A Study Differentiating Credit Risk Management Strategy between Islamic and Non-Islamic Banks in UAE

By

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In the Name of Allah, the Most Gracious, the Most Merciful

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ABSTRACT

Purpose - This study attempts to identify any differences between Islamic and Non-Islamic banks in UAE. Furthermore, factors affecting rate of return on lending have also been examined for UAE banks, Islamic and Non-Islamic banks.

Methodology – this study has used quantitative research design. Data has been collected through questionnaire. Data is obtained directly as primary evidence from the senior credit risk managers from all the local commercial banks within United Arab Emirates. The sample for the study consists of 6 commercial banks from UAE with 3 Non-Islamic and 3 Islamic Banks with 148 credit risk managers as respondents for the survey. Descriptive statistic and inferential statistics are used to obtain the results.

Findings - Islamic and non-islamic banks differ in 'expert system', 'lending policy' and 'lending decisions'. Islamic banks are performing better making lending decision and lending policies than non-islamic banks. Whereas, non-Islamic (conventional) banks are having better expert system than Islamic bank. All explanatory variables i.e. bank-wise exposure, experts system, company factors, lending decision, corporate borrowers, demographic variables and lending policy have significant influence on the profitability of UAE banks. Overall, credit risk management practices of Islamic banks are significantly contributing in profitability of banks than non-islamic banks.

Originality - This paper uses questionnaire-based methodology has not been used previously in UAE financial sector as well as in studies of credit risk management. Therefore this research could become the cornerstone of further academic research in other developing countries using this methodology.

Practical implication –This study is significantly important for the academic point of view as well as for the practitioners, risk managers and policy makers.

Keywords: credit risk management, Islamic and Non-Islamic banks, UAE financial sector, logistic regression analysis, questionnaire method, banking and finance.

ISLAMIC TERMS GLOSSARY

Al-Rahn	Property as collateral for a deferred debt
Al wadiah	Principle to keep or deposit something in custody
Bay Salam	A contract determining a pre-paid purchase
Fatwa	An authoritative legal opinion issued by a Shariah Supervisory Board/ single Shariah scholars, based on the Shariah
Fiqh	Practical Islamic jurisprudence
Ijarah	A contract determining a leasing agreement/ A lease-purchase agreement
Istisnaa	A contract of sale of specified goods to be manufactured
Mudarib	The entrepreneur or manager in a Mudaraba contract
Mudaraba	A partnership contract in which one partner contributes capital and the other partner invests time and effort
Murabaha	The resale of goods with an agreed upon profit mark-up on the cost
Musharaka	A partnership contract in which both parties contribute capital and may form a joint management
Qard Hassan	A benevolent (interest-free) loan
Rabb al mal	The partner in a Mudaraba agreement providing the funds
Shariah	Islamic religious law derived from the Holy Qur'an and the Hadithe
Sukuk	Participation securities, coupons, investment certificate
Wakala	An agency contract

CHAPTER ONE

1.0. INTRODUCTION

1.1. Introduction

The future cannot be predicted. It is uncertain and no one has ever been successful in forecasting the stock market, interest rates, or exchange rates consistently—or credit, operational, and systemic events with major financial implications (Crouhy, 2000).

In developing countries, the development process depends a lot on financial intermediaries. Empirical researches have shown that a good financial sector contributes to the development of economy. Financial institutions should have a credit risk management system in place to identify, measure, monitor and control credit risk which in turn prevent distress or collapse of the financial institutions. The concepts of a sound risk management system in financial institutions and regulations provide a mechanism to strengthen and improve the supervision and risk management system. A successful system for risk management needs a positive risk culture.

Financial literature explains various reasons for the fluctuations in the credit policies of bank. One of the most common explanations of the phenomenon given is the principal agent problem. It says that once a manager gets a reasonable profit for its shareholders, they may get involved into activities that may not maximise shareholder's value. The managers may start taking high risk to mark their social presence of (Williamson, 1963). Also, if there is strong competition among financial institutions the return is lowered and the managers may be encouraged to take higher risks to compensate for the lower returns. They use the strategy of issuing more and more number of loans. This results into lowering of credit standards and issuance of poor quality loans. There are many empirical studies which suggest that due to economic activities also banks face non-performing loans. When there is slow growth or negative growth then organizations and employees' cash flows get reduced due to lesser sales and wages. Hence, they face liquidity problems making it difficult to pay their loans obligations (Jimenez and Saurina, 2006). During recession, financial institutions start using more stringent credit policy which aggravates the problems of paying loan and interests by organizations and households.

The financial crisis is a golden opportunity for the expansion of Islamic banking to expand in the other parts of the world as Islamic banking is much safer as they do not include risky products offerings (Lahem 2009, Cihak and Hesse 2008). Islamic banks have managed to survive during financial crisis due to uniqueness of Islamic banking products (Zeitun, 2012). Differences were found between the Islamic and conventional banks understanding in risk and risk management. Islamic banks were found to have higher country, liquidity, operational, residual and settlement risk than conventional banks (Hussain and Al-Ajmi, 2012). In the similar vein, Hassan (2009) concluded that the Islamic banks are reasonably efficient in risk management. However, Shafique et al (2013) found that credit risk, equity investment risk, market risk, liquidity risk, rate of return risk and operational risk management practices are not different between Islamic banks and conventional banks. In another study conducted by Fauziah et al (2013), it was pointed out that there are significant differences in the usage of Value at risk (VaR), stress testing results, credit risk mitigation methods and operational risk management tools between Islamic and conventional banks. They also found that Islamic banks lack adequate tools and systems of risk management particularly in IT. They suggested that innovations and more product developments should be done for managing risks in Islamic banks.

Risk is the element of uncertainty or possibility of loss that prevail in any business transaction in any place, in any mode and at any time. In the financial arena, enterprise risks can be broadly categorized as Credit Risk, Operational Risk, Market Risk and Other Risk. Credit risk is the possibility that a borrower or counter party will fail to meet agreed obligations. Globally, more than 50% of total risk elements in banks and financial institutions are Credit Risk alone. Thus managing credit risk for efficient management of a FI has gradually become the most crucial task, (Heffernan, 2005).

Pyle (1997) says that Credit risk is the change in net asset value due to changes in the perceived ability of counterparties to meet their contractual obligations.

Credit risk measurement has developed increasingly in the last 20 years in response to a number of secular forces that have made its measurement more important than ever before. Among these forces have been: “(i) a worldwide structural increase in the number of bankruptcies, (ii) a trend towards disintermediation by the highest quality

and largest borrowers, (iii) more competitive margins on loans, (iv) a declining value of real assets (and thus collateral) in many markets and (v) a dramatic growth off-balance sheet instruments with inherent default risk exposure including credit risk derivatives" (McKinsey, 1993).

Risk is inherent in all aspects of a commercial operation; however for banks and financial institutions, credit risk is an essential factor that needs to be managed. Credit risk is the possibility that a borrower or counter party will fail to meet its obligations in accordance with agreed terms. Credit risk, therefore, arises from the bank's dealings with or lending to corporate, individuals, and other banks or financial institutions (Walter Gontarek[1]).

Brown (2007) believes[2] that credit risk management needs to be a robust process that enables banks to proactively manage loan portfolios in order to minimize losses and earn an acceptable level of return for shareholders. Central to this is a comprehensive IT system, which should have the ability to capture all key customer data, risk management and transaction information including trade & foreign exchange. Given the fast changing, dynamic global economy and the increasing pressure of globalization, liberalization, consolidation and disintermediation, it is essential that banks have robust credit risk management policies and procedures that are sensitive and responsive to these changes.

Although the most recent recession hit at different times in different countries, a significant increase in bankruptcies has been shown by statistics, compared to the prior recessions. The increase in global competition is one of the possibilities that led to the increase in bankruptcies worldwide. Accurate credit risk analysis becomes more important today than in the past (Saunders and Allen, 2002).

UAE is one of the fastest growing economies of the world. UAE has become a magnet for business interests worldwide. Local and international reports on UAE indicate that the economy has been witnessing a fast growth. The steady economic growth in the country over the past years is not attributed to energy production and export only, as is the case with many of the oil economies, but to a strategy of

[1] Walter Gontarek, "Looking after loans", Credit Risk– Loans, this article originally appeared in the April 1999 Credit Risk supplement to Risk magazine, published bywww.incisivemedia.com
[2] Benton Brown, Step-by-Step Enterprise Risk Management, www.rmmag.com dated 15/03/2007

diversifying sources of income, and reduction of oil-reliance in the favour of other sectors, such as financial services, logistics, tourism and trade and industry Meanwhile, UAE's commercial banks have entered a fresh development stage. Hence, it is now necessary to develop a research about UAE for market professionals and students who want to seek knowledge about UAE's financial system.

1.2. Research Problem

The UAE since its establishment has witnessed a remarkable and rapid economic development, which is very difficult to attain even in the most developed communities. The UAE has rapidly maximized the benefits obtained through its huge oil revenues to provide the basic requirements of society. The UAE has lived up to the expectation of the international community, and generously stood by its sister countries in the Arab world, and other developing countries in the rest of the world. The banking sector in UAE is also at the developing stage. According to a report published by IMF (2013) the UAE banks' profitability is increasing but it has issues with efficiency and proper risk management.

Researchers have studied on the fundamental differences between Islamic and conventional banking systems. Most of the studies are related to differences in efficiency, profitability and risk management practices. Some researchers are of the opinion that Islamic banks are more efficient than conventional banking.

It has been found that various principles, system for credit risk management have been established. Many researchers have emphasized the importance of a proper credit risk management structure in place to avoid bank failure. Research in the past on credit risk management is mostly on credit risk management models and judgments, competition, business cycles and its effect on credit risk management policies. There is a lack of study which tries to identify and analyse the impact on the demographic variables, attitudes towards the importance of various factors affecting lending decisions, lending policy, importance of expert systems, importance given to company factors, factors considered when lending to corporate borrowers, importance to evaluating bank exposures in credit risk management; The effect of credit risk management practices on rate of return on lending and profitability.

A few studies conclude that Islamic banks need more innovative products and lacks adequate system to maximize the use of Value at risk (VaR), stress testing results, credit risk mitigation methods. The present study will also attempt to identify and analyse the differences between the Islamic and conventional banks. However, it will differentiate between the banks in terms of the impact of the demographic variables, attitudes towards the importance of various factors affecting lending decisions, lending policy, importance of expert systems, importance given to company factors, factors considered when lending to corporate borrowers, importance to evaluating bank exposures in credit risk management; The effect of credit risk management practices on rate of return on lending.

1.3. Research Objectives

The main aim of the study is to give a general view of UAE financial sector credit risk management practices and how it affects the rate of return on lending. Besides, it also aims to identify to identify differences between Islamic and Non-Islamic banking and how it affects rate of return on lending.

This study is comprised of the following aims:

1. To identify the general characteristics of UAE banking and credit risk management practices
2. To identify if any differences in credit risk management practices between Islamic and Non-Islamic banking in UAE
3. To examine how credit risk management practices affect the rate of return on lending in UAE banks in general, UAE Islamic and Non-Islamic banks.

1.4. Research Questions

The main aim of the study is to give a general overview of UAE financial sector, credit risk management practices and how it affects the rate of return on lending. Since theoretically, if for instance the bank increases its limit on credit ceiling to different industries then the bank is exposed to higher risk which in turn makes them charge higher from the borrower of funds. Islamic banks according to few researchers are one of the safest and robust style of banking due to its many distinct features e.g. sharing of profit and loss and uncertain risk free investment activities. UAE banking sector consists of some largest Islamic banks and most of the past studies were aimed at differentiating between Islamic and Non-Islamic banks' profitability, efficiency and

risk management style. Besides, their aim was also to identify differences between Islamic and Non-Islamic banking and how it affects rate of return on lending. Finally credit risk does affect the profitability, the higher the rate of return i.e. the cost to the borrowers, the greater is the probability of default in times of economic or organizational downturn decreasing profitability (Figure 1.1).

Figure 1.1 Effect of credit risk management practices

Hence, the research questions are as follows:

1. What are general credit risk management practices in UAE banks?
2. What are the differences between Islamic and Non-Islamic credit risk management practices in the UAE?
3. How does credit risk management affects the rate of return on lending?
4. How does rate of return on lending differences between Islamic and non-islamic banks?

1.5. Contribution to the body of knowledge

Various principles and system for credit risk management has been established in the past. Researchers have emphasized the importance of a proper credit risk management structure in place to avoid bank failure. In the past, research work is done mostly on credit risk management models and judgments, competition, business cycles and its effect on credit risk management policies. Financial literature is full of work done on

explaining fundamental differences between Islamic and Non-Islamic banks. Most of the studies are related to differences in efficiency, profitability and risk management practices. Some researchers are of the opinion that Islamic banks are more efficient than conventional banking. A few studies conclude that Islamic banks need more innovative products and lack adequate system to maximize the use of Value at risk (VaR), stress testing results, credit risk mitigation methods. There are very few studies which try to identify and analyse the impact of the demographic variables, attitudes towards the importance of various factors affecting lending decisions, lending policy, importance of expert systems, importance given to company factors, factors considered when lending to corporate borrowers, importance to evaluating bank exposures in credit risk management and how this affect credit risk management practices on rate of return on lending and profitability. The present study attempts to fill that gap with this research. The findings of the study will help policy makers, managers and researchers understand better what practices exist in UAE, which factors lead to a sound banking system through better risk management. The study will identify what type of credit risk management practices affects rate of return on lending. If the rate of return on lending which is the cost of funds to borrowers rises, the chances of default also increases as the borrowers may find it difficult to pay back the loan during economic down turn or adverse business conditions negatively affecting their profitability.

1.6. Methodology

1.6.1 Population: The UAE banks forms the population of the study. There are 23 banks in UAE providing services in the country.

1.6.2 Sample: For the present study, the largest 6 banks in UAE have been selected. Since the study also attempts to compare Islamic and Non-Islamic banks, 3 Islamic and 3 Non-Islamic banks have been selected as a sample for the study.

1.6.3 Data Collection: This research looks into credit risk management, and how the senior credit bank managers play a pivotal role in the whole credit risk management banking processes within the UAE financial sector. Hence the credit risk managers were the obvious choice for the sample, since the research question focus on a sample because they are particularly informative in this area.

1.7. Data Analysis

The primary data analysis comprises of graphical analysis, descriptive analysis and inferential statistics of the primary data obtained from the questionnaires. The variables used in the data analysis are the credit risk management factors obtained from the survey affecting bank profitability (rate of return on lending).

1.7.1. Graphical Analysis: The graphical analysis presents the results of primary data in graphs to show the general characteristics of UAE banks and also the differences between UAE Islamic and Non-Islamic banks.

1.7.2. Descriptive Statistical Analysis: The descriptive analysis comprises of the mean, ranking, standard deviation, skewness and kurtosis.

1.7.3. Reliability Analysis: Reliability analysis tells about the consistency of the data. Reliability analysis is performed on responses of individual factors (48 questions asked in questions) and 7 variables that are computed from 48 factors.

1.7.4. Independent Sample t-test: The study aims to investigate factors which distinguish between Islamic and Non-Islamic banks credit risk management practices in the UAE. Therefore, non-parametric independent sample t test (Mann-Whitney U test) is applied.

1.7.5. Regression Analysis: The study also attempts to investigate how the rate of return on lending is affected by credit risk management practices. Hence, regression has been employed in the analysis.

1.8. Layout of the study

1.8.1 Introduction: Chapter 1 consist of the background information, problem statement, research objectives, research questions, contribution to the body of knowledge, methodology of the study comprising of brief information on population, sample, data collection and data analysis. It also presents the layout of the study.

1.8.2 Chapter 2 and 3 provides the Literature review: The literature review is divided into 2 main parts viz. credit risk literature and the other part composed of Islamic banking. The literature review presents the studies done by other researchers, principles, system and ways of managing credit risks. It also identifies the gap in the credit risk management research. Conceptual framework is discussed in chapter two.

1.8.3 Chapter 4 provides explanation on the research design and how data is collected. The chapter explains the population, sample, data collection method, data analysis for the study. The data is composed of the primary information collected through questionnaire.

1.8.4 Chapter 5 explained how primary data was analysed and its interpretation. The primary data was graphically analysed, and descriptive statistical analysis as well as inferential statistic (independent sample t test, regression analysis) was conducted

1.8.5 Chapter 6 ends with the Conclusion and Recommendation: This chapter summarizes the study and provided recommendations accordingly. It also points out some weaknesses and future possible research in credit risk management.

1.9. Conclusion

The study focuses on the credit risk management practices in UAE banks and its impact on rate of return on lending. Besides, it also attempts to identify any differences between Islamic and Non-Islamic banks' credit risk management practices and its impact on rate of return on lending in UAE. There is a lack of study which tries to identify and analyse the impact of the demographic variables, attitudes towards the importance of various factors affecting lending decisions, lending policy, importance of expert systems, importance given to company factors, factors considered when lending to corporate borrowers, importance to evaluating bank exposures in credit risk management. The present study attempts to fill that gap in research. The study has been presented under 5 main headings viz. Introduction, Literature Review, Research Methodology, Data Analysis and Conclusion and Recommendations.

CHAPTER TWO

2.0. LITERATURE REVIEW

CREDIT RISK MANAGEMENT

2.0. Introduction

The literature review chapter presents the studies done in the credit risk management in banks. It also presents various theories and principles, system in assessing credit risk, development of sound credit risk assessment, capital regulation and credit risk management in emerging economies.

Karras (2008) indicated that in a world of innovation, following the development of interest risk management, equity and foreign exchange risk management, now it was the turn of credit risk management. The last decade has seen dramatic losses in the banking industry globally and banking crisis.

As Ruth (1996) states risk is part of banking, and can hardly be avoided. Risk involves the day-to-day uncertainties of attracting, lending and investing money. Hence, it is not possible to operate a bank without dealing with risk. Banks have been developing methods to safeguard operating against risks. The high volume of defaults since 1999 has meant that credit risk management has become more important than ever before.

Carr (2009) said maintaining a healthy cash flow is essential to the survival of any business, but it is becoming more difficult in this tough economic climate to manage cash flow from debtors. The problem is that each of your debtors poses a different level of credit risk. In order to protect your cash flow, it is vital to understand the various credit risks that customers pose and to manage those risks effectively.

According to Malcolm (2008) it is necessary to understand exactly what credit risk is: an expression of the probability of financial loss after taking into consideration as many influencing factor as possible. Altman et al.[3] (1998) stated that every customer and every transaction carries an element of credit risk. There is the risk that they may not pay at all. Or that payment will occur beyond your trading terms. Both of these

[3] Edward I. Altman, Anthony Saunders, Credit risk measurement: Developments over the last 20 years, Journal of Banking & Finance, 21 (1998) 1721-1742. Among these forces have been: (i) a worldwide structural increase in the number of bankruptcies, (ii) a trend towards disintermediation by the highest quality and largest borrowers, (iii) more competitive margins on loans, (iv) a declining value of real assets (and thus collateral) in many markets and (v) a dramatic growth of off-balance sheet instruments with inherent default risk exposure (see, e.g. McKinsey, 1993), including credit risk derivatives.

have a direct impact on cash flow. Non- payment and delayed payment are financial burdens that can be overcome by good credit risk assessment. Crouhy et al. (2006) stated that it is less likely to predict the future. So far, no one has even been successful in forecasting the stock market, interest rates, or exchange rates consistently- or credit, operational, and systemic events with major financial implications.

Altman et al.[4] (1998) opined that risk management is a continual process of corporate risk reduction. In reality, it is about how firms actively select the type and level of risk that it is appropriate for them to assume. Over the last 20 years, risk management has become a hot topic. It is now widely acknowledged as the most creative force in the world's financial market.

Nelson (1997) stated that the role of a risk manager is to uncover the sources of risk and make them visible to key decision makers and stakeholders in terms of probability. A risk manager has a number of advantages over a model. First, a risk manager knows the model's limitations. Second, a risk manager can persuade management to take action to mitigate risk. (Powell, 2010)

Altman (1998) stated that the risks faced by financial institutions can be divided into five categories. The first one is market risk, which is the risk of unexpected changes in prices or rates. The second one is credit risk, which the risk of changes in value associated with unexpected changes in credit quality. The third one is liquidity risk, which is the risk that the costs of adjusting financial positions will increase substantially or that a firm will lose access to financing. Operational risk is the fourth one. Operational risk is the risk of fraud, systems failure, trading errors (e.g. deal mispricing) and many other internal organization risks. The last one is systematic risk- The risk of breakdown in market wide liquidity or chain-reaction default.

Duffie (2003) singled out that credit risk is the risk of default or of reductions in market value caused by changes in the credit quality of issuers or counterparties. Credit risk associated with changes in spreads on corporate debt at various maturities. These changes, showing the direct effects of changes in credit quality on the prices of

[4] Edward I. Altman, Anthony Saunders, Credit risk measurement: Developments over the last 20 years, Journal of Banking & Finance, 21 (1998) 1721-1742. Among these forces have been: (i) a worldwide structural increase in the number of bankruptcies, (ii) a trend towards disintermediation by the highest quality and largest borrowers, (iii) more competitive margins on loans, (iv) a declining value of real assets (and thus collateral) in many markets and (v) a dramatic growth of off-balance sheet instruments with inherent default risk exposure (see, e.g. McKinsey, 1993), including credit risk derivatives.

corporate bonds, also signal likely changes in the market values of OTC derivative position held by corporate counterparties.

Duffie (2003) also pointed out that risk management is the process of adjusting both the risk of large losses and the firm's vulnerability to them. This vulnerability depends on the portfolio of positions and on the amount of capital that is backing the firm's investment activities. Vulnerability to risk depends as well on the quality of the institution's risk-management team, its risk-measurement systems, the liquidity of its position, and many other attributes.

Various studies have been done on credit risk management in banks. According to Onaolapo (2012) recent rising toxic assets in banks' loan portfolio has been one the major reasons of bank failure across nations. Budd and Budd,(2011) hypothesized that competition and over-banking in the United Arab Emirates (UAE) somehow shows efficiency challenges faced by UAE banking sector prior to full compliance of the Basel II capital accord. They found that UAE banking sectors profit is rising however cost inefficiency and over-banking is also growing. They hypothesized that it is not the managerial policy but regulatory policy implications are the reasons of poor cost efficiency. They also found that some small size banks are also efficient contrary to the benefits of economies of scale.

Hameeda and Ajmi (2012) found that the most important risk in Islamic and conventional banks credit, liquidity and operational risk. They also concluded that the understanding of risk management, efficient risk identification, risk assessment analysis, risk monitoring and credit analysis by managers determine the risk management practices. Differences were found between the Islamic and conventional banks understanding in risk and risk management. Islamic banks were found to have higher country, liquidity, operational, residual and settlement risk than conventional banks. In the similar vein, Hassan (2009) concluded that the Islamic banks are reasonably efficient in risk management. However, Shafique et al. (2013) found that credit risk, equity investment risk, market risk, liquidity risk, rate of return risk and operational risk management practices are not different between Islamic banks and conventional banks. In another study conducted by Fauziah et al. (2013) pointed out that there are significant differences in the usage of Value at risk (VaR), stress testing results, credit risk mitigation methods and operational risk management tools between Islamic and conventional banks. They also found that Islamic banks lack adequate tools and systems of risk management particularly in IT. They suggested that

innovations and more product developments should be done for managing risks in Islamic banks.

Ferguson (2001) analyzed the credit risk management models and judgments. According to the author a sound risk modeling provides a formal systematic and disciplined mechanism to manage changes in the risk of a bank's loan portfolio. Bagchi (2003) also studied the credit risk management in banks. The author pointed out that a successful credit risk management is the result of proper credit risk architecture, policies and framework of credit risk management, credit rating system, monitoring and control. Muninarayanappa and Nirmala (2004) highlighted that for a successful credit risk management system a proper credit risk environment, strategy and policies are needed; hence it is very important that banks protect and improve the loan quality. Louberge and Schlesinger (2005) proposed a new method for credit risk allocation. They have shown how financial contracts might be redesigned to manage the idiosyncratic component for their own account (banks), while systematic component of the contract could either be retained or passed off to capital market.

An extensive literature is available which explains the relationship between competition and risk in banking. Keely (1990) is of the opinion that competition in financial sector is not a healthy situation. Due to competition the interest rate margins are lowered. When banks' franchise value goes down, the owners are encouraged to take on more risk which means lowering of credit standards resulting in higher probability of loan losses. Whereas, Boyd and De Nicolo (2005), Boyd et al. (2006) and DeNicolo and Loukoianova (2007) assert that due to competition the lending rates decreases and more entrepreneurs are encouraged to take loans who make investments and there is lesser chances of default. Jiménez et al. (2010) are of the opinion that with the increase in market power of a bank, the risk decreases. Turk-Ariss (2010) analysed market power,bank efficiency and risk in developing countries. He found that with the increase in market power the banks become more efficient in making profit however the risk is also increased. Casu and Girardone (2009) found that the market power and efficiency are positively related to each other. Berger et al. (2009) asserts that market power increases credit risk; but banks with more market power have lesser overall risk. Zhao et al. (2009, 2010) in their study found that competition encourages banks to increase risk.

Gabriel Jim´enez and Jes´us Saurina (2006) concluded that there is positive lagged relationship between very fast credit growth and loan losses. Their study also

evidenced lowering of credit standards during high growth/ boom periods. Regulations imposed on banking also affect the credit risk management practices. BASEL-III which is comprehensive set of reform measures. It has measures to strengthen the regulation, supervision and risk management of the banking sector. Its aims to improve the banking sector's risk management and governance, ability to absorb shocks due to financial and economic stress, improve risk management and governance. It also aims to strengthen banks' transparency and disclosures.

The financial crisis is a golden opportunity for the expansion of Islamic banking to expand in the other parts of the world as Islamic banking is much safer as they do not include risky products offerings (Lahem, 2009; Cihak and Hesse, 2008). Islamic banks have managed to survive during financial crisis due to uniqueness of Islamic banking products (Zeitun, 2012).

2.1. Principles of Credit Risk Management

2.1.1 Credit risk in global financial environment

Roach (2009) pointed out that the global financial environment has been changing radically nowadays. The globalisation and integration of financial markets has broken down the boundaries between countries, and strengthened the linkages and interdependencies between markets and economies around the world. A policy change by the Deutsche Bank in Germany may have effect on investors in the US immediately. Lam (1995) pointed in the last decade the influence of financial markets of the world manifesting through globalization processes and influencing the stability of financial systems of countries became the object of scientific research.

Tornell and Westerman (2002) established that if a country liberalizes the financial market, a credit boom starts, and it can cause a financial crisis, short-term recession of economy or a rather lengthy period of post-crisis credit rating. According to Martinaityte (2008), with the current world financial crisis and recession of economy it is obvious that financial globalization is becoming an important factor of instability of markets and increases the undesirable risk of economic recession.

Wang (2008) indicated that Since 1990's, bank crisis has soared up all over the world, such as Japanese bank crisis, Asia finance crisis, which makes people to research on the corporate governance for banking organization. In September 1999, a policy, enhancing corporate governance for banking organization, was released by the Basel

Committee, which draws on supervisory experience with corporate governance problems at banking organizations and suggests that could help to avoid such problem. The long-run challenge is to learn from the crisis and take measures designed to limit risk-taking to acceptable levels in today's global financial environment.

Martin (2002) indicated that banks are financial intermediaries originating loans and consequently facing credit risks. Default occurs when a borrower cannot meet his key financial obligations. If majority of borrows failed to pay principal as well as interests, it will cause banking crisis. Kim et al. (2009) analysed the latest financial crisis, which has originally sourced from US property loan crisis: credit growth was high with low interest loan and sub-prime mortgages and then expanding to other markets, leading to global financial crisis, that consider as the worst financial crisis since the Great Depression in the 1930s. Many giant financial institutions were collapsed, such as Lehman Brothers. The US government as well as the Governments all over the world has been applying various policy- based solutions to restore the real estate financial market and the financial system. Although there have been some signals of success, uncertain developments of the financial market as a whole and the real estate financial market remain relatively high. It is the common target among all commercial banks to increase the credit risk management system.

Suresh et al. (2010) indicated that credit is one of the oldest innovations in commercial practice. Historically, credit has been defined in terms of the borrowing and lending of money. Credit transactions differ from other investments in the nature of the contract they represent. Contracts where fixed payments are determined up from over a finite time horizon differentiate a credit instrument from an equity instrument. Arunkumar et al. (2003) indicated that unlike credit instrument, equity instrument tend to have no specific time horizon in their structure and reflect a claim to a share of an entity's future profits, no matter how large these profits become. Mckinley et al. (1994) contributed that while some equity instruments pay dividends, these payments are not guaranteed, and most equity is defined by not having any predetermined fixed payments.

Bohn & Stein (2009) pointed out that risk is the possible change in value of a security of asset over a particular time horizon. Change in value is not the only way to define risk. Some practitioners have focused on risk as defined only in terms of the probability of default. The trouble with this definition is that a portfolio can store up

"time bombs," in effect, that are not readily appreciated until it is too late when many firms in the same industry or geography default at the same time. Since the probability of default of one loan is the same regardless of the concentrations in a portfolio, the potential for large losses on a portfolio can change dramatically with portfolio correlation.

Crouhy[5] (2001) indicated that, as a basic element, risk could influence financial behavior. Without risk, the financial system necessary for efficient allocations of resources would be vastly simplified.' According to Heffernan (2005, pp. 104)[6], 'risk is defined as the volatility or standard deviation (the square root of the variance) of net cash flows of the firm, or, if the company is very large, a unit within it.'

Altman (2007) defined credit risk as the risk of loss due to the financial weakness of the bank's customer. Generally it is the risk that the customer will not be able to provide funds to settle its transactions, usually due to bankruptcy or some other liquidity crisis. In other words, credit risk is the loss in the event of default of the borrower or in the event of a deterioration of the borrower's credit quality. In the case of traded instruments, credit risk is the potential decrease in value generated by a change in credit quality during the life of the instrument. In the case of a bank loan, credit risk is considered primarily the risk that the borrower may not be able to make the scheduled payments. There is conflict of risk and reward. In financial markets, and other commercial activities, if one wants to achieve a higher rate of return on average, he has to take more risk. But the transparency of the trade-off between risk and return is highly variable.

Altman (2007) divide up the risk portfolio according to the type of risk, there are three broad risk types:

The first one is credit risk, which is the risk of loss following a change in the factors that drive the credit quality of an asset. These include adverse effects arising from credit grade migration; include e default, and the dynamics of recovery rates (Grundke, 2010).

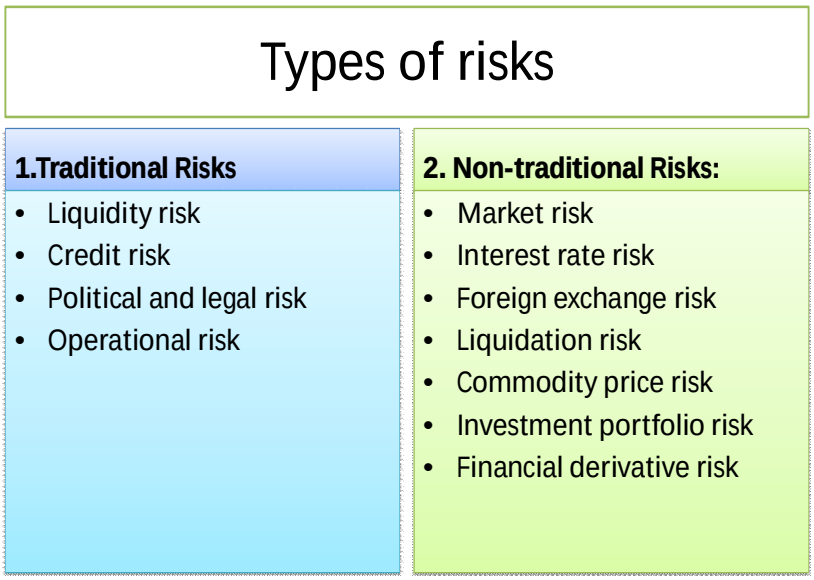
The second one is market risk, which is the risk of losses arising from changes in market risk factors. Market risk can arise from changes in interest rates, foreign exchange rates, or equity and commodity price factor (Grundke, 2010).

[5] Crouhy M. (2001), *Risk Management*, Blacklick, OH, USA: Mc Graw – Hill Companies
[6] Heffernan, S. (2005) *Modern banking*, London: John Wiley & Sons Ltd

The third risk is operational risk- refers to financial loss resulting from a host of potential operational breakdowns that we can think of in terms of people risks, process risks, and technology risks (e.g. frauds, inadequate computer systems, a failure in controls, a mistake in operations, a guideline that has been circumvented, or a natural disaster (*Fragnière et al., 2010).*

Categorically, Angelopoulos and Mourdoukoutas (2001)[7] have mentioned two types of risks, traditional and non-traditional risks. Traditional risks are liquidity risk, credit risk, political and legal risk and operational risk. Whereas non-traditional are Market risk, interest rate risk, foreign exchange risk, liquidation risk, commodity price risks, investment portfolio risks, financial derivative risks[8].

Figure 2.1: Types of Risk



Source: Angelopoulos and Mourdoukoutas (2001, pp 33)

According to Bessis (2002) banks are facing many financial risks, as credit risk, liquidity risk, operational risk, interest risk, foreign exchange risk and other risks. Liang (1989) explained that credit risk reduces bank profit because a bank recognize expected costs associated with high risk, such as higher premiums on uninsured

[7] Panos Angelopoulos and Panos Mourdoukoutas, Banking Risk Management in a Globalizing Economy page 2 to 15, Greenwood Publishing Group, 2001, USA.

[8] (Panos Angelopoulos and Panos Mourdoukoutas 2001)

deposits demanded by risk averse investors. Fraser et al. (2001) pointed that credit risk is regarded as the primary cause of bank failures in recent years, and it is the most visible risk faced by bank management.

Understanding the various types of risk is important because each category demands a different set of risk management skills. This research is under the topic of credit risk, which is primarily focusing on default. Nelson (1997) gave out a definition of default risk as a missed payment, a broken covenant or an economic default (when the value of the firm's assets falls below its liabilities). Rating agencies consider that default occurs when a contractual payment has been missed for at least three months, which coincides also with the Basel II definition of default. It should be mentioned however, that the various events of default do not necessarily mean that there are immediately losses. However, even a technical event of default would increase the probability of a bankruptcy.

Crouhy (2001)[9] indicated that future is uncertain, and cannot be predicted. So far, no one has ever been successful in forecasting the stock market, interest rates, or exchange rates consistently—or credit, operational, and systemic events with major financial implications.

Dedu and Nechif (2008) pointed out that there is no universally accepted definition for the term risk management. Generally speaking, risk management represents all policies and procedures that financial institutions have implemented to manage, monitor and control their exposure to risk.

Deventer et al. (2005) indicated risk management activity has experienced exponential growth over the last decade. Compared with simply lending operations in the past, the current credit includes in its sphere of concern substantive issues relating to three phrases of the credit process, namely: the decision phase of credit life and credit portfolio management process for credit. The principal purpose for risk management is to clearly define the risks and returns of alternative strategies at both the portfolio and transaction level.

Frey and Backhaus (2010) indicated that Credit derivatives transfer the credit risk of an underlying asset from one counter party to another without actually involving the underlying asset in any way. Credit derivatives are therefore useful tools for

[9] Yet the financial risk that arises from uncertainty can be managed. Indeed, much of what distinguishes modern economies from those of the past is the new ability to identify risk, to measure it, to appreciate its consequences, and then to take action accordingly, such as transferring or mitigating the risk (The Essentials of Risk Management by Michel Crouhy, Dan Galai and Robert Mark).

managing credit risk, and the market has grown tremendously over the last couple of years.

According to the Basel committee (2000), Credit risk is defined as 'the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. Casu [10]et al. (2006) mentioned that credit risk is associated with the traditional lending activity of banks and it is simply described as the risk of a loan not being repaid in part or in full.

Martensl et al. (2010) elaborates that credit risk is 'the chance that a debtor or issuer of a financial instrument will not repay principal and other investment related cash flows according to the terms specified in a credit agreement'. It means that payments may be delayed or not made at all.

Pyle (1997) explains that Credit risk is the change in net asset value due to changes of the perceived ability of counterparties to meet their contractual obligations[11]. Mileris et al. (2010) pointed out more than 50% of total risk elements in banks and Financial Institutions (FIs) are Credit Risk alone, globally. Thus managing credit risk for efficient management of a FI has gradually become the most crucial task. Banks are financial intermediaries originating loans and consequently facing credit risks. Credits in banks have risk of being defaulted. The main purpose of credit risk estimation in banks is the determination of company's ability to fulfill its financial obligations in future. It is very important to have a proper instrument for the estimation of credit risk in banks because it reduces potential loss due to crediting reliable clients.

The former CEO of Citibank, Walter Wriston mentioned that the business of managing risk is what the business of banking is about''[12] Banking activities have a lot of risks, with a high profit as well. Like any other business, for banks, profitability (and shareholder value-added) is going to depend on the management of risks. Credit risk is one of the main types of risk in banking, and the purpose of banking is to always try to minimize the credit risk with the highest profitability from those activities.

10 Casu B, Girardone C and Molyneux P (2006) Introduction to banking, England: FT Prentice Hall Finance time
11 David H. Pyle, Booth Professor Of banking and Finance, Haas School Of Business, University of California, Berkeley, Banking Risk Management: Theory, July 1997. "Conference on Risk Management and Regulation in Banking, Jerusalum, May17-19, 1997
12 By Walter Wriston The Economist, 10 April 1993

According to Bente (2009) the importance of bank management is not confined only to minimize costs. In order to diminish the negative impact of risk facts, banking risks management is a fundamental element of banking management. Effective management of banking risks will imprint on his public image of the bank. Customers want a bank safe and shareholders alike. Soundness of the bank attracts depositors but given that deposits are not necessarily assured.

Boguslauskas et al. (2009) indicated that good credit risk management has always been a key component to the success of the bank, even as banks move into other areas. Good credit risk management could help boost profit while minimize risk and avoid bad loans. Financial market has globalization manner, a change in London financial market will effect on the other markets in over the world. Therefore, if credit risk happened, recovery of the banking systems becomes harder job for financial experts, so keeping good credit risk management is the main point.

2.1.2 Principles of Credit Risk Management

Three objectives of bank management: maximising return, minimizing risk exposure and compliance with banking regulations in force. The Bank of International Settlement[13] issues a series of principles on 28th November 2000 for sound credit risk assessment and valuation of loans.

I. "The board of directors and senior management of bank are responsible for ensuring that the banks have a proper credit risk assessment process and effective internal controls to consistently determine provisions for loan losses in accordance with the bank's stated policies and procedures, the applicable accounting framework and supervisory guidance commensurate with the size, nature and complexity of the bank's lending operations".

[13] The Bank for International Settlements (BIS) is an international organisation which fosters international monetary and financial cooperation and serves as a bank for central banks. Established on 17 May 1930, the BIS is the world's oldest international financial organization. http://www.bis.org/about/index.htm

II. "Banks should have a system in place to reliably classify loans on the basis of credit risk".

III. "A bank's policies should appropriately address validation of any internal credit risk assessment models".

IV. "A bank should adopt and document a sound loan loss methodology, which addresses credit risk assessment policies, procedures and controls for assessing credit risk, identifying problem loans and determining loan provisions in a timely manner".

V. "A bank's aggregate amount of individual and collectively assessed loan provisions should be adequate to absorb estimated credit losses in the loan portfolio".

VI. "A bank's use of experienced credit judgment and reasonable estimates are an essential part of the recognition and measurement of loan losses".

VII. "A bank's credit risk assessment process for loans should provide the bank with the necessary tools, procedures and observable data to use for credit risk assessment purposes, account for impairment of loans and the determination of regulatory capital requirements".

VIII. "Banking supervisors should periodically evaluate the effectiveness of a bank's credit risk policies and practices for assessing loan quality".

IX. "Banking supervisors should be satisfied that the methods employed by a bank to calculate loan loss provisions produce a reasonable and prudent measurement of estimated credit losses in the loan portfolio that are recognized in a timely manner".

X. "Banking supervisors should consider credit risk assessment and valuation policies and practices when assessing a bank's capital adequacy".

Altman et al. [14] (1998) have opined that Credit risk measurement has evolved dramatically over the last 20 years in response to a number of secular forces that have

[14] Edward I. Altman, Anthony Saunders, Credit risk measurement: Developments over the last 20 years, Journal of Banking & Finance, 21 (1998) 1721-1742. Among these forces have been: (i) a worldwide structural increase in the number of bankruptcies, (ii) a trend towards disintermediation by

made its measurement more important than ever before. In response to these forces academics and practitioners alike have responded by: (I) developing new and more sophisticated credit-scoring/early-warning systems, (ii) moved away from only analyzing the credit risk of individual loans and securities towards developing measures of credit concentration risk (such as the measurement of portfolio risk of fixed income securities), where the assessment of credit risk plays a central role (iii) developing new models to price credit risk (such as the risk adjusted return on capital models (RAROC)) and (iv) developing models to measure better the credit risk of off-balance sheet instruments.

Rajagopal (1996) made an attempt to overview the bank's risk management and suggests a model for pricing the products based on credit risk assessment of the borrowers. He concluded the good risk management is good banking, which ultimately leads to profitable survival of the institution. A proper approach to risk identification, measurement and control will safeguard the interests of banking institution in long run.

Froot and Stein (1998) found that credit risk management through active loan purchase and sales activity affects banks' investments in risky loans. Banks that purchase and sell loans hold more risky loans (Credit Risk and Loss loans and commercial real estate loans) as a percentage of the balance sheet than other banks. Again, these results are especially striking because banks that manage their credit risk (by buying and selling loans) hold more risky loans than banks that merely sell loans (but don't buy them) or banks that merely buy loans (but don't sell them).

Treacy and Carey (1998) examined the credit risk rating mechanism at US Banks. The paper highlighted the architecture of Bank Internal Rating System and Operating Design of Rating system and made a comparison of bank system relative to the rating agency system. They concluded that banks internal rating system helps in managing credit risk, profitability analysis and product pricing.

Duffee and Zhou (1999) model the effects on banks due to the introduction of a market for credit derivatives; particularly, credit-default swaps. Their paper examined that a bank can use swaps to temporarily transfer credit risks of their loans to others, reducing the likelihood that defaulting loans trigger the bank's financial distress. They

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the highest quality and largest borrowers, (iii) more competitive margins on loans, (iv) a declining value of real assets (and thus collateral) in many markets and (v) a dramatic growth of off-balance sheet instruments with inherent default risk exposure (see, e.g. McKinsey, 1993), including credit risk derivatives.

concluded that the introduction of a credit derivatives markets not desirable because it can cause other markets for loan risk-sharing to break down.

Ferguson (2001) analysed the models and judgements related to credit risk management. The author concluded that proper risk modelling provides a formal systematic and disciplined way for firms to measure changes in the riskiness of their portfolio and help them in designing proper strategic framework for managing changes in their risk.

Bagchi (2003) examined the credit risk management in banks. He examined risk identification, risk measurement, risk monitoring, risk control, and risk audit as basic considerations for credit risk management. The author concluded that proper credit risk architecture, policies and framework of credit risk management, credit rating system, monitoring and control contributes in success of credit risk management system.

Muninarayanappa and Nirmala (2004) outlined the concept of credit risk management in banks. They highlighted the objectives and factors that determine the direction of bank's policies on credit risk management. The challenges related to internal and external factors in credit risk management are also highlighted. They concluded that success of credit risk management require maintenance of proper credit risk environment, credit strategy and policies. Thus the ultimate ain should be to protect and improve the loan quality.

Louberge and Schlesinger (2005) aim to propose a new method for credit risk allocation among economic agents. Their paper considers a pool of bank loans subject to credit risk and develops a method for decomposing the credit risk into idiosyncratic and systematic components. The paper shows how financial contracts might be redesigned to allow for banks to manage the idiosyncratic component for their own account, while allowing systematic component to be retained, passed off to capital market or shared with borrower.

2.2. Transitional System in Assessing Credit Risk

Gatfaoui (2003) opined that credit risk is an important consideration in most financial transactions. As for any other risk, the risk taker requires compensation for the undiversifiable part of the risk taken. In bond markets, for example, risk issuers have to promise a higher yield to attract investors. However, how much higher a yield?

Using methods from contingent claims analysis, credit risk valuation models attempt to put a price on credit risk.

Manuel (2002) gave an overview of the current methods for the valuation of credit risk and considers several applications of credit risk models in the context of derivative pricing. In particular, credit risk models are incorporated into the pricing of derivative contracts that are subject to credit risk. Credit risk can affect prices of derivatives in a variety of ways. First, financial derivatives can be subject to counterparty default risk. Second, a derivative can be written on a security which is subject to credit risk, such as a corporate bond. Third, the credit risk itself can be the underlying variable of a derivative instrument. In this case, the instrument is called a credit derivative. Fourth, credit derivatives may themselves be exposed to counter-party risk. This text addresses all of those valuation problems but focuses on counterparty risk.

Altman (2007) defines credit risk as the possibility that a contractual counterparty does not meet its obligations stated in the contract, thereby causing the creditor a financial loss. In this broad definition, it is irrelevant whether the counterparty is unable to meet its contractual obligations due to financial distress or is unwilling to honour an unenforceable contract, thereby causing the creditor a financial loss. In this broad definition, it is irrelevant whether the counterparty is unable to meet its contractual obligations due to financial distress or is unwilling to honour an unenforceable contract.

Manuel (2001) indicated that credit risk has long been recognized as a crucial determinant of prices and promised returns of debt. A debt contract involving a high amount of credit risk must promise a higher return to the investor than a contract considered less credit-risk by market participants. The higher promised return manifests itself in lower prices for otherwise identical indenture provisions.

Manuel (2001) narrated methods and models for the valuation of credit risk. It reviews some of the most common approaches to valuing credit risk and focuses on the application of credit risk valuation to derivative contracts. In particular, it covers four aspects of derivative credit risk.

The first risk is *Counterparty default risk.* Patel and Pereira (2008) explained derivative instruments are contracts in which the parties agree on future cash flows according to predefined rules, parties which are to receive cash-flows are exposed to credit risk if it is conceivable that the counterparty will not or cannot satisfy its

contractual obligations in the future. As a consequence, the fair price of a vulnerable derivative differs from the default-free price.

The second risk is *Options on credit-risky bonds.* Peterson and Stapleton (2003) discussed credit risk results in lower prices for credit-sensitive bonds. However, the price distribution does not simply move, it also changes shape because of the low-probability, high-loss property of default risk. Accordingly, options on credit-sensitive bonds cannot be priced with standard option pricing methods but require a credit risk model.

The third risk is *Credit derivatives.* According to Dai (2008) credit risk may be the underlying variable of derivative contracts. In this case credit risk is not a by-product of a derivative, but the purpose of the contract itself.

The last risk is *Credit derivatives with counterparty default risk.* Manuel (2001) stated as typical OTC [15] derivative contracts, credit derivative themselves are subject to counterparty risk. In this case, two distinct forms of credit risk affect the price of the credit derivative. On the one hand, the promised payoff of the contract is calculated based on a credit risk variable, such as a credit spread or a default loss caused by the default of the party specified in the contract. On the other hand, the counterparty risk of the derivative counterparty can affect the value of the contract.

We propose pricing models for all four distinct credit risk pricing problems identified above although we focus on derivatives with counterparty risk.

2.2.1 Expert system

Sinkey (2002) singled out that the expert system is the most used traditional method in assessing credit risk. When commercial banks have a loan application concerning a particular project, banks might organize a committee composed by experts to make a decision based on qualitative and quantitative information. This means the experts' expertise and subjective judgement play an important role in the decision-making process.

Crouhy (2006) in his book [16] says that the most financial institutions (FIs) relied virtually exclusively on subjective analysis or so-called banker's expert systems to

[15] Over-The Counter and off-exchange trading is to trade financial instruments such as stocks, bonds, commodities, or derivatives directly between two parties. It is contrasted with exchange trading, which occurs via facilities constructed for purpose of trading.

[16] Michel Crouhy. Dan Galai. Robert Mark, The Essentials Of Risk Management, McGraw-Hill, 2006, pages 1 to 291

assess the credit risk on corporate loans. Essentially, bankers used information on various borrower characteristics - such as borrower character (reputation), capital (leverage), capacity (volatility of earnings) and collateral, the so-called 4 ``Cs'' of credit, to reach a largely subjective judgment (i.e., that of an expert) as to whether or not to grant credit.

However, Heffernan (2005), Jesswein (2008), Strischek (2009) indicated that the most popular expert system to assess credit risk is the "5 Cs" system. The experts analyze the five factors and make a decision based on the subjective balance between the 5 Cs. The five Cs are Character, Cash flow, Capital, Collateral (or security) and Conditions, respectively.

Character concerns the borrower's personal nature, reputation, knowledge, social status and credit record etc. It is usually used to measure borrower's willingness to repay. For example, the history of an enterprise is regarded as a signal whether it is a good borrower, (Strischek, 2009).

Cash Flow indicates the borrower's liquidity. A liquidity problem is a common cause for default. Usually banks require borrowers to submit the financial reports and frequent cash flow always means good liquidity, (Lundsten and Anyamwu, 2007). Discounted cash flow techniques are the generally accepted methods for valuing firms, (Magin et al., 2006).

Capital means the assets or capital the borrower has. This term directly related to the amount of the loan. A leverage of debt to capital is a good index to show the probability of bankruptcy or default. Usually higher leverage means higher default possibility, (Jesswein, 2008).

Collateral is security or guarantee pledged for the repayment of a loan if one cannot procure enough funds to repay. The value of collateral is closely determined by the liquidity and stability of collateral. Real estate and share certificates are the favourable collateral, (Clarke, 1987).

Conditions are also known as Cycle Conditions, which indicate the current macroeconomic status of the economy. If the banks believe the economy is in the upturn, it would be easier for a borrower to obtain loans. If it is in the event of a downturn, banks' valuation of borrower's collateral would decrease and things would be difficult for the borrower, (www.ioma.com, 2004).

According to Jesswein (2008) although many banks prefer to apply the expert system in their credit practice, two main problems of this system cannot be neglected. The

first one is how to identify the common factors which can expose default risk for similar borrowers. The other one is how to find the critical weight for each five factors. Since the weights are given subjectively according to different borrowers, it is difficult to reach a common decision and it is hard to judge experts' decision. Experiences of credit managers play an important role in the expert system.

2.2.2 Credit rating

The principles of good lending for banks can be reduced to a simplified framework. Credit evaluation is important for ensuring loan quality. Lenders can use a variety of tools and techniques to evaluate a loan proposal. Nirmala Lee (2008) showed lenders used 'loan evaluation frameworks' or checklists to evaluate a credit application, summarized in a useful mnemonic, *Campari* and *Ice*. The mnemonic of *Campari* stands for Character, Ability, Means, Purpose, Amount, Repayment, Insurance while ICE stands for Interest, Commissions, Extras, respectively.

Treacy and Carey (2000) discussed a credit rating assesses the credit worthiness of an individual or corporation, according to financial history and current assets and liabilities. Usually a credit rating could tell a lender or investor the probability of the subject being able to pay back a loan. "A credit rating is a summary indicator of risk for banks' individual credit exposures".

Coyle (2000) pointed that care should be taken by the lender to establish whether a trade supplier might have retention of title over goods supplied, should the lender be looking at those goods as security for its borrowing. Investors in the credit market traditionally relay on credit ratings produced by rating agencies to determine the creditworthiness of debt issues.

According to Bessis, (2002) there are six to ten different ranks under credit rating normally. Those 10 ranks are measures of qualitative ordering instead of quantitative measures of risk. At the moment, there are two kinds of credit rating: external ratings published by the credit rating agencies, such as Moody's, S&P, etc., and internal ratings calculated and used by banks.

Jarrow et al. (1997) discussed credit ratings produced by agencies such as S&P and Moody's are widely regarded as an important tool to investors in credit market. Changes in the credit rating have significant implications for various market

participants since they can affect the issuer's cost of capital, credit spreads, bond returns and the prices and hedge ratios of credit derivatives.

In the study of Li et al. (2003), it shows earliest credit rating system was developed by the Office of the Comptroller of Currency (OCC)[17] in the US, which gives five categories to loans with different possibility of default. Afterwards banks developed OCC's five categories into more detailed categories. Currently in the US, around 60% of bank corporations and the top 50 banks have developed internal ratings which have 9 to 10 categories With the development of internal and external ratings, banks are increasingly mapping their internal risk ratings to public ratings.

Allen et al. (2004) pointed a well-managed credit risk rating systems is believed to be able to help banks promote safety and soundness by facilitating informed decision making. This system enables bank management and examiners to monitor changes and trends in risk levels and optimize returns. Internal credit ratings have become more and more critical for credit risk management in the large banks. Internal rating system is different from the external rating in the structure and operating design, because these are designed by banks and not related with the outsiders. The internal credit rating systems has also been enforced by regulators and examiners of banks.

The Office of the Comptroller of the Currency (OCC) (2005)[18] has long required banks to implement a rating system. The Basel II is the most powerful driving thing in this area today. Banks should have an internal rating system when calculating their capital requirements. Basel II also regulates the detail in the design of internal rating system such as system structure, assessment horizon, rating dimensions, rating criteria, use of model and documentation of rating system design.

ERisk, (2002) indicated banks usually use credit rating system in the lending process, credit monitoring, loan pricing, management decision process and in calculating inputs for portfolio credit risk model. Normally banks use credit rating system for business and institutional loans. In the USA credit rating systems are used for large companies and credit scoring system used for Small companies and consumer credit.

Danielsson, et al. (2001) opined non-rated firms face a uniform charge at the same level as in the old accord. In the US, ratings are widespread, e.g. 94% of the S&P 500 firms are rated, so that this approach may be thought to improve capital allocation. In

[17] The office of the Comptroller of the Currency (OCC) charters, regulates, and supervises all national banks. It also supervises the federal branches and agencies of foreign banks. www.occ.treas.gov

[18] *Regulatory Roundup*, (2005) American Banker, Vol.170, Issue 71, pp4

Europe, though, credit ratings are by no means as widely spread. At the extreme, only 53% of all DAX-30 firms have obtained a credit rating. Clearly, the standard approach will not deliver in such a setting. While regulators may expect most European banks to migrate to the IRB approach eventually, banks in developing countries are not expected to do so.

2.2.3 Credit Score

Mester (1997) indicated a credit score is a number that is based on a statistical analysis of a borrower's credit report, and is used to represent the creditworthiness of that person1. A credit score is primarily based on credit report information. Lenders, such as banks use credit scores to evaluate the potential risk posed by giving loans to consumers and to mitigate losses due to bad debt. Using credit scores, financial institutions determine who are the most qualified for a loan, at what rate of interest, and to what credit limits. Today, many banks are implementing credit scoring models in their credit decision-making. Credit scoring models are widely used in credit card approval, mortgage loans, and consumer loans and are increasingly used for business loan applications

Engelmann and Rauhmeier (2006) pointed that basically credit scoring is the assessment of the risk associated with lending to an organization or an individual. Every month almost every adult in the UK and the USA is scored several times to enable a lender to decide whether to mail information about new loan products, to evaluate whether a credit card company should increase one's credit limit, and so on.

Whilst the extension of credit goes back to Babylonian times, (Lewis, 1992) the history of credit scoring begins in 1941 with the publication by Durand (1941) of a study that distinguished between good and bad loans made by 37 firms. Since then the already established techniques of statistical discrimination have been developed and an enormous number of new classificatory algorithms have been researched and tested. Virtually all major banks use credit scoring with specialized consultancies providing credit scoring services and offering powerful software to score applicants, monitor their performance and manage their accounts.

Credit scoring and risk assessment has been one of the most successful applications of statistical and operational research concepts ever with considerable social implications. It has made practical the assessment and granting of hundreds of

millions of credit card applications and applications for other loan products and so it has considerably improved the lifestyles of millions of people throughout the world. It has considerably increased competition in credit markets and arguably reduced the cost of borrowing to many. The techniques developed have been applied in a wide variety of decision making contexts so reducing costs to those who present minimal risk to lenders.

Thomas et al. (2002) showed that like any rating tools, a scoring model assesses a borrower's creditworthiness. The outcome of the model is expressed in terms of number called "score". Increasing scores usually indicate declining risk, so that a borrower with a score of 210 is more risky than a borrower with a score of 350. The model which calculates the score is often referred to as a scoring table, because it can be easily displayed in a table. Engelmann and Rauhmeier (2006) found Scoring models usually are estimated with historical data and statistical methods. The historical data involves information about the performance of a loan, ("good" or "bad") and about the characteristics of the loan some time before. The time span between the measurement of the characteristic on the one hand and the performance on the other hand determines the forecast horizon of the model.

Engelmann and Rauhmeier (2006) explained an idea which is essentially the same as previous system: pre-identify certain key factors that determine the probability of default (as opposed to repayment), and then combine or weight them into a quantitative score. In some cases, the score can be literally interpreted as a probability of default; in others, the score can be used as a classification system: it places a potential borrower into either a good or a bad group, based on a score and a cut off point.

Altman's (1968) Z-score model is a classificatory model for corporate borrowers using linear discrimination analysis and based on a matched sample (by year, size and industry) of failed and solvent firms. The best fitting scoring model takes the form:

- $Z=1.2X_1 +1.4X_2 +3.3X_3+0.6\ X_4+1.0\ X_5$
- X_1= working capital/ total assets ratio
- X_2= retained earnings / total assets ratio
- X_3= earnings before interest and taxes/total assets ratio
- X_4= market value of equity/ book value of total liabilities ratio
- X_5= sales/total assets ratio

As used by the credit officer, if a corporate borrower's accounting ratios (the X_i's), when weighted by the estimated coefficients in the Z function, result in a Z score below a critical value (which is 1.81 in Altman's initial study), they would be classified as "bad" and the loan would be refused.

Heffernan (2005) pointed out some limitations of credit scoring system. The limitations could apply to most of the quantitative methods. The first is that the data are historical. It cannot give relatively accurate prediction unless banks frequently update either the variables or the weights. Another limitation is that the credit score system imposes a binary outcome: either the borrower defaults or does not default. However, in reality there are a range of possible outcomes, from a delay in interest payments to no-payment of interest, to outright default on principle and interest. Due to these problems, credit score is usually used for personal loans and SMEs loans, which makes finance for small businesses difficult.

2.3. The developing of credit risk assessments & sound practices

Risk assessment refers to commercial banks' ability to predict the unexpected default. The mainstream Western approach is to model the probability of default risk basing on the historical data. Till 1990s, credit analysis was still staying in the subjective stage, which involving a person sitting, talking to another person and making individual assessment without any external data. During that time, credit managers had limited methods to quantify absolute levels of default risk.

Carling et al. (2004) shows in the last 10 years, a whole range of modelling techniques has been developed to analysis credit risk. A lot of contribution in credit rating and credit scoring has been made. In 1997, Credit Suisse Financial Products (SCFP) released a new approach, Credit Risk+, which is specified in analysing defaults. Credit Risk + assumes that default for individual bonds, or loans, follows a prison process.

Mayland (1993) indicated that all deposit accounts have the potential for creating credit exposure. The credit decisions associated with depository services fall into three fundamental categories: funds availability return items, and irrevocable payments.

Funds' Availability indicates the decision to make check or electronic deposits available to customers for withdraw, even though the bank itself may not have final

availability in its own clearing account, is a credit decision. This is common practice in the banking industry and is usually driven by competitive pressures.

Return Items indicates the decision not to return checks or reject electronic items presented for payment, even though the customer may not have sufficient funds deposited, is a credit decision.

Irrevocable Payment indicates the decision to initiate an irrevocable payment on behalf of a customer, based on expected funding in the future, is a credit decision. The exposures that result from these decisions can range from daylight overdrafts of several minutes to exposures that extend over several days.

Treacy & Carey (2000) indicated that the fundamental credit administration principles for corporate services are no different than those for lending- the key being "know your customer". Knowing your customer, however, may require unprecedented cooperation in many institutions. Knowledge of the customer's service usage- including transaction volumes and dollar flows- is found in the business unit or operation area responsible for sales and delivery, but knowledge of the customer's creditworthiness lies with the account officer or credit administration.

Brown and Wang (2002) mentioned that generally there are three types of information relevant to the default probability: Financial statements, market prices of the firm's debt and equity, and the subjective perception of the firm's risk. Modelling credit risk can be broadly classified into structure models and reduced-form models. Structural models value credit risk based on equity market and accounting information, while reduced-form models utilize rating information provided by rating agencies, such as Stand & Poor's and Moody's.

Crosbie and Bohn (2003) develop the objective determining factors of default probabilities to three main elements: Value of Assets, the market Value of the Firm's Assets, Asset Risk, the "uncertainty" or risk attached to the asset value; the leverage, the extent of the firm's contractual liabilities. Many US large banks have introduced more structured or formal systems for approving loans, portfolio monitoring and management reporting, analysis of the adequacy of loan loss reserves or capital, and profitability and loan pricing analysis, (Treacy & Carey, 2000).

2.4. Capital Regulating (Basel II and credit risk management)

2.4.1. History

Bank risk management techniques have had a huge influence on the more general world of financial risk management. The 1988 Basel Accord, also referred to as the Accord or Basel I, established international minimum capital guidelines that linked banks' capital requirements to their credit exposures, divided into broad classes.
The first models of credit risk for banks and financial institutions appeared in 1966 (model of Beaver), well known classical models of Altman (1968, 2000), Altman et al. ZETA model (1977), Zavgren (1985), Scott (1981), Black and Scholes (1973), Merton (1974), Kealhofer (2003), etc.
Two international bank failures, West German bank (Backhaus Herstatt) in June 1974 and Franklin National bank in May 1974 because of losses in the foreign exchange market resulted in the formation of The Basel Committee, the Committee on Banking Regulation and Supervisory Practices by the central-bank governors of the Group of the Industrialized Ten Nations in 1974. The Basel accord 1988 tried to establish single set capital adequacy standards. The agreement led to adoption of risk asset ratio by international banks, (Basel Committee, 2007).

The first attempt by the Basel committee to regulate the financial markets was through the issuance of Basel I standards in 1988, when the committee was increasingly concerned by the banks' capital ratio and the lack of international convergence of regulations. According to Basel I the ratio should be kept at the minimum of 8%, however, the national authorities can assess their need of a higher percentage suiting their situations, (The Basel Capital Accord, 1988). Karling et al. (2002) stated that many larger corporations had established sophisticated ways to work around the regulations and the regulations of the Basel I Accord were no longer able reflect the risk portfolio and the capital ratios of the banks. These problems with the regulations were followed by several amendments in order to deal with the new scenario. Gradually, these amendments results in the creation of Basel II.

The improvements in the previous regulations were created as a guideline for the internationally active banks to govern their risk management and capital adequacy more effectively. These standards aimed the provision of much stronger risk management systems within the banks. '*It is stated that there has been a positive reaction from banks and other interested parties, concerning the new regulations*', (Basel Committee, 2006).

2.4.2. Rational of Basel II

The new regulations of the capital requirements were aimed to contribute to the stability in the financial sector, to increase and improve the risk sensitivity systems within the banks, and, to ensure the fairness of the banks in the competitive markets. Primarily these regulations were to focus on the internationally active banks, however, they may be applied to local banking system on national levels too (Finansinspektionen, 2001).

The significant change in Basel II which was not earlier considered in the previous version of the Accord is the banks' opportunity to use their internal measurements (Basel Committee, 2006). Furthermore, to handle the risk management more effectively the new regulations create incentives for the purpose (Forsell & Lormqvist, 2004). It provides far greater risk coverage in the financial sector along with being better equipped to be more risk sensitive. The new standards aim to provide more transparency in the processes of risk control (Finansinspektionen, 2001). For the usage of a more risk sensitive system the banks must be provided with incentives, thus, measure the capital need more precisely (Finansinspektionen, 2001).

2.4.3. Basel I

Acharya (2000b)[19] shows the 1988 Basel Capital Accord has made an important contribution to the prominence of bank capital regulation. The Accord has been praised, for example for promoting the international convergence of capital standards and for improving these standards in many countries.

Wagster (1996)[20] signal out in the early 1980s, as concern about the international banks' financial health mounted and complaints of unfair competition increased, the Basel Committee on Banking Supervision started considering proposals to set capital standards for these banks see An agreement was reached in July 1988, which was phased in by January 1993.

[19] In a recent paper Acharya (2000b) calls into question the international harmonization of capital adequacy regulation. In this model, the optimal regulation capital standards to be tied to the rescue policy. When capital standards are harmonized across countries that have different rescue policies, the presence of international banks leads to a spillover effect from the country with a more forbearing policy to the other country. This effect increases the vulnerability of banks in the latter and forces the authorities in that country to adopt a more forbearing policy, creating a "regression to the worst regulation."

[20] Some have suggested other motives for the harmonization of capital requirements. Wagster (1996), for example, argues that the ultimate objective was to eliminate the funding cost advantage of Japanese

Hendricks and Hirtle (1997)[21] discussed The main novelty of this amendment relates to the fact that it allows banks to use, as an alternative to the standard approach, their internal models to determine the required capital charge for market risk.

Jones (2000) argues capital arbitrage exploits the difference between a portfolio's true economic risks and the Accord's measure of risk. One of the oldest forms of capital arbitrage is cherry picking that is the practice of shifting the portfolio's composition toward lower quality credits. For example, in order to boost its return on equity, a bank may choose to substitute higher credit quality loans with lower credit quality ones. Given that both loans receive the same risk weight under the Accord, that substitution would increase the bank's overall risk but it would not change the bank's regulatory capital ratios. Financial innovation made it easier and more cost-efficient for banks to implement this and other forms of regulatory capital arbitrage, which they have done through securitization with partial recourse, remote origination and indirect credit enhancements.[22]

Mingo (2000) shows growing evidence on the Accord's shortcomings, together with the experience accumulated since the Accord was introduced and the research undertaken in the meantime, prompted the development of various alternative approaches to the Accord's "buckets" framework for setting capital standards,). One of these approaches, the internal ratings-based approach (IRBA), banks would assign a rating to each borrower based on their rating models and estimate the probability of default (PD) for each of the ratings they define. Regulators would then define a function to convert this vector of PDs into the minimum required capital.[23]

Another approach, the full models approach (FMA), would extend to credit risk (and possibly other risks) the Accord's approach for market risks. Banks would need to develop a system to estimate (either independently or jointly) the probability density functions for losses in the entire bank's business (housed in the banking and trading book) stemming from each of the risk categories. The regulator would then set the

[21] See Hendricks and Hirtle (1997) for a brief description of the internal models approach.
[22] See Jones (2000) for a detailed characterization of these practices, including the financial instruments they require.
[23] Under a more developed variant of the approach, banks would also estimate the expected loss given default (LGD) for each credit claim. In this case, regulators would have to link the matrix of EDFs and LGDs to the minimum required capital.

capital requirement so that a given soundness objective, for example a minimum solvency standard, is met.

Finally, Estrella (1998) and Shepheard-Walwyn and Litterman (1998), have suggested using the "pre-commitment" approach (PCA).[24] This approach was initially designed as an alternative to the internal models approach for market risks. Under the PCA, a bank would pre-commit to a maximum loss exposure over a period of time and the capital charge would be defined as a function of that loss exposure. Should the bank incur a larger loss, it would be subject to a penalty, which could take the form of monetary fines, punitive capital charges or other restrictions on future trading activities see Kupiec and O'Brien (1995).[25]

How do these approaches compare with the 1988 Basel Accord? As argued earlier, the Accord adopted a "buckets" approach, treating all banks alike, and thus not giving safer banks the incentive to distinguish themselves from riskier ones in order to save on capital. Moreover, the definition of buckets based on the asset category that it adopted, a criterion only loosely related to risk, further heightened banks' incentive to develop regulatory capital arbitrage practices. The IRBA represents an improvement over that approach because it defines the buckets based on a risk measure rather than on the asset's category. As a result, it would bring regulatory capital requirements for each exposure into closer alignment with the risk of the underlying asset and would give banks better incentives to improve on their risk management practices, as this would be reflected in capital savings. However, the extent of this advantage depends partly on the way regulators map the information produced by banks' internal models into the regulatory capital. For example, if they were set to capital requirements only for a reduced number of rating buckets, this would reduce, but not eliminate, incentives for regulatory capital arbitrage.[26] An additional shortcoming of the IRBA is, as with the framework in the 1988 Accord, their inabilities to account for differences across institutions in such things as the portfolio's diversification see Mingo (2000).

[24] Other approaches include the supervisory approach an the base-plus approach put forward by Estrella (1998) and Shepheard-Walwyn and Litterman (1998), respectively

[25] See Bliss (1995), Stephanou (1996) and Kupiec and O'Brien (1997a) for a comparative analysis between the PCA and the internal models approach to set capital charges for market risk

[26] The fact that different banks already use different internal rating models compounds this problem and it will require the regulator to "translate" each bank's rating system into a common system for regulatory capital allocation purposes. See Mingo (2000)

The FMA and the PCA do not suffer from these problems, but they have their own drawbacks. Rochet (1999) indicated though conceptually different, the two approaches are related. In the FMA, the back testing validation procedure (including the penalties in case the bank fails the test) needs to give the bank the incentive to reveal truthfully the probability density function of its portfolio's losses, which the regulator would then use to set the capital requirement. In the PCA, the penalty function needs to give the bank the incentive to choose he capital requirement that the regulator would have imposed had it known the density function of the bank's portfolio of losses. A challenge to both approaches is that to be incentive-compatible the bank testing procedure and the penalty function have to be bank-specific, which raises questions of feasibility.[27] The FMA is more intrusive in management and requires banks to release more information. The PCA in contrast, because it applies penalties ex post, is more prone to a time consistency problem. Regulators, for example, would be pressured to waive the penalty in case it was to lead to bankruptcy.[28] In addition, because of limited liability the approach does not protect against go-for-broke strategies.

In sum, the new approaches to setting capital standards move away from the "one-size-fits-all" approach of the original Basel's Capital Accord. They all attempt to take account of the fact that banks are better informed about their risks than regulators. Some of them go even further and aim at designing incentive-compatible standards. These approaches, however, in contrast with the literature on optimal regulation, do not consider other regulatory instruments. That literature suggests that the inclusion in the regulatory menu of instruments, such as deposit insurance, access to the lender of last resort, (soft) information (measured for instance by agencies' ratings) and possibly the set of services banks want to offer, would facilitate the design of a regulation giving banks the incentive to truthfully reveal their risk. Besides the conceptual differences between the various approaches, their implementation also raises different challenges regarding the modelling and measurement of credit risk as

[27] See Prescott (1997) for a discussion of the importance of the penalty scheme, Kupiec and O'Brien (1997b) for a discussion of the feasibility of bank-specific penalty schemes and Daripa and Varotto (1997) for an analysis of the reputational implications of disclosing a breach of the committed loss.

[28] See Marshall and Venkataraman (1999) for an analysis of limiting the penalty as not to lead banks into default and Mailath and Mester (1994) for a study of the regulator's incentives to close a failing bank

well as the data necessary to validate them.[29] Despite giving consideration to the full model's approach, these feasibility issues led the Basel Committee to opt for an approach based on banks' internal rating models in its proposal to revise the Accord.[30]

The rules of the original 1988 Accord are generally acknowledged to be flawed for five main reasons. First, the risk-weighted ratios in the current rules do not differentiate adequately between the riskiness of bank assets, and are in some ways non-sensical. For example, they assume that a loan to a corporate counterparty generates five times the amount of credit risk as does a loan to an OECD bank, regardless of the borrowers' respective creditworthiness. That means that a loan to General Electric Corporation, an AAA-rated entity, has to be supported by five times as much regulatory capital as a similar loan to a Mexican (BB) or Turkish bank (B). General Electric is also considered to be considerably more risky than the sovereign debt of Turkey or Mexico. Clearly, this is the opposite of what one might think appropriate.

Second, regulatory rules assume that all corporate borrowers pose an equal credit risk. For example, a loan to an AA-rated corporation requires the same amount of capital as a loan to a B-rated credit. This is also clearly inappropriate.

Thirdly, the 1988 Accord does not appropriately take maturity factors into effect. For example, revolving credit agreements with a term of less than one year do not require any regulatory capital, while a short-term facility with 366 days to maturity bears the same capital charge as any long-term facility. The bank is clearly at risk from offering short-term revolver facilities, yet so long as the term is less than one year, no regulatory capital is required. This has led to the creation by many banks of a 364 day facility, in which banks commit to lend for 364 days only, but then continuously roll over the facility into the next year- a clear example of how banks alter their behaviour to circumvent regulatory rules.

Fourth, the Accord does not provide any incentive for credit-risk mitigation techniques such as the use of credit derivatives-now one of the fastest-growing risk management markets.

[29] See Altman and Saunders (1998) for a discussion on the progress in credit risk measurement and Gordy (2000) and Crouhy, Galai and Mark (2000) for a comparison of some credit risk models

[30] See Basel Committee (1999b) for a review of current banking industry practices on credit risk modeling.

Fifth, the Accord does not address complex issues such as portfolio effects, even though credit risk in any large portfolio is bound to be partially offset by diversification across issuers, industries, and geographic locations. For example, a bank is required to set aside the same amount of regulatory capital for a single 100 million corporate loan as for a portfolio of 100 different and unrelated 1 million corporate loans. While a single 100 million loan might go sour, it is extremely unlikely that 100 loans of a similar standing in a fully diversified portfolio will all go wrong at once.

These problems with the 1988 Accord led larger banks to argue that banks should be allowed to develop their own internal credit portfolio models to determine Value at Risk for credit instead of the overly simplistic standards set by the 1988 Accord.

2.4.4. Basel II

In response to growing evidence of regulatory capital arbitrage, regulators began to consider whether the paradigm used so successfully in the regulation of market risk could be applied to credit risk and operational risk. The result is a proposal for a new Basel Capital Accord (Basel II). The Basel Committee found that internal models of credit risk were not yet sufficiently reliable to replicate the approach to market risk for credit risk and so they embarked on a complex course of increasingly intrusive specifications about how banks should manage their credit risk by means of an internal ratings approach. With hundreds of pages prescribing how to risk-weight assets, Basel II has emphatically abandoned the original objectives of simplicity and avoidance of micro-managing lending decisions. Indeed, Taylor (2002) has noted that Basel II may have the unintended consequence of undermining bank governance by prescribing how risk should be managed, traditionally a key responsibility of senior management and the board.

According to Couto and Bulhões (2009) the main objectives of Basel II are to maintain international stability in the banking system and to create a unique methodology for calculating minimum capital requirements for internationally active banks. With complex and consecutive transformations taking place in the banking sector, the new capital accord is adapted to the modern banking reality, strengthening the minimum capital requirements in financial institutions.

Chorafas (2005) indicated that although the concept of operational risk has only appeared lately, occurrences associated with this type of risk have existed in financial institutions for a long time. Basel II was implemented on January 1, 2007 in the G10 countries. It is built on three pillars as can be observed in figure-2.2.

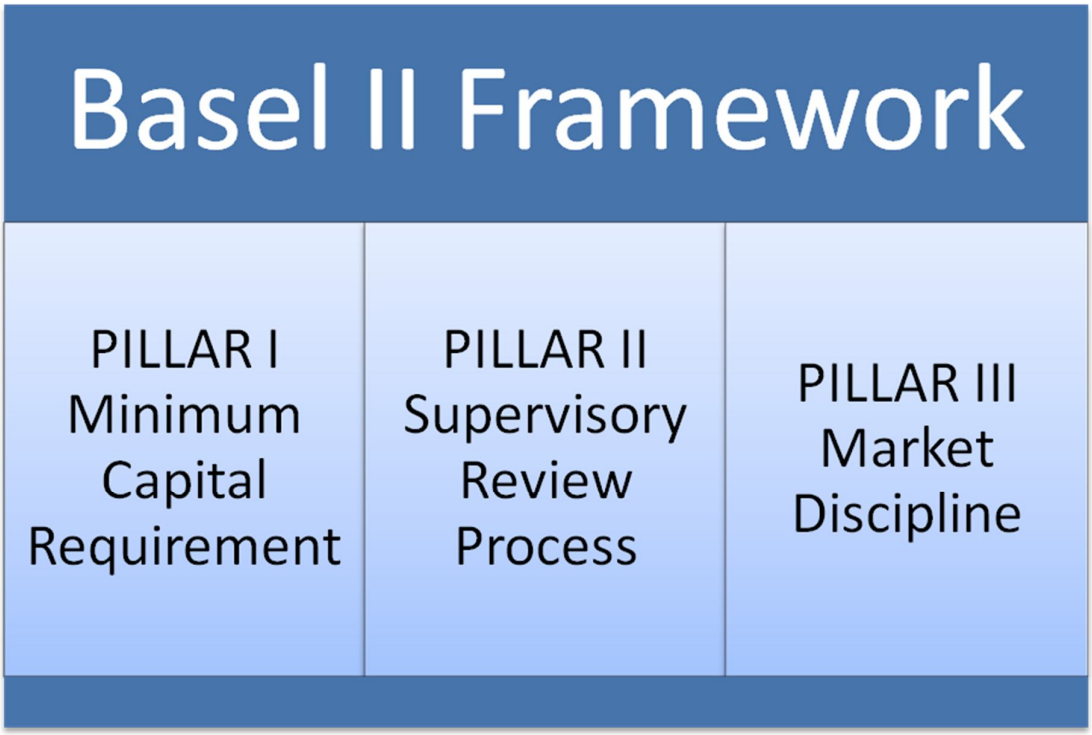


Figure 2.2: Basel II framework

Couto and Bulhões (2009) explained, pillar I ensures that banking institutions hold minimum capital requirements, sufficient to cover all exciting risks. In Pillar II, the national supervisor, Banco de Portugal, must ensure that all national banks have sufficient minimum capital to face all incurred business risks. The national supervisor must also stimulate the development of techniques that could improve risk management in banks. Pillar III of the New Basel Accord ensures that there is transparency in the financial situation and solvency of the institutions, allowing the market to create a more precise analysis of banks profiles and risks, applying incentives to fortify financial institutions' risk management and levels of capital (IFB, 2006)

Structure of New Basel Capital Accord

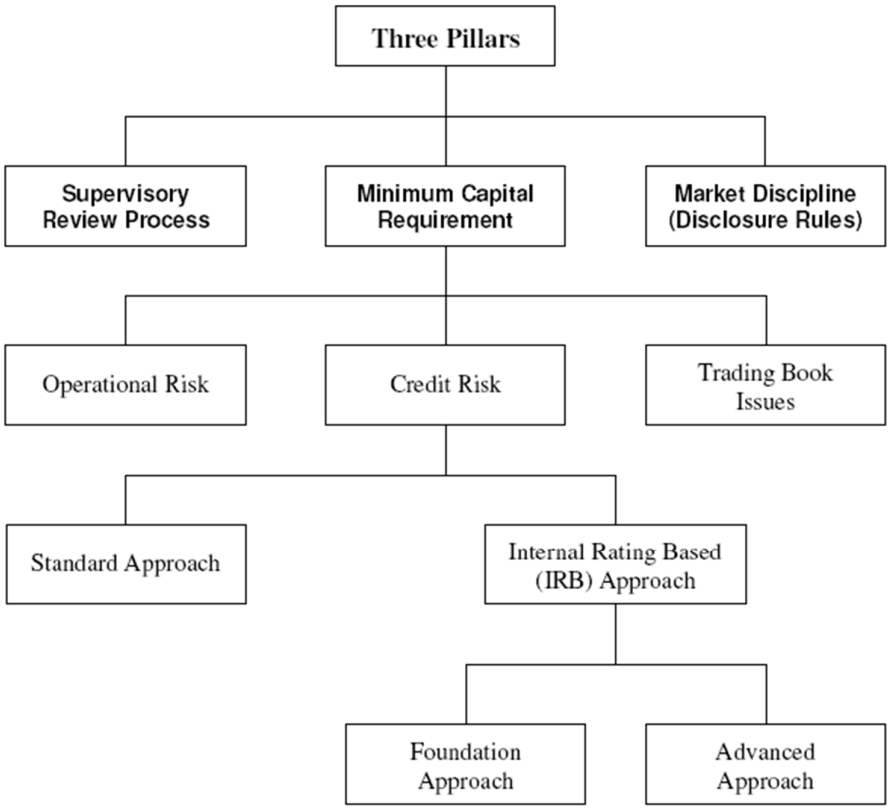


Figure 2.3: Structure of New Basel Capital Accord

Basel II provides two different approaches for risk-weighting assets for credit risk. The Standardized Approach is similar to the original Accord, except that it has more risk buckets, makes use of external credit ratings and recognizes some credit mitigation techniques. The internal ratings-based approach (IRB), however, is totally different from the original Accord. A bank that meets a series of qualifying conditions may use components of its own internal credit risk models as inputs in a regulatory model of risk weights in two different versions of the IRB. The Foundation IRB (FIRB) permits qualifying banks to use their own estimates of the probability of default (PD), but uses conservative regulatory assumptions about the loss given default (LGD), exposure at default (EAD) and maturity of the instrument. The Advanced IRB (AIRB) permits banks that qualify for the FIRB and meet an additional set of more stringent conditions, to use their own estimates of PD, LGD, EAD and M as inputs in the regulatory model of risk weights. Since the banks' own estimates of LGD, EAD and M are likely to be lower than the conservative values assumed in the FIRB, the AIRB will usually result in a lower capital charge. Most

large, internationally active banks are likely to adopt the FIRB or AIRB and so this discussion will focus on these approaches.

The main purpose of Basel II is to (1) eliminate incentives for regulatory capital arbitrage by getting the risk weights right; (2) align regulation with best practices in credit risk management; and (3) provide banks with incentives to enhance risk measurement and management capabilities

In June 1999 the Basel Committee declared its intention to build a new capital adequacy framework, known as Basel II, to replace the 1988 Accord. The new framework maintains both the current definition of capital and the minimum capital requirement of 8 percent of the risk-weighted assets.

$$Capital\ ratio = \frac{Total\ capital}{Credit\ risk + Market\ risk + Operational\ risk}$$

(Minimum 8%)

Basel II has stimulated the thinking of nonbank financial institution regulators, for example, the Securities and Exchange Commission (SEC) in the United States has adopted Basel II, which will allow securities firms to opt into the new regulatory capital regime. Further, the insurance industry is currently looking to apply more sophisticated regulatory capital standards. Much of the impetus for banks to develop standardized risk management systems comes from their regulators.

Regulators carefully watch over banks' activities, monitor their risk management standards closely, and impose a unique set of minimum required regulatory capital rules on them.

Two reasons why they do so: banks collect deposits from ordinary savers, and they play a key role in the payment and credit system. While bank deposits are often insured by specialized institutions, in effect national governments act as guarantor for commercial banks; some also act as a lender of as resort. National governments therefore have a very direct interest in ensuring that banks remain capable of meeting their obligations: they wish to limit the cost of the government "safety net" in the event of a bank failure. This is one reason why the amount of capital retained by a bank is regulated. By acting as a buffer against unanticipated losses, regulatory capital helps to privatize a burden that would otherwise be borne by national governments.

Furthermore, fixed-rate deposit insurance itself creates the need for capital regulation. As deposits are insured up to a given limit, there is no incentive for depositors who stay within the insured limits to select their bank cautiously. Instead, depositors may be tempted to look for the highest deposit rates, without paying enough attention to a bank's creditworthiness.

Regulators also try to make sure that banks are capitalized well enough to avoid a systemic "domino effect", whereby the failure of an individual bank, or a run on a bank caused by the fear of such a failure, propagates to the rest of the financial system. Such domino effects can cause other banks and financial companies to fail, disrupting the world economy and incurring heavy social costs.

Prior to the implementation of the 1998 Basel Accord, in 1992 bank capital was regulated in some countries by imposing uniform minimum regulatory capital standards. These were applied to banks regardless of their individual risk profiles. The off-balance-sheet positions and commitments of each bank were simply ignored.

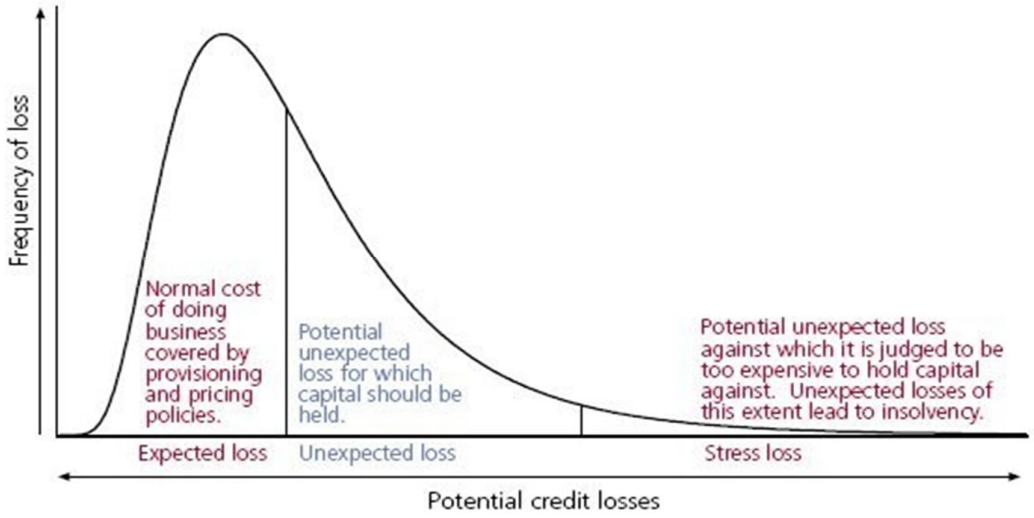
According to Mossa (2010) the global financial crisis has reinforced the pre-existing belief in the weaknesses of the Basel II Accord. It is argued that capital-based regulation and the Basel-style capital regulation cannot deal with financial crises and that attention should be paid to liquidity and leverage. The Accord is criticised, in view of what happened during the crisis, for allowing the use of bank internal models to determine capital charges, for boosting procyclicality of the banking industry, for reliance on rating agencies and for being an exclusionary, discriminatory and a one-size-fits-all approach. It may not be possible to salvage Basel II, and the way forward is perhaps to abandon the idea of unified international financial regulation.

2.4.5. Basel Approach for Measuring Credit Risk

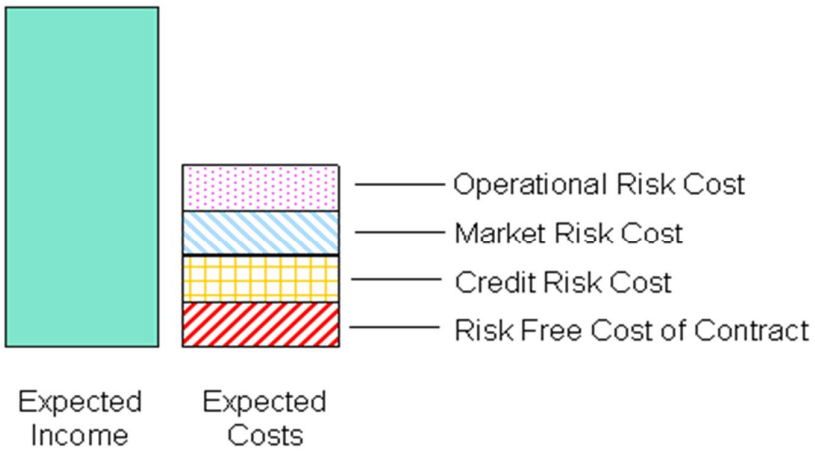
During their analysis on Basel Accords, Zelgalve and Romanova (2009) argues that some credit assessments in standardized approach refer to unrated assessment. Basel I & II also encouraged banks to initiate internal-ratings based approach for measuring credit risks. Banks are expected to be more capable of adopting more sophisticated techniques in credit risk management.

Banks can determine their own estimation for some components of risk measure: the probability of default (PD), loss given default (LGD), exposure at default (EAD) and effective maturity (M). The goal is to define risk weights by determining the cut-off

points between and within areas of the expected loss (EL) and the unexpected loss (UL), where the regulatory capital should be held, in the probability of default. Then, the risk weights for individual exposures are calculated based on the function provided by Basel II. The following graph is taken from the Wikepedia, free encyclopaedia, to further elaborate the discussion.



Another economist explains the same approach in a different way. Tripp, (2003)[31] argued that this section is much more a subjective view of where the Risk departments in banks may be heading. One can imagine banks wanting to view the Income and Costs of a contract according to the following model.



Source: Tripp (2003)

[31] Tripp, R., www.howbankswork, 2003

Since January 2007 the new Accord is now implemented across Europe as the Capital Requirements Directive. However, while many firms are not implementing until 2008, the need for parallel running and historical data means that immediate and rapid action may be required. Indeed, long before the Accord finally became legislation, many organizations had to collate historic data and develop their base credit and operational risk management models.

According to BCBS (2011) in December 2010 a new accord was introduced by Basel committee due to weaknesses found in Basel II and the new accord will be implemented in 2017 .and an evolutionary period is allowed to banks.to improve the quality of capital and introduction of comprehensive risk exposure the new accord was designed and designing leverage ratio as base of risk requisite

As Discussed by BCBS (2011) the transition period will be used by Basel committee to determine new accord is suitable for complete credit cycle .the new accord was introduced to answer against financial crunch with strong regulatory structure to control losses BCBS introduced more improved frameworks known as Basel III as a result of financial crises mismanagement of capital allocation and procyclicality in previous accord .The new framework is designed to control failures it work as prudential rules at micro and micro level. The transparency, consistency of capital is first element of Basel III accord. Tier 1,2&3 capital were introduced in Basel II accord whereas tier I was revised in Basel III ,tier 2 was standardized and tier 3 capital was removed.in tier 1 capital common stock and retained earnings are important part.

Basel III is more striated towards risk weight allotted to assets. Total capital is 8% still but tier 1 contribution has enhanced in Basel III from 4% to 6% and common equity in tier 1 should be from 4.5% to 2% this is explained by figure below clearly.

Basel III Requirement of Capital32

years	Common Equity	Tier1 requirement	Total capital
currently	2%	4%	8%
2013	3.5%	4.5%	
2014	4%	5.5%	
2015	4.5%	6.0%	

According to BCBS (2010) Tier 1 capital is defined by Basel III very restrictively and capital requirement regulation is the extremity of the cycle. The revision of pillar 1 capital principles included a section that has permitted by the approval of country banking supervisor, which is how to convert assets into common shares if the bank is non-sustainable. By the involvement of private sector it will reduce hazards if there will be any possibility of future crises .liquidity ratio net funding ratio are two that are defined in Basel III.

In liquidity coverage ratio banks are required to maintain extra-ordinary class of liquid assets to resist a 30-day strained finance situation that is measured and evaluated by the supervisors of financial institutions (BCBS, 2010) the NSFR Ratio is to encourage both medium and long term financing of the assets of organizations.

All balance sheets items are covered by it and provide incentives to banks for the utilization of stable funding. NSFR is the sum of accessible funding to amount required for stable funding. This ratio must be higher than 100% stable funding is the part of equity and liability that is likely to be consistent in phase of long stress (BCBS, 2010).

According to BCBS (2010) the preferred stock whose maturity time is more than one year is an example of stable funding

Banks can extend the period of their funding or reform business framework which seems to be weak to liquidity risk if banks fall below the requirements of minimum ratios. Counter cycle buffer is introduced by BCBS in Basel III Accord .the purpose of these capital requirement ids to lessen pro-cyclicality.

[32] **BCBS (2010)**

Basel III was designed to absorb losses suffered by banks instead of enhancement of capital.it functions as a tool for risk sensitivity and cyclicality the ratio of buffer that banks will maintain is 2.5% to 0% of risk weighted assets depends on systematics risk and for any change in this capital ratio a 12 months' notice is required so that banks can alter capital easily.

Basel III has refined rules for financial institutions the buffer for capital is to be maintained according to their jurisdiction .and for dealing in global banking system the exchange system of jurisdiction is introduced. The banks are required to follow the rules and regulations of a state in which it operates banks are required to measure weighted average of cushions of all jurisdictions it operates to file credit risk exposure.

Basel III Capital Structure[33]

	Common Equity	Tier 1 Capital	Total
Minimum	**4.5%**	**6%**	**8%**
Conservative Buffer	**2.5%**		
Sum Of Minimum And Conservative	**7%**	**8.5%**	**10.5%**
Counter Cycle Buffer	**0-2.5%**		

2.5. Credit Risk Management and Implementation in Emerging Economies

2.5.1 Credit Risk Management

Martin (2010) indicated that much of the current economic crisis can be attributed to a failure of risk management process across the global financial industry. Petria N. and Petria L. (2009) explained that techniques for managing operating credit risk build on the broad principles of risk management that are already deeply ingrained in banking

[33] **(BCBS,2010)**

practice. Martin (2010) pointed out the risk management function has been regarded as an advisory function for senior management rather than a control function within the business. This has rendered the risk managers impotent when they see things going wrong but are ignored by senior management.

Juta and Ingrīda (2009) explained, credit risk management is the keystone of risk management in the banking area. Financial institutions have to manage credit risk at the level of credit portfolio, individual borrowers, and settlements of transactions. The main aim of the credit risk management is to maximise a bank's risk-adjusted rate of return by maintaining expected level of losses within acceptable parameters and decreasing the dispersion of these losses. The credit risk management system should be linked with other financial risks particularly the market risk. The credit risk management involves several participants. The most important ones include legislative power, supervising institutions, shareholders, the board, financial managers, internal audit, external audit, community, banking associations.

Classens, Djankov and Klapper (1999) have also indicated that external macro-economic factors like the external political environment, may present a variety of unforeseen problems in several developing countries. For example, the emergence from a repressed political regime may leave financial contracts open to hitherto unknown types of opportunistic behaviour or fraud.

A basic model for risk management was published by the American Bankers Association in 1984. Risk management was summarized as a circle of interrelated and continuing steps: exposure identification, risk assessment, risk control, and risk finance. Emblemsvag (2010) indicated that the presented approach will expand the subjective risk management process to include information management and to some extent knowledge management and thus add more activities to the practice of risk management.

Beegun and Pascale (2009) pointed out that the effectiveness of the risk management process depends on the existence of a proper risk management framework, including: risk governance, risk assessment, quantification and aggregation, monitoring and reporting and control optimisation. Exposure identification is a continuous discovery process where alternative scenarios are explored as the operating environment changes over time. The operating environment includes external legal, regulatory and payment system factors, customer behaviour patterns, and internal bank policies,

procedures and product features. Exposure identification is an ongoing "what-if" analysis to understand the dynamics of exposure creation.

Laere and Bart (2010) mentioned that Solvency II, the European Commission's planned reform of the regulation of insurance companies is well underway. One of the consequences will be a shift in focus to internally based models in determining the regulatory capital needed to cover unexpected losses. This evolution emphasises the importance of credit risk assessment through internal rating. Risk assessment attempts to measure the potential frequency and severity of the exposures that have been identified. In the context of operating credit risk, it includes the continuous measurement of past and projected dollar flows associated with customers and products and the continuous evaluation of customer creditworthiness. The process is supported with regular reports to alert management of any changes in risk assessment.

Keenan (2009) mentioned the risk control framework which serves as the best tool in managing the counterparty risk portfolio. Risk control is the application of techniques to reduce the probability of loss, ranging from informal control, to periodic review, to interactive control. The key component of cost-effective risk control is business decision that balances the trade-off between the costs of increased risk control with a reduced potential for financial loss.

Risk finance is the provision of sufficient funds to meet loss situations as they occur. Funding can be accomplished by using a variety of internal and external financial resources, including insurance and risk-based pricing. The glue that holds this circle of continuing steps together is risk management administration. Effective administration requires a clear policy by the board of directors, senior management commitment, designated responsibility for the function, and commitment by operating officers, and periodic reports to the board (Mayland, 1993).

Emerging securities markets can be classified in one of two ways. On the one hand the term "emerging" may be applied to the characteristics of the market itself, suggesting a securities market that has begun a process of change involving both increasing size and greater sophistication. Alternatively, emerging can refer to any securities market in a developing economy as defined by that economy's level of per capita GDP. Interactive Data Credit Rating-Emerging Markets adopts this latter approach, applying the country classifications used by the World Bank. That is to say, any economy classified by the World Bank as either low-income or middle-income is viewed as developing, and all securities markets in such developing economies are

viewed as emerging markets for the purposes of Interactive Data Credit Rating-Emerging Markets coverage. There are some exceptions to this rule. Rating from Hong Kong, Singapore and Taiwan are included, due to their importance as financial centres serving Asia's emerging markets. Ratings from Israel, Korea and Portugal are also included due to the presence of important national rating agencies in these countries.

International credit rating agencies generally incorporate a measure of country risk into their ratings, with the sovereign rating imposing a rating ceiling on all issuers from the country concerned. In contrast, national rating agencies in emerging markets typically focus on national currency debt issues. For this purpose they use government bonds as a risk-fee benchmark against which lesser credits are assessed. In comparing ratings of the same issuers by different ratings agencies, therefore, it is necessary to refer to the individual agency profiles at the front of the directory.

In order to make possible comparisons, between the ratings of issuers rated by different agencies the "Global Rating Scores" section provides a standardised numerical scoring system based on individual agencies' rating classifications (Stephen and Thomas, 2008).

Pangestu and Habir (2002) reported that individual bank failure can often be traced to lending decisions based on an over-optimistic assessment of creditworthiness for example loans to prominent individuals and politician who are unwilling to repay.

Carber (1996) and Mishkin (1996) also concluded that poor management and unwise lending can lead to over exposure of risky open foreign exchange positions, adopted from uncovered differentials as was seen in emerging market, as Mexico and Turkey.

Shleifer and Sishny (1991) highlighted that developing countries are not only small but also undiversified, being dependent on a narrow range of primary products as their main exports. Emerging markets have been experiencing very volatile times over the last ten years. Political and economic developments have been driving the markets and have led to significant progress in many countries. Emerging markets have been identified with defaults, rescheduling of debt, currency and political crises and volatile stock markets. They certainly have got all of these aspects and will continue to differ from the developed world mainly in terms of stability.

The experience of the last ten years shows that most market participants such as institutional investors, investment banks and commercial banks tend to over-allocate funds in good times and draw back completely in times of crisis.

2.5.2. Emerging Market

The World Bank's gauge of US$8,956: if the income per capita is less than this threshold, the country is considered an emerging market. Many investors focus on additional and more practical factors such as developments of a stock, bond and FX market, economic policies, reforms and privatisation and many more. Another important criterion for inclusion as an emerging market is its track record in terms of debt servicing: any countries with a debt default and restructuring record-being domestic or international-are part of the emerging market universe. Emerging countries have at least one or more of the characteristics, as Weak economic indicators; Defaulted on debt in the past and restructured debt; Brady countries; Non-OECD countries; Geographic classification (North and South); Political stability; Status of market economy; Currency restrictions; Illiquid stock market; Strong growth rates.

Schmidt, J. (2000) indicated approximately 85% of the world's population and 65% of its natural resources are in the emerging countries. Their stock markets have a market capitalisation of not more than 11% of the world markets, the US 50% alone. In the emerging markets, the South African bouser is the biggest, followed by Brazil and Turkey.

Earlier tags for emerging markets were less-developed countries (LDC) or developing countries. As the international investor community discovered the markets of Latin America and Emerging Europe in the early 1990s, a more positive sounding term had to be found. While high yield is used from time to time, it did not find acceptance as this term denotes below investment grade corporate bonds. In retailing banking industry, credit loss refers more about credit cards.

Emerging credit market includes Vietnam, China, Poland, and Cambodia, which are new to credit card as a consumer financial service. Others, such as the Philippines, Brazil, Mexico and Indonesia have had credit card service for many years, but are still considered emerging, because of the low penetration and lack of widespread use of credit card. Reasons for the latter could be no credit bureau, economic conditions, a large unbanked population, lack of merchant acceptance or other situations effecting the use and ownership of credit card.

In all markets, at any stage of development, managing the credit risk is one of the major challenges. This is even more of a challenge in emerging market, where years

of experience and supporting infrastructure may not exist. However, emerging markets also have some opportunities to tackle this key success factor early on and to get it right.

Adler and Jeong (2010) indicated that it is important to manage the credit risk in emerging markets. It is extremely important to establish the process, management structure and, especially, commitment to the credit risk cycle in emerging markets. The commitment of the management team and the strategic focus on having a fully integrated risk process are central to the successful initiation or continuation of credit issue in emerging market.

- Even at early stages of development the management of credit risk will be a secondary control and independent audit of new account and internal credit processes.
- The lack of credit bureaux with their independent data validation requires total investigative and interpretative policy internally.
- The credit risk cycle approach assures an objective and analytical, as well as statistically valid, method of quantifying portfolio conditions.
- There is requirement early on to balance the tendency to default to personality driven "expert" new account and credit administration operations.
- As a corollary to the above, the potential of internal fraud increases with "expert" management of the credit process.
- Emerging market entrants are not expected to, and should not; go through all the historical stages of credit risk development. They enter a market environment wherein the technical tools and management methods of current philosophy exist and are ready to be utilised.
- Current best practice profitability models, non-traditional revenue streams, product definitions and technology applications etc. are all available and practised (to varying degrees) in today's markets worldwide, whether emerging or not.
- The establishment of a new business in an emerging market does not have to go through the developmental stages as it has the opportunity to initiate its operation with the best possible practice available.

Ramcharran, and Il- Woon (2003) explained that in emerging countries, banks are considered at the heart of financial systems. In fact that, the domestic financial

markets have been liberalized but still weak and have been effected by lots of factors such as governors, legal procedures and so on. Credit management is one of the weak points on management activities of institutions; because of those factors it is understandable that banks are vulnerable. [34]The size of institutions is almost small and medium one, in which lending funds frequently has taken from depositors. And these funds are used to provide financing to poor or very risky projects. Moreover, in emerging countries, banks constantly stay in trouble for non-performing loans.

Classens, Djankov and Klapper (1999) have also indicated that external macro-economic factors like the external political environment may present a variety of unforeseen problems in several developing countries. For example, the emergence from a repressed political regime may leave financial contracts open to hitherto unknown types of opportunistic behavior or fraud.

According to Huang (2007), the non-performance loans' issues may lead to the 'twin crisis': bank and country crisis. As he mentioned, since 1980, more than 100 emerging market countries have suffered, in one way or another some kind of serious 'twin crises'. The damage is substantial if we look into crises all over the world. For instance, during the African banking crisis, five of 20 African countries spent more than 10% of GDP to repair the damage. In Eastern Europe, banks in almost every country ran into trouble. The Asian financial crisis in 1996-1997 caused many bank crises in Thailand, Indonesia, South Korea, etc.

Diaz and Gemmill (2006) described the emerging market banks in general had fundamental weaknesses. As Eastern Europe, China and Vietnam as well, these emerging market are so called 'ex-central planned economies'. Because of historical legacy, their banking sector has weaknesses due to their unique system under the communist regime of the past, that W. Huang (2007) mentioned some characteristics as following:

Relationship between banks and the government: it was not a clear function between the government and organizations.

The functions of the banks: Central banks had a monopoly position, such as mobilize deposits, and supply credits in economy. In the case of China, the People's Bank of China, now the central bank in China, was the only name for taking deposits and extending loans before the economic reform started.

[34] W. Huang (2007) *Institutional Banking for Emerging Markets: Principles and Practice*, Chichester: John Wiley & Sons, Ltd.

Credit allocation: All the credits were allocated basing on the plan targets. Governments or some institutions created credit plans, made decisions and allocated their targets to enterprises. It was led to misuse of funds in enterprises.

Foreign exchange: the foreign exchange sector was monopolized and had a two tier foreign exchange market: a separation of domestic and foreign market, in which the currency was nonconvertible and usually overvalued.

Generally, in emerging countries there are some similar features as W. Huang (2007) mentioned:

The strength of the economy: the economy is not stable; it is one major factor in explaining frequent banking crisis. A sound economy will ensure a good environment for bank to function, and to ensure sound banks are needed to run a sound economy.

Government's unwise intervention: Government have massive affection on the banking sector and political intervention is everywhere in banking practice. Usually, government influences State banks decisions and procedures and may distort good market practice, like neither efficient nor prudent to plug gaping fiscal holes and to finance dubious projects. This leads to an increase in non-performance loans.

Pressure under globalization: globalization requires liberalization. Such liberalization exposes banks to new risks. Financial liberalization may give benefits in the long term but cause short term pain. Asian financial crisis in 1997 – 1998 is an example. Without proper precautions and pre-training, it will nevertheless make a crisis more likely.

Role of foreign banks: The presence of foreign banks by means of local branches can be an important impact on the efficiency of financial institutions; about the macroeconomic effects on aggregate lending and on the responsiveness to monetary policy; and about the implications for financial sector modernization and stability (Bongini P. and et al., 2009).

In developed markets, it is hard to imagine that difficulties experienced by a bank can be solely attributable to general risks, even though such risks certainly do have an impact on the bank's performance -- in most cases bank failure is the result of mismanagement, risky strategies, rogue traders, etc. In emerging markets, general risks loom larger. Not only can general risks be more severe but also it may be

difficult for any bank to avoid the consequences of a severe economic shock (such massive currency devaluation) or a deep economic recession[35].

Properly identifying credit risk (New Straits Times (Malaysia), February 24, 2000[36]) in the loan portfolio is critical to the overall effectiveness of loan portfolio management. Because an institution's plans, direction, and controls are based upon a perceived level of risk in the loan portfolio, the ability to identify risk affects the adequacy of these areas. For instance, the board of directors may establish profitability objectives for the loan portfolio, which provide inadequate returns to shareholders or fail to offset future loan losses due to inaccurate assessment of risk in the loan portfolio. Also, adequate controls may not be implemented to prevent loans from deteriorating and resulting in loan losses.

Again in the same article it is recommended that a breakdown in the risk identification process could seriously threaten the safety and soundness of an institution. Weaknesses in risk identification not only hinder sound loan portfolio management, but also affect the institution's ability to determine allowance for loan losses requirements and capital, earnings, and liquidity needs. Risk must also be adequately identified to fairly and accurately disclose the financial condition of System institutions to shareholders and investors.

Duffie et al. (2003)[37] suggest that the primary risks emanating from the loan portfolio are credit risk and interest rate risk. Credit risk is the potential for losses resulting from the failure of borrowers to repay their loans, and interest rate risk is the potential for losses resulting from the impact of market interest rate fluctuations. However, interest rate risk is mentioned here to highlight the need to consider it in evaluating loan portfolio management. Also, interest rate risk can result in significant credit risk

[35] Clearly, banks which are better managed and have stronger balance sheets are better placed to cope with general risks, but if general risks present a significant threat to the banking system it may well be that no bank can be assigned an FSR at the upper end of the scale. For example, in the case of Lebanon, no bank is rated higher than D because general risks include that of a severe devaluation and that the post-civil war reconstruction could stall. In those circumstances, even well managed banks with currently sound financial ratios may face difficulties. In some Asian countries devastated by the region's financial crisis – Indonesia and Thailand for example – the objective insolvency of all banks in the system is recognised by their financial strength ratings being E or E+.

[36] New Straits Times (Malaysia), February 24, 2000: Risk Watch system for better risk management in banking industry. (Leading Asian Financial Magazine).

[37] Duffie, Darrell and Kenneth J. Singleton (2003). Credit Risk: Pricing, Measurement, and Management. Princeton University Press.

in situations where interest rate risk has been passed on to borrowers through variable rate loans.

The examination of an institution's risk identification process should primarily focus on management's ability to identify aggregate risks in the loan portfolio. Aggregate risks that should be identified include: adversely classified assets; Past due loans; Nonaccrual loans; Restructured loans; Other property owned; Concentrations of credit; Dependence upon a single or a few customers; Loans that do not comply with underwriting criteria; Lack of borrowers' current and complete financial data; Other credit administration deficiencies; and Loans with common credit factor weaknesses.

Sufficient examination Kumbhakar (1991)[38] work should be completed to test and verify the accuracy of risk identified. Since the institution's risk identification process starts with the evaluation of individual loans, a sample of loans may be reviewed to determine if adequate credit evaluations are made and relevant information accurately recorded. The institution's credit evaluations should include an analysis of each credit factor, an assessment of credit administration, an assignment of a credit classification and performance category, and a determination of whether the loan should be combined with other loans for the purpose of calculating lending limits. Additional guidance on examining these aspects of the credit evaluation is provided in their respective sections of the Assets module.

The information generated from the credit evaluations, together with other useful data on loans, such as outstanding debt and commitment, loan type, terms, enterprise/commodity financed, and geographic location, should be accurately recorded and summarized by the institution. Summaries should provide the prevalent aggregate risk categories present or other information needed by the board and management to understand the risk characteristics of the loan portfolio. This may include common credit factor weaknesses on a group of loans, a breakdown of loan sizes, or the enterprises/commodities financed on certain classifications of loans. The capability to retrieve data and generate such information based on the institution's needs is largely dependent on the effectiveness of the institution's MIS (FCA)[39].

[38] Kumbhakar, C. Subal, 1991, Measuremnent and Decomposition of Cost-efficiency: The Translog Cost System, Oxford Economics Papers, 43:4, 667-683.

[39] http://www.fca.gov/FCA-HomePage.htm, Loan Portfolio Management EM-310, Date Published: 07/1998.

Conceptual Framework

This part presents conceptual framework for the study and elaborate on dependent and independent variables.

Figure 2.4 shows that Credit risk management practices is evaluated on the basis of 7 variables such as demographic variables, bank-wise exposure, expert system, lending decision, company factors, corporate borrower, and lending policy.

1. **Demographic variable**

   Demographic variables have been computed by grouping responses of first five questions asked in questionnaire which includes, basic and professional education, years of service in organization, years of experience issuing credit, training attended and authorized credit limit.

2. **Bank wise exposure**

   Bank wise exposure has been computed by grouping factors of 'importance of bank-wise exposure' (question 24) which includes; study of financial performance, operating efficiency, past experience, bank rating on credit quality, internal matrix for studying, counter party or country risk.

3. **Expert system**

   Expert system has been computed by grouping factors of '5 Cs' (question 27 and 28) which includes; character, cash flow, capital, collateral and condition.

4. **Lending decision**

   Lending decision has been computed by grouping question six to ten which are about reliable and helpful data, role of personal experience in lending decision, importance of financial statement of different companies, importance of non-financial data in issuing credit and credit screening method.

5. **Company factor**

   Company factor has been computed by grouping factors of 'importance of company factors' (question 26) which includes; fixed assets, accounting turnover, profitability of company, in business less than 2 years, in business more than 2 years.

6. **Corporate borrower**

   Corporate borrower has been computed by grouping factors of 'important factor for lending to corporate borrower' (question 25) which includes; ownership background, capital size, set up year, credit history.

7. Lending policy

Lending policy has been computed by grouping question 11, question 13 to question 23 (see appendix 1 for reference).

Figure 2.4 Credit Risk Management Practices

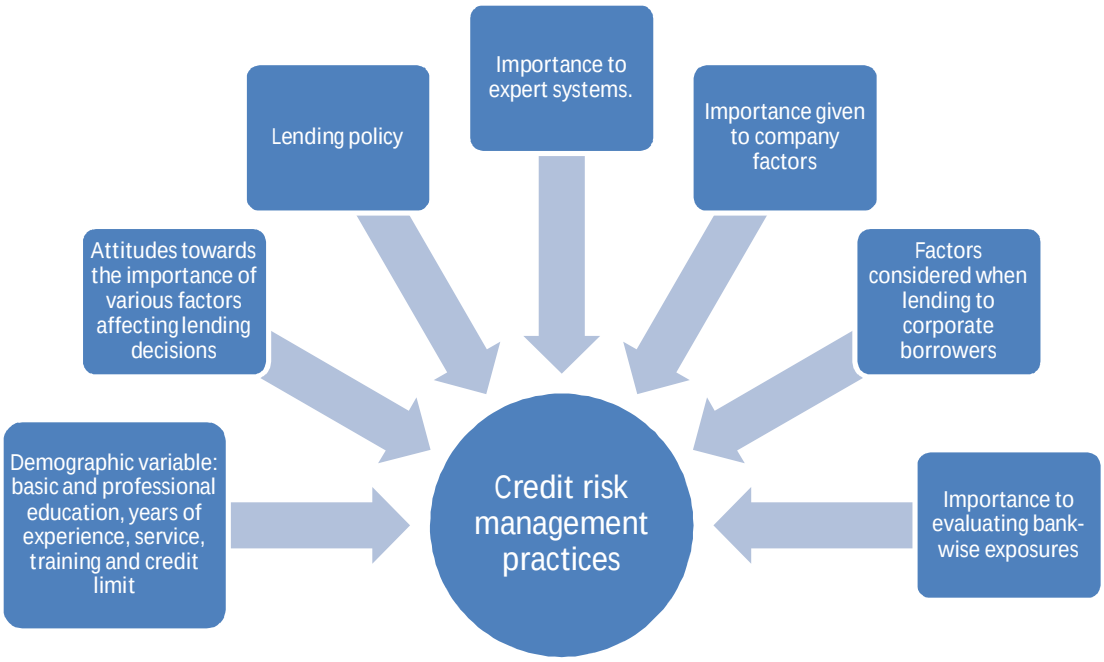
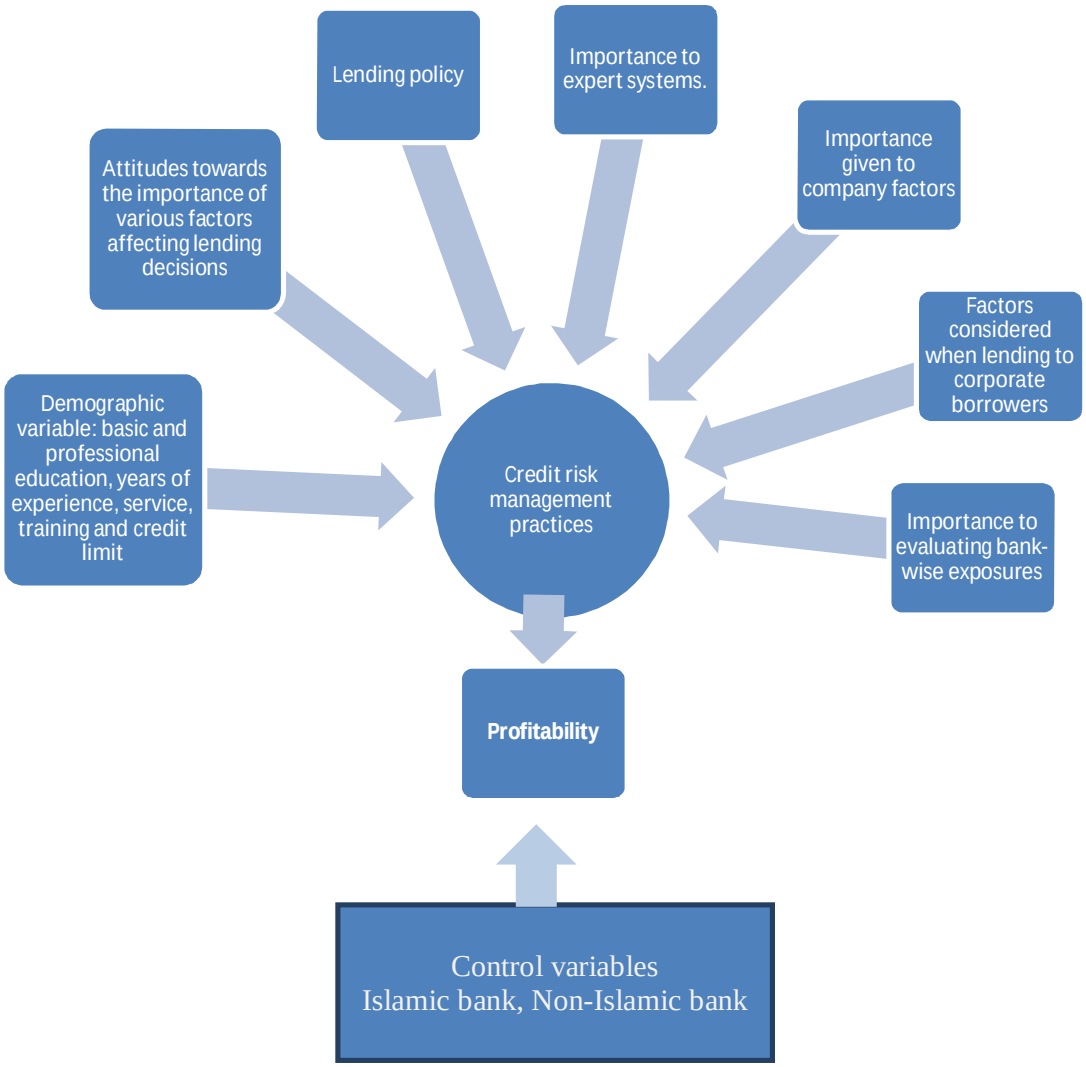


Figure 2.5 presents that profitability is dependent variable and factors of credit risk management practices are independent variable in the study. Control variables are Islamic and non-islamic banks. Rate of return on lending (question 12) is used as a proxy for dependent variable i.e. profitability.

Figure 2.5: Effects of Credit Risk Management on Profitability of Islamic and Non-Islamic Banks in UAE



CHAPTER THREE

3.0 ISLAMIC BANKING

3.0. Preliminary Review of the Literature

This section looks at the literature on fundamental contracts/instruments of Islamic banking to develop a better understanding on this form of banking. The literature also explores the risks that emanate in the Islamic banking and the relevant risk management framework to manage and mitigate the risks.

Lewis (2001) states that in an Islamic financing system the provider of the finance or capital and the entrepreneur enters in the business together by taking the business risk in order to get and share the profits. There are only a few studies[40] to date which review[41] and compare the risk management practices of Islamic banking. It is now proven that Islamic banking has established dramatically in recent years in the Muslim world along within the western countries[42]. But there are scholars' scepticism regarding Islamic financial system despite its continuous growth, i.e. whether it will be able to sustain or cope with international banking system or standard[43]. It is found that there is no proper professional identification of risks involved in Islamic banking, i.e. risk management approaches that lead Islamic banking strongly towards equity financing in the long term[44]. The researchers and scholars have accelerated the academic interest in Islamic banking risk management study in the last several years[45]. They have studied that Islamic banks do not only face common types of risk but also pointed some unique and new kind of risks. This new

[40] V. Sundaranjan and L. Ericco (2002), 'Islamic Financial Institutions and Products in the Global Financial System: Key Issues in Risk Mnagement and Challenges ahead', IMF working paper no. WP/02/192, International Monetary Fund (2002)

[41] Hassan, M.K. (2003), 'VaR analysis of analysis' paper presented in an international conference on Islamic banking: Risk Mnagement, Regulation and Supervision towards an international Regulatory Convergence, Jakarta, September 30- October 02; Mulijawan et al. (2004),'A capital adequacy framework for Islamic banks: the need to reconcile depositors' risk aversion with managers' risk taking' Applied Financial Economics, Vol.14, No. 4, pp. 429-441.

[42] Willson, R (2007), 'Islamic Investment in UK', Business Islamica, Vol.1 No. 12, pp. 68-72

[43] M. Hassan, (2009), 'Risk management practices of Islamic banks of Brunei Darussalam', Journal of Risk Finance, Vol.10, No.1, pp. 23-37

[44] Hassan, M.K and Dicle, M.F (2006),'Basel II and capital requirements for Islamic Banks' Department of Economics and Finance, University of New Orleans, New Orleans, L.A, Working Paper

[45] Khan (1997), Vogel and Hayes (1998), Obaidullah and Wilson (1999), Karim and Ahmad (2001)

type of risk is identified as complying with the Shariah requirements[46]. This is the requirement of Islamic banking function by using the different modes of Islamic financing which has an effect on both sides of the balance sheet i.e. in asset and liabilities; and these modes are categorized by the following fundamental contracts.

Islamic banks follow the principles of *Shariah law* when providing services. There are several principles which differentiate Islamic from conventional banking system (Zeitun 2011, Olson and Zoubi 2008: and Chong and Liu 2008). Islamic banks prohibit *Riba* (interest). Secondly the investments should be based on halal activities. Thirdly, *gharar* (unreasonable uncertainty) and *Maisir* (speculation or gambling) transactions are not permissible. Fourth, Islamic banks must pay Zakat in order to benefit society. The conventional banking system is interest based contrary to sharing of risks between the provider and user of funds in Islamic banking system. The profit and loss sharing principle in the Islamic banking financing system helps Islamic banks protect and participate in the stability of profit. Islamic banks invest their funds jointly with customers through different financing methods; hence equity financing differentiates their performance from conventional banking (Hanif, 2011; Iqbal, 2010).

Differences were found between the Islamic and conventional banks understanding in risk and risk management. Islamic banks were found to have higher country, liquidity, operational, residual and settlement risk than conventional banks. In a similar vein, Hassan (2009) concluded that the Islamic banks are reasonably efficient in risk management. However, Shafique et al. (2013) found that credit risk, equity investment risk, market risk, liquidity risk, rate of return risk and operational risk management practices are not different between Islamic banks and conventional banks. In another study conducted by Fauziah et al. (2013) pointed out that there are significant differences in the usage of Value at Risk (VaR), stress testing results, credit risk mitigation methods and operational risk management tools between Islamic and conventional banks. They also found that Islamic banks lack adequate tools and systems of risk management particularly in information technology. They suggested that innovations and more product developments should be done to manage risks in Islamic banks.

[46] Khan, T and Ahmad, H (2001), ' Risk management: an analysis of issues in Islamic financial industry', IRTI Occasional paper , Jeddah.

3.1. Fundamental Contracts in Islamic Banking

The Islamic economic system presents diverse modes of business contracts which are the foundation of Islamic financial institutions *(IFIs)* operations in the world. All those contracts comply the core principles of Islamic law *(Shariah)* which prohibits the Interest *(Riba)***,** Uncertainty *(Gharar)*, Gambling *(Maisir)* and involvement in such businesses which are unethical and hazardous for the society. Simultaneously there is a rationale of equitable participation, distribution of wealth and management of risk (El Qorchi, 2005). The following is a brief overview of all the contracts which are widely used in today's Islamic banking and serve as building blocks for designing various instruments, products and/or services.

According to Siddiqui (2008), like traditional banks, Islamic banks also offer a range of financial products and services. These are consumer financing, trade related financing and investment financing etc. The most common Islamic financial contracts are cost plus sale (*Murabaha*), profit and loss sharing (*Mudarabah*), partnership or joint venture *(Musharaka),* forward contracts *(Salam and Istisna),* Leasing *(Ijarah)*, credit sale *(Bay "bi-thaman ajil"),* In addition there are zero interest loan or benevolent loans for poor farmers and needy students termed as *(Qardul Hasna)***.**

However Iqbal & Mirakhor (2007) bring the idea that in IFIs, contracts dealing with commercial and business transactions can be classified into four broad categories.

1. Transactional Contracts
2. Financing Contracts
3. Intermediation Contracts
4. Social Welfare Contracts

"This classification based on the function and purpose of contract provide us with a framework to understand the nature of credit creation types of financing instruments, intermediation and the different roles each group plays in the economic system"

Researcher and academic like El Qorchi (2005), Chong et al. (2009), divide Islamic financial contracts and/or instruments in two categories (i) Debt-creating such as

Salam, Istisna, Murabaha and Kafalah, and (ii) Non-debt creating such as Mudarabah and Musharakah.

3.1.1. Murabaha (Cost plus Sale / Mark-Up Trade)

This mode of *Shariah* compliance contract is the most commonly used financial contract in Islamic banks. In fact a big amount of financial transactions of Islamic banks are based on the cost plus or mark-up trade contract. According to Henry and Wilson (2004) one study reveals that in Islamic banks, the share of *Murabaha* financing alone accounts for between 45 percent and 67 percent of total financing. The Murabaha contract is being used for commodity or trade financing such as consumer goods, raw materials, real estates, machinery, equipments and including the letters of credit as well. Predominantly banks engage in Murabaha financing on short-term basis. (Siddiqui, 2008; A-Rahman, 2010)

The bank purchases the assets on the request of client (with promise to purchase) and then resell it to client on agreed cost plus or mark-up price and with deferred or flexible payment terms. To be validated Murabaha contracts bear the conditions that before the transaction, both parties should agree on the mark-up and payment terms, the rate of profit must not be fixed on the length of repayment period, there should not be any hidden or increased charges on transaction even if the circumstances change or client fail to pay within agreed payment duration.

Siddiqui (2008) assert that in a broad context Murabaha contracts are more likely the consumer loan, lines of credit and working capital facilities that any conventional bank provides except the above mentioned conditions and prohibition of interest.

3.1.2. Musharakah (Partnership or Joint venture)

Siddiqui (2008) assert that, under the *Musharakah* mode of contract IFI engage in a direct investment with the client in the form of equity participation and risk sharing. Usually Musharakah financing is used by banks for financing trade, imports and to issue letter of credits and also in agriculture and industry.

In Musharakah both parties can share the profits according to pre-agreed ratios however if there is a loss than it will be divided in proportion to their equity participation. All parties have right to take part in its management and to work for it.

However Ayub (2007) describes that the partners may agree upon a condition that the management shall be carried out by one of them. But in this case the sleeping partner should be entitled to the profit only to the extent of his investment, and the ratio of the profit allocated to him should not exceed the ratio of his investment as discussed earlier.

3.1.3. Mudarabah (Profit and Loss Sharing)

This mode of *Shariah* compliance contract can be described as a contractual relationship between two parties, the financer (rabb-al-mal) and entrepreneur (mudarib) to combine their human and financial resources in an investment project for profit and loss sharing. It is similar to Musharakah mode except that in Mudarabah only one party invest the entire capital and other (client) provide its expertise to manage the project. In practice, Islamic bank's PLS account is most simple example of Mudarabah contracts where client deposit funds for bank to invest or Bank finance entire capital in clients' project. Profit sharing is pre-agreed between the two parties however the losses are only borne by the fund provider except in the case of misconduct, negligence, or violation of the conditions agreed upon by the bank. (Henry & Wilson 2004, El Qorchi 2005, Siddiqui 2008)

According to Vogel & Hayes (1998), mostly Islamic banks engage in *Mudarabah* contracts to finance well established and mature businesses as well as new ventures with greater risks and profit potential.

3.1.4. Ijarah (Leasing)

In simple terms Ijarah implies a contract to give something on rental basis. Greuning & Iqbal (2008) assert that, technically it is a contract of sale, but not the sale of tangible asset rather it is a sale of the rights to use the asset for a specific period of time. In Islamic banking there are two ways in which Ijarah works.

(i) Simple Ijarah (Operating Lease): In operating lease, the financer/bank purchases the assets and leases it to the client for an agreed rental and period of time. Usually it involves leasing of machinery equipment, buildings and other capital assets.

(ii) Ijarah wa iqtina (Financial Lease): In this mode of Ijarah the financer/bank signs a contract with client, allowing him the ownership of the asset after the end of lease

term however client does not only pay rental but also a gradual payment for the ownership of the asset. The instrument has been used increasingly in a range of asset classes including ships, aircrafts, telecom equipment and power station turbines, etc.

3.1.5. Salam (Sale Contract)

In Islamic banking *Salam* is commodity sale contract, whose delivery will be in a future date for a cash price, which means, it is a financial transaction in which price is advanced in cash to the seller, who abides to deliver a commodity of determined specification on a definite due date. The deferred is the commodity sold and described (on liability) and the immediate is the price. In other words a *Salam* sale contract is a futures contract.

According to Iqbal & Mirakhor (2007), *Salam* is similar to conventional forward contracts in terms of function but is different in terms of payment arrangements. In Salam contract buyer pays the seller full negotiated price of a specific product. Another condition of Salam is that the transaction is only legitimate to the products whose quality and quantity can be fully specified at the time when contract is made.

Siddiqui (2008) affirms that, the *Salam* contract can be used to meet the capital requirements as well as cost of operations of farmers, industrialists, contractors or traders as well as craftsmen and small producers. The bank benefits from entering into a *Salam* contract with a seller because usually a *Salam* purchase by the bank is cheaper than a cash purchase. Due to this reason the bank is secured against price fluctuations, barring those extreme circumstances of a price deflation or a market crash when post *Salam* prices could dip lower than currently contracted *Salam* sale prices.

3.1.6. Istisna (Partnership in Manufacturing)

The term Istisna refers to a contract whereby a manufacture/contractor agrees to produce and deliver well-described goods at a given price on a given date and time in future. Istisna in similar to Salam contract except in Istisna the buyer does not need to pay the full price of asset in advance, it may be paid in instalments with preferences of the parties or partly in advance and the balance later on. However it should be based on mutual agreement. (Iqbal & Llewellyn, 2002; Vogel & Hays, 1998).

Iqbal & Mirakhor (2007) affirm that after Salam the Istisna contract is the second kind of sale contract where an asset is bought or sold before it comes into existence. However there are some conditions in regard to Istisna contract. Firstly the underlying assets is required to be manufactured or constructed, secondly there is enough flexibility in regard to payments and time of delivery as mentioned above, thirdly Istisna can be cancelled before the manufacturer undertake manufacturing.

3.1.7. Qar-dul-Hasan *(*Gratuitous Loans*)*

Islamic banks provide such a facility on a limited scale to poorer sections of society such as needy students or small rural farmers. Such loans would have negative NPVs for the banks (Siddiqui, 2008). Traditional banks do not have any such benevolent loan structures, any benevolence is only manifested through charities and grants or scholarships, but not through non-returnable zero interest loans.

El. Qorchi (2005) states that while the main types of Islamic financial instruments are conceptually simple; they may become complicated in practice as some banks combine aspects of two or more types of instruments to suit customer requirements.

3.2. Risk Profile of Islamic Banking

Risk management in banking, insurance and economics is essential for their survival and is not a new concept. Financial institutions are always ready for risks in terms of pre considered and analysed contingency planning and dealing with risks constitutes a financial institution's entire skills for better analysis (Schroeck, 2002). It has been identified by Santomero (1997) in a research over financial institutions that banks and all financial institutions are susceptible to numerous risks throughout their span of business. An effective risk management strategy and resulting policies is vital to any financial organization (Dar & Presley, 2006). As argued by Scholtens and Van (2000), a holistic approach towards effective risk management is required for less risky banking and strong analysis has to be in place for better integration of such strategies into the entire banking system and decisions. In Islamic banking, the lender or the bank has rights over profit in Mudarabah contract. However, in a contract such as Loan, the lender is not entitled to any profit or extra income since they are not responsible of any risks (Abdul-Rahman & Yahia, 2006).

Risk management is the set of activities designed specifically to minimize negative consequences or losses. The main reason to build a financial institution in a country is to provide the nation with better and secure ways of financial management and at the same time minimize losses and enhance revenues to the shareholders. Enhancing value of shares requires strong risk management strategy and policies so as to be able to survive with minimum loss of capital even during crucial financial down time (Nocco and Stulz, 2006).

According to Iqbal & Mirakhor (2007), the banking industry has changed significantly in the last two decades, in which the nature of risks faced by banks and financial institutions has also changed. Today these business entities are exposed to whole new array of risks. There have been many studies on risks in banking industry; researchers divide the banking risks in different ways from risks associated with market conditions and the economy in general and the particular risks that relate to the institution and its system itself. Islamic bank are exposed to the same risks as conventional bank however due to distinct nature of its business contracts/instruments (Shariah compliance) from conventional banks there are some other risks as well. The following examines the nature of risks and their relationship to Islamic banking contracts.

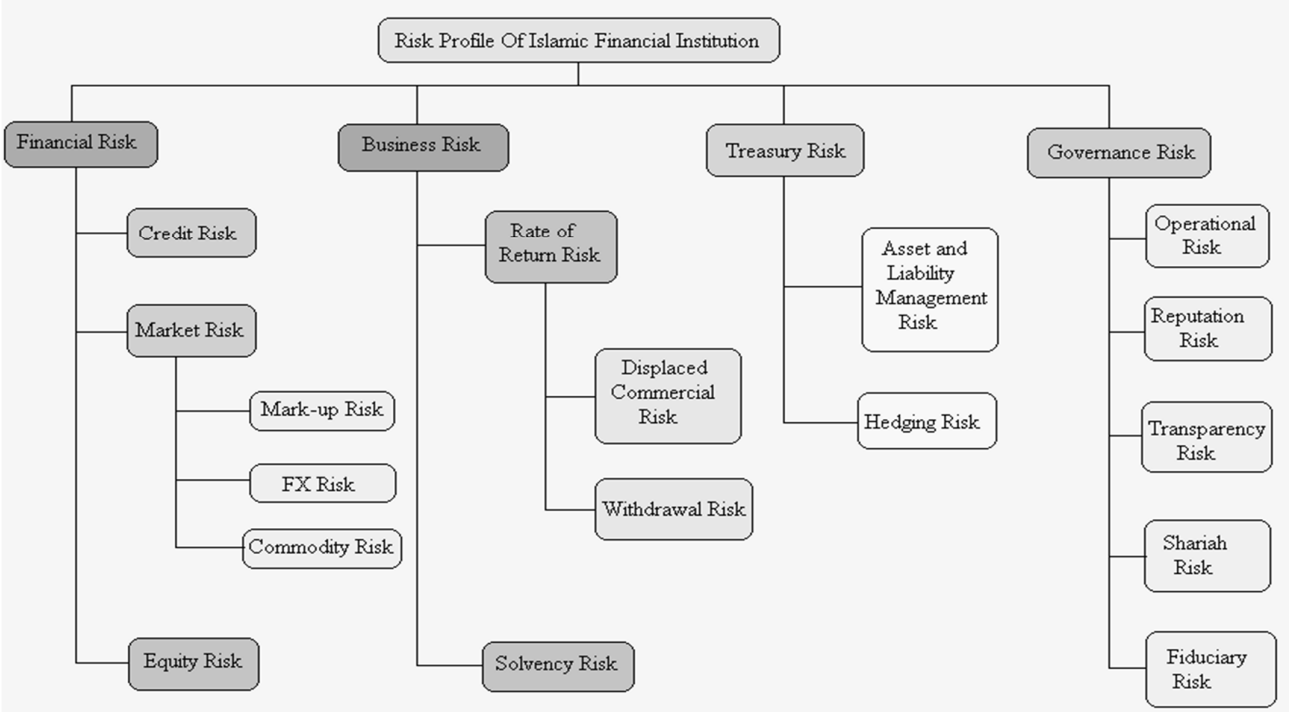


Figure 3.1: Risk Profile of Islamic Financial Institutions, Source: Iqbal & Mirakhor 2007, (pp. 230)

Risks faced by financial Institutions are mainly divided into three groups:

(i) Financial Risks

(ii) Business Risks

(iii) Operational Risks

3.2.1. Financial Risks

Islamic financial sector has now grown up to an extent that it has a diverse range of financial institution under its umbrella. Such institutions involve commercial banks, investments banks and insurance companies. However, in most of the countries, both Islamic and non-Islamic, the main financial institutions following the principles are the banks (Dar, 2006). Islamic banks however, have been facing potential risks due to the current economic crisis around the world. Islamic banks have experienced some major credit risks which need strong consideration and some efficient risk management needs to be in place. Rahman and Yahia (2006) have argued that an affective risk management means understanding the complexity of issues that Islamic financial institutions have because of the external economic pressures. What needs to be understood while considering risk management is that Islamic banks now have some very efficient and acceptable ways of financing which can help them plan for better future economic conditions and it will help against preventing economic break-down. However, at the same time the limited profit making nature of Islamic financial institutions can introduce a number of risks related with income generation for future prosperity. Therefore, as expressed by Cihak & Hesse (2008), some useful research has to be done within this area of Islamic banking which can result in innovative ideas and constructive solutions of effective risk management policies. Therefore, the purpose of this research is to identify potential and possible risks that Islamic banks can encounter and the steps that need to be in placed in-order to reduce the probability of the resulting business down time (Cihak & Hesse, 2008).

As argued by Al-Tamimi and Al-Mazrooei (2007), Islamic banks have to comply with the rules and regulations of Shariah so as to be able to conduct financial activities based on this concept. However, following the laws and stay active can sometimes be a challenge in current market standards. Hence, one of the common and most

important risk affecting Islamic financial institutions is for Islamic banks to keep on being *Shariah* compliant and make profit to survive.

According to Iqbal and Mirakhor (2007), banks direct exposure of financial loss to assets or liabilities is termed as financial risk. In order to develop an effective risk management policy, financial risk are first to be considered and discussed. On the top of the financial risk list is, credit risk then market risks. Both conventional and Islamic banks face credit, market and liquidity risks but Islamic banks are also exposed to equity investment risk. The Following discussion provides Islamic banks' exposure to those risks with reference to various Islamic investment and financial contracts/instruments.

A quick comparison of different risks in Islamic finance with conventional finance reveals that credit risk, commodity risk, risk of liquidity, risk of market, risk of legal and risks of regulatory are higher in Islamic financing. These risks in Islamic finance exist with different intensities and have several dimensions (Table 3.1)

Table 3.1: Risk in Islamic Financial Services[47]

Type of risk	**Coverage**
Credit risk	Attributed to delayed, deferred and default in payments by counterparties. Covers profit-sharing contract (Mudarabah and Musharakah), receivables and lease (Murabaha, Diminishing Musharakah, and Ijarah), and working capital financial contracts (Salam, Istisna, and Mudarabah). Covers different stages of a contract.
Market risk	Attributed to the change in interest rates, commodity prices, and foreign exchange rates. Covers commodity risks existing in Murabaha and Ijarah contracts.
Equity risk	Attributed to adverse changes in market value (and liquidity) of equity held for investment purposes. Covers all equity instruments (Mudarabah and Musharakah).
Liquidity risk	Attributed to adverse cash flow in situations arising mainly due to change in market risk exposures, credit risk exposures, and operational risk exposures.

[47] Ioannis Akkizidis and Sunil Kumar Khandelwal (2007), 'Financial Management for Islamic banking and Finance'. Pg-39

Rate of return risk	Attributed to changes in account holders' expectations of the return on investment. Also related to fluctuations in returns due to changes in underlying factors of the contract.
Operational risk	Attributed to the inadequacy of failed process, people, and systems. Also includes risks arising from *Shariah*.
Legal risk	Attributed to the inadequate legal framework, conflict of conventional and Islamic laws, and conflict between *Shariah* rulings and legal decisions.

3.2.1.1. Credit Risk

Credit risk is generally defined as the potential that counterparty fails to meet its obligations in accordance with agreed terms (IFSB, 2005; Iqbal & Mirakhor, 2007; Hassan & Lewis, 2007). In other words, it is regarded as client's inability to meet the deadline or do not wish to fulfil the dues towards bank. It also includes the risk arising in the settlement and clearing of the transactions. The unique characteristics of Islamic financial contracts causes chances of increase in credit risk such as;

Credit risk arises in *Murabaha* transactions when a bank delivers the assets to the client but client does not reimburse the dues in time. Apparently credit risk could be higher if such contracts are due to its nature and *Shariah* compliance. Hassan & Lewis (2007) assert that the non-performance can be due to external systematic sources or internal financial causes or as a result of moral hazard (wilful default).Vogel & Hays (1998; pp. 185) assert that in case of Bai' *al*-Salam and Istisna contracts, bank could be exposed to risk of failure to supply asset on time, supply quality goods or no supply at all which could ultimately result in delays or default in payment from client.

Islamic banks face credit risks in profit sharing contracts as well. According to Iqbal & Mirakhor (2007), Hassan & Lewis (2007), when Islamic bank engage in Mudarabah contracts as financer/principal (Rabbul-mal) and client become an agent to manage the project, hence, with a typical agency problems, bank are also exposed to an enhanced credit risk. This is because, the nature of Mudarabah contracts is such that, it does not give bank appropriate rights to monitor the client/agent or engage in the management of project operations. In such contractual conditions bank cannot participate in the risk assessment process of project. On the contrary if bank perform role of (Mudarib), then other party has to bare the risks as shown in the figure 3.2. In

case of Musharakah transaction, credit risk will be non-payment of bank share in profit by the entrepreneur when it is due. Siddiqui (2008) states that credit risk could be higher due to high information asymmetries and low transparency in financial disclosures from other participant in the contract. Traditional banking is considered a credit risk business as its operations are based on lending and banks' ability to minimize credit risk is the source of its profitability whereas Islamic banking operations are based on investment and partnership thus credit risk management becomes more critical.

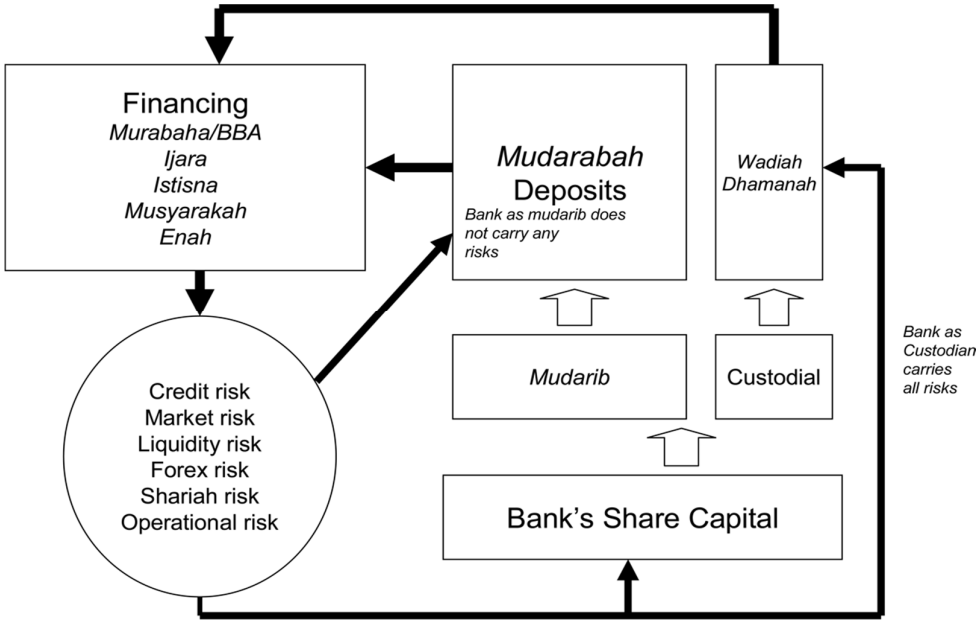


Figure 3.2: Distribution of Risks among Bank's Shareholders and Depositors

Source: Rosly & Zaini (2008)

As expressed by Abdul-Rahman (2006), amongst a number of risks which are equally probable to every Islamic banking institution, credit risk has the greatest importance. For example, if the debtor fails to abide by his contract or the financial agreement between the two parties becomes void for any reason, the loss is always borne by the creditor/financer which is the bank itself. Hence, these days it is getting difficult for individuals to get debit from Islamic banks anywhere in the world. Today's weak economy has made Islamic banks to be over cautious before making an investment/provide credits. According to Schmit and Kendall (1990), credit risk can

be dangerous for Islamic banks in a number of following ways, such as risks on interest, risk of fluctuating exchange rates, risk of changing Market trends, risk of un-stable political strategies and policies, environmental risks that can affect the value of tangible assets and goods.

Credit risks are not just driven by inefficiently analysed finances such as personal or business loans, credit risks can also be involved in various situations like bonds where the originator fails to abide by the agreement. Therefore, Islamic banks perform series of analytic tasks before making a decision on provisioning of funds to individual or businesses (Cihak & Hesse, 2008).

3.2.1.2. Market Risks

Bessis (2002) describe market risks as the potential downside deviation of the market value of transactions and the trading portfolio. (pp. 359) For Islamic banks market risks arise in the form of negative price trends in rate of return risk, mark-up rates risk, foreign exchange rates risk, equity and commodity prices, each components of risk includes a general aspect of market risk and a specific risk that emerge in the banks business transactions. (Iqbal & Mirakhor, 2007; Greuning & Iqbal, 2008) However unlike conventional banks which invest in various types of government papers and private sector instruments, limited *Shariah* compliant investment options essentially means that Islamic banks are largely insulated from the interest rate risks that the rest of the industry is exposed to. In Islamic banks market risks that's relate to the current and future instability of the market values of specific assets due to different risk factors are as follows.

Mark-up Risk: Conventional bank charge interest on the loan they issue but due to prohibition of interest in *Shariah* Islamic bank charge mark-u. As there is not any Islamic rate of return index so Islamic bank often use LIBOR (London Interbank Offered Rates) as the benchmark for the mark-up they charge. According to Iqbal & Mirakhor (2007) in Murabaha contracts Islamic bank charge a fixed mark-up for the duration of contract, while in that duration if the benchmark rate increased, the mark-up rates on these fixed income contracts cannot be changed, consequently where bank cannot benefit from increased rates on the other hand face risk arising from the movements in market interest rate. Hassan & Lewis (2007) further argue that "Mark-up risk can also appear in profit sharing modes of financing like Mudarabah and

Musharakah, as profit sharing ratio sometime also depends on a benchmark rate like LIBOR."

Commodity Price Risk: The effects appear evident in the various Islamic products where the bank is the owner of the goods in different periods and may retain the stock of goods with a view to sale. For instance in case of Bay al- *Salam* Islamic banks could expose to price risk as commodity price may go down between the delivery of the and sale of the commodity time and bank has to resale the commodity at lower than buying price. This risk is similar to market risk of forward contracts if it is not hedge properly. (Akkizidis & Khandelwal, 2008) According to Hassan & Lewis (2007) Islamic banks bare commodity price risk in Istisna, Ijrarha, Mudarabah and Musharakah in a same way as Bai' *al-Salam* as bank engage in investment through these mode of *Shariah* compliance contracts.

Foreign Exchange Rate Risk: Describing currency risk Greuning & Bratanovic (2009) assert that, Bank face currency risk from changes in exchange rates between a bank's domestic currency and other currencies. It originates from a mismatch when assets and liabilities are valued in different currencies."(pp. 255). In Islamic banks currency risk arises from the deferred trading nature of some of contracts offered by Islamic banks, as the value of the currency in which receivables are due may decrease or currency in which payable are due may increase. Currency risk has speculative nature as some time it results in gain and sometime loss. However it depends on the exchange rates movements and bank reserves in foreign currencies. For instance in decrease in domestic currency's value will result in gain for the bank and increase in value will affect other way around. (Iqbal & Mirakhor, 2007; Greuning & Iqbal, 2008)

It is possible that the Islamic banks are more vulnerable to these risks due to prohibition of the use of financial derivatives known in the management of this group of risk use by traditional banks.

3.2.1.3. Equity Investment Risk

In its investment operations under the umbrella of profit and loss sharing (Murabaha) and partnership (Musharakah) contracts Islamic banks also engage in equity investments such as holding of shares in stock markets, investment in private equity

funds, participation in specific projects or syndication investments. Liquidity, credit and market risks associated with such equity holdings can cause instability in Islamic banks earnings; simultaneously they also lead to financial risk of losing capital invested due to losses in business (Iqbal & Mirakhor, 2007; Greuning & Iqbal, 2008).

According to Iqbal & Mirakhor (2007), the degree of risk in equity investment is relatively higher than other investment as:

. Equity investment other than stock market investments do not have secondary markets and therefore an early exist is costly

. Equity investment may not generate a study income and capital gain might be the only source of return. The unscheduled nature of cash flows cans pose difficulties for the Islamic banks in forecasting and managing cash flows.

3.2.2. Business Risks

Risks related to bank's business environment are termed as business risks. It includes macroeconomics, policy concerns and overall financial sector infrastructure such as payment systems and auditing (Greuning & Iqbal, 2008). While Islamic banks are exposed to regular business risks they are also exposed to a specific rate of return risk.

3.2.2.1. Rate of Return Risk

Islamic banks are exposed to rate of return risk from the uncertainty in the returns on their investment. Rate of return risk differs from interest rate risk. Since conventional banks operate on interest based fixed income securities and assets so there is less uncertainty in their rate of returns on the other hand Islamic banks are concerned with the result of their investment activities at the end of the investment-holding period, such results cannot be pre-determined exactly and bank has to wait for the results of their investments to determine the level of return to their account holders/depositors. This uncertainty is termed as rate of return risk. (Iqbal & Mirakhor, 2007)

For Instance an Islamic bank is expected to make 5% on its assets which it will share with its investors/depositors. Meanwhile current rate in market increase to 6% which is higher than what the bank may make on its investment, the account holders/depositors may expect to earn the increase rate on their deposit/investments. The rate of return risk could lead Islamic bank to withdrawal risk as well.

3.2.2.2. Withdrawal Risk

Under the business risks umbrella banks are also exposed to withdrawal risk. Iqbal & Mirakhor (2007) affirm that competitive pressure from other Islamic banks and conventional banks with the Islamic windows may raise withdrawal risk for an Islamic bank. Ahmed & Khan (2007) describe lower rate of return as another reason for withdrawal risk; depositors will withdraw their fund if they are receiving a lower rate of return than they would receive from another bank. Due to banks inefficiency and consistent low rate of return depositors will decide to move their money which could consequently lead bank to liquidity risk as well.

3.2.2.3. Liquidity Risk

In simple terms liquidity risk implies lack of adequate funds for operational requirements, or to meet the obligations of the bank in a timely manner. Liquidity risk may result from the poor management of funds in the bank and the difficulty in accessing to funds at a reasonable cost. According to Iqbal & Mirakhor (2007), Liquidity risk as it applies to Islamic banks can be of two types, first lake of liquidity where bank is constrained by illiquid assets to meet its liabilities and financial obligations. Secondly, Islamic banks do not have access to borrow or raise funds at reasonable cost.

Archer & Karim (2007) state that this is a significant risk in Islamic banks owing to the limited availability of *Shariah* compatible money market instrument and lender of last resort (LOLR) facilities. While Ariffin et al. (2008) assert that liquidity risk arise from the lake of sufficient *Shariah* compliant liquid instruments. It is not permissible to transform financial assets into negotiable financial instruments. Once a debt has been created it may not be transferred to anyone else except at par value. Depositor funds either are callable on demand or require very short withdrawal notice period. Islamic contracts could increase the potential for liquidity problems in Islamic banks. For instance cancellation risks in Murabaha, Shariah requirement to sell Murabaha contracts only at par, prohibition of secondary trading of Salam and Istisna contracts.

3.2.2.4. Reputation Risk

Banks reputation in the market plays a significant role toward achieving its goals and objectives. However there is always risk that any irresponsible actions, behaviour,

from management or non-compliance of system (*Shariah law* in case of Islamic banks) could shatter the trust of client and cause damage to banks reputation.

According to Iqbal & Mirakhor (2007), negative publicity can have a huge impact on an institution's market share, profitability and liquidity. The Islamic financial services industry is a relatively young and a single case of failed entity could damage reputation of entire industry. However all Islamic banks are exposed to such risk.

3.2.3. Operational Risks

Operational risks are the risks which raise from human, professional, technical or systems errors or deficiencies in any of them, or that result from domestic incidents in the bank It also includes legal risk. Operational risks can result from internal and external factors causing loss to the bank directly or indirectly (Bessis, 2002; Iqbal & Mirakhor, 2007; Ahmed & Khan, 2007).

According to Basel Convention on Banking Supervision (2001) main sources of operational risks are as follows.

a. Staff Deception: Financial fraud, embezzlement and crimes resulting from the corruption of accounts staff. Based on the study and five years review in number of global banks, found that 60% of cases of theft by staff at the bank, of which 20% by managers, and a drop of 85% of the losses of banks was caused by dishonesty of employees.

It is assumed initially that the Islamic banks are less vulnerable to this type of risk because of the importance that is supposed to attach these banks to the level of staff moral and ethical environment that must be provided by Islamic banks in transactions both internally and externally.

b. Risks resulting from human errors of the staff may not be intentional but the result of negligence or lack of experience. The Islamic banks are seriously facing this kind of risk due to lack of trained personnel, institutions involved in training and skills development necessary for Islamic banks, especially in light of the reality of rapid expansion.

c. The risk of fraud: This includes checks and falsifying documents, one statistical study reviled that the crime of fraud are 10-18% of the causes of the losses of banks.

d. Counterfeiting: It is estimated by the expects in U.S. that the amount of counterfeit currency from the dollar and the currency in circulation outside the United States is up to one billion U.S. dollars annually, and this indicates the magnitude of this problem to banks, especially if we imagine the volume of counterfeiting of other currencies that may be less technical than the dollar.

e. Technological Risks: The risks of cyber-crimes, especially after the expansion in the use of different techniques in banking transactions, including credit cards, and POS cards, and use the Internet, telephone, mobile, and retail operations of different billing reimbursement mechanism, as well as resulting from the exchange of information electronically. Technological risks also arise from errors or defects or malfunctions or inadequate hardware and used in banks.

f. The legal risks: Legal risk face by conventional and Islamic banks can be described under the same umbrella. Islamic banks have to comply with the Shariah; the problem arises when the conventional law governing Islamic bank transactions may not be considered Islamic. This create legal risk arises due to incomplete understanding of laws, regulation and legal actions (Djojosugito, 2008)**.** Other potential legal risks exposure to banks include,

. Risks arising from errors in the contracts or documents or documentation.

. Risks arising from the ineffectiveness of the judicial system in a country or corruption.

. Risks arising from the delay to take some legal action in time-binding.

. Risks arising from the violation of some law or binding agreements, deregulation of laws against money laundering or counter-terrorism, or laws restricting the transfer of currency or foreign exchange in some countries or the laws of the province-binding.

It is possible that the Islamic banks are more vulnerable to these risks due to the multiplicity of contracts and their dependence on different versions of each respective condition and their own procedures.

3.2.4. Shariah Risk

The major significant unique risk Islamic banks face is the *Shariah* compliance risk. According to Iqbal & Mirakhor (2007) *Shariah* risk is related to the structure and functioning of the Shariah boards at the institutional and systematic level. There are two types of Shariah risks, one is due to non-standards practices in respect of different contracts in different jurisdictions and other is due to failure to comply with *Shariah* rules. Islamic banks have to ensure that they are in compliance with *Shariah* rulings as this carries considerable reputation risk to the bank. In addition, any changes in the *Shariah* rulings may lead to banks having to unwind transactions, potentially at significant cost. Some commentators have suggested that the legal enforceability of contractual terms may be uncertain, if there is lack of clarity in certain jurisdictions as to whether *Shariah* law or the governing national law would be given precedence

Iqbal & Mirakhor (2007) assert that "it has been suggested by some *Shariah* scholars that if a bank fails to act in accordance with the Shariah rule the transaction should be considered null and void and any income generated from it should not be included in the profits to be distributed to the investors/depositors."

Table 3.2: Risk Perceptions in Different Modes of Financing (mean values)

	Credit Risk	Rate of Return Risk	Price Risk	Liquidity Risk	Foreign Exch. Risk	Operational Risk	Shariah Non-compliance Risk	Total	Chi-Square
Murabahah	4.10	3.55	3.48	3.93	3.74	3.72	4.00	3.79	0.00
Bay' al-Salam	4.56	4.18	4.41	3.63	4.13	4.18	3.81	4.14	0.00
Istisna	4.49	3.90	4.11	4.25	3.82	4.05	3.85	4.06	0.00
Ijarah	4.00	3.70	3.76	3.96	3.83	3.86	3.85	3.85	0.00
Mudarabah (Assets Side)	4.48	4.25	3.86	4.27	4.38	4.14	3.85	4.17	0.00
Musharakah	4.29	4.42	3.86	3.96	4.29	4.37	3.88	4.16	0.00
Diminishing Musharakah	4.19	4.29	4.11	4.14	4.05	4.25	3.95	4.14	0.00

Source: Ariffin et al. (2008)

Empirical studies by Ariffin et al. (2008) found that risk perceptions for different modes of financing of the Islamic bankers profit sharing mode of financing (i.e.

diminishing Musharakah, Musharakah and Mudarabah), and product-deferred sale (i.e. Salam and Istisna) are riskier than Murabaha and Ijarah. This implies that Murabaha and Ijarah are significantly different from the others. Mudarabah and Musharakah contracts may contribute substantially to Islamic banks' earnings, but they are perceived as exposing them to significant rate of return risk, liquidity risk, foreign exchange risk and operational risk as shown in Table 3.2. Results also indicate that credit risk in Islamic banks perceived to be the most important risk.

3.3. Risk Management in Islamic Banking

According to Khan and Ahmed (2001) Islamic banking industry possesses some of those financial management styles followed by Islamic laws which are susceptible to numerous types of risks. Research shows that success of financial institutions depends on their strength to stand against external risks and the capacity to survive during tough economic situations so that they can gain profits for shareholders. Nation trusts on banks based on their power to survive through such conditions and the level of their maturity within risk management.

Akkizidis and Khandelwal (2008) also argue the risk management for Islamic banking institution is set up in the form of cautiously created standards for availability of funds, by Islamic Financial Services Board (IFSB). IFSB has recognized the importance of effective risk management. They realized this importance after a very short period of establishing Islamic banking concept because of the challenges enforced by international laws and pressures against Shariah.

Sarker (1999) states the research performed by various different researchers and analysts on risk management for financial sector shows that financial institutions perform risk management for the following two reasons:

- To save the establishment from negative consequences of risks.
- To achieve positive financial outcomes related with opportunities.

Risk management illustrates the same intention of its deployment within organizations of any business nature. In banking sector, efficient risk management ensures security and availability of capital. When we talk about performing risk management to attract positive consequences, risk analysts consider potential risks

as potential opportunities which allow them to strategically plan to achieve crucial business objectives which include increasing the value of shares with the help of better financial performance and stability. Increasing shareholders value of investments means protecting the institute against losses. The key objectives of achieving financial stability are as follows[48]:

- Planning against unforeseen monitory losses.
- Increasing consistency of financial earning – profits.
- Analysing and enhancing the potential opportunities of earnings.

The nature of laws followed by Islamic banks[49], features of processes followed and the types of financing opportunities require strong and effective risk analysis and management. The profit and loss sharing nature of Islamic financing is a practical and justified way of performing financial business yet it introduces several risks to the shareholder or people who deposit their money since the loss has to be borne by all the parties. These risks are more meaningful to the bank due to the loss that can be borne by these investors. This is because of administering the profit and loss sharing strategy is much more complex in nature in comparison to the conventional financing. The determination of profit and loss sharing includes identifying the ratios amongst economic investments and auditing standards of financial projects to ensure proper governance standards are in place.

Siddiqui (2008) elaborates that when Islamic financial institutions[50] provide funds to other entrepreneurs for their ventures through the profit and loss sharing methods, the entrepreneurs do not bare any risks of loss. The bank is responsible for financial analysis and liquidity of venture so to avoid the potential risk of financial loss. This is in the context of Mudarabah contract. If profit and loss sharing contract expires then the loss can be borne by both parties. Defaulting this contract means that the terms of pre agreed profit could not be met and hence the loss has to be borne by both the bank and the entrepreneur (Kahef, 2006).

[48] M.U Chopra and T.Khan (2000), Regulation and Supervision of Islamic banks', Occasianal paper No.3, Islamic Training and Research Institute, Saudi Arabia (2000), pp. 52-54

[49] Siddiqui, M. Nejatullah (1983), 'Issues in Islamic banking' Islamic Economic Seroies-4, The Islamic Foundation, Leicester, Uk.

[50] Anjum Siddiqui (2008), ' Financial contracts, risk and performance of Islamic banking', Journal of Managerial Finance. Vol. 34, No. 10, pp. 680-694

Mudarabah contract attracts[51] another risk in a way that while providing funds to people, the bank has no legal restrictions on the entrepreneur. How to run the venture or the project of investment is dependent on what the entrepreneur thinks best for it. Bank has no say and involvement in the project (Kahef & Monzer, 2005). On the other hand, in investments based on Musharakah contracts banks have better positions and less risks since the contract allows both parties to influence decisions with the help of pre agreed voting rights. Therefore, Musharakah based contracts and investments are less risky for Islamic financial institutions due to their nature of having pre agreed contract and level of rights of both parties. Profit and loss shareholding method does not entail any collateral or pre agreed guarantees to reduce risks that may occur (Kahef, Monzer (2006, April 22-23)).

Islamic banking is facing various types of risks due to different nature of its financial contracts /instrument and Shariah compliance. Simultaneously, increased market volatility, financial innovations, shift in banking business, increased competition and regulatory environment are causes of increased risks. A proper risk management framework is always necessary to manage and mitigate those risks. Researchers describe four main aspects of risk management which are as follows.

3.3.1. Understanding Risk and Risk Management (URM)

A study conducted by Boston Consulting Group (2001) found that the sole determining success factors is not the technical development but the ability to understand risk strategically and also the ability to handle and control risk organizationally. It is important for staff of banking institutions to understand the aspect of risk in the banking operations and the risks that are inherent and exposed in their business operations. Better understanding of risk management is also necessary especially in the financial intermediation activities where managing risk is one of the important activities. Secondly, in order to realize a risk based management philosophy, the attitude and mind-set of the employees need to be changed whereby they must be brought to understand that managing risk is crucial for success. This implies that there must be intensive training, clearly defined structures and responsibilities, as well as commitment to change.

[51] Ioannis Akkizidis and Sunil Kumar Khandelwal (2007), 'Financial Management for Islamic banking and Finance'

It was identified that banks in North America and Australia concentrate on risk management primarily to enhance their competitive positions. Meanwhile in Europe, Asia and particularly in South America, risk management is considered primary from the perspective of regulatory requirements. Al-Tamimi and Al-Mazrooei (2007) found that the UAE banks staffs have good understanding of risk and risk management, which might give an indication about the ability of these banks to manage risks efficiently in the future. Moreover, understanding risk and risk management had positive effect on risk management practice although it is insignificant. From the literature, it shows that understanding risk and risk management is an important factor of risk management practices.

3.3.2. Risk Identification (RI)

There are few conceptual and empirical studies on risk identification of banking and financial institutions. Tchankova, (2002), Al-Tamimi & Al-Mazrooei, (2007) assert that risk identification is the first stage of risk management and a very important step in risk management. The first task of the risk management is to classify the corporate risks according to their different types (Pausenberger and Nassauer, 2000). The first step in organizing the implementation of the risk management function is to establish the crucial observation areas inside and outside the corporation (Kromschroder and Luck, 1998). Then, the departments and the employees must be assigned with responsibilities to identify specific risks. For instance, interest rate risks or foreign exchange risks are the main domain of the financial department. It is important to ensure that the risk management function is established throughout the whole corporation; i.e. apart from parent company, the subsidiaries too have to identify risks, analyze risks and so on.

Pausenberger and Nassauer (2000) also state that it is advisable for most corporations to implement early warning systems. An early warning system is a special information system enabling the management board to identify risks in time by observing the development of defined indicators. According to Luck (1998), instruments that could be used to identify risks are checklists of possible disturbances or breakdowns, risk workshops, examination of corporate processes, internal inspections and interviews, loss balance, etc. It is advisable to make use of the knowledge and skill of external experts, for instance, forecasts of banks about the

development of interest rates or foreign exchange rates. There are many other approaches for risk identification, for instance, scenario analysis or risk mapping. Barton et al. (2002), affirm that an organization can identify the frequency and severity of the risks through risk mapping which could assist the organization to stay away from high frequency and low severity risks and instead focus more on the low frequency and high severity risk. Risk identification process includes risk-ranking components where these ranking are usually based on impact, severity or dollar effects. The analysis helps to sort risk according to their importance and assists the management to develop risk management strategy to allocate resources efficiently.

In relation to commercial banks' practice of risk management, Al-Tamimi (2002) found that the UAE commercial banks were mainly facing credit risk. The study also found that inspection by branch managers and financial statement analysis are the main methods used in risk identification. The main techniques used in risk management are benchmarking, credit score, credit worthiness analysis, risk rating and collateral. The recent study by Al-Tamimi and Al-Mazrooei (2007) was conducted on banks' risk management of UAE national and foreign banks. Their findings reveal that the three most important types of risks encountered by UAE commercial banks are foreign exchange risk, followed by credit risk, then operating risk. Not only that, there is no significant different on risk identification between UAE national and foreign bank, hence, the UAE banks clearly identified the potential risks relating to each of their declared aims and objectives. Moreover, risk identification is positively significant to influence risk management practices.

In the case of Islamic banks, studies made especially on risk identification and risk mitigation includes the work of Haron and Hin Hock (2007) on market and credit risk, and Archer and Haron (2007) specifically on operational risk. They explain the inherent risk i.e. credit and market risk exposures in Islamic banks. Also, they illustrate the notion of displaced commercial risk that is important in Islamic banks. They conclude that certain risks may be considered as being inherent in the operations of both Islamic and conventional banks. Although the risk exposures of Islamic banks differ and may be complex than conventional financial institution, the principles of credit and market risk management are applicable to both. In addition, the IFSB's standards on capital adequacy and risk management guiding principles mark the first steps in an on-going process of developing prudential standards and filling regulatory

gaps in the field of Islamic finance. Apart from those two risks, Archer and Haron (2007), state that Islamic banks are exposed to a number of operational risks that are different from those face by conventional banks. They argue that the complexities of a number of their products, as well as their relative novelty in the contemporary financial services market, combined with the fiduciary obligations of Islamic bank when it acts as a Mudarib, imply that for Islamic banks operational risk is very important consideration. Because of that, the IFSB has taken the position while Investment Account Holders (IAHs) may be considered in the absence of misconduct and negligence by the Islamic bank to bear credit and market risks of assets in their funds have been invested by the bank, the latter must be considered as being exposed to the operational risk arising from its management of those funds.

3.3.3. Risk Assessment and Analysis (RAA)

According to Pausenberger and Nassauer (2000), the dimension of the potential loss has to be quantified, the amount of the potential loss for the corporation and the corresponding probability of occurrence of this risk have to be determined. However, only a few risks can be exactly measured. In most cases, it is necessary to estimate the possible loss of a risky business or a risky position. Hence, the managers have to consider different possible developments. In practice, it is useful to classify the different risks according to the amount of damage they could possibly cause (Fuser et al., 1999). It is also useful to identify the development that will generate the biggest loss in order to assess the effects on the existence of the corporation. On the basis of this sort of information, the managers have to take measures to handle the risks.

This classification enables the management to divide risks that are enabling to threat the existence of the corporation from those which can only causing slight damages. Frequently, there is an inverse relationship between the expected amount of loss and its corresponding likelihood, i.e. risks that will cause a high damage to corporation, like earthquakes or fire, occur seldom, while risks that occur daily, like interest rate risks or foreign exchange risks, often cause only relatively minor losses, although these risks can sometimes harm the corporations seriously. The empirical findings by Al-Tamimi and Al-Mazrooei (2007) highlighted that UAE banks are somewhat efficient in analysing and assessing risk and significant different between UAE national and foreign banks in the practice of risk analysis and assessment.

Additionally, the findings show that risk analysis and assessment are influencing risk management practices. Similarly, Drzik (1995) assert that the BAI Risk Management Survey showed that large bank in the US had made a substantial progress in their development and implementation of risk measures. The measures use not only for risk control purposes, but also for performance measurements and pricing. In the context of Islamic banking, few conceptual studies (e.g. Sundararajan, 2007; Jackson-Moore, 2007) discuss the risk measurement aspects particularly on the unique risk. A comprehensive risk measurement and mitigation methods for various risk arising from Islamic financing activities and from the nature of profit and loss sharing (PLS) in the source of funds especially investment account holders (IAHs) are explained by Sundararajan (2007). He concludes that the application of modern approaches to risk measurement, particularly for credit and overall banking risks is important for IBs. He also suggests that the need to adopt new measurement approaches is particularly critical for Islamic banks because of the role IAHs play, the unique risks in Islamic finance contracts. However, Ariffin (2005) indicates that Islamic banks are perceived not to use the latest risk measurement techniques and Shariah compliant risk mitigation techniques due to different Shariah interpretation of these techniques. Also, appropriate measurement of credit and equity risks in various Islamic finance facilities can benefit from systematic data collection efforts, including by establishing credit and equity registry. Jackson-Moore (2007) suggests that bank need to start collecting data, and there can be significant advantages in pooling information and using common definitions, standards, and methodologies for operational risk which is argued can lead to significant losses in all financial institutions. Finally, it is found that risk analysis and assessment particularly on measuring risk in banking institutions is important for risk management practices.

3.3.4. Risk Monitoring (RM)

Effective risk management requires a reporting and review structure to ensure that risks are effectively identified and assessed and that appropriate controls and responses are in place (IRM, AIRMIC and ALARM; 2002). According to Bessis (2002), the Monitoring and periodical review of risks are a standard piece of any controlling system. They result in corrective actions or confirmations of existing guidelines. (pp. 63). Risk monitoring can be used to make sure that risk management practices are in line and proper risk monitoring also helps bank management to

discover mistake at early stage (Al-Tamimi and Al-Mazrooei, 2007). Monitoring is the last step in the corporate risk management process.

Pausenberger & Nassauer (2005) assert that control has to be established at different levels. The control by the management board will not be enough to ensure the effective functioning of the risk monitoring system, because the management board members do not have time on their hands to exercise extensive control. Hence, the management board can install an independent unit to complete the task of internal supervision. This task is the responsibility of the internal audit. Also, the supervisory board is obliged to control the risk management process. The supervisory board is supported by the auditor. If the auditor discovers a defect, he will have to inform the supervisory board and the management board. Finally, the shareholders of the corporation can use their rights to demand information in order to judge the efficiency of the risk management system. The director's report enables the shareholders to assess the status of the corporation knowledgeably and thoroughly.

Table 3.3: Sources of Aspects of Risk Management Systems for Islamic Banks

Risk Management Components	Score (Total	Percentage
Establishing an appropriate risk management system and environment	84 (102)	82.4
Maintaining an appropriate risk measurement system	106 (153)	69.3
Adequate internal controls	65 (85)	76.5

Source: Khan and Ahmed (2001)

In one study about risk management practices (as Table 3.3) conducted by Khan and Ahmad (2001) found that on average the lowest percentage is on the measuring, mitigating and monitoring risk i.e. 69% score as compared to risk management policies and procedures i.e. 82.4%, and internal control of Islamic banks i.e. 76%. Al-Tamimi and Al-Mazrooei (2007) found that there is significant difference between UAE national and foreign banks in risk monitoring and controlling. Also, the UAE commercial banks have an efficient risk monitoring and controlling system and it has

positive influence on risk management practices. Finally, risk monitoring is important process to ensure that risk management effectively been practiced by banks.

3.4. Risk Mitigation in Islamic Banking

We have discussed the risk management system in regard to Islamic banking, now we will see how Islamic banks mitigate risk in that system. The nature of risks faced by Islamic banks is complex and slightly difficult to mitigate as some risks are eliminative some are transferable and some require absorption/management. Ahmed & Khan (2007) describe different reasons for that, first unlike conventional banks, given trading-based and equity financing instruments; there are significant market risks along with credit risk in Islamic banks. Secondly risk interrelation and change from one kind to another at different stages of a transaction. Like trade based contracts *Murabaha, Salam, Istisna* and *Ijarah* are exposed to both credit and market risk. For instance during the transaction tenure in *Salam* contract bank is exposed to credit and at the end of the contract the risk transfer into commodity price risk. Third reason is the rigidities and insufficiency in the Islamic infrastructure, institutions and instruments, like *Shariah* prohibit the use of foreign exchange futures to hedge against foreign exchange risk or in case of liquidity risk management there are no *Shariah* compatible short term securities in most Islamic jurisdictions.

However Islamic banks and financial institutions around the globe are trying to find and improve different tools and techniques to mitigate risks. According to Ahmed & Khan (2007) there could be two types of techniques of risks identification and management available to Islamic banks. First, standard techniques such as risk reporting, internal and external audit, GAP analysis, RAROC, internal rating and so on, on the other hand there are techniques and tool which need to be developed according to *Shariah* compliance. Following are the different risk mitigation techniques and tools adapted by Islamic banks to avoid/eliminate, transfer and adaption/management of risks.

3.4.1. Risk Avoidance/Elimination

Santomero (1997) asserts that risk avoidance techniques would include the standardization of all business related activities and processes, construction of diversified portfolio and implementation of an incentive-compatible scheme with

accountability of actions. In Islamic banking some risks can be reduced or eliminated by transferring or selling these in well-defined markets by using the following techniques:

3.4.1.1. Contractual Risk Mitigation

Islamic banking is based on different contracts, some risk need to be mitigated by proper documentation of these contracts. Ahmed & Khan (2007) state that uncertainty could be mild and unavoidable but could also be excessive and cause injustices, contracts failures and defaults. An appropriate contractual agreement between counterparties work as risk control tool.

- To overcome the counter party risk arising from the non-binding nature of Murabaha, up-front payment of a substantial commitment fee has become a permanent feature of the contract.

- Since the *Murabaha* contract is approved on the condition that the bank will take possession of the assets, theoretically bank holds the asset for some time. To eliminate the risk arising in that holding period Islamic banks now appoint client as an agent for the bank to buy asset.

- In *Istisna* contracts enforceability becomes a problem particularly with respect to fulfilling the qualitative specification. To prevail over such counterparty risk, *Shariah* scholars have allowed a penalty clause.

- In several contracts Islamic banks give a rebate to clients on the remaining amount of mark-up, as an incentive for quick repayment.

- Vogel & Hayes (1998) assert that in an environment with no Islamic courts or formal litigation system, dispute settlement is kind of a serious risk to Islamic banking. To overcome such risk the counterparties can contractually agree on a process, choice of law and dispute settlement clauses, if any dispute arise. This is quite important in regard to settlement of defaults.

Where such contractual agreements serve to mitigate counterparty default risk simultaneously they can enhance credit quality of contracts in different circumstances.

3.4.1.2. Parallel/Two Step Contracts

Due to *Shariah* compliance most of the assets of Islamic banks are fixed income which raises the rate of return risk. In order to mitigate rate of return risk Islamic banks use parallel or two step contracts (Ahmed & Khan, 2007). Since *Shariah* does not allow direct guarantee as a commercial activity however using parallel contracts Islamic bank can play the role of guarantor in facilitating fund to users. In the parallel contract the bank will have two Mudarabah contracts one as a supplier with the client and other as a buyer with the actual supplier. Hence the bank will not make an upfront payment to the actual seller until it receives payment from the buyer.

In this mode of risk mitigation Greuning & Iqbal (2008) argue about another aspect that parallel contracts raise questions about bank obligations as well. For instance in parallel *Istisna* if the actual supplier fails to deliver the goods according to agreed specifications the Islamic bank will be in default of its obligation towards the actual buyer.

3.4.1.3. Immunization

In order to mitigate the foreign currency risk, immunization is an effective tool for Islamic banks use. Ahmed & Khan (2007) assert that once the net exposure of foreign currency is minimized, the possibility exist that exposure can be hedge. For instance an Islamic bank has to pay a net amount of $1 million in three months and at present exchange rate is Rs.80/$. There is a risk that after three month the dollar will have appreciated compared to the current exchange rate. To remedy this Islamic banks raise three months profit and loss sharing (PLS) deposit in rupees for the value of $1 million and buying dollars with this amount at current rate. These dollars can then be kept in a dollar account for three months. After the three months and at the time of making the payment, the PLS deposit will mature and the bank can share the earnings on the dollar deposit with the rupee deposit holders. In this way Islamic bank fully hedge the foreign currency risk.

3.4.2. Risk Transfer

Banks use different risk transferring techniques such as use of derivatives for hedging, selling or buying of financial claims and changing in borrowing terms. Greuning & Iqbal (2008) affirm that many of the derivative instruments which are commonly used

by conventional banks do not comply with *Shariah*. Some of them which are in practice and/or can be used to transfer risk in Islamic banking are as follows:

3.4.2.1. Credit Derivatives

Derivatives are instruments whose value depends on the value of something else. According to Crouhy et al. (2001) "credit derivatives are tools used to manage credit risks. In these instruments the underlying risk of credit is separated from the credit itself and sold to possible investor whose individual risk profile may be such that the default risk attracts their investment decision. This can be done by packaging, securitizing and marketing credit risk exposures with a variety of credit risk features." Ahmed & Khan (2007) and Schoon (2009) assert that from many *Shariah* scholars' point of view, sale of debt or derivative and forward foreign exchange contracts are generally not permitted in Islamic banking since they include an element of uncertainty and are priced by reflecting an interest differential."

However from some researchers' point of view there should be distinction between secured and unsecured debt. Like Chapra & Khan (2000) argue that external credit assessment makes the quality of debt transparent, credit valuation techniques have improved drastically furthermore, all Islamic debt financing is asset based and secured. In view of these developments, restrictions on sale of debt may be reconsidered. According to Ahmed & Khan (2007) some scholars suggest that, although sale of debt is not possible as such, the owner of a debt can appoint a debt collector under agency contract (Wakalah) or Service Contract (ju'alah). For instance if the debt due is $5 million and the owner consider that in case of default he may loss $.05 million, the owner can offer some amount less than this estimated loss to debt collector. In this scenario there should be no *Shariah* objection.

3.4.2.2. SWAPS

According to Kolb (1997) in a swap agreement parties agree to exchange sets of cash flows over a period in the future. By using swaps both parties end up with a net financial gain as the cash flows become consistent with their own asset and liability structures. (pp. 613). Given that, by using swaps, both parties are better off and there is a great need for these contracts, there should not be any objections to using these as long as they are compatible with S*hariah.* Ahmed & Khan (2007) affirm the one of

the most common swaps involves swapping fixed return with variable. Since fixed rent and adjustable rent bonds (Sukuk*)* have recently been introduced in the markets, this may pave the way for further financial engineering in the form of *Shariah* compatible swap arrangements. Following we will discuss some other swaps that can be used by Islamic banks to mitigate various risks.

Debt-Asset Swap: While debt cannot be sold, it can be used as a price to buy real assets. Ahmed & Khan (2007) explained debt asset swaps with an example, i.e. Bank A owes debts worth £1 million to bank B, which are due after two years. Meanwhile bank B needs liquidity to buy real assets worth £l m from supplier C on deferred basis for two years. In this case, subject to the acceptance of C, the payments for bank B's instalment purchase can be made by bank A. Because of the instalment sale from C to B, C will charge Murabaha profit of say, 5 per cent. This profit can be adjusted in two ways. First, upon mutual agreement the supplier may supply goods worth £0.95 million to bank B and the supplier will receive $1million cash from bank A in two years. As a second option, C will receive £1million from A and £0.05m directly from B. The implication of this is important. B receives assets worth £1million at the present time instead of receiving after two years, but after paying 5 per cent. As a result, in net terms, B receives £O.95million today for £1million after two years. Thus the arrangement facilitates a *Shariah* compatible discount facility and can be used by Islamic banks to mitigate liquidity risks.

Swap of Liabilities: Exchange of liabilities can be a useful technique to minimize foreign exchange risk. For instance, a British company needs to import tea from Kenya, and a Kenyan company seeks to import chemical from Britain, the two parties can agree to buy the commodities for each other, bypassing the currency markets, if the dollar amount of the two commodities is the same, this arrangement can eliminate transaction risk for both parties. If the ratings of the two companies are good in their own home countries as compared to the other country, this swap will also save them some of the cost of finance.

Deposit Swap: Another technique to mitigate foreign exchange risk by Islamic banks is deposit swaps. In this method two banks, in accordance with their own expected risk exposure, agree to maintain mutual deposits of two currencies at an agreed exchange rate for an agreed period of time.

However according to Ahmed & Khan (2007) there are at least two *Shariah* objections to this contract. The exchange rate cannot be any rate except the spot rate. In this case the rate is fixed for a period during which there could be a number or spot rates, not only one. The exchange of deposits is also questionable. These deposits are supposed to be current accounts, which are treated as loan (qard). There cannot be mutual loan. Further, loan in two different currencies cannot be exchanged.

3.4.2.3. Forwards / Futures

Contemporary futures contracts in which both payment and receipt of good/asset are postponed are forbidden under *Shariah* law because or the presence of uncertainty *(Gharar)* and elements of interest *(Riba).* Some types of forwards and futures that are used by Islamic banks or have possibility to be used are as follow.

Salam and Commodity Futures: The potential of futures contracts in risk management and control is tremendous. Conventional banks manage risks by utilizing commodity forwards and futures contracts. In these contracts unlike *Salam,* payment of the price of the commodity is postponed to a future date. In *Shariah* postponing both the price and the object of sale is not allowed. Therefore the Islamic banks at the present time do not utilize the commodity futures contracts on a large scale, however by virtue of number of *Shariah* resolutions conventions and new research the scope for commodity futures is widening in Islamic banking. For Instance Karnali (2005) argues that, if new technology can eliminate *(Gharar)* in the contract then it may be reconsidered. He asserts that the implementation of a contemporary futures contract removes (Gharar*)* that is the basis of forbidding these contracts and consequently may be allowed. In the future these contracts may prove to be instrumental in managing commodities risks.

Currency forward and futures: Forwards and futures are the most effective instruments for hedging against currency risks. Most Islamic banks which have significant exposure to the foreign exchange risk do use currency forwards and futures for hedging purposes as required by regulators. However according to Chapra and Khan (2000) all Shariah scholars unanimously agree that such contracts are not allowed in the Shariah keeping this apparent contradiction in view and the tremendous difference between the stability of the present and past markets.

Chapra and Khan (2000) suggest *Shariah* scholars to review their position and allow the Islamic banks to use these contracts for hedging. Such a change in position will remove the contradiction between the practices of Islamic banks and the existing *Shariah* positions, on one hand, and will empower the Islamic banks, on the other. Furthermore, it may be noted that hedging is not an income-earning activity. Since interest *(Riba)* is a source of income and hedging does not generate income there is no question of involvement of (Riba*)*. On the other hand hedging actually reduces (Gharar*)*. It is important to note that the consensus among Shariah scholars is that currency futures and forwards are another form of (Riba*)* which has been prohibited by the Shariah.

3.4.2.4. Options

Options are another powerful risk management instrument. However a resolution of the Islamic *Shariah* Academy prohibits the trading in options. Therefore the scope for the utilization of options by the Islamic banks as risk management tools is limited at the present. However, some other forms of options that can be used are discussed next.

According to Kotby (1996), Option can be used to minimize the risks of price fluctuations in a S*alam* contract. For example, after signing the contract and receiving the price in advance, if the price of wheat appreciates substantially at the time of delivery the wheat grower may have an incentive to default on the contract. The risk can be minimized by a clause in the contract showing an agreement between the two parties that at certain level of price fluctuation will be acceptable but beyond that point the gaining party shall compensate the party which is adversely affected by the price movements. Ahmed & Khan (2007) affirm that in Sudan a contractual arrangement, known as Band *al*-Ihsan (beneficence clause) has now become a regular feature of the Salam contract. These options can be used by Islamic banks not only as incentives, but also as instruments to hedge against price fluctuations.

Embedded Options: Khan (2000) argues that there are no *Shariah* objections to using non-detachable embedded options. As mentioned, use of debts in buying goods, services and other real assets is allowed. This permission can further be extended to design quasi debt (equity) financial instruments by embedding convertibility options, For instance, in writing an Islamic debt contract, the user of funds can inscribe a non-

detachable option in the contract, subject to the preference of the financier, the receivables can be used to buy real assets or shares from the beneficiary, This option in fact changes the nature of collateral from a limited recourse to a full recourse as the option can be utilized according to the will of the financier. In this manner, it enhances the quality of credit facility by reducing its risk. The potential of these instruments increases in the framework of two step contracts. However, the Islamic banks at present do not write such instruments.

Bay al-arbun: Islamic funds have successfully utilized *arbun* (down payment with an option to rescind the contract by forgoing the payment as a penalty) to minimize portfolio risks in what are now popularly known in the Islamic financial markets as the principal protected funds (PPFs).

3.4.3. Risk Absorption

Some risks cannot be eliminated or transferred and must be absorbed by the banks. This is due to complexity of the risk and difficulty in separating it from assets. Such risks are sometime accepted by the financial institutions as these are central to their business and they specialize in dealing with them and are rewarded accordingly. For instance credit risk inherent in banking book activities and market risks in the trading book activities of banks. Some techniques and tools to mitigate and manage such risks are as follows (Ahmed & Khan, 2007):

3.4.3.1. Collateral

Collateral is also one of the most important securities against credit loss. Islamic banks use collateral to secure finance, because *al*-rahn (an asset as a security in a deferred obligation) is allowed in the **Shariah**. A-Rahman (2010) says, according to the principles of Islamic finance, a debt due from a third party, perishable commodities and something which is not protected by the Islamic law as an asset, such as an interest-based financial instrument, is not eligible for use as collateral. On the other hand, cash, tangible assets, gold, silver and other precious commodities, shares in equities and debt due from the finance provider to the finance user, are assets eligible for collateral.

3.4.3.2. Guarantees

Guarantees supplement collateral in improving the quality of credit. Commercial guarantees are extremely important tools to control credit risk in conventional banks. However according to Ahmed & Khan (2007) and A-Rahman (2010) the general *Shariah* understanding goes against their use. In accordance with the *Shariah* only a third party can provide guarantees as a benevolent act and on the basis of a service charge for actual expenses. Owing to this lack of consensus, therefore, the tool is not effectively used in the Islamic banking industry.

3.4.3.3. Loan Loss Reserves

Sufficient loan loss reserves offer protection against expected credit losses. The effectiveness of these reserves depends on the credibility of the systems in place for calculating the expected losses. Recent developments in credit risk management techniques have enabled large traditional banks to identify their expected losses accurately. The Islamic banks are also required to maintain the mandatory loan loss reserves subject to the regulatory requirements in different jurisdictions. However, as discussed above, the Islamic modes of finance are diverse and heterogeneous as compared to the interest-based credit. These require more rigorous and credible systems for expected loss calculation (Ahmed & Khan, 2007)

In addition to the mandatory reserves, some Islamic banks have established investment protection reserves. The Jordan Islamic Bank has pioneered the establishment of these reserves, which are established with the contributions of investment depositors and bank owners. The reserves are aimed at providing protection to capital as well as investment deposits against any risk of loss including default, thereby minimizing withdrawal risk.

3.5. Islamic Banking Risk Management Regulations and Supervision

3.5.1. Central Bank

Central bank's plays an important role in the banking business by setting up rules and regulations to provide level playing field for both conventional and Islamic banks and providing lender of last resort facility however according to Siddiqui (2008) there are two issues related to the relationship of banks with the central bank. First, central

bank pay interest to commercial banks on the reserves kept with them and secondly central banks are lenders of last resort to the banking sector. The lending involves an interest penalty for running out of reserves. Islamic banks cannot take interest on their reserves that they park with the central bank and also cannot benefit from the liquidity facility provided by the central bank as a lender of the last resort. Supporting that Ariffin, et al. (2008) assert that by not being able to receive a return on their deposits with the central bank, Islamic banks lose earnings and profitability and by not being able to pay interest for liquidity reserves obtained from the central bank, the banks expose themselves to higher priced money market funds or running short on liquidity in crucial times.

This problem cannot be resolved unless the central bank develops an Islamic deposit facility which pays a rate of profit to commercial banks on their deposits and the commercial banks similarly develop an Islamic loans instrument which is profit and loss based (Iqbal and Molyneux, 2005). Another suggestion has been given by Chapra (1985) that commercial banks should pool funds to assist liquidity constrained banks. However, it seems unclear why profit oriented commercial banks would partake of their profits by participation in such a scheme.

As Islamic banks cannot borrow on the overnight money market or from the central banks as these carry interest charges, they would be forced to keep higher non-earning liquidity reserves and thus loose profitability. Another issue relates to central bank's regulatory standards for managing the risks of Islamic banks as opposed to traditional banks. Central banks already have various prudential regulations in place to monitor the risk exposure of financial sector. These relate to capital, assets, management, earnings and liquidity[52].

3.5.2. Basel II

The Basel Committee on Banking Supervision has adopted a new accord, which is called the "Basel II". The primary purpose of the "Basel II" is to stabilize the international banking system and thus level the playing field. "Basel II" emphasizes capital adequacy, risk management techniques, internal controls, and external audits**.** The new Basel regulatory framework aims to establish greater market discipline

[52] T. Khan, (2004) Risk management in Islamic banking: A conceptual Framework, distance learning lecture', Islamic Research and Training Institute.

which is necessary for the stability of international financial system. Basel II also emphasizes risk management techniques, internal controls and external audits. While capital adequacy definitions are not changed with the new accord, new approaches are described for weighting assets: the standardized approach, the internal ratings-based approach and the model based approach (Khaf, 2005).

However, Hassan and Dicle (2006) argue that the risks associated with specialized Islamic products and their unique nature, Islamic banks face a challenge in adopting international standards. It may be taken into consideration that some of the risk models may expose Islamic banks to other risks that are not apparent for conventional banks. The methods that are developed for conventional banks should be amended and tailor-made for Islamic banks and such procedures may require extensive input in terms of data availability.

Islamic banks are required to comply with the standardized approach and measure risk exposure for capital adequacy. Regulatory agencies are responsible for imposing "Basel II" in their jurisdictions[53]. Hassan and Dicle (2006) suggest that since understanding risk and application of contemporary risk management techniques is a very important aspect, Islamic banks should give priority in the area of risk management practices (RMPs).

3.5.3. Islamic Financial Services Board

A comprehensive risk-based supervision was needed for Islamic banks and financial institutions around the world, supported by a clear strategy to build up risk management processes at the individual institutions' level, and robust legal, governance and market infrastructure at the national and global levels. In recognition of this need, international community has established the Islamic Financial Services Board (IFSB), headquartered in Kuala, Lumpur, to foster good regulatory and supervisory practices, help develop uniform prudential standards, and support good practices in risk management[54].

[53] Maali, B. Casson, P. And Nappier, C (2006), 'Social Reporting by Islamic banks' ABACUS, Vol.42, No.02, pp. 266-289

[54] Ioannis Akkizidis and Sunil Kumar Khandelwal (2007), 'Financial Management for Islamic banking and Finance'

Realizing the significance of risk management the Islamic Financial Services Board (IFSB) issued a comprehensive standard document on risk management in December 2005. The document identifies and discusses different risks and offers fifteen guiding principles of risk management for Islamic financial institutions.

1. General Requirement

Principle 1.0: IIFS shall have in place a comprehensive risk management and reporting process, including appropriate board and senior management oversight, to identify, measure, monitor, report and control relevant categories of risks and, where appropriate, to hold adequate capital against these risks. The process shall take into account appropriate steps to comply with *Shariah* rules and principles and to ensure the adequacy of relevant risk reporting to the supervisory authority.

2. Credit Risk

Principle 2.1: IIFS shall have in place a strategy for financing, using various instruments in compliance with *Shariah*, whereby it recognises the potential credit exposures that may arise at different stages of the various financing agreements.

Principle 2.2: IIFS shall carry out a due diligence review in respect of counterparties prior to deciding on the choice of an appropriate Islamic financing instrument.

Principle 2.3: IIFS shall have in place appropriate methodologies for measuring and reporting the credit risk exposures arising under each Islamic financing instrument.

Principle 2.4: IIFS shall have in place *Shariah*-compliant credit risk mitigating techniques appropriate for each Islamic financing instrument.

3. Equity Investment Risk

Principle 3.1: IIFS shall have in place appropriate strategies, risk management and reporting processes in respect of the risk characteristics of equity investments, including Muḍārabah and Mushārakah investments.

Principle 3.2: IIFS shall ensure that their valuation methodologies are appropriate and consistent, and shall assess the potential impacts of their methods on profit calculations and allocations. The methods shall be mutually agreed between the IIFS and the *(*Mudarib*)* and/or Musharakah partners.

Principle 3.3: IIFS shall define and establish the exit strategies in respect of their equity investment activities, including extension and redemption conditions for Mudarabah and Musharakah investments, subject to the approval of the institution's Shariah Board.

4. Market Risk

Principle 4.1: IIFS shall have in place an appropriate framework for market risk management (including reporting) in respect of all assets held, including those that do not have a ready market and/or are exposed to high price volatility.

5. Liquidity Risk

Principle 5.1: IIFS shall have in place a liquidity management framework (including reporting) taking into account separately and on an overall basis their liquidity exposures in respect of each category of current accounts, unrestricted and restricted investment accounts.

Principle 5.2: IIFS shall assume liquidity risk commensurate with their ability to have sufficient recourse to *Shariah*-compliant funds to mitigate such risk.

6. Rate of Return Risk

Principle 6.1: IIFS shall establish a comprehensive risk management and reporting process to assess the potential impacts of market factors affecting rates of return on assets in comparison with the expected rates of return for investment account holders (IAH).

Principle 6.2: IIFS shall have in place an appropriate framework for managing displaced commercial risk, where applicable.

7. Operational Risk

Principle 7.1: IIFS shall have in place adequate systems and controls, including *Shariah* Board/ Advisor, to ensure compliance with *Shariah* rules and principles.

Principle 7.2: IIFS shall have in place appropriate mechanisms to safeguard the interests of all fund providers. Where IAH funds are commingled with the IIFS's own funds, the IIFS shall ensure that the bases for asset, revenue, expenses and profit allocations are established, applied and reported in a manner consistent with the IIFS's fiduciary responsibilities.

Once the variables affecting credit risk management have been identified, it should follow through with a conceptual framework of the relationship between the independent variables and dependent variables. This should be discussed in Chapter 3, in the form of a diagram and some explanation necessary to understand how the relationship will be determined. At this stage, the examiner now has an idea of how the research is going to proceed.

CHAPTER FOUR

4.0 METHODOLOGY

4.1. Introduction

This chapter describes the methodology used for assessing and analyzing the implementation of credit risk management UAE in the financial sector. The study uses primary data for the analysis. The primary data collected for this research will be through questionnaires. Senior credit risk department managers are the respondents of the questionnaire used in the study. Credit risk managers are responsible for the implementations of actions to reduce the risk associated with lending. They play an important role in formulation and implementation of credit policies and procedures, analysis and review in order to avoid poor lending decisions. The role of credit risk managers is vital in regards to the financial crisis in Dubai. This study uses a primary data for the evaluation of credit risk management in banks working in UAE.

4.2 Justification of methodology/choice of industry/subject and sources

In the last decade, the banking industry in UAE has gone through several fundamental changes; the UAE financial sector has played significant role in development of UAE. The recent financial crisis has affected financial position of Dubai. The role of credit risk managers of the financial institutions was vital. Therefore it has been widely believed that the fundamental changes, particularly the stock market and banking crisis of 2009 has less to do with external economic conditions or world-wide recession and more to do with corruption and poor management of the credit risk management system within the financial institutions. This fact was further established when pilot questionnaires were carried out. In this thesis, quantitative methodology[55] has been used to determine the credit risk management techniques in the six leading commercial banks in UAE.

Similar studies carried out by Royal (2000, 2002) in the investment banking industry used surveys and questionnaires across different levels of the organization to determine key indicators and performance drivers. In the same way, other researchers

[55] See Bryman, (1989)

such as Collins (2001), Turner & Crawford (1998), Watson Wyatt Worldwide Research (2002) and Bassi et al (2001) have used surveys and interviews to provide evidence for their findings on the positive relationship between the sophisticated use of human capital and the future financial performance of the firm. Beaulieu (1991, 1994, and 1998) has also used questionnaire methodology with loan officers in relation to their commercial lending.

In the context of this study, survey based methodology were considered to be the most appropriate and helpful, taking into account the personal and socio-cultural traits of the respondents in UAE. It was observed and established that while doing the pilot questionnaire during the initial meetings with leading credit managers that they would decline or not response well to telephonic or emails questionnaires. Therefore based on their advice and feedback face to face questionnaire methodology was chosen to ensure that respondents were able to answer in person, thereby providing first hand accurate information. The main research focus of this was the collection of primary data from senior credit risk managers at all the leading six commercial banks. This would give the thesis a very unique dimension and contributes to literature of credit risk management in the banking sector of developing countries as well as provides a rare insight into UAE financial sector which has been under a lot scrutiny after recent financial crisis.

4.3. Research Design

This research study is based on quantitative research method. Quantitative research technique is used to answer the research question and illustrate the pattern that is present in the research. Primary data is collected and used by the researcher for a particular purpose. Ghauri and Gronhaug (2002, 76) defined primary data as 'original data collected by us for the research problem at hand'. The means of collecting primary data are experiments, observations and communications and the latter includes questionnaire surveys and interviews (Ghauri and Gronhaug, 2002). In this research primary data would be collected from face-to-face questionnaire from senior credit risk managers of six leading UAE commercial banks.

4.3.1. Population

The UAE banks forms the population of the study. There are 23 banks in UAE providing services in UAE. Local and international reports on UAE indicate that the economy has been witnessing a fast growth. The steady economic growth in the country over the past years is not attributed to energy production and export, as is the case with many of the oil economies. But to a strategy of diversifying sources of income, and reduction of oil-reliance for the favor of other sectors, such as financial services, logistics, tourism and trade and industry, where the country was able to strike record highs in these sectors and even become a competitor to many economies.

Hence, with so much of developmental activities going on in the economy a sound financial system in place is a must. In developing economies the role of financial system has a major impact in the economy. The banking sector in UAE is also in developing stage. According to a report published by IMF (2013) the UAE banks' profitability is increasing but it has issues with efficiency and proper risk management. Along with this UAE is the home of the first Islamic bank in the world. It has one of the largest Islamic banks in the world. Hence, UAE banking sector has been chosen for the study.

4.3.2. Sample

For the present study largest 6 banks in UAE has been selected. Since the study also attempts to compare Islamic and Non-Islamic banks, 3 Islamic and 3 Non-Islamic banks have been selected as a sample for the study. Although the banks had more than 700 branches throughout UAE, only a handful of people and branches have the authority to give loan and manage the whole credit risk management processes throughout the bank. The structure of each bank was sub-divided into eight zonal offices, which had a specialized credit risk management department, which deal with all credit management issues. In each of these offices, there was a team of 5 or 6 senior credit managers who are joint signatures and decision makers. Therefore these senior credit risk managers formed the target population of the surveys since only their point of view could explain and review the credit risk management process and satisfy the aims and objectives of the research. All together on average each bank would have no more than 30 senior credit risk manager. Therefore, the total number

of respondents from all the six leading commercial banks was not more than 150. The actual number of respondents as per each bank is stated below.

4.4. Respondents

Since this research looks into credit risk management, it was considered essential that the survey would only be collected from the senior credit bank managers who play a pivotal role in the whole credit risk management banking processes within the UAE financial sector. These were senior managers are particularly those who are actually responsible in determining and carrying out the credit risk management process. Hence the credit risk managers were the obvious choice for the sample, since the research question focusing on a sample were the respondents are selected because they are particularly informative (see Neuman 1997 and Kervin 1992).

Table 4.1 Actual Number of Credit Risk Managers in the sample Commercial Banks in UAE

Name of the bank	**Number of Credit Risk Managers**
National Bank of Abu Dhabi	23
Abu Dhabi Commercial Bank	27
Emirates Bank International	24
Emirates Islamic Bank	22
Mashreq Islamic Bank	25
Abu Dhabi Islamic Bank	27
Total Number of Credit Managers	**148**

Majority of the respondents have 6-10 years of service in the same organisation and 1-5 years of experience of issuing loan. In regards to the highest academic qualification, the majority of them are Post graduates.

4.5. Data Collection Method

Saunders et al. (2003) argues that surveys are an economical way of getting data from a big population. He further points out that usually questionnaire method is used to collect data but there are other methods as well, which are associated with survey methodology for example structured interviews where all the respondents are asked similar questions, organized observation and organization and method research also fall into survey strategy. The aim of the method is to collect as much, comparable, information as possible – particularly in the area of attitude measurement. Surveys are 'a method of gathering information from a sample of individuals' (Scheuren, 2004: 9). They are extensively used method for data collection, and specifically for measuring opinions, attitudes, descriptions and causal relationships. Used for data collection in several fields (Neuman, 2000) surveys remain most popular in business studies (Ghauri and Gronhaug, 2002). The researcher follows a deductive approach by beginning with a theoretical or applied research problem and ending with empirical measurement and data analysis.

Like all research methods the survey has specific advantages and disadvantages. According to Scheuren (2004), survey advantages include speedy and economical collection of a variety of generalisable data. Moreover, data generated by survey method is inherently statistical (and significant) in nature (Neuman, 2000). Data can be easily quantified and ranked.[56] Moreover, the fixed-alternative question can be much more directly applied to a hypothesis because the data are quantifiable (and reduced to a 'common dimension') with much less effort (Adams & Schvaneveldt, 2005: 203).In addition, survey makes it possible to ask about several things at one time, measure several variables, test several hypothesis and survey many people, respondents, about their beliefs, opinions, characteristics and behaviors (Neuman, 2000). Another clear advantage to this approach is that it is much easier for participants to complete the questionnaire they are less time consuming than open-ended surveys. Therefore, response rates are much higher. Moreover, there is increased speed at which responses can be gathered and processed and an absence of the interviewer effects that may undermine face-to-face interviews.

[56] Statistical analysis can easily take place using SPSS & E- views software. It is likely that a Likert scale will be used to rank the questions and measure response sets, this "vertical" format allows the questionnaire to be pre-coded.

4.5.1 The Pilot Questionnaires/Survey

The pilot questionnaire enables the questionnaire to be initially evaluated for its design, format, and clarity in content, relevant to the research question and structure. The pilot survey helps in assessing the reliability and validity of the questions. As Mitchell (1996) indicated, as well as allowing suggestions to be made to the structure of the questionnaire, the pilot survey helps to establish content validity. As indicated by Proctor (2000), it is more beneficial for a researcher to receive comments and responses to questionnaires before a large distribution takes place. This is because it would be impossible to exactly predict how respondents would interpret the questions. Similarly, other studies[57] using survey-based methodology on finance managers have initially used test questionnaires as a suitable tool for assessing the validity of their research. Keeping in mind that the sample size of the number of respondents would be small, it was very important to have a "test questionnaires" first. Guidance was taken from prominent bankers [58] in UAE banking sector while designing and structuring the questionnaires. For most questionnaires, the minimum number of pilots is ten (see Fink, 1995), as issuing them provides the researcher with added insight into the questionnaire's design and validity.

A list of over twenty respondents[59] was identified and used in a pilot study. A list based on the literature review which constituted of all questions which could be asked from senior credit risk managers of commercial banks was prepared. The researcher personally had meetings with every respondent for the purpose of filling in the test questionnaires and discussing in detail. To start with every aspect[60] and issues in relation to banking regulation was considered and questions were included in the pilot questionnaire. Several highly technical questions relating to risk management[61] were found not to be applicable because the UAE credit risk managers did not use those techniques. Hence several technical questioners [62] were omitted from the final questionnaire. The pilot study indicated that the wording of some of the questions, and in some cases, their sequencing, required modification to reduce response error

[57] See Collins (2001), Royal (2000), Schuster (1986) Crawford (1998).
[58] List of Names of Senior Economist, central bank officials, Financial Analyst, Senior Bankers
[59] The original test questionnaires are available on request.
[60] Qualitative and quantitative problems in regards to risk management.
[61] (Risk Management Techniques like VAR, other matters relating credit risk management issues)
[62] For example: Which credit Risk Management do you use to analyze risk?

and also promote and facilitate productive participation by respondents. It was also found out during the pilot questionnaires that senior credit risk managers would prefer filling out a questionnaire with specific options, which he/she could select or rank in order of preference, rather than giving written explanations. All this was achieved based on feedback of the pilot questionnaire and informal discussions with the senior credit managers of these banks. In final questionnaire was designed and modified accordingly to their feedback, hence confirming the validity of the research investigation. The credit risk managers of the following six leading commercial banks UAE were to fill out the questionnaire:

Name of the bank

National Bank of Abu Dhabi

Abu Dhabi Commercial Bank

Emirates Bank International

Emirates Islamic Bank

Mashreq Islamic Bank

Abu Dhabi Islamic Bank

4.5.2 Questionnaire Design & Analysis

The questionnaire was framed in two stages. A draft[63] was worked out covering different aspects[64] and issues in relation to credit risk management was considered and questions were included in the pilot questionnaire as discussed in previous chapters, were considered. The draft constituted questions in the following categories:

4.5.2.1. Demographic Questions

Questions were included on: the senior credit risk bank manager's which concentrates on their demographic[65] and basic information[66]. For example: age, sex, marital status, basic and professional education, experience as a senior manager, number of training courses attended etc. The purpose was to determine if the above factors influenced attitude towards regulatory and behavior of the senior credit risk managers. Similar

[63] Initial draft of test questionnaires carried is also available on request.
[64] Qualitative and quantitative problems regarding the credit risk management issues
[65] For example: Age, marital status, salary, basic education, profession education years of experience of senior credit risk manager s etc.
[66] For example Basic education, profession education, years of experience of senior credit risk manager etc.

questions based on demographic representation and analysis, has been used in survey work by Royal (2000, 2002), and Collins (2001) on credit managers. The questionnaire begins with the respondent filling out his/her name, the name of the bank and branch as well as their age. The respondents were then given three options to choose from which were in relation to their education, years of experience etc.

4.5.2.2.Credit risk management based issues

Questions were included on: The qualitative and quantitative issues relating credit risk management in the UAE financial sector for example; the accuracy of data available; credit rating agencies; dependence on financial and non-financial information etc. These issues relating to the credit risk management have been highlighted in research studies such as Santomero (1999; 2000), Bessis (1998; 2006), Coyle (2000).

The final questionnaire developed by the researcher was particularly for the senior credit risk managers of the six UAE commercial banks keeping in mind the response to the test questionnaire[67]. Informal meetings with several prominent UAE bankers as well as the feedback of pilot study helped in designing the questionnaire. The intention while designing the questionnaires was to have them in a structured format so they would be suitable for statistical analysis. Most importantly, the feedback from the test questionnaire provided the insight into relevant questions. It was decided to use a structured questionnaire[68] would encompass all the research objectives. As Khan and Cannell (1957) have suggested, the questionnaire must serve two purposes: I) it must translate research objectives into specific questions whose answers will provide the necessary data for evaluation. II) It must also aid the researcher in motivating respondents, so that the necessary information is obtained.

The format of the questionnaires[69] was extremely important. The senior credit risk managers, for whom the questionnaire was designed, are extremely busy people and are always pressed for time. The time they could spare for it was limited, their lack of exposure to academic research making them wary. Since they had to volunteer the information questions had to be simple, precise and logical. They also had to be self-explanatory and not too detailed or about events too far in the past. Each question had

[67] Test Questionnaire was carried out on 20% of the entire population.
[68] See Anderson, C.R. and Paine,(1975); Maines (1995); Keasey & Watson (1986)
[69] See Anderson, C.R. and Paine,(1975); Maines (1995); Keasey & Watson (1986) Royal (2000)

to be separate from the other, easy to understand, totally unambiguous and relevant to this research. While conducting the pilot questionnaires, it was observed and suggested that the senior credit risk managers should not be asked too intrusive, potentially sensitive questions, since that would be make very uncomfortable and they not culturally use to.

It was strongly indicated that explicit questionnaires, which required mentioning names, would jeopardize the jobs of the respondents and would adversely affect the response rate. While designing the questioner, it was also kept in mind that an average questionnaire would take approximately 35-45 minutes to complete. All the interviews were conducted in English. The survey questions[70]were standardized and the positivist principle[71] of minimizing the researcher influence, adhered to.

4.6. Validity of Questionnaires

As Scheuren (2004) points out that the confidentiality and integrity of the information provided by the respondents is extremely important. The respondents may have the option to be anonymous or reveal their identity, which may depend on the nature of survey information.

While doing pilot testing, it was found that most of respondents were hesitant to fill out questionnaires themselves. Furthermore it was found that most of the senior credit risk banks managers did not seem inclined to give long written explanations – partly because they were very busy people and also because culturally they were not used to and were rather wary of being asked to write anything down. They had no objections to being questioned, although in this case it meant reading over the answers and signing the questionnaire. The researcher therefore is planning to read out specific questions, filled out the answers in the questionnaires and asked respondents to read it over and sign it[72]. This would also ensure that there is no room for vague answers and also overcame the problem of hand written replies that would be difficult to read later. The interview could thus be made more accurate and structured. The researcher would also ensure that the information received would be computer code able so that each

[70] See Appendix
[71] See Oppenheim, 1992
[72] A logbook with Name, Address and Signatures of each and every credit manager survey will be made available as evidence.

questionnaire was recorded as soon as it was filled and transferred to an excel sheet for further analysis.

The feedback after pilot testing clearly indicated that the senior credit risk managers would prefer filling out a questionnaire with specific options, which they could select or rank in order of preferences, rather than giving written explanations. For this reason quantitative methodology, since specific questions were asked and vague replies could not be accepted. This would require the researcher's personal interaction and careful probing with each senior manager. Even then, it was virtually impossible to check the authenticity of information. The triangulation process[73] of checking every piece of information will be used. Cross checks, on information provided by one senior manager, with another of their colleagues will be used. Confidentially and to some extent secrecy will be assured to them so that these senior credit risk bank managers could be more honest and open while answering the questioners. A guarantee will also give that the information would be used only for academic purposes. A written non-disclosure agreement[74] will be signed with each of the interviewed senior manager. This would help to provide candid, accurate and unbiased information. As a further precaution, the auditors of these six leading UAE commercial banks will also be asked to verify that the information provided is consistent with their findings.

4.7. Data Analysis

Questionnaire was based on different statements that are based on credit risk management practices. After data has been collected, it has been coded in numbers in SPSS. In order to perform the data analysis, the responses to the questionnaire have been coded. There are broadly three types of questions and associated relative frequency distributions. The first type is where the respondent answers Yes or No to a direct question giving a variable with two categories and has been coded as "Yes"=1 and "No"=0. The second is where the respondent gives four or five ranked responses e.g. frequency (once a week, once a month, once every six months and once every year), percentage (less than 5%, 5-10%, 10-15% etc), importance (very unimportant, unimportant, neutral, important and very important) etc. The third type of question

[73] (See Black, T.R. 1993; Bryman, 1989)
[74] Copy of Disclosure Agreement would be available

from the survey is where respondents give answers that indicate their strength to which some factor is viewed as important/unimportant or the strength of agreement/disagreement with a statement. Data coding is explained in data analysis chapter in detail. SPSS 16.0 is used to analyze the data. The primary data analysis comprises of graphical analysis, descriptive analysis and logistic regression analysis of the primary data obtained from the questionnaires. The variables (i.e. bank-wise exposure, expert system, company factors, demographic variables, lending decision, lending policy, and corporate borrower) used in the data analysis are the credit risk management factors as shown in figure 2.4 obtained from survey. These variables are computed by using mean values.

4.7.1. Graphical Analysis: The graphical analysis presents the results of primary data in graphs to show the general characteristics of UAE banks and also the differences between UAE Islamic and Non-Islamic banks.

4.7.2. Descriptive Statistical Analysis: Descriptive statistics is used to summaries the result or simply u can say that descriptive statistics used to show the basic characteristic of the data set. The descriptive analysis comprises of the mean, ranking, standard deviation, skewness and kurtosis.

4.7.3. Reliability Analysis: Reliability analysis tells about the consistency of the data. Reliability analysis is performed on responses of individual factors (48 questions asked in questions) and 7 variables that are computed from 48 factors.

4.7.4. Independent Sample t-test: The study aims to investigate factors which distinguish between Islamic and Non-Islamic banks credit risk management practices in the UAE. Therefore, non-parametric independent sample t test (Mann-Whitney U test) is applied.

4.7.5. Regression Analysis: Regression analysis is a tool to test the relationship between variables. It usually tests the cause and effect relationship between variables. The purpose of regression analysis is to estimate the net effect of independent variable on dependent variable. The study also attempts to investigate how the rate of return on lending is affected by credit risk management practices. Hence, regression has

been fitted to see the effect of 7 variables on profitability of Islamic and non-islamic banks together and separately.

4.8. Conclusion

This chapter has discussed how we have used the survey methodology to investigate the implementation of senior credit risk managers have in the UAE financial sector. This methodology has not been used previously in studying credit risk management in the UAE economy. The methodology focuses questionnaires from senior credit risk bank managers on issues relating to credit managers and implementation of credit risk management techniques. The questionnaires are designed to analyze the issues and attributes of the senior UAE bank managers who are the signatories and responsible of the whole credit management process of the UAE financial sector. Primary data has been used and quantitative methodology using standardized statistical methods[75] plus the financial analysis are used as the main tool of this research as they are comparable, objective and as reliable as possible. This gives the whole thesis a very unique dimension contributing to literature on banking, credit risk management worldwide and especially in the emerging economies.

[75] (See Ford, Olson 1978; Fraser R. Donald 1998; Ron Jones 1997

CHAPTER FIVE

5.0 PRIMARY DATA ANALYSIS

This chapter contains the descriptive statistics, graphical analysis of the results obtained from the survey using questionnaires on the sample commercial banks in UAE. The aim of the chapter is to identify general features of credit risk management practices in UAE banks and identify if any differences between Islamic and non-Islamic banks. and how credit risk management practices influence profitability of UAE banks in general, and of Islamic and non-islamic banks.

PART 1: GRAPHICAL REPRESENTATION

5.1 Introduction

For the graphical analysis, the data obtained for the research have been collected through face-to-face questionnaires, which were answered by senior credit risk managers.

Table 5.1: Actual Number of Credit Risk Managers at the Leading Commercial Banks in UAE

Name of the bank	**Number of Credit Risk Managers**
National Bank of Abu Dhabi	23
Abu Dhabi Commercial Bank	27
Emirates Bank International	24
Emirates Islamic Bank	22
Mashreq Islamic Bank	25
Abu Dhabi Islamic Bank	27
Total Number of Credit Managers	**148**

As shown in Table 5.1, sample for the study consists of 6 commercial banks from UAE with 3 Non-Islamic and 3 Islamic Banks. A total of 148 credit managers were the respondents for the study from National Bank of Abu Dhabi (23), Abu Dhabi

Commercial Bank (27), Emirates Bank International (24), Emirates Islamic banks (22), Mashreq Islamic Bank (25) and Abu Dhabi Islamic Bank (27).

The questionnaire was composed of questions in the following categories:

5.1.1. Demographic questions

Questions were asked to the senior credit risk bank managers' which concentrated on their demographic and basic information. For example: age, sex, basic and professional education, experience as a senior manager, number of training courses attended etc. The respondents were asked questions in relation to their education, years of experience, service, training and credit limit that they could authorize.

5.1.2. Credit risk management based issues

Questions were included on: qualitative and quantitative issues relating to credit risk management in the UAE financial sector; attitudes towards the importance of various factors affecting lending decisions, lending policy, the relative importance of different aspects considered for evaluating bank-wise exposures, factors considered when lending to corporate borrowers, importance given to company factors while making lending decisions and expert systems.

The aim of the analysis is to identify the general features of UAE banks and assess the differences between the Islamic and Non-Islamic banks. This chapter shows the graphical analysis of the variables.

In order to perform the data analysis, the responses to the questionnaire have been coded. There are broadly three types of questions and associated relative frequency distributions. The first type is where the respondent answers Yes or No to a direct question giving a variable with two categories and has been coded as "Yes"=1 and "No"=0. The second is where the respondent gives four or five ranked responses e.g. frequency (once a week, once a month, once every six months and once every year), percentage (less than 5%, 5-10%, 10-15% etc), importance (very unimportant, unimportant, neutral, important and very important) etc. The third type of question from the survey is where respondents give answers that indicate their strength to which some factor is viewed as important/unimportant or the strength of agreement/disagreement with a statement and the coding for all the variables have been presented in Table. 5.2

Table 5.2: Coding for variables

Question	Variable names	Variable Type	Coding
Type of bank	bank_type	Dichotomous dependent variable in binary logistic regression	1=Islamic bank 2=Non-Islamic bank
Frequency of trainings attended	Training_attended	Interval	1=Once a week, 2=Once a month, 3=Once every 6 month, 4=Once a year
Penalizing credit officers for issuing default loans	penalties_for_Credit _officiers	Categorical	1=Yes, 0=No
Credit officers allowed to give loans to their relatives	credit_to_relatives	Categorical	1=Yes, 0=No
Preparation of credit quality report	credit_quality_report	Categorical	1=Yes, 0=No
Development of Risk adjusted return on capital for risk pricing	RAROC	Categorical	1=Yes, 0=No

Development of framework to study inter-bank exposures	interbank_exposures	Categorical	1=Yes, 0=No
Use of derivatives to manage credit risk	use_of_derivatives	Categorical	1=Yes, 0=No
Sharing of default information among banks	share_default_information	Categorical	1=Yes, 0=No
Considering all 5Cs while making lending decisions	all5Cs	Categorical	1=Yes, 0=No
Years of service within the organization	year_of_service	Ordinal	1=1-5 years, 2=6-10 years, 3=11-15years, 4=15+yrs
Importance of cash flow in lending decision	Q28b_cashflow	Ordinal	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Credit limit that credit officers	credit_limit_authorize	Ordinal	1= Less than 100000,

can authorize			2=100000-200000, 3=200000-300000, 4=300000+
Importance of non-financial data	Q9_nonfinancial_ data_important	Ordinal	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Percentage of credit ceiling allocated to different industries by the bank	credit_ceiling_allocated	Ordinal	1=5-10%, 2=10-15%, 3=15-20% and 4=20%+
Importance of character in lending decisions	Q28a_Character	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Years of service issuing loans	year_of_issuing	Ordinal	1=1-5 years, 2=6-10 years, 3=11-15years, 4=15+ years

Are data reliable and helpful	data_reliable_helpful	Interval	1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree
Personal experience play an important part in lending decisions	personal_experience_ in_lending	Interval	1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree
Financial statements of company are important	Q8_financial_statements	Interval	1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree important
Credit screening methods are reliable	Q10_credit_screening _methods	Interval	1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree
Rate of return on	Rate_of_lending	Ordinal	1=5-10%, 2=10-

lending			15%, 3=15-20% and 4=20%+
Percentage of bad debt out of total loan	percentage_of_baddebts	Ordinal	1=5-10%, 2=10-15%, 3=15-20% and 4=20%+
How often do you have credit assessment review	credit_risk_assessment	Interval	12=Monthly, 4=Quarterly, 2=Bi-annually, 1=Annually
How often do you examine borrower's performance	borrowers_performance	Interval	12=Monthly, 4=Quarterly, 2=Bi-annually, 1=Annually
Importance of study of financial performance for evaluating bank-wise exposure	Q24a_financial_ performance	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of operating efficiency for evaluating bank-wise exposure	Q24b_operating_efficiency	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of past experience	Q24c_past_experience	Interval	1=Very unimportant,

for evaluating bank-wise exposure			2=important, 3=neutral, 4=important, 5= very important
Importance of bank rating on credit quality for evaluating bank-wise exposure	Q24d_bank_rating _Credit_quality	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of internal matrix for evaluating bank-wise exposure	Q24e_internal_matrix	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of counter party or country risk for evaluating bank-wise exposure	Q24f_counter_party	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of state ownership of a firm when lending to corporate borrowers	Q25a1_stateOwnership	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of non-state ownership of a	Q25a2_Nonstateowned	Interval	1=Very unimportant, 2=important,

firm when lending to corporate borrowers			3=neutral, 4=important, 5= very important
Importance of medium and small firm when lending to corporate borrowers	Q25b1_CS_medium	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of old and well-established firms when lending to corporate borrowers	Q25b2_CS_oldestablished	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important

Importance of newly set up corporates when lending to corporate borrowers	Q25c1_setupyear_newlysetup	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of providing business plan when lending to corporate borrowers	Q25c2_setupyear_providing _BusinessPlan	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of	Q25d1_CH_director	Interval	1=Very

director/owner of the company giving personal guarantee when lending to corporate borrowers	PersonalGurantee		unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of property deposits when lending to corporate borrowers	Q25d2_CH_propertyDeposit	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance given to fixed assets of a company	Q26a_Fixed_assets	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance given to accounting turnover of a company	Q26b_accounting_turnover	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance given to a company's profitability	Q26c_profitability	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important

Importance given to a company in business for less than 2 years	Q26d_in_busniess_ lessthan_2years	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance given to a company in business for more than 2 years	Q26e_in_business_ more_than_2years	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of capital in lending decisions	Q28c_capital	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of collateral in lending decisions	Q28d_colletral	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important
Importance of conditions in lending decisions	Q28e_conditions	Interval	1=Very unimportant, 2=important, 3=neutral, 4=important, 5= very important

Highest academic qualification	acdemic_qualification	Ordinal	1=Secondary school, 2=Undergraduate, 3=Post graduate, 4Professional diploma, 5= PhD

5.2.1. Graphical presentation

We now conduct a graphical analysis of the variables obtained from the questionnaire to assess the extent of differences between Islamic and No-Islamic banks and identify the general features of UAE banks. A criterion has been set to categorize if the difference is slight, moderate, and large or no difference. If the difference in any category is more than 0% but less than 10%, then it will be categorized as a slight difference; a difference of greater than 10% but less than 25% will be considered a moderate difference; a difference greater than 25% will be taken as a large difference and 0% difference will be taken as no difference. For the variables with 5-categories e.g. Very-important, Important, Neutral, Unimportant and Very Unimportant we also present the response in 3-categories i.e. Important, Neutral and unimportant. Similar treatment has been applied to the variables where the response is strongly agree, Agree, Neutral, Disagree and strongly disagree.

5.2.1.1 Demographic variables

The first part of the questionnaire consisted of questions related to the demographic variables; years of service within the organization, years of service issuing loans, highest academic qualification, frequency of training on credit risk and credit limit that managers can authorize.

5.2.1.1.1 Years of service within the organization

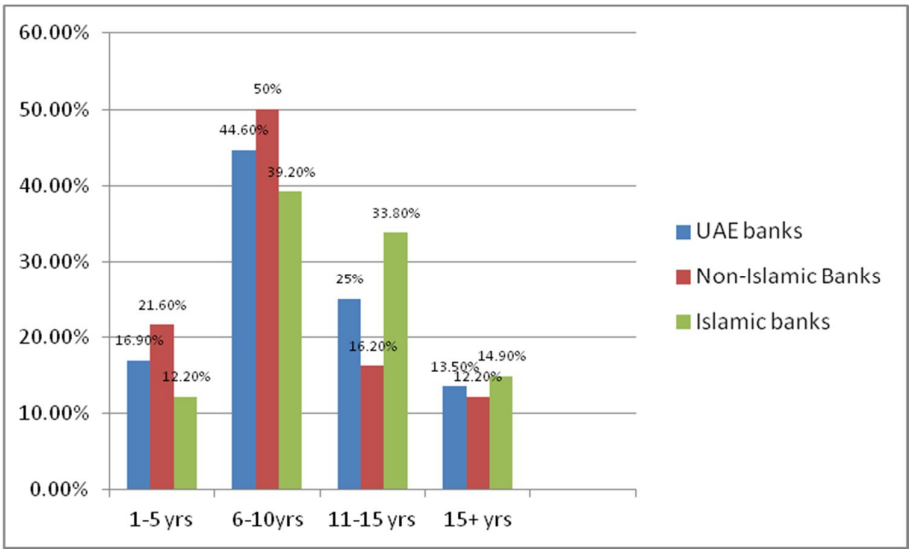


Figure 5.1 Years of service within the organization

The data of "Years of service within the organization" for UAE banks shows that most of the respondents (44.6%) served in the organization for 6-10 years followed by respondents who served 11-15 years, 1-5 years and 15+ years. Hence, for UAE banks in general, the majority have 6-10 years of service and very few have 15+ years of experience. Similarly, most of the Non-Islamic bank managers (50%) were found to have 6-10 years of service followed by 1-5 years, 11-15 years and 15+ years of service. And about 39.2% of the Islamic bank managers belonged to the group of 6-10 years of experience followed by 11-15 years (33.8%), 15+ years (14.9%) and 1-5 years (12.2%). A slight difference (0%<difference<10%) was seen between the Islamic and Non Islamic banks in the categories of 1-5 years and 15+ years of experience and a moderate difference (10%<difference<25%) in the categories 6-10 years and 11-15 yrs. Islamic banks are more likely to have managers with 11-15 years and 15+yrs of service whereas, Non-Islamic banks are more likely to have managers with 1-5 years and 6-10 years of service. Thus, Islamic bank managers tend to have more years of service than Non-Islamic bank managers.-

5.2.1.1.2 Years of service issuing loans

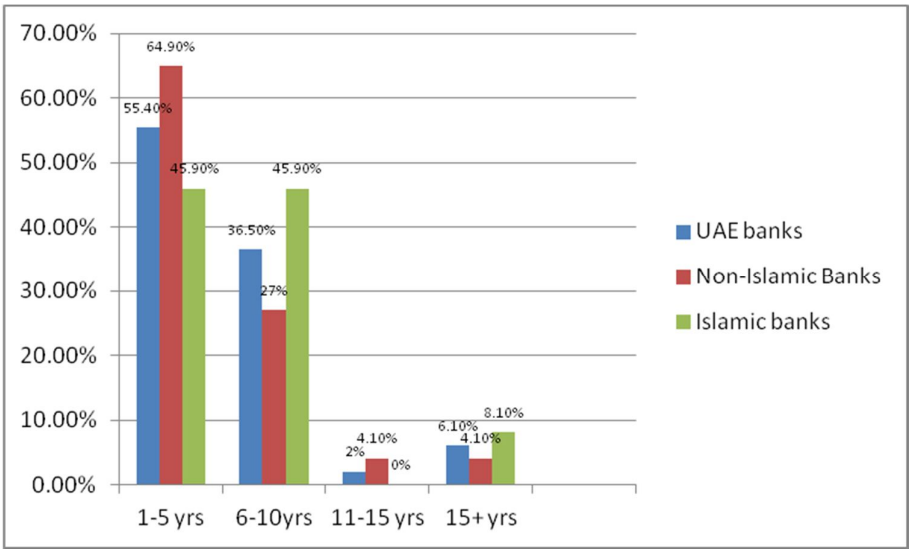


Figure 5.2 Years of service issuing loans

The survey result shows that the majority of the respondents from UAE banks had 1-5 years of service issuing loan and few of them had 11-15 years of service issuing loan. Non-Islamic banks had most of the managers who served 1-5 years issuing loans followed by 6-10 years, 11-15 years and 15+ yrs. But the distribution in Islamic banks was about 45.9% each in the category 1-5 years and 6-10 years followed by 8.1% in 15+ yrs. A moderate difference (10% <difference<25%) is seen between the Islamic and Non-Islamic banks in the category 1-5 years and 6-10yrs and a slight difference (0%<difference<10%) was seen in the category 15+ years. Islamic banks are more likely to have managers with 6-10 years of service issuing loan while Non-Islamic bank managers are more likely to have 1-5 years of experience. Hence, Islamic banks tend to have more experience issuing loans.

5.2.1.1.3 Highest academic qualification

The survey results show that in UAE banks, the majority of respondents were those who are Post graduate followed by an equal number of respondents with undergraduate and Professional diploma qualifications. Few respondents in UAE banks have secondary school qualifications and none of them with a PhD degree. In Non-Islamic banks the majority of the respondents are Postgraduates followed by Professional diploma, Undergraduate and secondary school qualification. The

distribution in Islamic banks shows that the majority of the respondents have Postgraduate qualification followed by Undergraduate, Professional diploma and Secondary school qualification. A moderate difference (10% <difference<25%) was seen between Islamic and Non-Islamic banks in the category of highest qualification being Undergraduate.

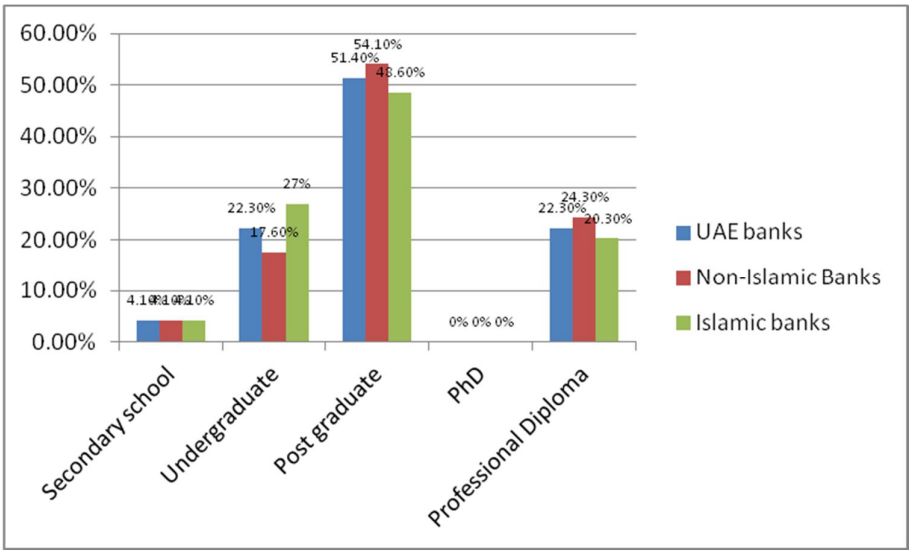


Figure 5.3 Highest Academic Qualifications

5.2.1.1.4 Frequency of trainings on credit risk

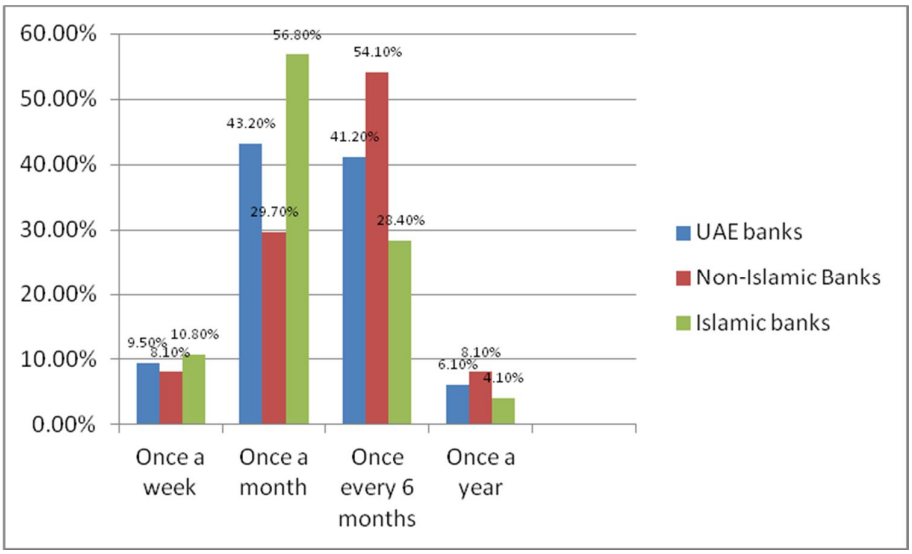


Figure 5.4 Frequency of trainings on credit risk

When enquired about the frequency of training most of the staff (43.2%) from the UAE banks receive training once a month and the least frequency of trainings was once a year. In Non-Islamic banks most of the staff received trainings every 6 months followed by once a month, and once a year and once a week. Islamic banks provide training to their staff mostly once a month followed by once every six months, once a week and once a year. A slight difference (0% <difference<10%) was found between Islamic and Non-Islamic for the frequency of training being once a week and once a year. And a large difference (difference>25%) was found in the category of once a month and once every 6 months. Islamic banks are more likely to provide training once a month to its staff and Non-Islamic banks are more likely to provide training once in every 6 months. Hence, Islamic banks provide training more frequently than Non-Islamic banks.

5.2.1.1.5 Credit limit that you can authorize

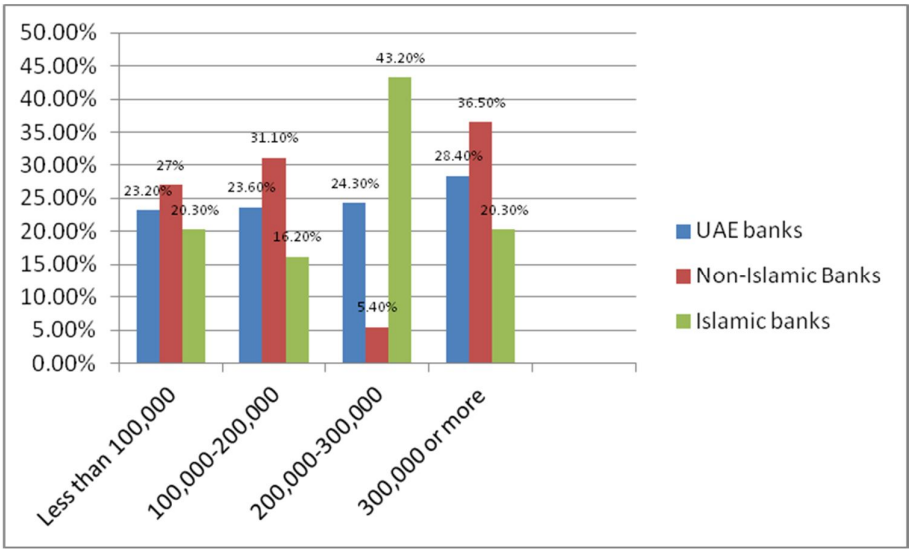


Figure 5.5 Credit limits that you can authorize

The survey results regarding credit limit authorization for UAE banks overall showed an almost uniform distribution among various categories with the highest number of respondents (28.4%) in the limit 300000 or more followed by 200000-300000, 100000-200000 and less than 100000. A similar distribution was found in Non-Islamic banks but the lowest response being received for the category 200000-300000. Islamic banks had the highest response for the category 200000-300000 and the lowest response was received for the category 100000-200000. A large difference

between the Islamic and Non-Islamic banks (difference>25%) was seen in the credit limit 200000-300000, moderate difference (10% <difference<25%) in the credit limit 300000+ and 100000-200000 and a slight difference (0% <difference<10%) in the less than 100000 category. Islamic banks are much more likely to have credit officers with an authorized credit limit of 200000-300000, while Non-Islamic bank managers have higher frequencies in the other categories.

5.2.1.2 Credit risk management based issues

The next part of the questionnaire was related to credit risk management; attitude towards the importance of various factors affecting lending decisions, lending policy, the relative importance of different aspects considered for evaluating bank-wise exposures, factors considered when lending to corporate borrowers, importance given to company factors while making lending decisions and expert systems.

5.2.1.2.1 Attitude towards the importance of various factors affecting lending decisions

The respondents were asked about their attitude towards the importance of various factors affecting lending decisions; the factors in question were importance and reliability of data, importance of personal experience, importance of credit screening methods and importance of financial statements and non-financial data.

5.2.1.2.1.1 Data are reliable and helpful

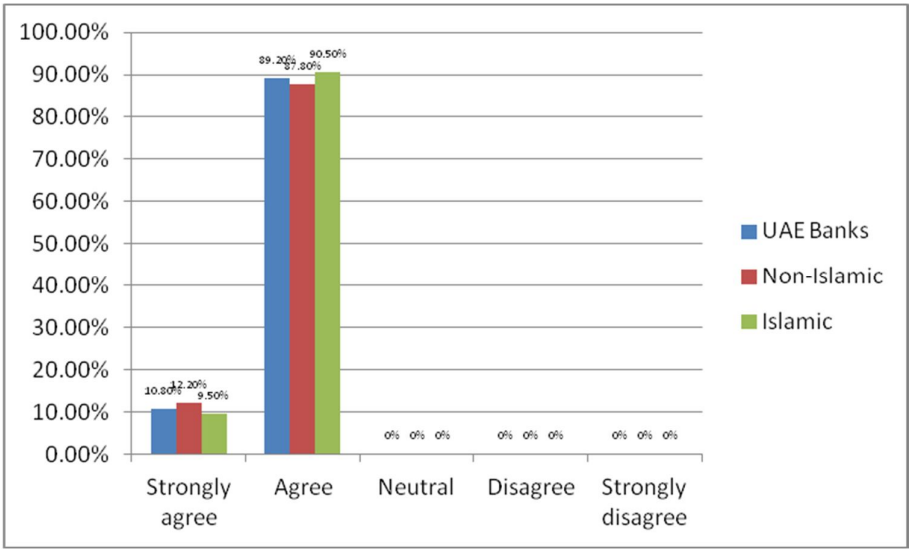


Figure 5.6a.Data are reliable and helpful (5-categories)

Interpretation (5-categories):

The survey result on UAE banks shows that majority of the respondents agree that data (financial and non-financial) are reliable and helpful and a few of them strongly agree on it. None of them were neutral or disagreeing on the issue. The distribution in Non-Islamic and Islamic banks was found to be similar with only a slight difference (0% <difference<10%) and the majority of them agreeing and a few strongly agreeing that the data (non-financial and financial) are reliable and helpful (using 5-categories response).

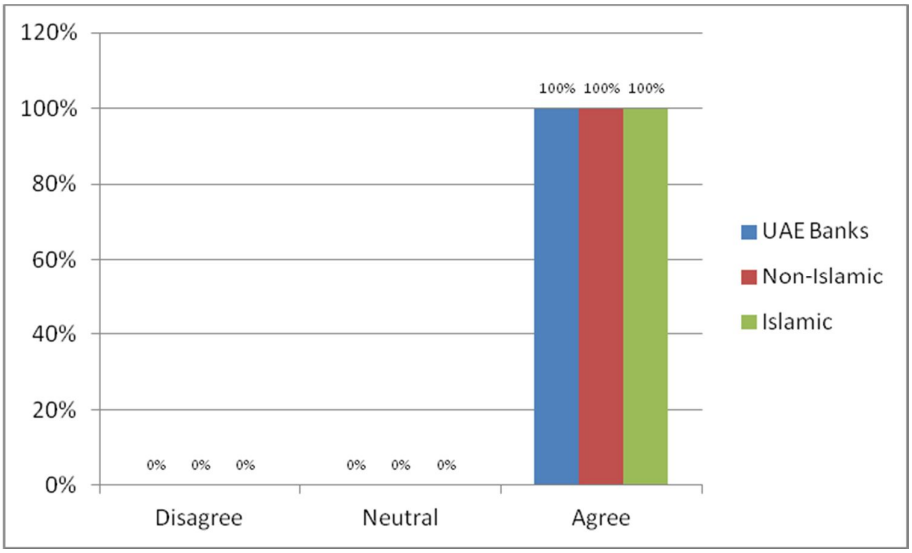


Figure 5.6b.Data are reliable and helpful (3-categories)

The Figure shows that all of the respondents from UAE banks agree that the data are reliable and helpful (using 3-categories responses). Both Islamic and Non-Islamic banks respondents agreed on the issue which means that all the managers have similar views meaning that there is no difference on the attitude regarding data being helpful and reliable (using 3-categories responses).

5.2.1.2.1.2 Personal experience plays an important part in lending decision

On the question of whether personal experience plays an important role in lending decisions the majority (81.1%) of the respondents from UAE banks were found to be agreeing and a few of them strongly agreeing and disagreeing on the issue (using 5-

categories responses). The majority (75.7%) of the respondents from the Non-Islamic banks agreed to its importance and a few of them disagreed as shown in the figure. Similar responses were found in Islamic banks agreeing to the factor. However, a moderate difference (10% <difference<25%) was seen between the Islamic and Non-Islamic banks in the degree of agreement as more Non-Islamic banks strongly agreed over the issue than Islamic banks (using 5-category responses).

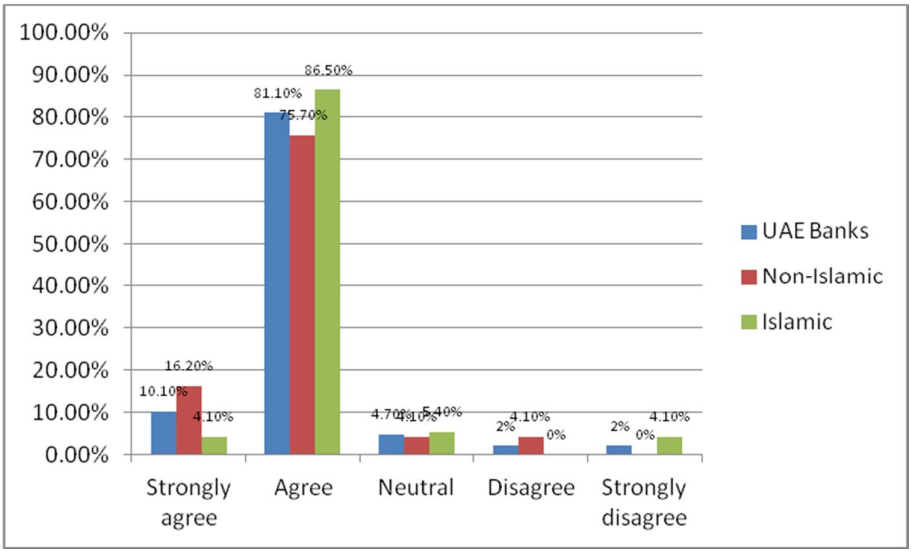


Figure 5.7.a. Personal experience plays an important part (5-categories)

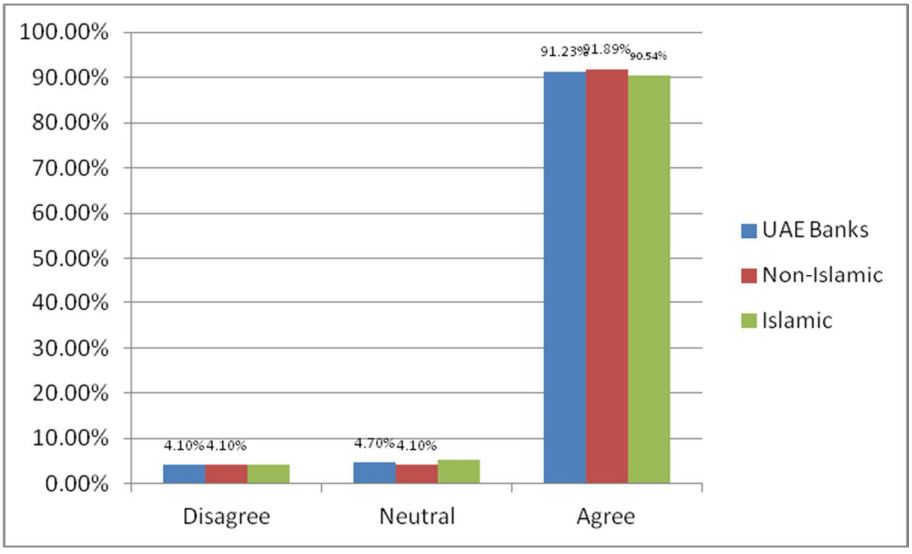


Figure 5.7.b Personal experience plays an important part (3-categories)

The Figure 5.7.b shows that majority of the UAE banks managers agree that personal experience plays an important role with only a few not agreeing on the issue (using 3-

category graphs). The Non-Islamic bank managers were found to agree (91.89%) in majority of cases with a few not agreeing. Similar responses were found from Islamic banks but with a slight difference (0% <difference<10%) in agreement. Hence, the differences found using the 5-categories response is only due to differences in the strength of agreement.

5.2.1.2.1.3 Financial statements of companies are important

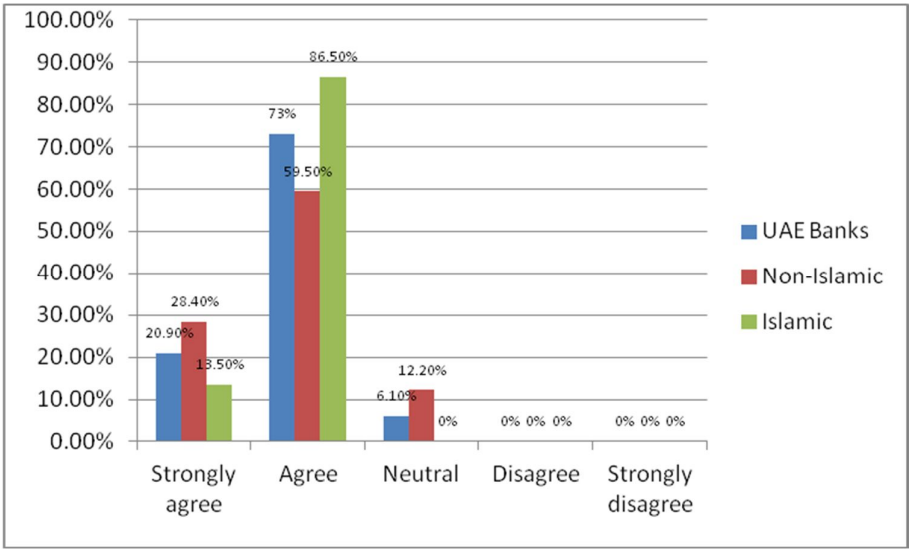


Figure 5.8.a Financial statements of companies are important (5-category)

Graphical presentation show that the majority (73%) of the respondents from UAE banks agreed to the importance of financial statements and very few of them were neutral on the issue (using 5-category responses). Most of the Non-Islamic bank managers were also found to be agreeing that the financial statements of the companies are important with only a few of them neutral on the issue. Similarly, most of the Islamic bank managers agreed this statement. A moderate difference (10% <difference<25%) was seen for the strongly agreeing response between Islamic and Non-Islamic banks and a large difference for the response of agreeing. The Islamic managers were found to be more likely to agree on the issue than Non-Islamic bank managers if Non-Islamic managers were more likely to strongly agree.

The Figure 5.8.b shows that most of the managers (93.9%) in UAE banks agree that financial statements play an important role in lending decisions and a few of them were found to be neutral (using 3-category responses). Managers from both Islamic

and Non-Islamic banks were found to be agreeing that financial statements are important with a moderate difference (10% <difference<25%) as more Islamic bank managers were found to be agreeing than Non-Islamic managers (using 3-category responses). Hence, it can be concluded that the Islamic banks and Non-Islamic banks do not have large differences regarding whether financial data are important and they differ mainly in the degree of agreement.

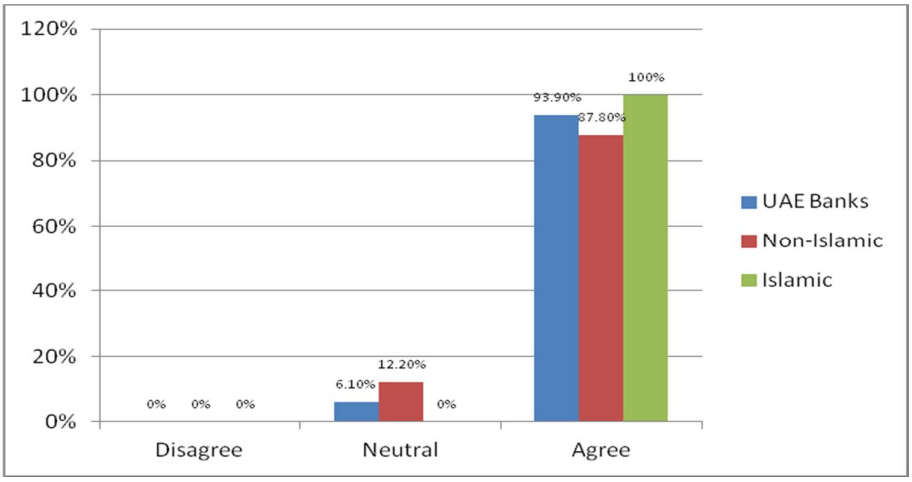


Figure 5.8.b Financial statements of companies are important (3-categories)

5.2.1.2.1.4 Non-financial data are important

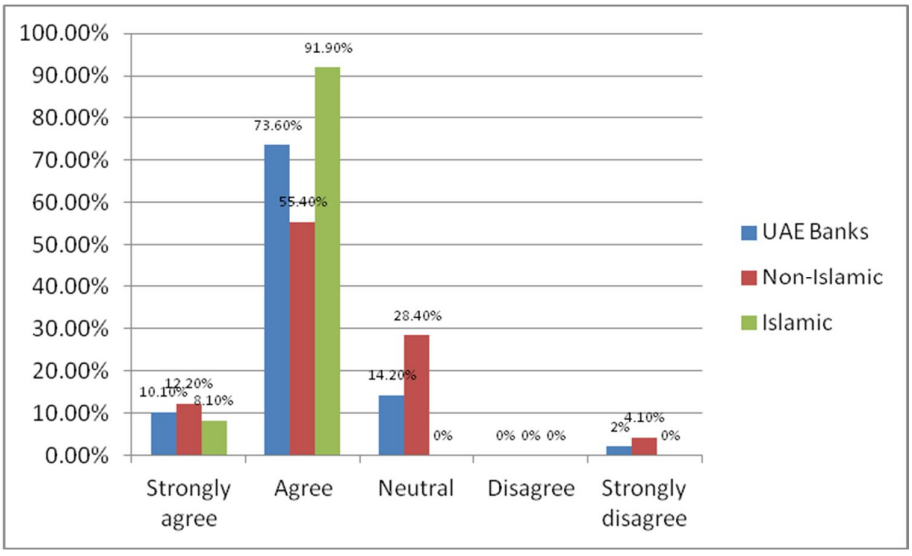


Figure 5.9.a Non-financial data are important (5-categories)

When asked if non-financial data plays an important role in lending decisions, the majority of respondents (73.6%) from the UAE banks agree that Non-financial data are important and a few of them disagree (using 5-category responses). The majority of managers from Non-Islamic banks agree on the issue and a few of them disagree. Managers in Islamic banks also generally agree on the issue. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic managers in the category Agree and a slight difference was seen in the category strongly agree. In 5-category response Islamic bank managers were found to be more likely to agree that non-financial data play an important role than the Non-Islamic bank managers.

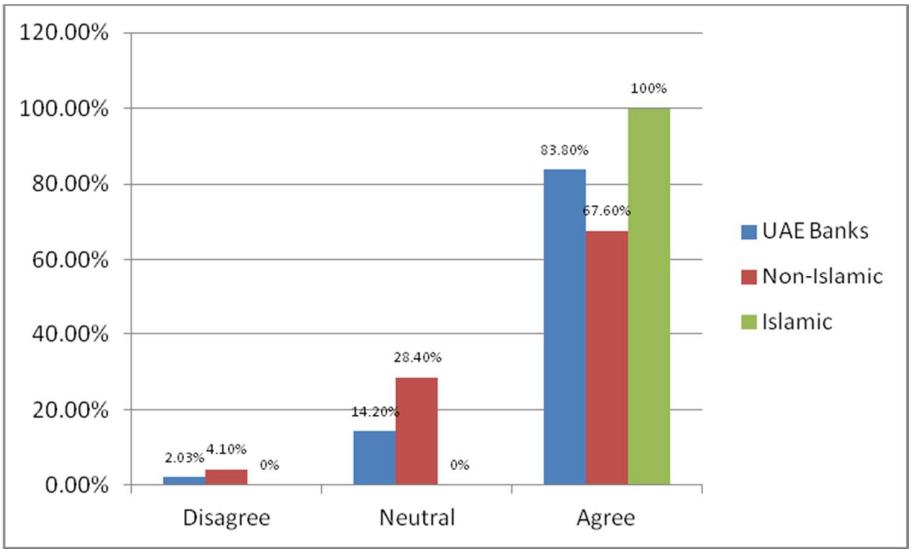


Figure 5.9.b Non-financial data are important (3-categories)

The Figure shows that most of the managers (83.8%) in UAE banks agree that non-financial data plays an important role in lending decisions and a few of them were found to be disagreeing (using 3-category responses). The majority of managers from both Islamic and Non-Islamic banks were found to agree that non-financial data are important although there is a large difference (difference >25%) as much more Islamic bank managers agree than Non-Islamic managers (using 3-categories response). Hence, more Islamic bank managers tend to agree that non-financial data are important than Non-Islamic bank managers.

5.2.1.2.1.5 Credit screening methods are reliable

The survey result on the question of whether credit screening methods are reliable in lending decisions, the majority(93.2%) of the respondents from UAE banks were found to be agreeing and very few were neutral on the issue. Majority (95.9%) of the respondents from the Non-Islamic banks agreed and none of them disagreed or are neutral on the issue as shown in the figure. Similarly, most of the managers from Islamic banks (90.5%) agree with the statement. However, a slight difference(0%<difference<10%) was seen between the Islamic and Non-Islamic banks in the agreement as slightly more Non-Islamic banks managers agreed than Islamic bank managers (using 5-category responses).

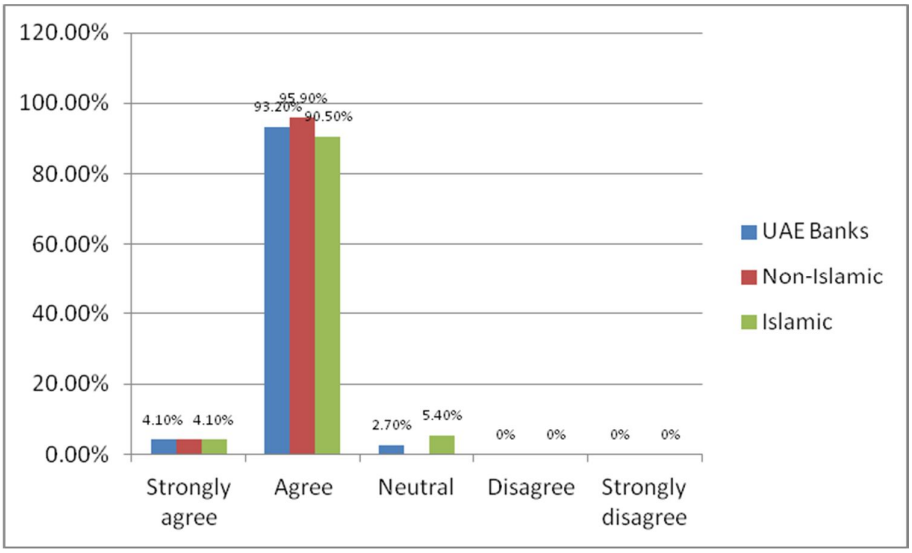


Figure 5.10.a Credit screening methods are reliable (5-categories)

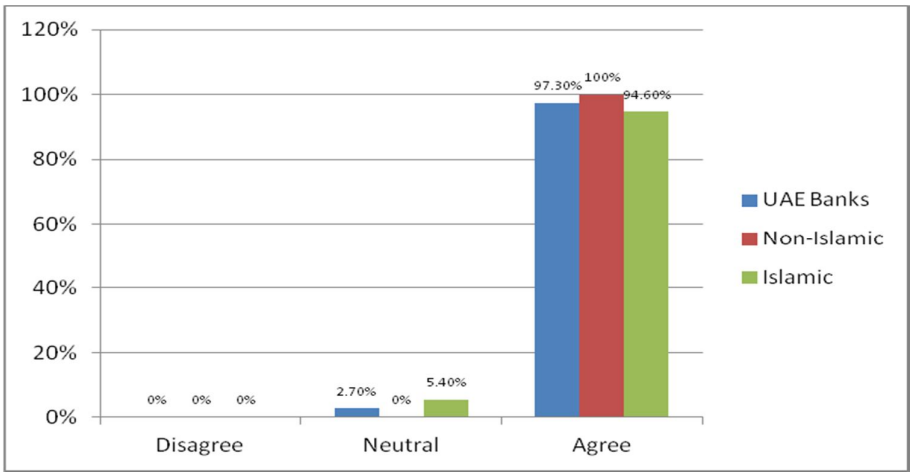


Figure 5.10.b Credit screening methods are reliable (3-categories)

The Figure 5.10 b shows that most of the managers (97.3%) in UAE banks agree that credit screening methods are reliable in lending decisions with only a few of them neutral over the issue. Managers from both Islamic and Non-Islamic banks were found to be agreeing over the issue with only a slight difference. Hence, UAE, Non-Islamic and Islamic banks were found to be overwhelmingly agreeing on the reliability of credit screening method.

5.2.1.2.2 Lending Policy

Questions were asked relating to lending policy which enquired if credit officers were allowed to give credit to relative, the rate of return on lending, percentage of bad debts out of total loan, the percentage of credit ceiling allocated to different industries, credit risk assessment review, the borrower's performance, Credit quality report, risk adjusted return on capital(RAROC) framework, use of Derivatives, sharing of default information, verification of applicant's data and penalizing credit officers issuing default loans.

5.2.1.2.2.1 Are credit officers allowed to give credits to relatives?

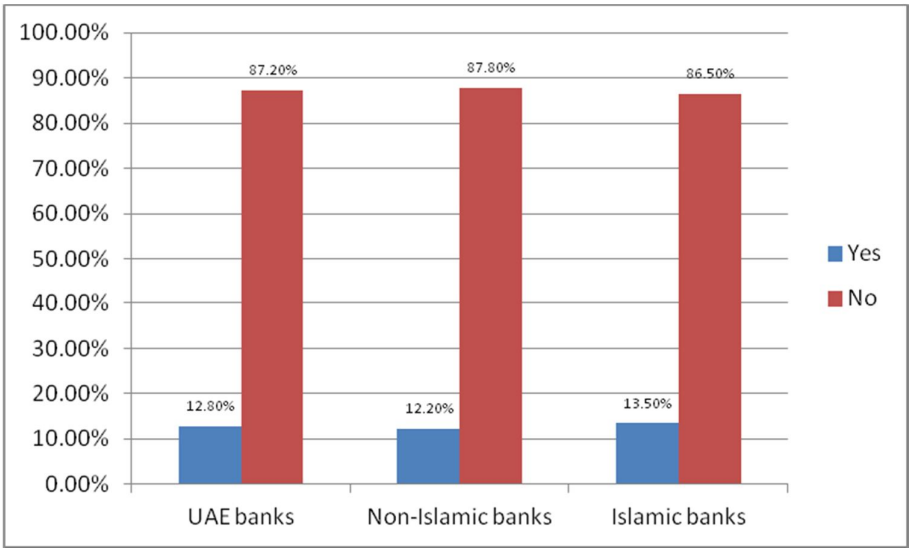


Figure 5.11. Are credit officers allowed to give credits to relatives?

On the question of whether credit officers are allowed to give credit to relatives, majority (87.2%) of respondents from UAE banks said that they are not allowed. The majority (87.8%) of the respondents from the Non-Islamic banks said that they were not allowed to give credit to relatives. A similar response was found in Islamic banks.

Hence, UAE, Non-Islamic and Islamic bank managers appeared as not being allowed to give credits to relatives with only a slight difference (0% <difference<10%) in responses.

5.2.1.2.2.2 What is the rate of return on lending in your bank?

The survey result on the rate of return on lending in UAE banks is 5-10% according to the majority of the respondents (60.8%) and very few of them said that the rate is 15-20% in 5-categories response. In Non-Islamic banks the rate of return on lending is 5-10% according to majority of the managers (78.4%) and very few of them said that the rate is 20%+. Similarly, the rate of return on lending in Islamic banks is 5-10% according to majority (43.2%) and a very few of them said that the rate is 15-20%. Large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic managers on whether the rate is 5-10% or 20%+. Islamic banks are more likely to have 20%+ rate of return whereas Non-Islamic banks are more likely to have 5-10% rate of return. In general, Islamic bank tend to have a higher rate of return on lending than Non-Islamic banks.

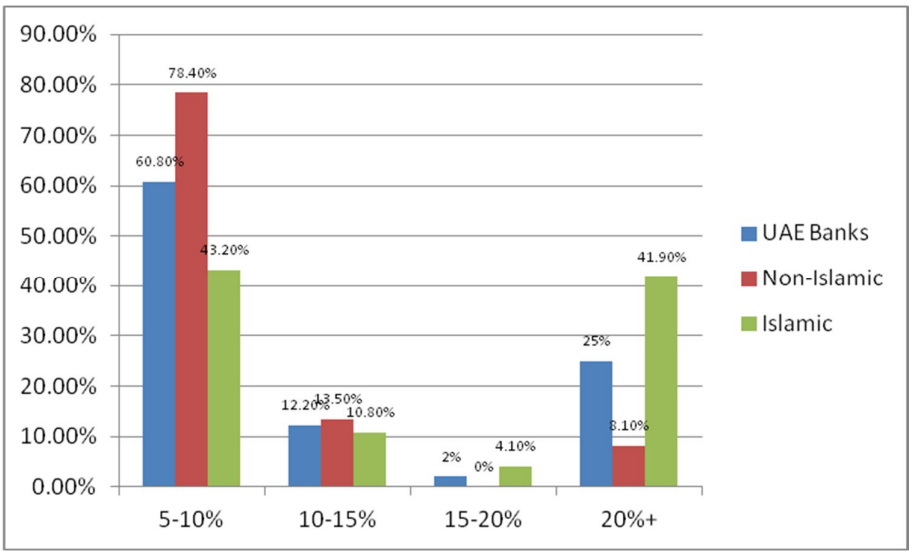


Figure 5.12. What is the rate of return on lending in your bank?

Non-Islamic banks charge interest rate on lending from its borrowers which is rate of return on lending for Non-Islamic banks. But, in Islamic financing system the provider of the finance or capital and the entrepreneur enters in the business together by taking the business risk in order to get and share the profits (Lewis, 2001). Hence,

Islamic banking is more expensive compared to Non-Islamic banking and is also shown in the graphical analysis of the study.

5.2.1.2.2.3 What is the percentage of bad debt out of total loans?

The survey result on the percentage of bad debts out of total loans in UAE banks is 5-10% according to the majority of the respondents (46.6%) and the distribution of response was found to decrease with the increase in percentage of bad debt. In Non-Islamic banks the percentage of bad debt out of total loans is 10-15% according to the majority of the respondents (44.6%). On the other hand, the percentage of bad debt out of total loans in Non-Islamic banks is 5-10% according to the majority of the respondents (54.1%). A moderate difference (10%<difference<25%) was seen between the managers in Islamic and Non-Islamic managers on the 5-10% and 10-15% categories of bad debts out of total loans. Islamic banks are likely to have lower percentage of bad debts out of total loans than Non-Islamic banks.

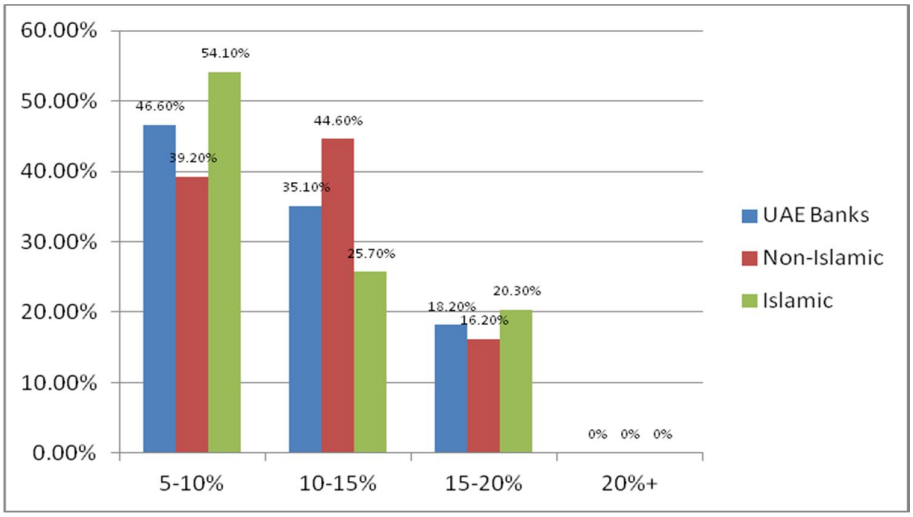


Figure 5.13. What is the percentage of bad debts out of total loans?

5.2.1.2.2.4 What is the percentage of credit ceiling allocated to different industries by the bank?

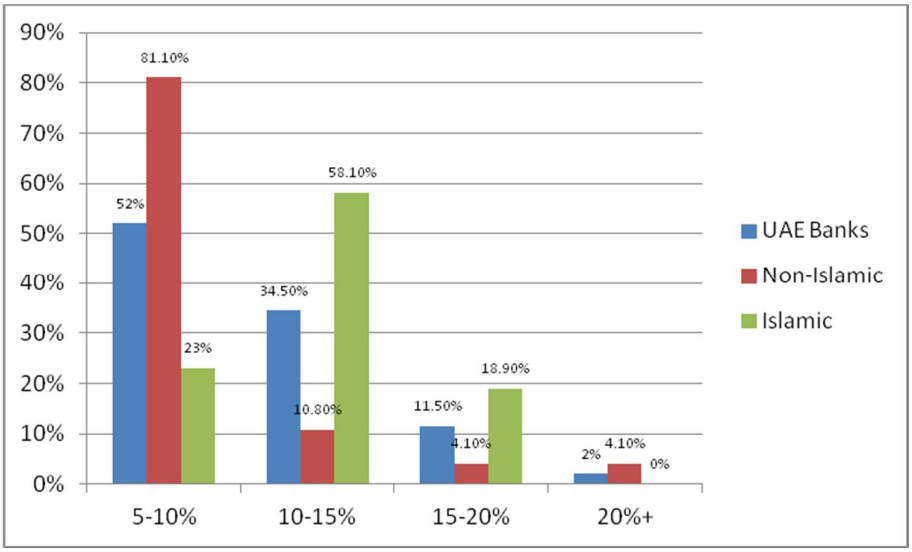


Figure 5.14. What is the percentage of credit ceiling allocated to different industries by the bank?

The survey result on the percentage of credit ceiling allocated to different industries in UAE banks is 5-10% according to the majority of the respondents (52%) and the distribution of response was found to decrease with the increase in the percentage of credit ceiling. In Non-Islamic banks the percentage of credit ceiling allocated to different industries is 5-10% according to the majority of the respondents (81.1%). On the other hand, in Islamic banks the percentage of credit ceiling allocated to different industries is 10-15% according to the majority of the respondents (58.1%). A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the 5-10% and 10-15% of categories. The result shows that the Non-Islamic banks are likely to have a lower percentage of credit ceiling allocated to different industries than the Islamic banks.

5.2.1.2.2.5 How often do you have Credit Risk assessment reviewed in your bank?

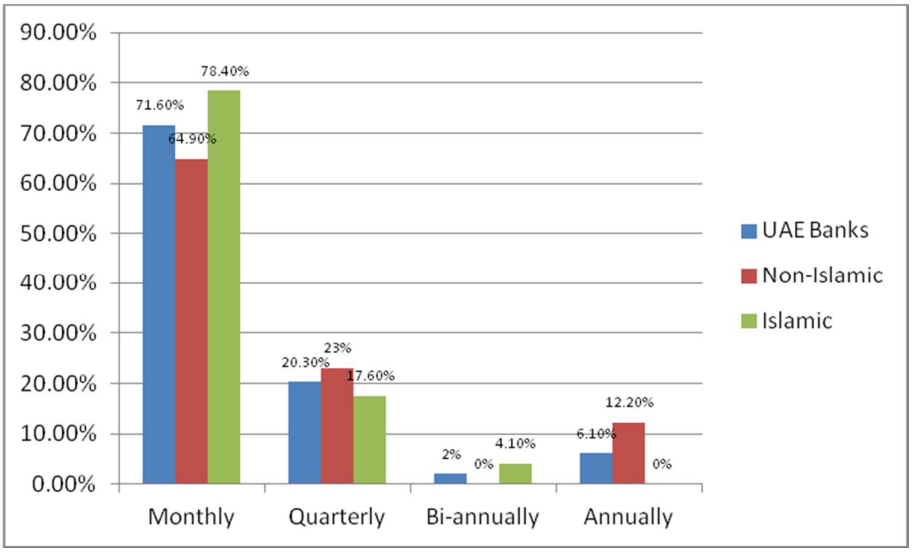


Figure 5.15. How often do you have Credit Risk assessment reviewed in your bank?

When enquired about the frequency of credit risk assessment review in the bank most of the staffs (71.6%) from UAE banks review once a month and very few do credit review every 6 months. In Non-Islamic banks most of the staffs (64.9%) have credit risk assessment review every month. Similarly, in Islamic banks most of the staffs (78.4%) have credit risk assessment review every month. Nevertheless, there is a moderate difference (10%<difference<25%) between Islamic and Non-Islamic in the frequency of review being once a month category. Islamic banks are more likely to have credit risk review assessment every month (and more frequently) than Non-Islamic banks.

5.2.1.2.2.6 How often do you examine borrowers' performance?

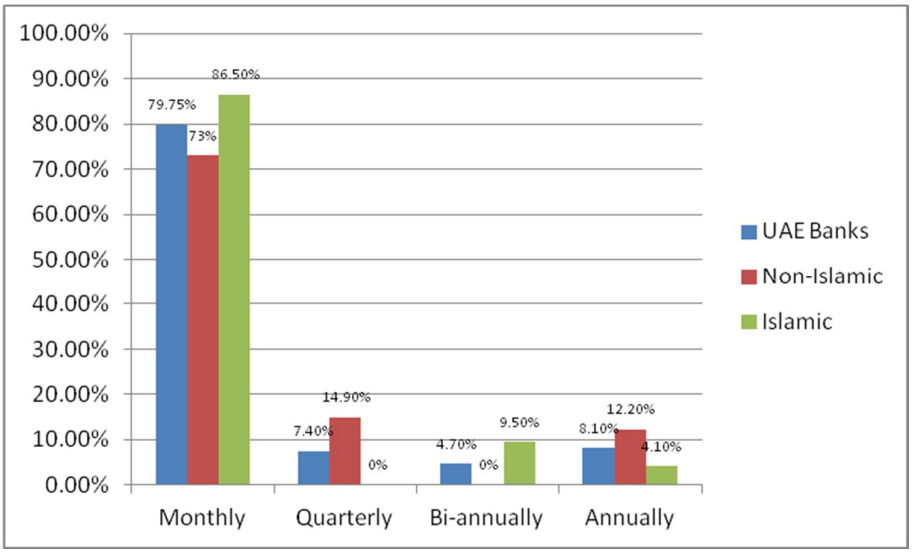


Figure 5.16. How often do you examine borrowers' performance?

When enquired about the frequency of examining borrower's performance in the bank most of the staff (79.75%) from UAE banks examines this once a month and very few do it bi-annually. In Non-Islamic banks most of the staff (73%) examines borrower's performance every month. Similarly, in Islamic banks most of the staff (86.5%) examines borrower's performance every month. A moderate difference (10%<difference<25%) was found between Islamic and Non-Islamic bank in monthly examination of borrowers. And a slight difference was found in the category of quarterly examination. Islamic banks are more likely to examine borrower's performance every month than Non-Islamic banks.

5.2.1.2.2.7 Do you prepare regular 'Credit Quality Reports'?

On the question of whether 'Credit Quality Reports' are prepared, the majority (71.6%) of respondents from UAE banks said that they prepare reports regularly. The majority (77%) of the respondents from Non-Islamic banks also said that they prepare reports regularly. Similar responses were found in Islamic banks. However a slight difference (0% <difference<10%) was seen between Islamic and Non-Islamic banks as Non-Islamic banks are slightly more likely to prepare the credit quality report regularly.

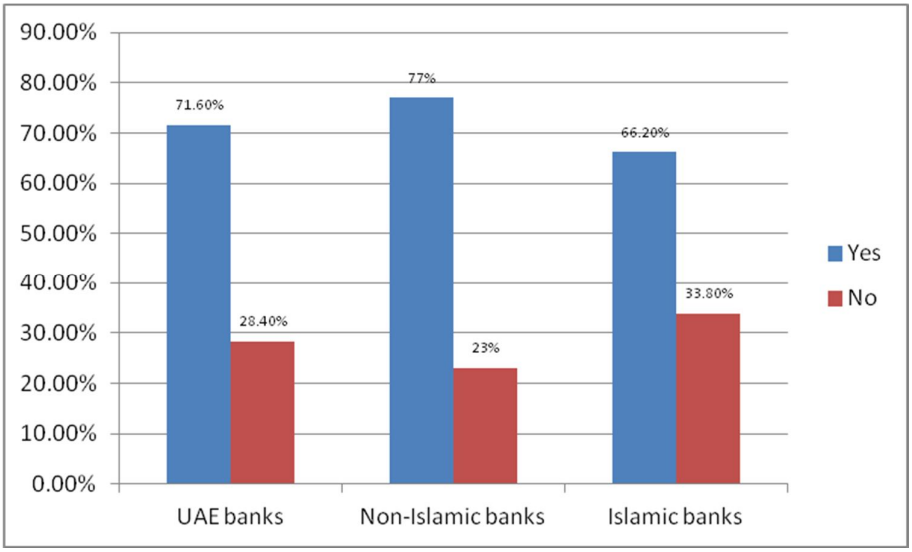


Figure 5.17. Do you prepare regular 'Credit Quality Reports'?

5.2.1.2.2.8 Have you developed the 'Risk Adjusted Return on Capital (RAROC)' Framework for Risk Pricing in your bank?

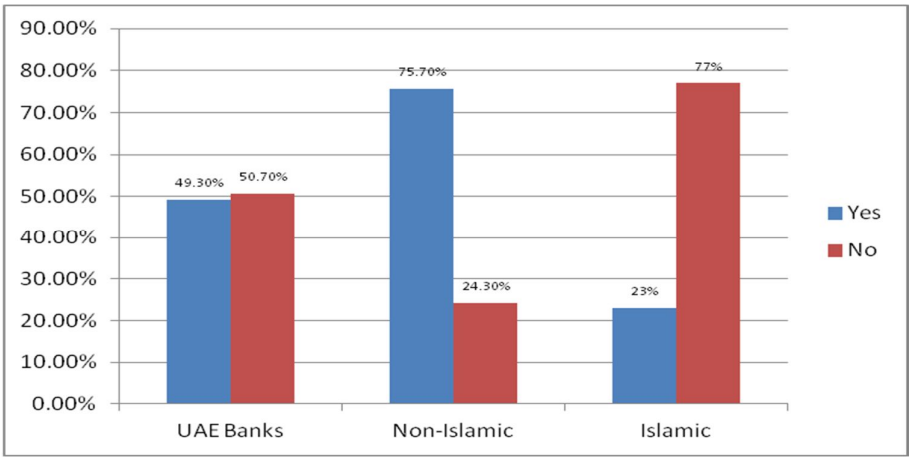


Figure 5.18. 'Risk Adjusted Return on Capital (RAROC)' Framework for Risk Pricing

On the question of whether 'Risk Adjusted Return on Capital (RAROC)' framework for risk pricing is prepared or not, almost an equal distribution was observed for the 'Yes' and 'No' response in UAE banks. The majority (75.7%) of respondents from Non-Islamic banks said that they have a RAROC framework. However, the majority of the respondents from Islamic banks reported of not having RAROC framework.

Hence, a large difference (difference>25%) was seen between Islamic and Non-Islamic banks as the latter are much more likely to have RAROC framework.

5.2.1.2.2.9 Have you developed any framework to study inter-bank exposures?

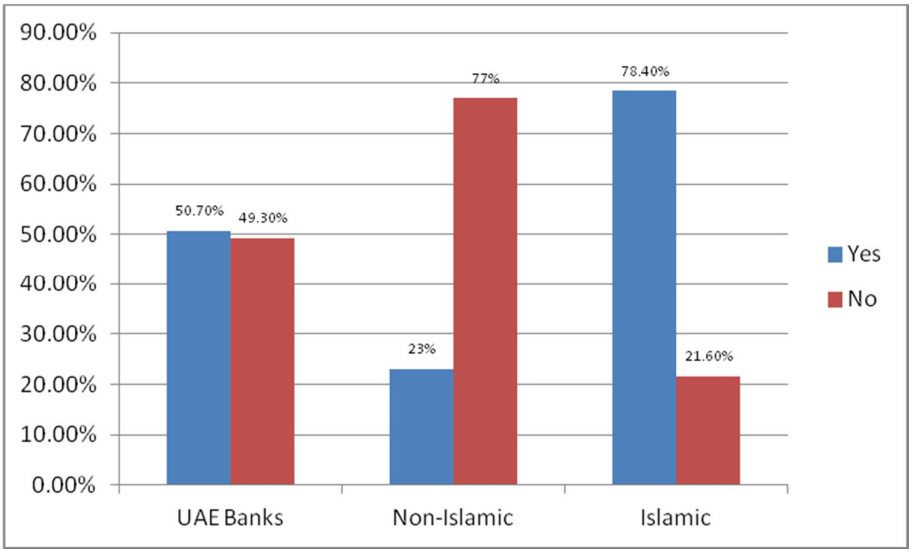


Figure 5.19. Framework to study inter-bank exposures

On the question of whether the banks have any framework to study inter-bank exposures, almost an equal distribution was observed for the Yes and No response for UAE banks. The majority (77%) of respondents from Non-Islamic banks reported not having any framework to study inter-bank exposures. However, the majority of respondents (78.2%) from Islamic banks reported having the framework. Hence, a large difference (difference>25%) was seen between the Islamic and Non-Islamic banks as the former are far more likely to have a framework to study inter-bank exposures.

5.2.1..2.2.10 Does your bank use 'Derivatives' (credit default swaps) to manage Credit Risk?

The survey result on the question of whether the banks use 'Derivatives' to manage credit risk, the majority (60.1%) of respondents from UAE banks said that they did use 'Derivatives' to manage credit risk. The majority (68.9%) of respondents from Non-Islamic banks said that they used 'Derivatives' to manage credit risk. However, an almost even distribution was found for the Yes (51.4%) and No (48.6%) responses in Islamic banks on the issue. A moderate difference (10% <difference<25%) was

found between the Islamic and Non-Islamic banks as the latter are more likely to use 'Derivatives' to manage credit risk.

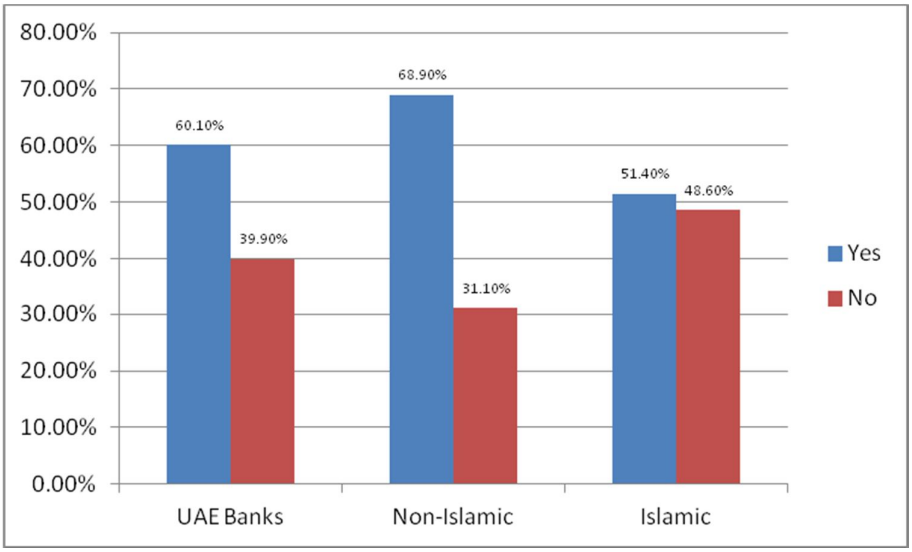


Figure 5.20. Does your bank use 'Derivatives' (credit default swap) to manage Credit Risk?

5.2.1.2.2.11 Do you share default information among banks?

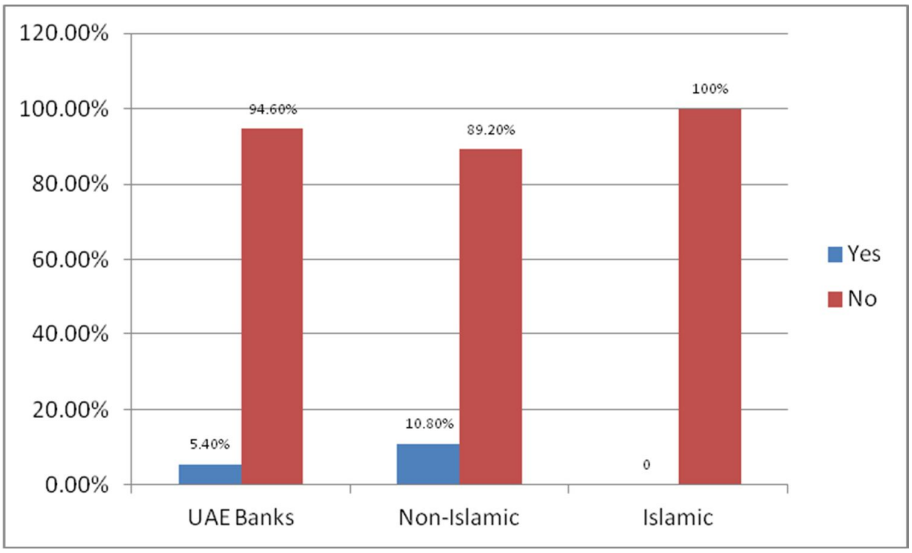


Figure 5.21. Do you share default information among banks?

On the question of whether the banks share default information among banks, the majority (94.6%) of respondents from UAE banks said that they do not share default information. The majority (89.2%) of respondents from Non-Islamic banks said that

they do not share the default information. And all the respondents from Islamic banks reported of not sharing the default information. A moderate difference (10% <difference<25%) was found between Islamic and Non-Islamic banks as the latter are more likely to share default information.

5.2.1.2.2.12 Do you verify applicant's data?

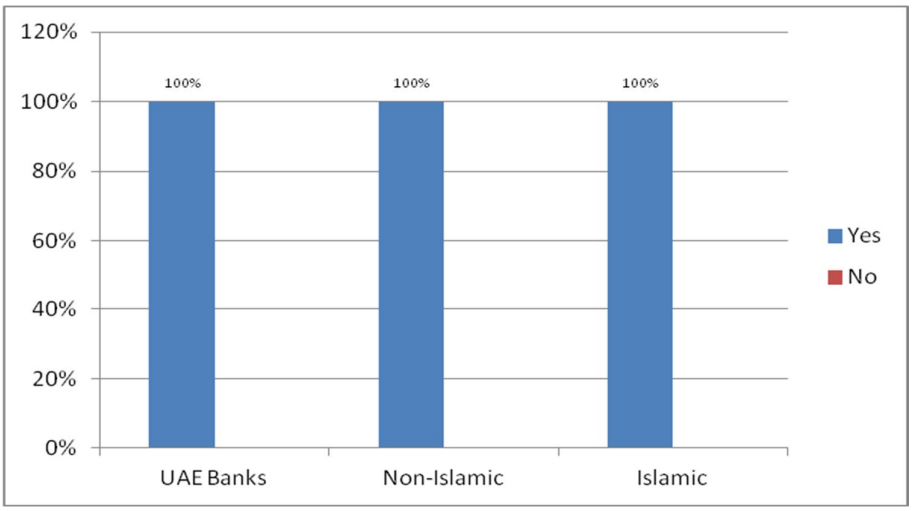


Figure 5.22. Do you verify applicant's data?

When asked if the banks verify applicant's data, all the respondents from UAE banks said that they did when making lending decision. Similarly, all the respondents from Non-Islamic and Islamic banks gave a uniform response when asked whether they verify applicant's data with all saying that they do verify the data. Hence, all UAE, Non-Islamic and Islamic bank managers verify applicant's data and there are no differences on this issue between Islamic and Non-Islamic banks.

5.2.1.2.2.13 Are there penalties for credit officers that issue default loans?

On the question of whether there are penalties for credit officers that issue default loans, the majority (59.5%) of the respondents from UAE banks said that they do not penalize the officers that issue default loans. In Non-Islamic banks the majority of respondents (52.7%) said that there are penalties for credit officers that issue default loans. While the majority (71.6%) of respondents from Islamic banks said that there are no penalties for credit officers that issue default loans. Hence, a moderate difference (10%<difference<25%) was found between the Islamic and Non-Islamic

banks as the latter are more likely to have penalties for credit officers that issue default loans.

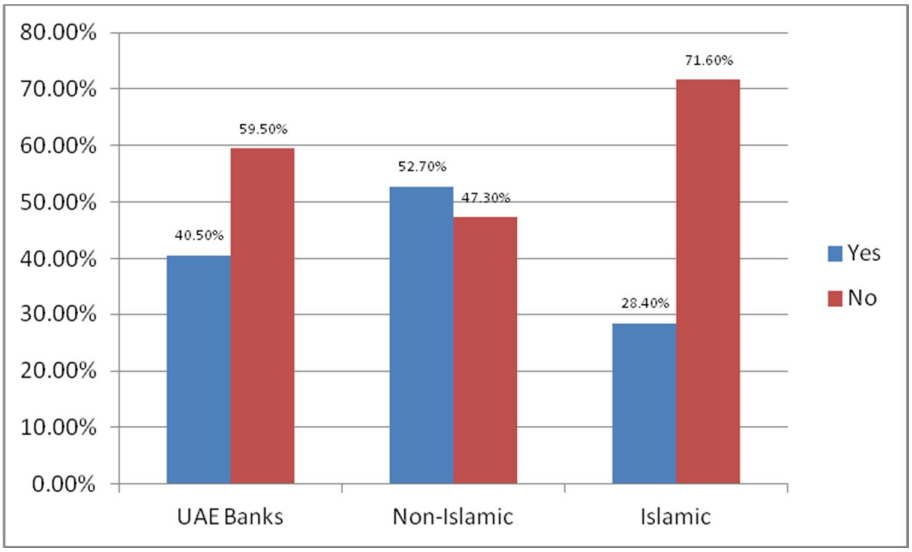


Figure 5.23: Are there penalties for credit officers that issue default loans?

5.2.1.2.3 The relative importance of the following aspects that you consider for evaluating bank-wise exposures

The survey enquired about the relative importance of the following aspects that banks consider for evaluating bank-wise exposures. In this regard, they enquired about study of financial performance, operating efficiency, past experience, bank rating on credit quality, internal matrix for studying bank-wise exposures and counter party or country risk.

5.2.1.2.3.1 Study of financial performance

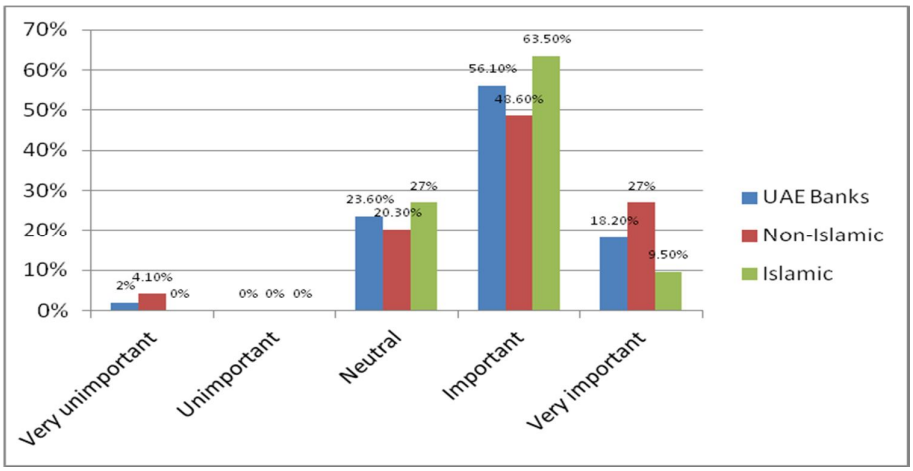


Figure 5.24.a. Study of financial performance (5-categories)

When asked about the importance of the study of financial performance for evaluating bank wise exposure, the majority of the respondents (56.1%) from the UAE banks agreed that the study of financial performance is important and only a few of them consider it very unimportant based on the 5-category responses. The majority of the managers (48.6%) from Non-Islamic banks consider study of financial performance important. Similarly, the majority of managers in Islamic banks also consider the study of financial performance as important. A moderate difference (10% <difference<25%) was seen between managers in Islamic and Non-Islamic banks in the category 'Important' and 'Very Important. Non-Islamic bank managers are more likely to consider the study of financial performance very important whereas Islamic managers are more likely to view this as important.

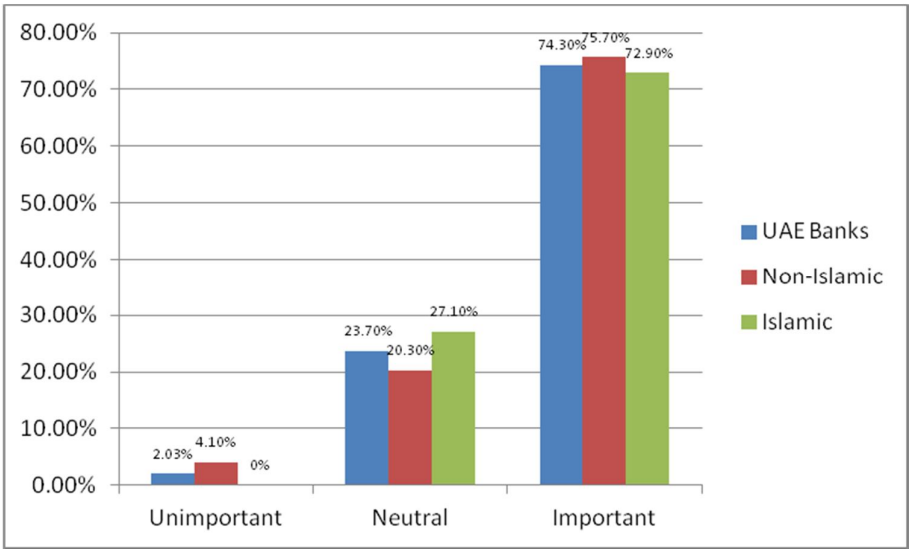


Figure 5.24.b. Study of financial performance (3-categories)

Figure 5.24.b shows that most managers (74.3%) in UAE banks agree that the study of financial performance is important and only a few of them consider it unimportant based on 3-category responses. Managers from both Islamic and Non-Islamic banks were found to be considering the study of financial performance important with only a slight difference in 3-categories response. Hence, both the Islamic and Non-Islamic banks consider the study of financial performance important and the main difference is in the strength of the response only.

5.2.1.2.3.2 Operating Efficiency

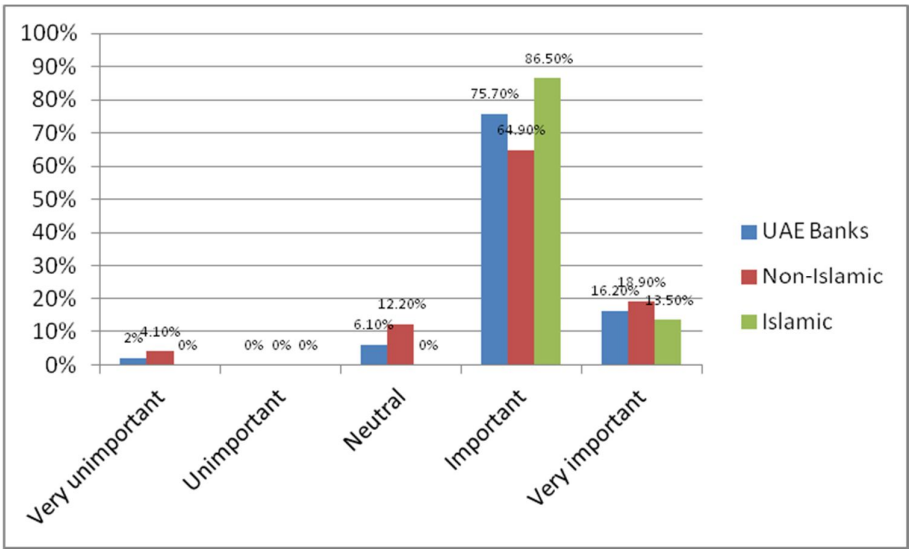


Figure 5.25.a. Operating Efficiency (5-categories)

Regarding the importance of operating efficiency for evaluating bank wise exposure, the majority of respondents (75.7%) from UAE banks consider the operating efficiency as important and only a few of them consider it very unimportant based on 5-category responses. The majority of managers (64.9%) from Non-Islamic banks consider operating efficiency important. Similarly, the majority of managers (86.5%) in Islamic banks also consider the operating efficiency as important. A moderate difference (10% <difference<25%) was seen between managers in Islamic and Non-Islamic banks in the category 'Important' and a slight difference (0% <difference<10%) was seen in the category 'Very important'. Islamic bank managers are more likely to consider the operating efficiency as an 'Important' factor based on 5-category responses.

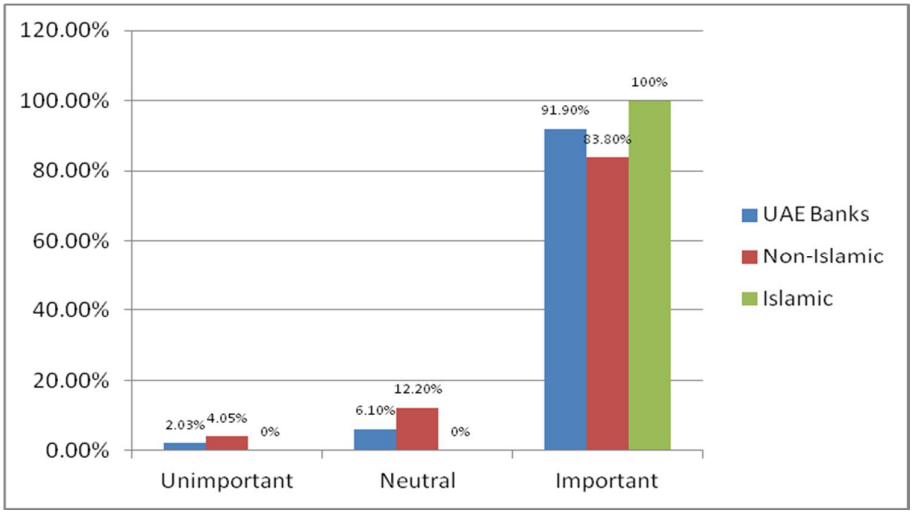


Figure 5.25.b. Operating Efficiency (3-categories)

Figure 5.25.b shows that most of the managers (83.8%) in UAE banks agree that operating efficiency is important and only a few of them consider it unimportant based on 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider the operating efficiency as important and a moderate difference (10%<difference<25%) was seen such that Islamic banks are more likely to consider the issue important than the Non-Islamic banks based on 3-category responses. Both Islamic and Non-Islamic banks consider operating efficiency important and there exists a difference mainly in the strength of response.

5.2.1.2.3.3 Past Experience

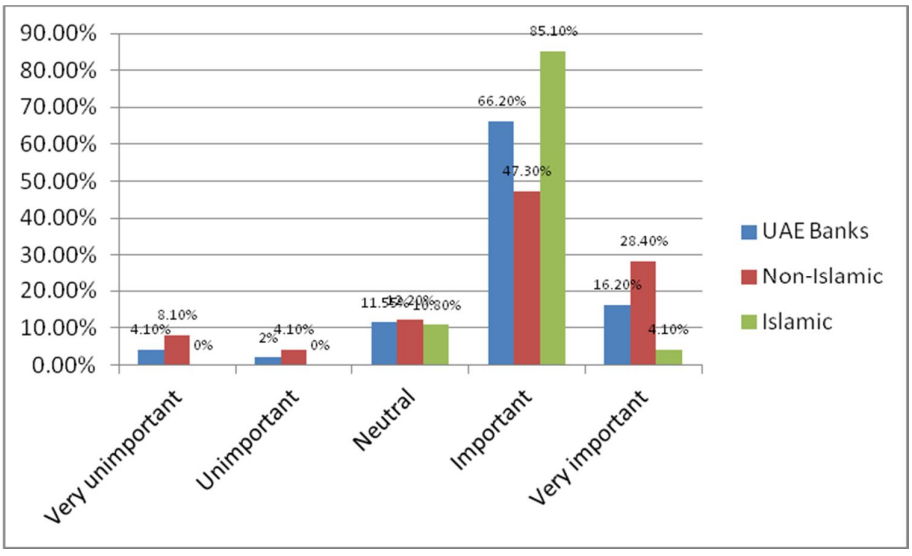


Figure 5.26.a. Past experience (5-categories)

For the survey result about the importance of past experience for evaluating bank wise exposure, the majority of respondents (66.2%) from UAE banks consider the past experience as important and a few of them consider it unimportant based on 5-category responses. The majority of managers (47.3%) from Non-Islamic banks consider past experience important. Similarly, the majority of managers (85.1%) in Islamic banks also consider the past experience important. A large difference (difference>25%) and moderate difference was seen between the managers in Islamic and Non-Islamic managers in the categories 'Important' and 'Very Important' respectively. Non-Islamic bank managers are more likely to consider past experience very important using 5-category responses.

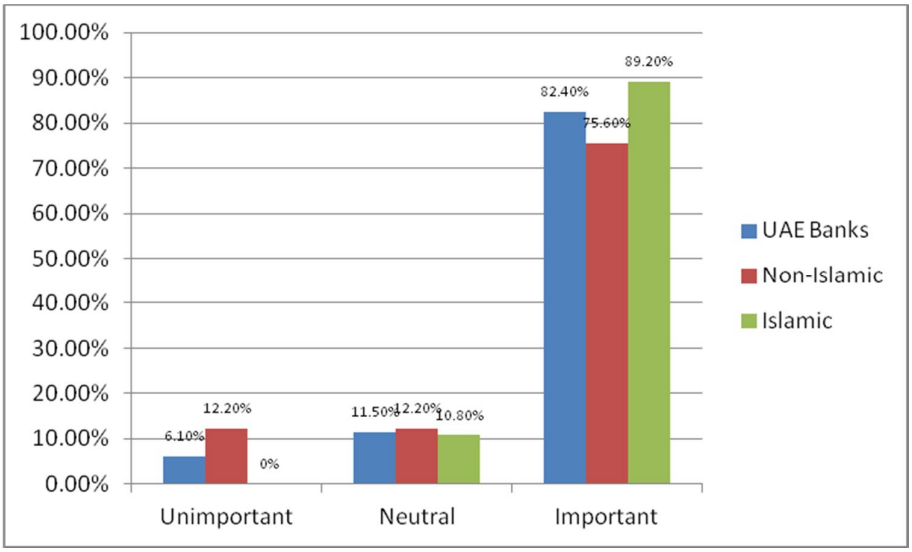


Figure 5.26.b. Past experience (3-categories)

Figure 5.26.b shows that most of the managers (82.4%) in UAE banks agree that the past experience is important and only a few of them consider it unimportant based on 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider the past experience as an important factor using 3-category responses. A moderate difference (10% <difference<25%) was seen where more Islamic banks consider the past experience more important than Non-Islamic banks. Hence, both type of bank have similar response but the main difference exists in the strength of response.

5.2.1.2.3.4 Bank rating on Credit Quality

For the survey result about the importance of bank rating on credit quality for evaluating bank wise exposure, the majority of the respondents (80.4%) from UAE banks consider the bank rating on credit quality as important and only a few of them consider it very unimportant or are neutral using 5-category responses.

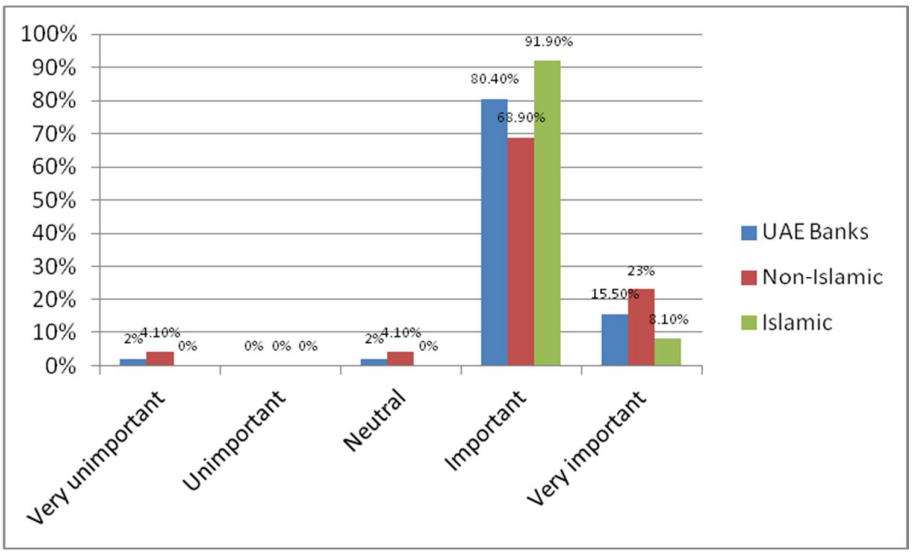


Figure 5.27.a. Bank rating on credit quality (5-categories)

The majority of the managers (68.9%) from Non-Islamic banks consider bank rating on credit quality important. Similarly, the majority of managers (91.9%) in Islamic banks also consider bank rating on credit quality as important. However, a moderate difference (10% <difference<25%) was found between the managers in Islamic and Non-Islamic banks in the category 'Important' and 'Very important'. Non-Islamic bank managers are more likely to consider the bank rating on credit quality very important using 5-category responses.

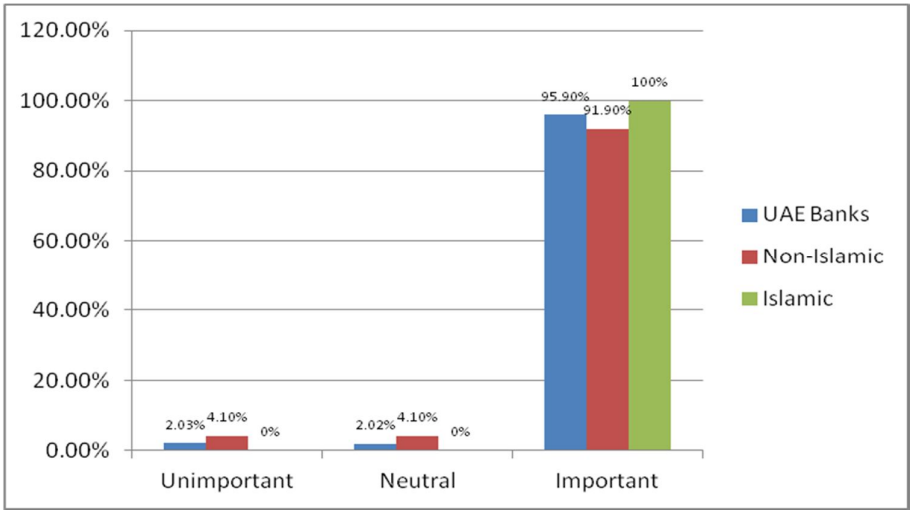


Figure 5.27.b. Bank rating on credit quality (3-categories)

Figure 5.27.b. shows that most of the managers (95.9%) in UAE banks consider the bank rating on credit quality important and only a few of them consider it unimportant or are neutral on the issue using 3-category responses. The vast majority of Managers from both Islamic and Non-Islamic banks consider the bank rating on credit quality important with only a slight difference (0% <difference<10%) in the percentage of responses in this category. The differences were mainly in the strength of the response but generally they have similar opinions.

5.2.1.2.3.5 Internal Matrix for studying bank-wise exposures

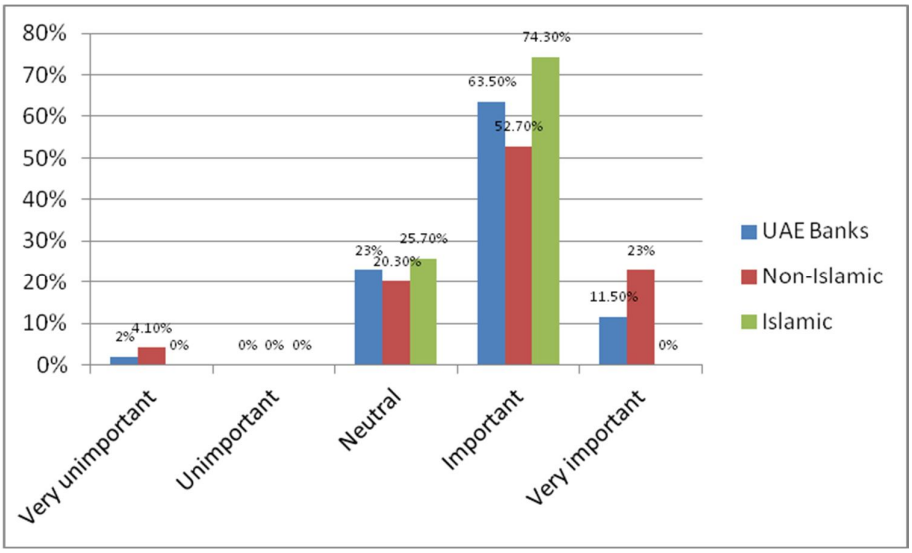


Figure 5.28.a. Internal matrix for studying bank-wise exposures (5-categories)

Using the survey result about the importance of an internal matrix for evaluating bank wise exposure, the majority of respondents (63.5%) from UAE banks consider an internal matrix as important and only a few of them consider it very unimportant using a 5-category responses. The majority of managers (52.7%) from Non-Islamic banks consider an internal matrix important. Similarly, the majority of managers (74.3%) in Islamic banks also consider the internal matrix as important. A moderate difference (10% <difference<25%) was seen between the managers in Islamic and Non-Islamic managers in the category 'Important'. Non-Islamic bank managers are more likely to consider the internal matrix as very important and Islamic banks do not appear to consider the issue as very important, although most consider it important.

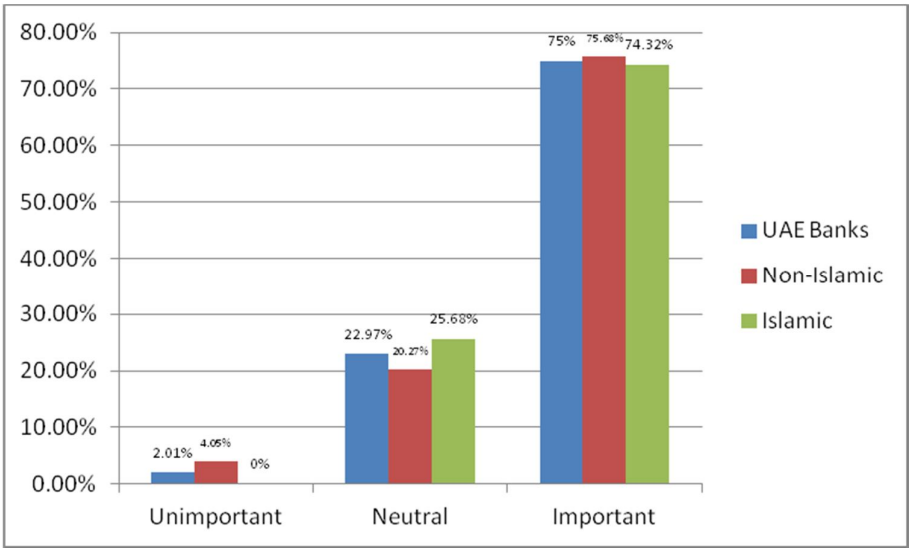


Figure 5.28.b. Internal matrix for studying bank-wise exposures (3-categories)

The Figure 5.28.b shows that most of the managers (75%) in UAE banks consider the internal matrix important and only a few of them consider it unimportant based on 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider the internal matrix as important and in similar proportion hence the differences were the differences in the strength of the response but generally they have similar opinions.

5.2.1.2.3.6 Counter party or country risk

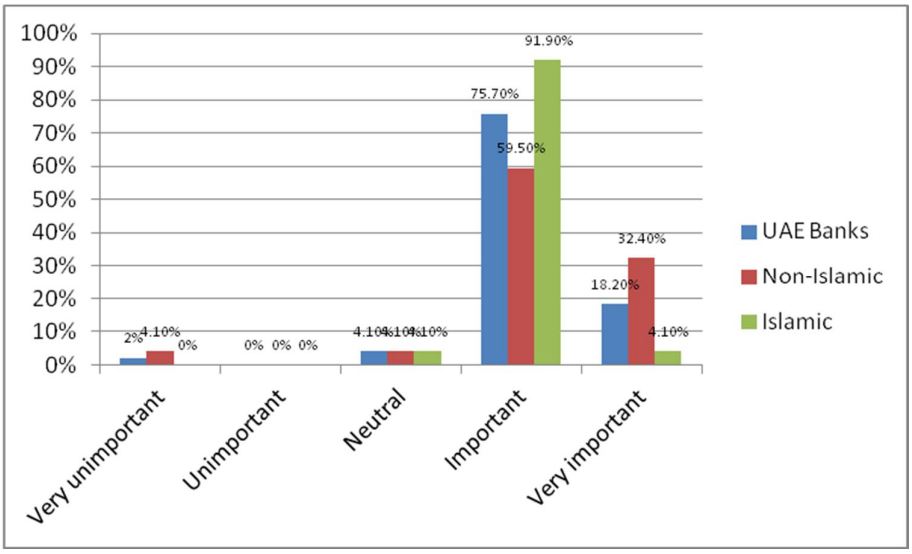


Figure 5.29.a. Counter party or country risk (5-categories)

The survey result about the importance of counter party or country risk for evaluating bank wise exposure shows that the majority of the respondents (75.7%) from UAE banks consider it as important and with only a few of them considering it very unimportant using 5-category responses. The majority of managers (59.5%) from Non-Islamic banks consider counter party or country risk important. Similarly, the majority of managers (91.9%) in Islamic banks also consider the counter party or country risk important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the categories 'Important' and 'Very important'. Non-Islamic bank managers are more likely to view counter party or country risk very important and Islamic bank managers are more likely to consider the issue important using 5-category responses.

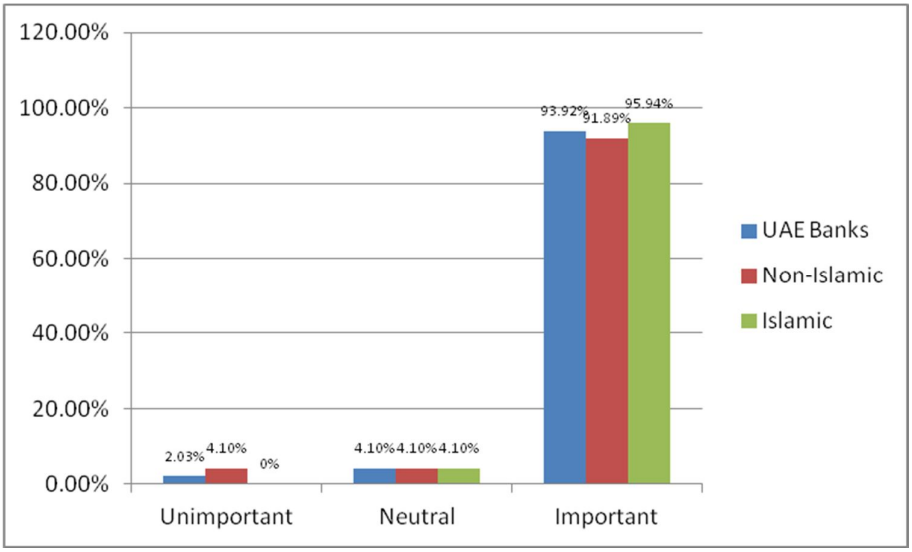


Figure 5.29.b. Counter party or country risk (3-categories)

Figure 5.29.b shows that most of the managers (93.92%) in UAE banks agree that the counter party or country risk is important and only a few of them consider it unimportant using 3-category responses. The vast majority of managers from both Islamic and Non-Islamic banks consider the counter party or country risk important with only slight difference (0% <difference<10%) in this category using a 3-category response. The differences were mainly in the strength of the response but generally they have similar opinions in this issue.

5.2.1.2.4 Factors considered when lending to corporate borrowers (%)

The survey enquired about various factors when lending to corporate borrowers. The factors in question were ownership background, capital size, set up year and credit history.

5.2.1.2.4.1 Ownership background

The importance of ownership background in terms of being State-owned and non-State owned was asked to the respondents when lending to corporate borrowers.

5.2.1.2.4.1.1 State-owned

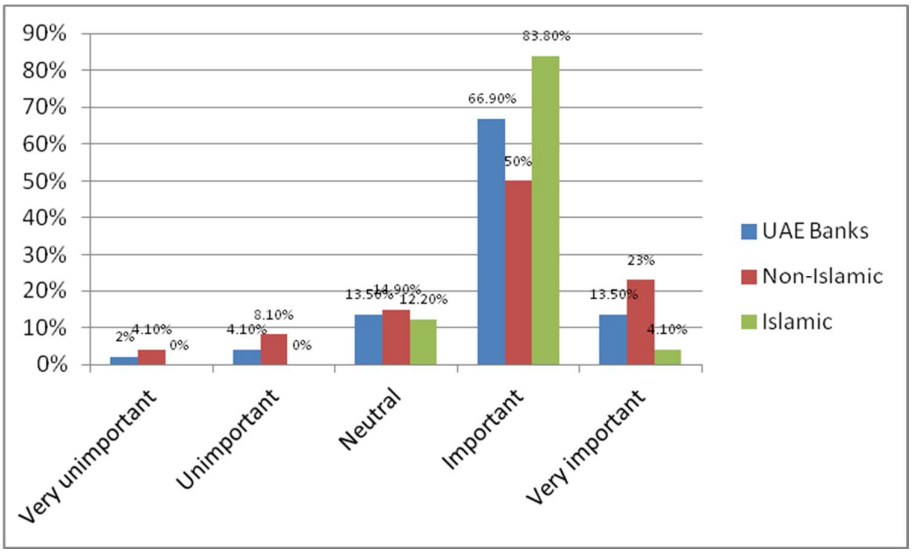


Figure 5.30.a. State-owned (5-categories)

State owned enterprises could be considered safer for lending as it is backed by Government. The survey result on the importance of state ownership when lending to corporate borrowers shows that the majority of the respondents (66.9%) from UAE banks consider the issue as important and only a few consider it very unimportant using 5-category responses. The majority of the managers (50%) from Non-Islamic banks consider state-ownership important. Similarly, the majority of managers (83.8%) in Islamic banks also consider the state-ownership as important. There is a large difference between the managers in Islamic and Non-Islamic banks in the category 'Important' and a moderate difference (10% <difference<25%) in the category 'Very important'. Islamic bank managers are more likely consider the issue important according to 5-category responses.

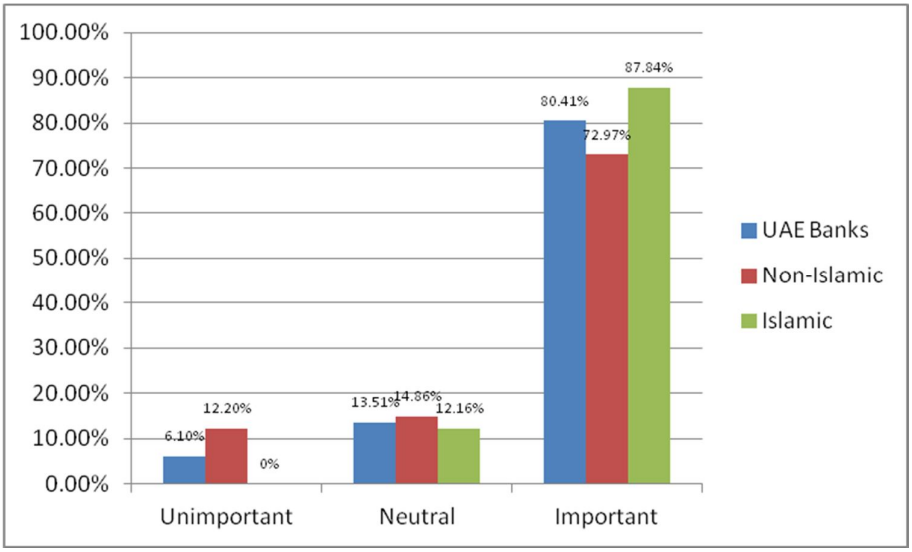


Figure 5.30.b. State-owned (3-categories)

Figure 5.30.b shows that most of the managers (80.41%) in UAE banks consider state ownership important and only a few of them consider it unimportant based on 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider the state-ownership important with a moderate difference in this category. The main difference was in the strength of response with both types of bank broadly view state ownership as important.

5.2.1.2.4.1.2 Non-state-owned

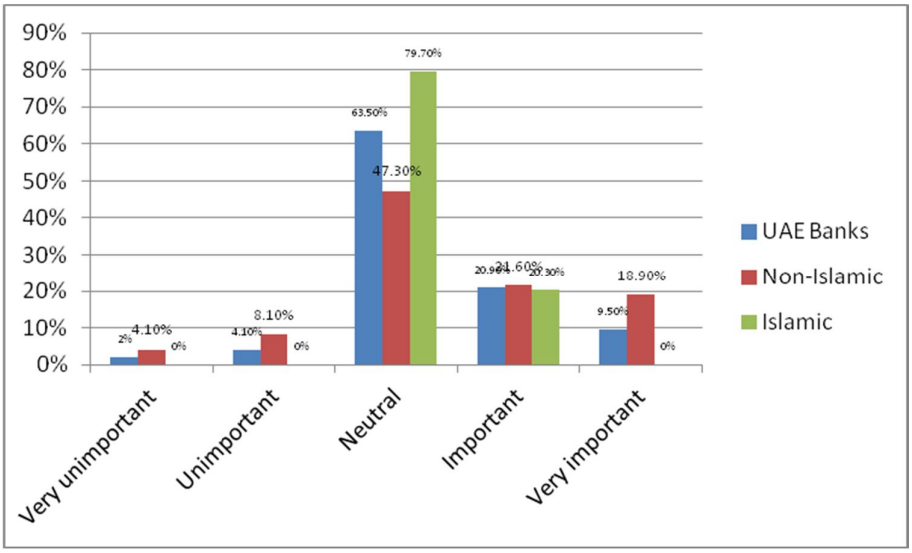


Figure 5.31.a. Non-state owned (5-categories)

The survey result on the importance of non-state ownership when lending to corporate borrowers shows that the majority of the respondents (63.5%) from the UAE banks were neutral on the issue and only a few of them consider it very unimportant using 5-category responses. The majority of the managers (47.3%) from Non-Islamic banks were neutral over the issue. Similarly, the majority of managers (79.7%) in Islamic banks were also neutral on the importance of the non-state ownership. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic managers in the category 'Neutral' and a slight difference was seen in the category 'Important'. More managers from Islamic banks were neutral on the importance of non-state ownership using 5-category responses.

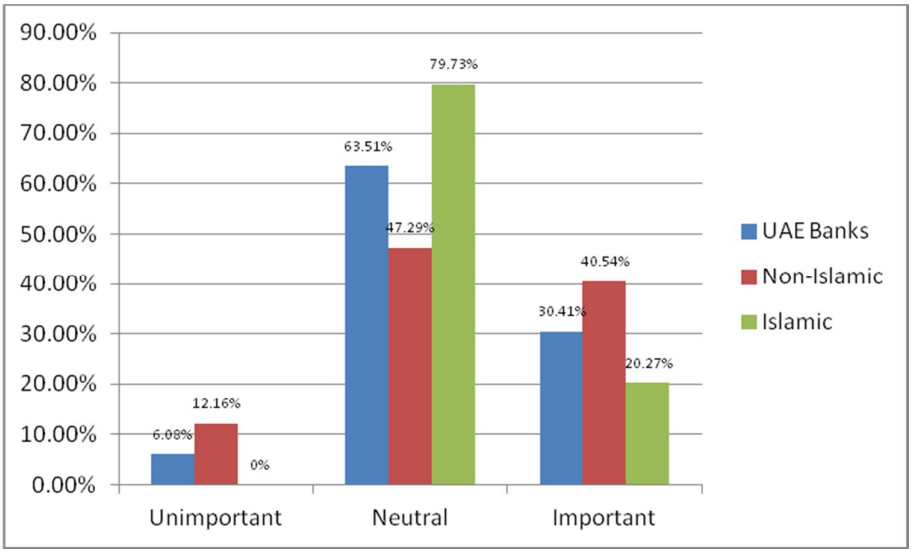


Figure 5.31.b. Non-state owned (3-categories)

Figure 5.31.b shows that most of the managers (63.51%) in UAE banks were neutral on the importance of the non-state-ownership using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks were found to be neutral on the importance of the non-state-ownership and a moderate difference was seen where Non-Islamic banks considered the issue more important than the Islamic banks. A large difference (difference>25%) was found between the banks as more number of managers from Islamic banks were found to be neutral over the issue. Hence, Non-Islamic banks are less neutral over the issue than Islamic banks.

5.2.1.2.4.2 Capital size

On the basis of capital size, the respondents were asked how much importance they give to old and established firm i.e. large capital and medium and small sized firm i.e. with smaller capital.

5.2.1.2.4.2.1 Medium and small sized firm

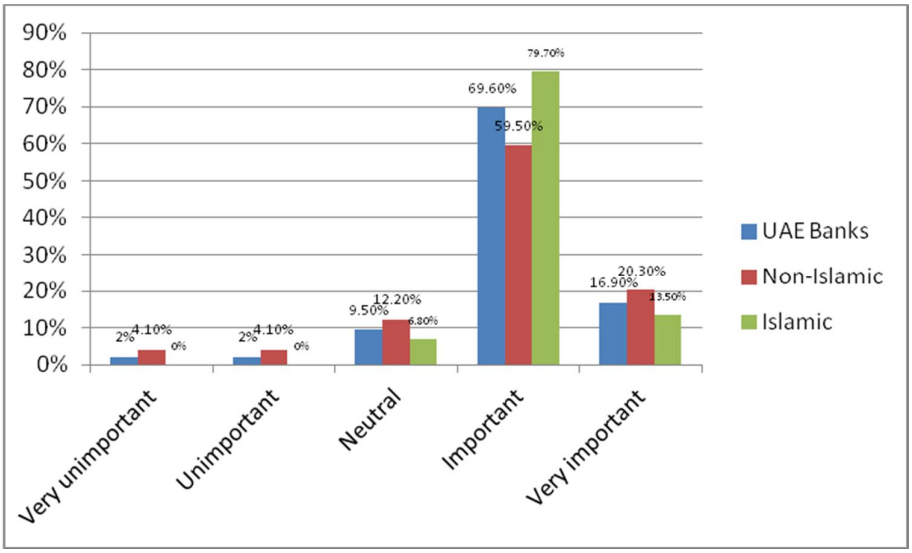


Figure 5.32.a. Medium and small sized firm (5-categories)

The survey result about the importance of medium and small sized firm shows that the majority of the respondents (69.6%) from UAE banks consider medium and small sized firm as important and only a few of them consider it very unimportant or unimportant using 5-category responses. The majority of managers (59.5%) from Non-Islamic banks consider medium and small sized firm important. Similarly, the majority of managers (79.7%) in Islamic banks also consider medium and small sized firm as important. A moderate difference (10% <difference<25%) was seen between the managers in Islamic and Non-Islamic managers in the category 'Important'. Islamic bank managers are more likely to view the medium and small sized firm as important compared to Non-Islamic bank managers using 5-category responses.

Figure 5.23.b shows that most of the managers (86.5%) in UAE banks consider medium and small sized firms as important and only a few of them consider it unimportant using 3-category responses.

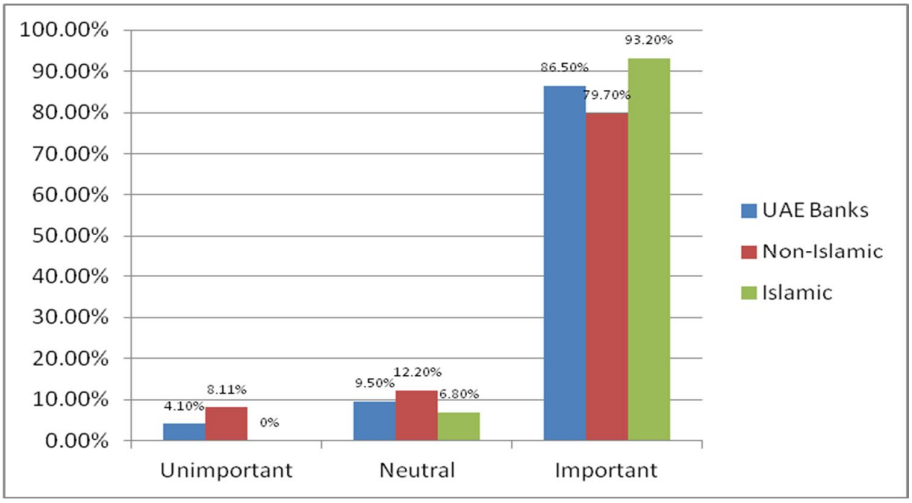


Figure 5.32.b. Medium and small sized firm (3-categories)

The majority of managers from both Islamic and Non-Islamic banks consider the medium and small sized firms as important and there is a moderate difference (10% <difference<25%) of response in this category where more Non-Islamic banks consider the issue important than Islamic banks using 3-category responses. The main difference was in the strength of response to this question with the majority of managers agreeing that medium and small sized firm is important in lending decisions.

5.2.1.2.4.2.2 Old well-established

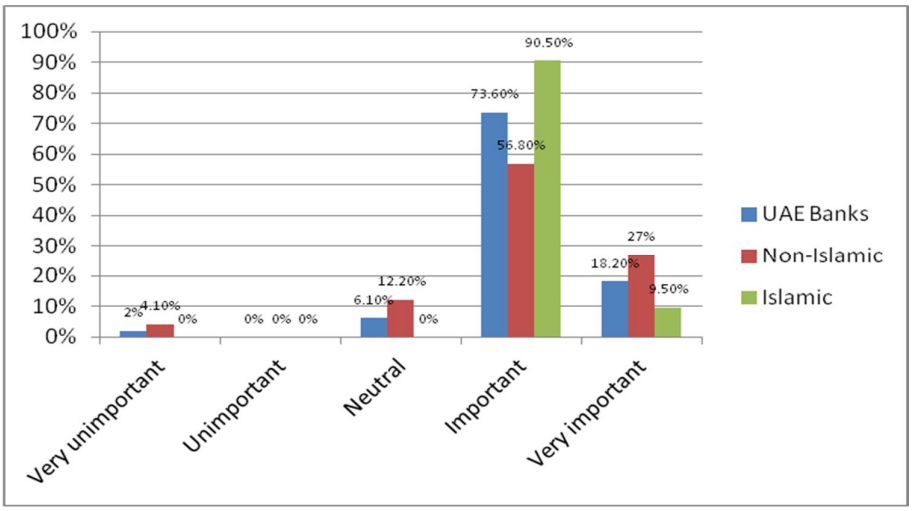


Figure 5.33.a. Old-well established (5-categories)

The survey results about the importance of old-well established firms show that the majority of the respondents (73.6%) from UAE banks consider the old-well established firms as important and only a few of them consider it very unimportant using 5-category responses. The majority of managers (56.8%) from Non-Islamic banks consider old and established firm important. Similarly, the majority of managers (90.5%) in Islamic banks consider the old and established firm as important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic managers in the category 'Important' and a moderate difference (10% <difference<25%) was seen in the category 'Very important'. Non-Islamic bank managers are more likely to consider the issue very important which Islamic bank managers are more likely to consider old-well established firms as important using 5-category responses.

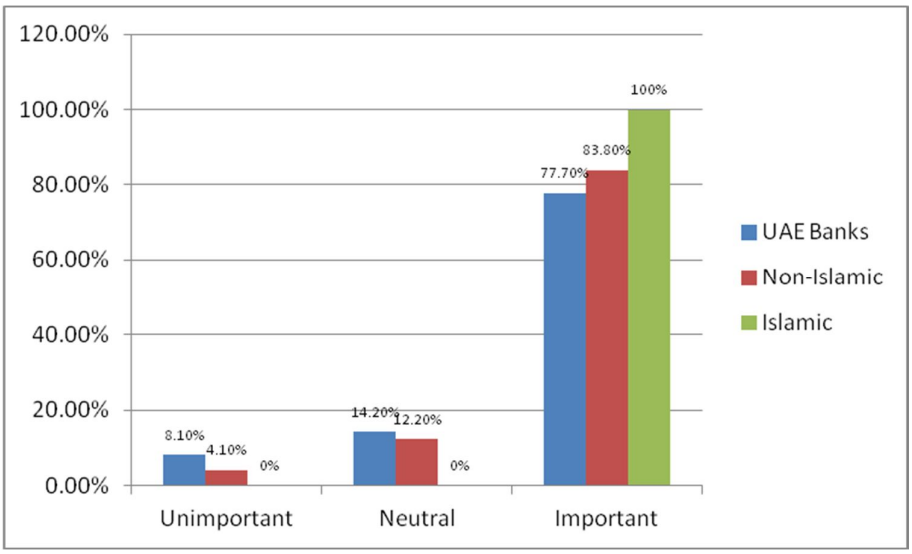


Figure 5.33.b. Old-well established (3-categories)

Figure 5.33.b shows that most of the managers (77.7%) in UAE banks consider old-well established firms as important and only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider the old-well established firms as important and the main difference is in the strength of response otherwise bank managers in Islamic and Non-Islamic banks have similar views on the issue.

5.2.1.2.4.3 Set up year

The respondents were asked how important the set up year of a business for lending was. The importance of set up year with reference to newly set up firms and providing a business plan was asked to the respondents. Newly set up firms means the firms which have been newly established whereas providing business plan indicates the firms which have not been established and they provide business plan to banks for getting loan.

5.2.1.2.4.3.1 Newly set up

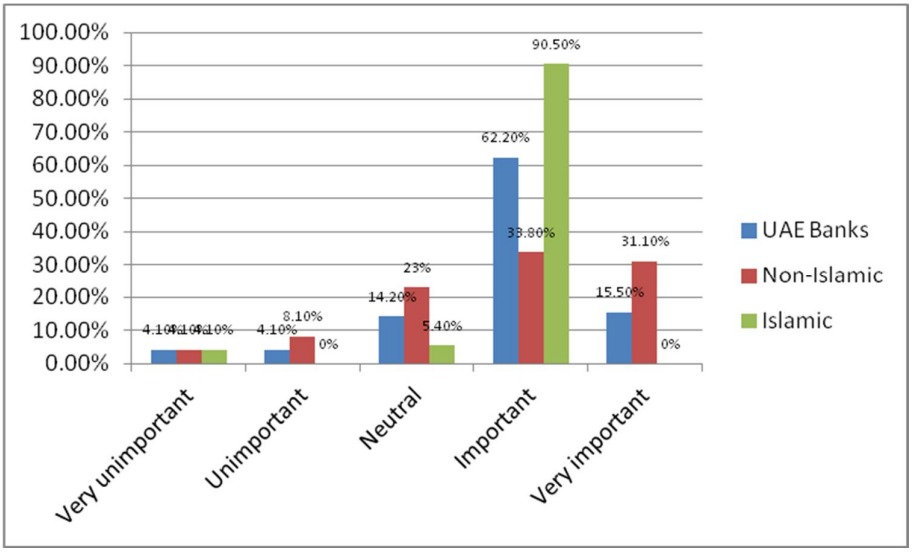


Figure 5.34.a. Newly set-up (5-categories)

The survey result about the importance of newly set-up firms shows that majority of the respondents (62.2%) from UAE banks consider newly set-up firms important and only a few of them consider it very unimportant using 5-category responses. The majority of managers (33.8%) from Non-Islamic banks consider newly set-up firms as important. Similarly, the majority of managers (90.5%) in Islamic banks also consider newly set-up firms as important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the category 'Important' and a moderate difference (10% <difference<25%) was seen in the category 'Neutral'. Islamic bank managers are more likely to consider newly set-up firms as important but do not consider them very important.

Figure 5.34.b shows that most of the managers (77.7%) in UAE banks consider newly set-up firms as important using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider newly set-up firms as important and a moderate difference (10%<difference<25%) was seen in this category as Islamic bank managers are more likely to consider it important; The large difference is in the strength of response otherwise bank managers in Islamic and Non-Islamic banks have similar view on the issue.

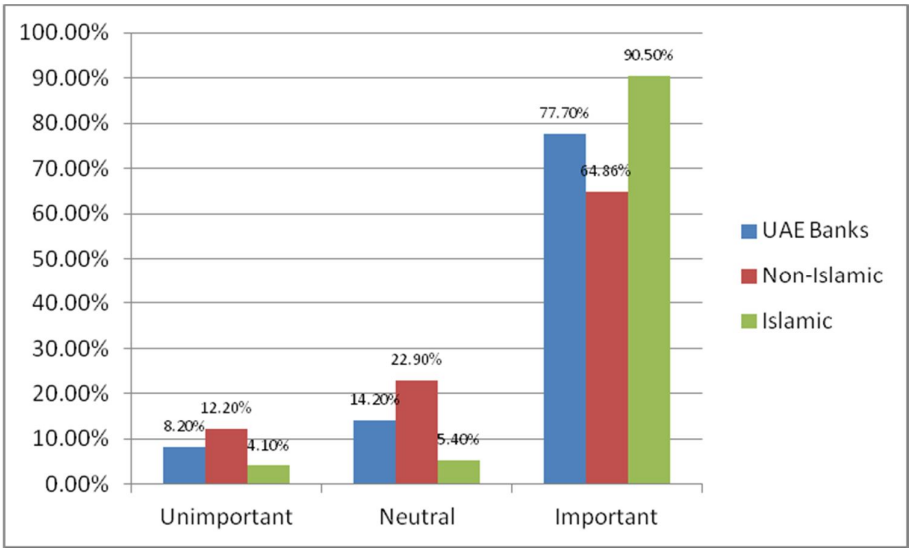


Figure 5.34.b. Newly set-up (3-categories)

5.2.1.2.4.3.2 Firms not established and providing business plan

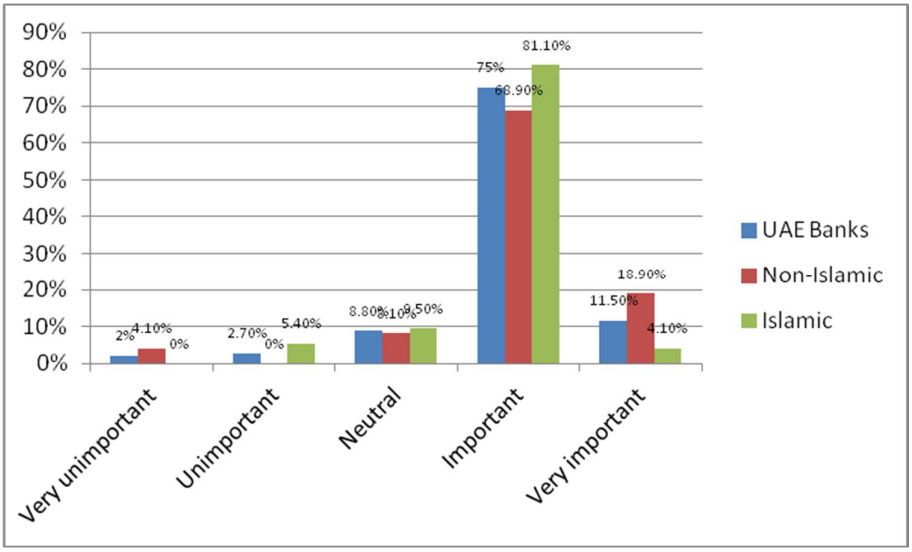


Figure 5.35.a. Firms not established and providing business plan (5-categories)

The survey result about the importance of providing business plan when lending to corporate lenders shows that the majority of the respondents (75%) from UAE banks consider providing business plan as important and only a few of them consider it very unimportant using 5-category responses. The majority of managers (68.9%) from Non-Islamic banks consider providing business plan important. Similarly, the majority of managers (81.1%) in Islamic banks also consider providing a business plan as important. A moderate difference (10% <difference<25%) was seen between the managers in Islamic and Non-Islamic managers in the category 'Important' and a slight difference was seen in the category 'Very important'. Non-Islamic bank managers are more likely to consider providing business plan as very important.

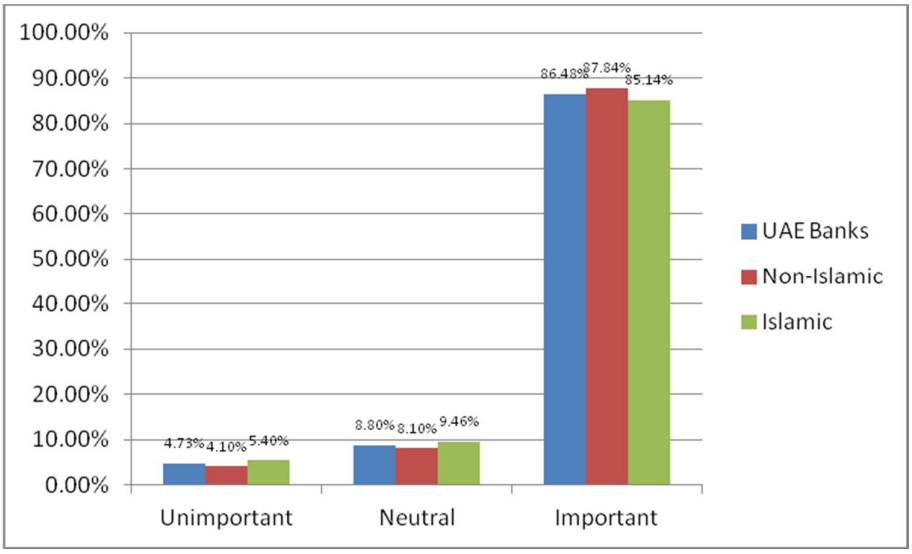


Figure 5.35.b. Providing business plan (3-categories)

Figure 5.35.b shows that most of the managers (86.48%) in UAE banks agree that providing a business plan is important and only a few of them consider it unimportant. The vast majority of managers from both Islamic and Non-Islamic banks consider providing a business plan as important with only a slight difference (0%<difference<10%) between them in this category; The difference is in the strength of response otherwise the bank managers in Islamic and Non-Islamic banks have similar views on the issue.

5.2.1.2.4.4 Credit history

The importance of credit history with reference to a Director/owner of a company giving a personal guarantee and providing property deposit was asked to the respondents.

5.2.1.2.4.4.1 Director/owner of the company gives personal guarantee

The survey result about the importance of a director/owner's personal guarantee shows that the majority of the respondents (61.5%) from UAE banks consider the director/owner's personal guarantee as important and only a few of them consider it unimportant using 5-category responses.

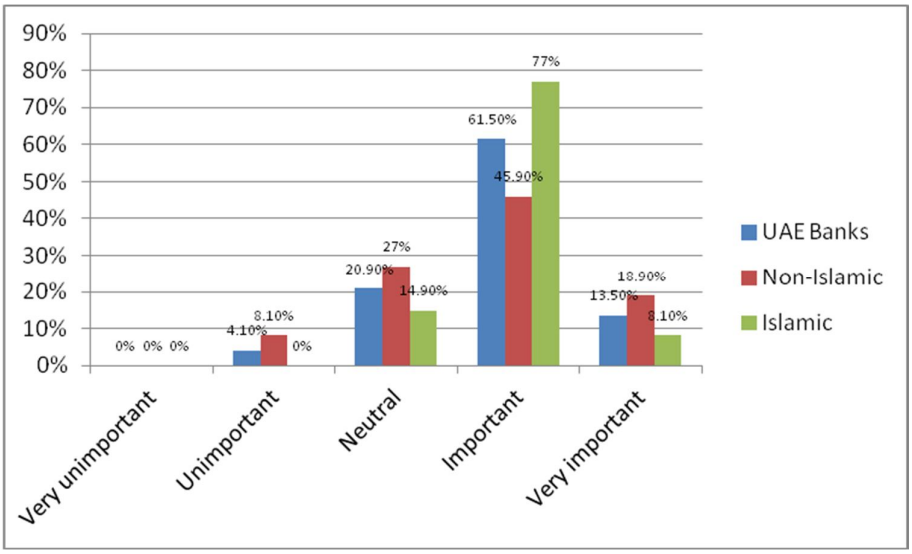


Figure 5.36.a. Director/owner of the company gives personal guarantee (5-categories)

The majority of managers (45.9%) from Non-Islamic banks consider director/owner's personal guarantee as important. Similarly, the majority of managers (77%) in Islamic banks also consider the director/owner's personal guarantee important. A large difference (difference>25%) was seen between managers in Islamic and Non-Islamic banks in the category 'Important' and a slight difference (0% <difference<10%) was seen in the category 'Very important'. Non-Islamic bank managers are more likely to consider director/owner's personal guarantee very important while Islamic managers are more likely to view this as important.

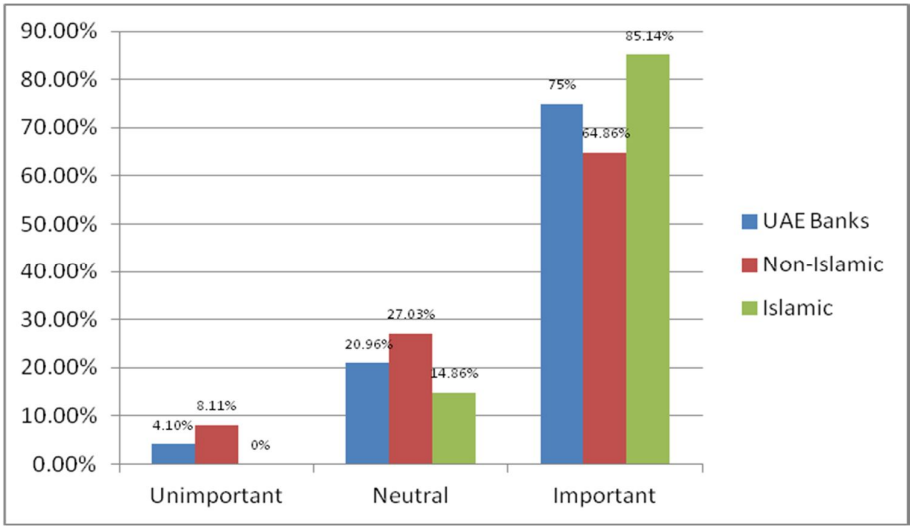


Figure 5.36.b. Director/owner of the company gives personal guarantee (3-categories)

Figure 5.36 (b) shows that most of the managers (75%) in UAE banks agree that the director/owner's personal guarantee is important and only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider the director/owner's personal guarantee important with a moderate difference (10% <difference<25%) in this response. Islamic bank managers are more likely to view a director/owner's personal guarantee important than Non-Islamic bank managers.

5.2.1.2.4.4.2 Providing property deposit

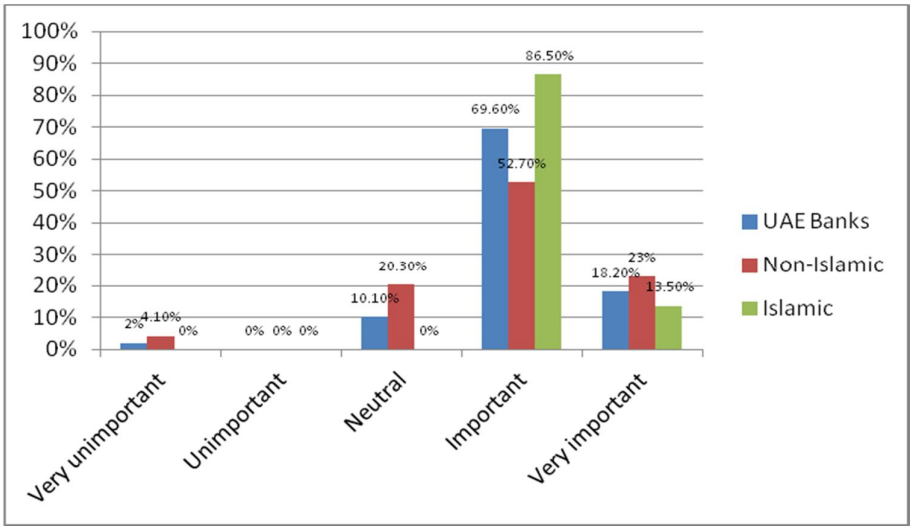


Figure 5.37.a. Providing property deposit (5-categories)

The survey result about the importance of property deposit shows that the majority of respondents (69.6%) from UAE banks consider the property deposit as important and only a few of them consider it very unimportant using 5-category responses. The majority of the managers (52.7%) from Non-Islamic banks consider property deposit important. Similarly, the majority of managers (86.5%) in Islamic banks also consider property deposit as important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the category 'Important' and a moderate difference (10% <difference<25%) was seen in the category 'Very important'. Non-Islamic bank managers are more likely to consider a property deposit very important.

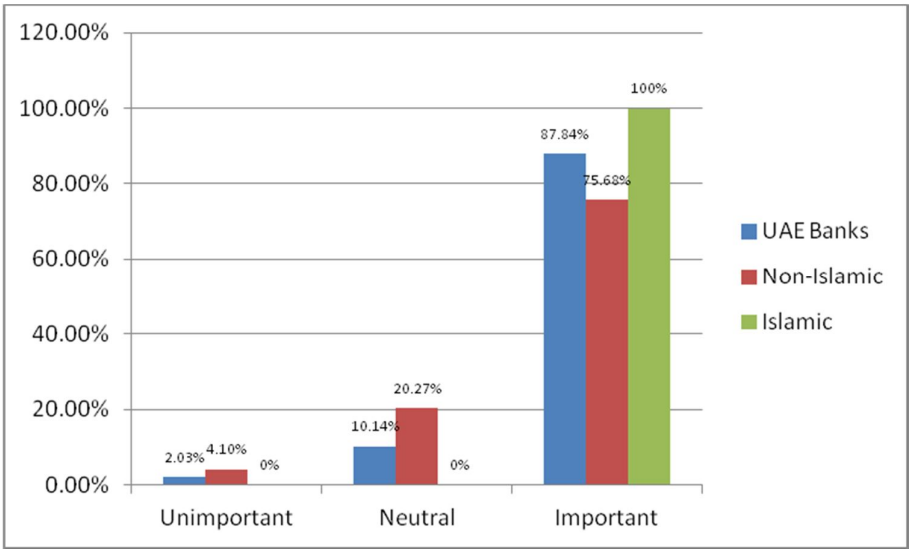


Figure 5.37.b: Providing property deposit (3-categories)

Figure 5.37.b shows that most of the managers (75.68%) in UAE banks agree that property deposit is important and only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks were found to be considering the property deposit important and a moderate difference (10% <difference<25%) was seen in this category where more Islamic banks consider the issue important than Non-Islamic banks using 3-categories response.

5.2.1.2.5 Importance given to company factors while making lending decisions

The respondents were asked about the importance given to company factors while making lending decisions; the factors in question were fixed assets, accounting turnover, profitability of the company, and the firm having been in business for less than or more than two years.

5.2.1.2.5.1 Fixed assets

The survey result about the importance of fixed assets shows that the majority of the respondents (73%) from UAE banks consider the fixed assets of the company important and only a few of them consider it unimportant using 5-category responses. The majority of managers (64.9%) from Non-Islamic banks consider fixed assets important. Similarly, the majority of managers (81.1%) in Islamic banks consider fixed assets important. A moderate difference (10% <difference<25%) was seen between managers in Islamic and Non-Islamic banks in the category 'Important'. Islamic bank managers are more likely to consider fixed assets more important than Non-Islamic managers using 5-category responses.

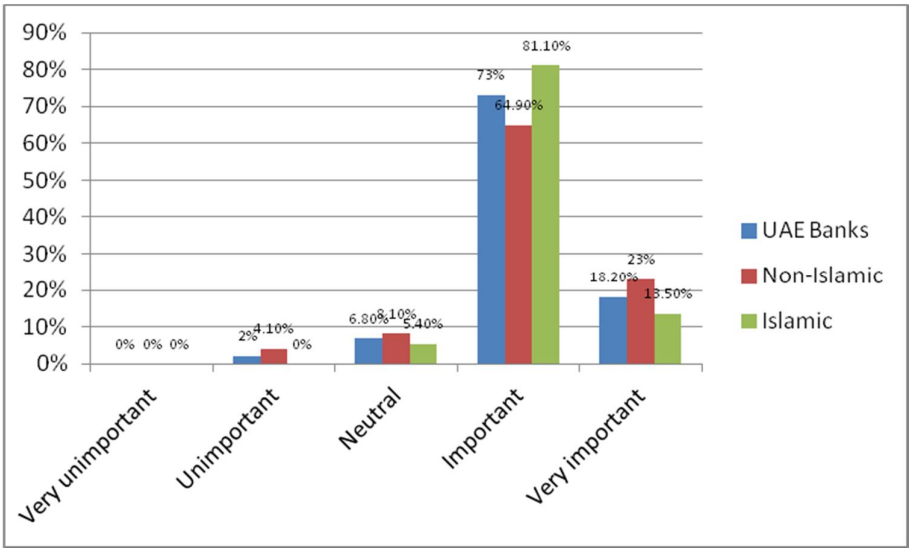


Figure 5.38.a. Fixed assets (5-categories)

Figure 5.38.b shows that most of the managers (91.23%) in UAE banks agree that fixed assets are important and only a few of them consider it unimportant using 3-categories responses. The majority of managers from both Islamic and Non-Islamic banks consider the fixed assets as important with only a slight difference (0%

<difference<10%) in response rates. The main difference was seen in the strength of the response otherwise managers from Islamic and Non-Islamic banks have similar opinions on the issue.

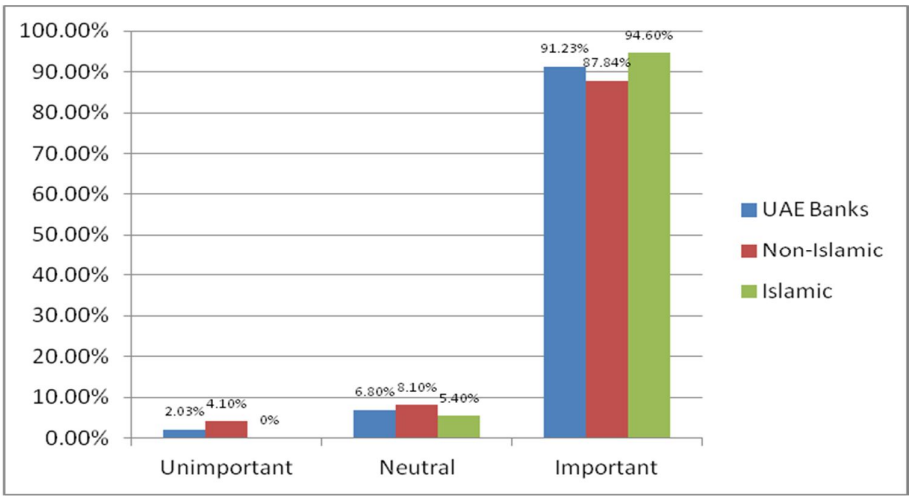


Figure 5.38.b. Fixed assets (3-categories)

5.2.1.2.5.2 Accounting turnover

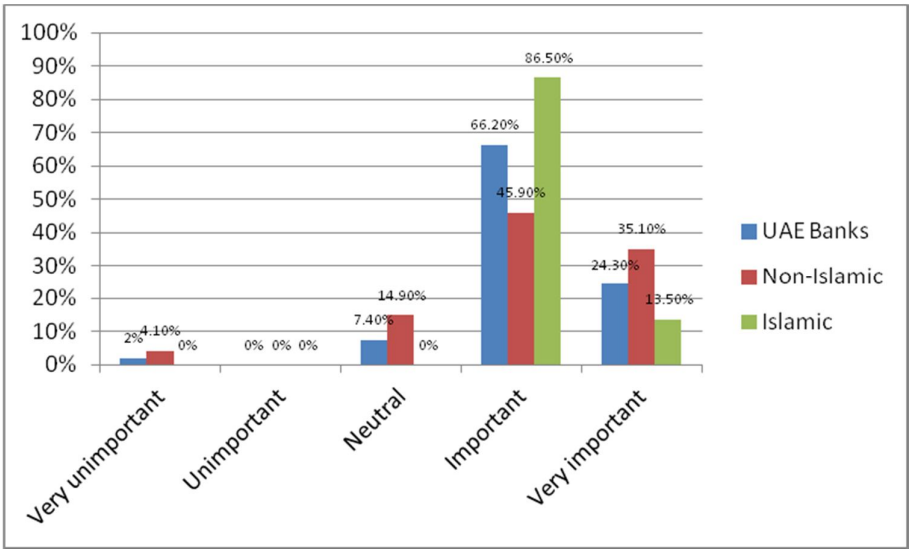


Figure 5.39.a. Accounting Turnover (5-categories)

The survey result about the importance of accounting turnover shows that the majority of the respondents (66.2%) from UAE banks consider the accounting turnover important and only a few of them consider it unimportant or very unimportant using 5-category responses. The majority of managers (45.9%) from Non-Islamic banks

consider accounting turnover important. Similarly, the majority of managers (86.5%) in Islamic banks also consider accounting turnover important. A large difference (difference>25%) was seen between managers in Islamic and Non-Islamic banks in the category 'Important'. Islamic bank managers are more likely to consider the accounting turnover important using 5-category responses.

Figure 5.39.b shows that most of the managers (90.5%) in UAE banks agree that accounting turnover is important and only a few of them consider it unimportant based on 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider the accounting turnover important with a moderate difference (10% <difference<25%) in their responses. Islamic managers have a slightly greater tendency to view the issue as important relative to Non-Islamic managers.

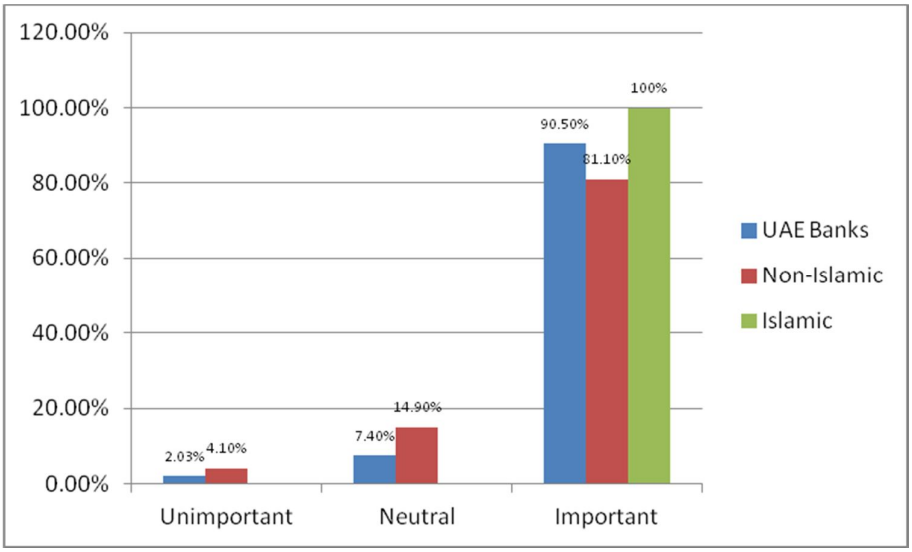


Figure 5.39.b. Accounting Turnover (3 -categories)

5.2.1.2.5.3 Profitability of company

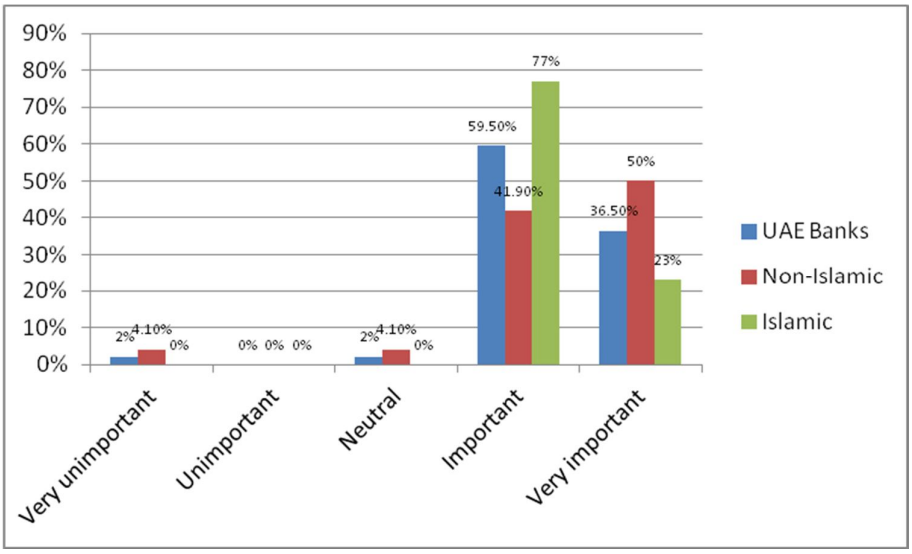


Figure 5.40.a. Profitability of company (5-categories)

The survey result about the importance of the profitability of a company shows that the majority of the respondents (59.5%) from the UAE banks consider the profitability of a company as important and only a few of them consider it unimportant or very unimportant using 5-category responses. The majority of the managers (41.9%) from Non-Islamic banks consider profitability of company important. Similarly, the majority of managers (77%) in Islamic banks also consider the profitability of a company as important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the categories 'Important' and 'Very important'. Non-Islamic bank managers are more likely to consider the profitability of a company as very important.

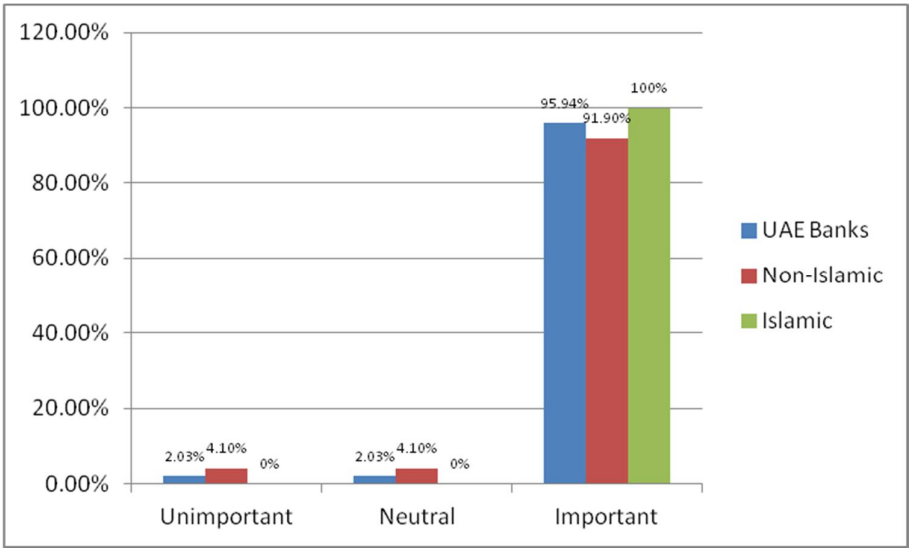


Figure 5.40.b. Profitability of company (3-categories)

Figure 5.40.b. shows that most of the managers (95.94%) in UAE banks agree that the profitability of a company is important and only a few of them were found to be considering it unimportant using 3-category responses. The vast majority of managers from both Islamic and Non-Islamic banks consider the profitability of company important with only a slight difference in the percentage of responses in this category. The main difference is in the strength of the response otherwise, in general, managers from Islamic and Non-Islamic banks have similar opinions on the issue.

5.2.1.2.5.4 Being in business for less than 2 years

The respondents were asked if they consider the firms that are in business for less than 2 years are important when lending. The survey result about the importance of a company being in business for less than 2 years shows that the majority of the respondents (44.6%) from UAE banks consider a company being in business for less than 2 years as important and only a few of them consider it very unimportant using 5-category responses. The majority of the managers (41.9%) from Non-Islamic banks were neutral about the importance of a company being in business for less than 2 years. On the other hand, the majority of the managers (67.6%) from Islamic banks consider a company being in business for less than 2 years as an important factor.

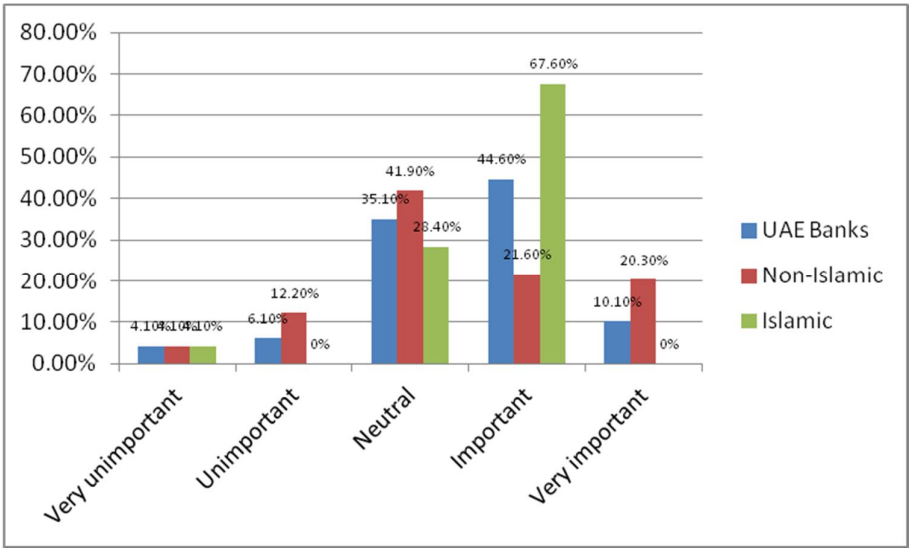


Figure 5.41.a. Being in business for less than 2 years (5-categories)

A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the category 'Important' and a moderate difference (10% <difference<25%) was seen in the category 'Neutral'. Non-Islamic bank managers are more likely to be neutral on the importance of being in business for less than 2 years and Islamic banks are more likely to consider it as important based on 5-category responses.

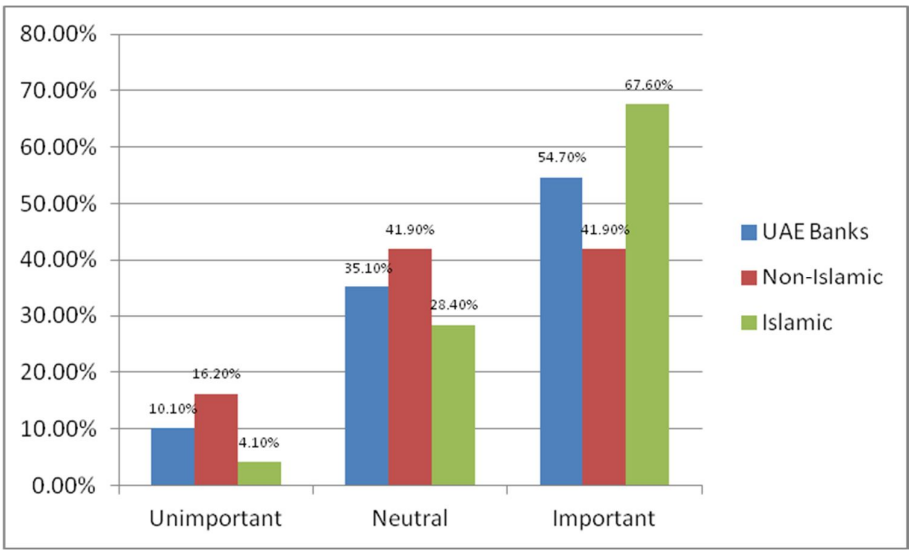


Figure 5.41.b. Being in business for less than 2 years (3-categories)

Figure 5.41.b shows that most of the managers (54.7%) in UAE banks consider a company being in business for less than 2 years as important and only a few of them

consider it unimportant using 3-category responses. Most of the managers from Islamic banks consider a company being in business for less than 2 years important and an equal number of responses for 'Neutral' and 'Important' were given by Non-Islamic bank managers. A moderate difference (10% <difference<25%) was found for the category 'Neutral' and a large difference was seen for the category 'Important'. Hence, Non-Islamic banks are more likely to be neutral on a company being in business for less than 2 years than the Islamic banks. Islamic banks are more likely to consider the factor important using 3-category responses.

5.2.1.2.5.5 Being in Business for more than 2 years

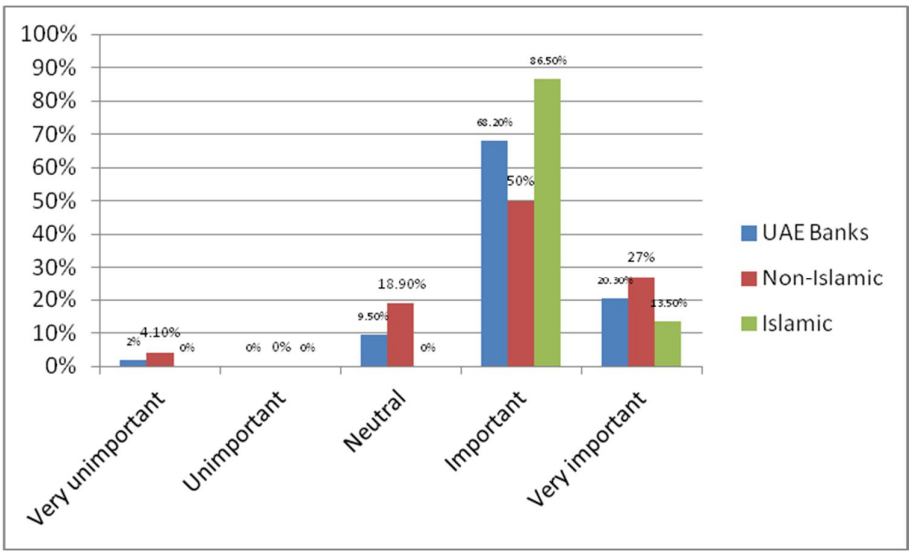


Figure 5.42.a. Being in business for more than 2 years (5-categories)

The respondents were asked if they considered the firms which have been in business for more than 2 years as important for lending. The survey result about the importance of a company being in business for more than 2 years shows that the majority of respondents (68.2%) from UAE banks consider a company being in business for more than 2 years as important and only a few of them consider it very unimportant using 5-category responses. The majority of the managers (50%) from Non-Islamic banks consider being in business for more than 2 years important. Similarly, the majority of managers (86.5%) from Islamic banks consider a company being in business for more than 2 years as an important company factor. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the category 'Important' and a moderate difference (10% <difference<25%) was seen in the

category ‘Very important’. Non-Islamic bank managers are more likely to consider being in business for more than 2 years as very important and Islamic banks are more likely to consider it important using 5-category responses.

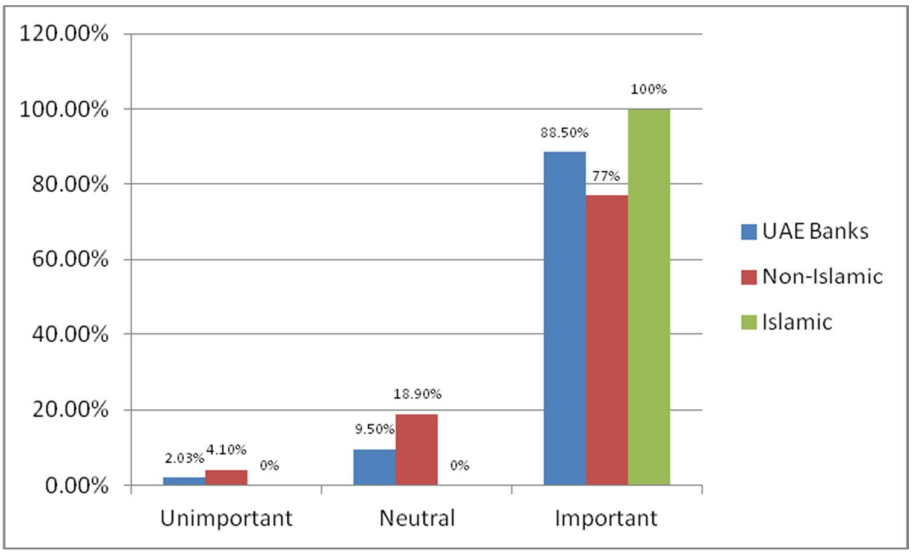


Figure 5.42.b. Being in business for more than 2 years (3-categories)

Figure 5.42.b shows that most of the managers (88.5%) in UAE banks consider a company being in business for more than 2 years as important and only a few of them consider it unimportant using 3-category responses. Most managers from Non-Islamic and Islamic banks consider a company being in business for more than 2 years as important. A moderate difference (10% <difference<25%) in response rates was found for the category ‘Important’. Islamic banks are more likely to consider a company being in business for more than 2 years important than Non-Islamic banks. A moderate difference was seen in the strength of the response otherwise in general managers from Islamic and Non-Islamic banks have similar opinion on the issue.

5.2.1.2.6 Expert system

The respondents were asked about the expert system 5Cs for credit risk management i.e. character, cash flow, capital, collateral and conditions.

5.2.1.2.6.1 Do you consider all the 5 Cs while making decisions?

When asked whether the banks consider all 5Cs while making lending decisions, 93.2% of the respondents from UAE banks they did consider all 5Cs. The majority of

the respondents from Non-Islamic banks (91.9%) said that they considered all the 5Cs in decision making. Similarly, the majority of respondents from Islamic banks (94.6%) also considered all 5Cs, with only a very slight difference (0%<difference<10%) in response rates.

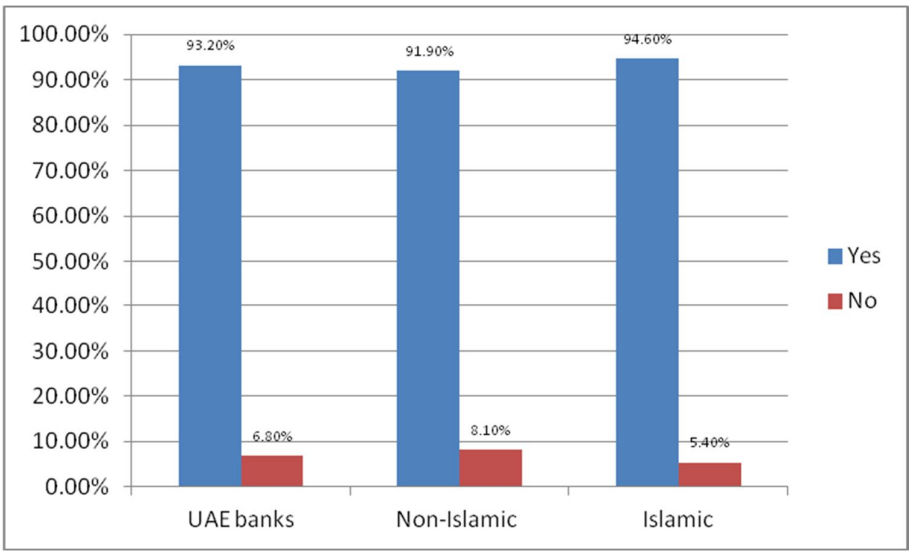


Figure 5.43. Do you consider all the 5 Cs while making decisions?

5.2.1.2.6.2 Character

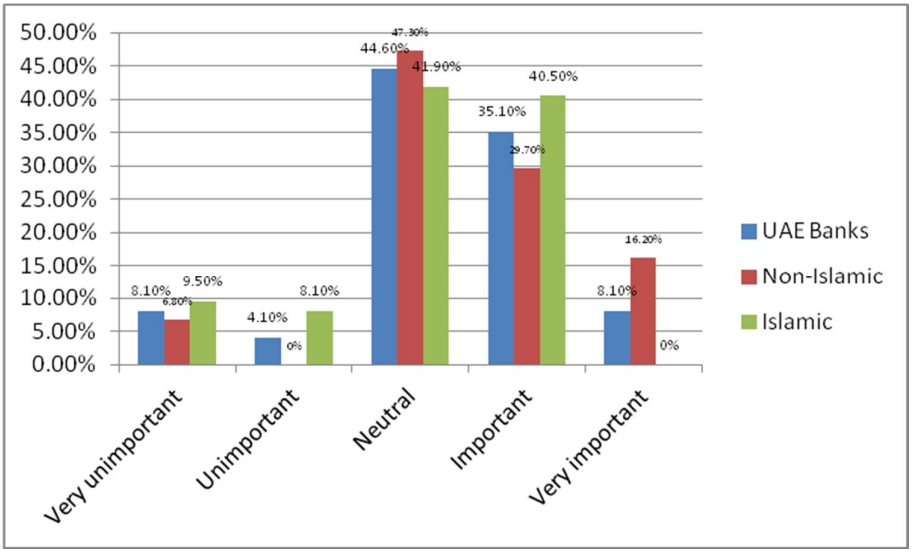


Figure 5.44.a. Character (5-categories)

The survey result about the importance of character shows that the majority of respondents (44.6%) from UAE banks were neutral about it and very few considered

it unimportant. The majority of managers (47.3%) from Non-Islamic banks were neutral on the importance of character using 5-category responses. Similarly, the majority of managers (41.9%) in Islamic banks were also neutral on the importance of character. A moderate difference was seen between the managers in Islamic and Non-Islamic managers in the category 'Important' and 'Very Important'. Islamic bank managers are more likely to consider character as important and Non-Islamic banks are more likely to consider the issue very important.

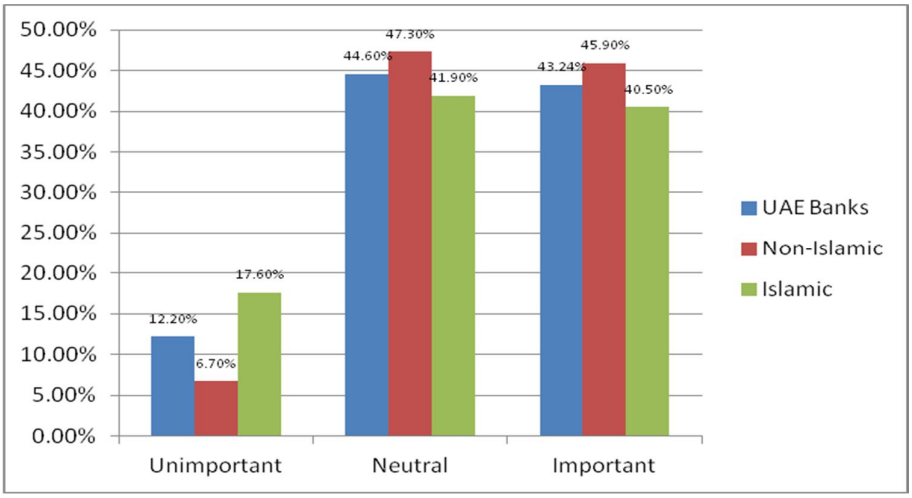


Figure 5.44.b. Character (3-categories)

Figure 5.44.b. shows that most of the managers (47.3%) in UAE banks are neutral on the importance of character and only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks were found to be neutral on the importance of character, also almost as many regard this issue as important as find it neutral with a slight difference (0%<difference<10%) in response rates. Difference was seen in the strength of the response otherwise in general managers from Islamic and Non-Islamic banks have the similar opinions on the issue.

5.2.1.2.6.2.3 Cash Flow

The survey result about the importance of cash flow shows that the majority of respondents (66.2%) from UAE banks consider cash flow important and very few consider it unimportant using 5-category responses. The majority of managers (48.6%) from Non-Islamic banks consider cash flow important. Similarly, the

majority of managers (83.8%) in Islamic banks also consider cash flow important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the category 'Important' and 'Very Important'; and a slight difference (0% <difference<10%) was seen in the category 'Neutral'. Non-Islamic bank managers are more likely to consider the cash flow as very important and Islamic banks are more likely to consider it important using 5-category responses.

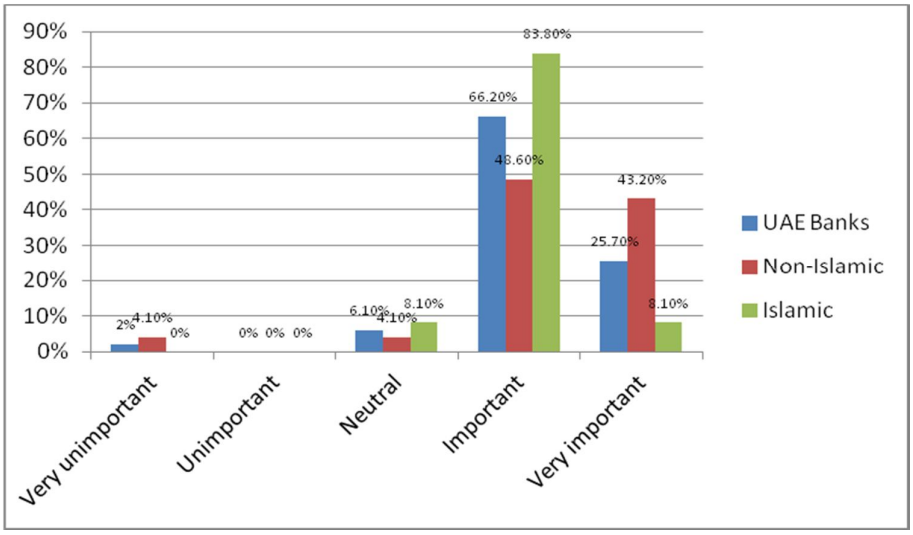


Figure 5.45.a. Cash flow (5-categories)

Figure 5.45.b shows that most of the managers (91.9%) in UAE banks consider cash flows important and only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks considering cash flow as an important factor with no difference in response rate for this category. Hence, the main difference is in the strength of the response and they have a similar general opinion on the issue.

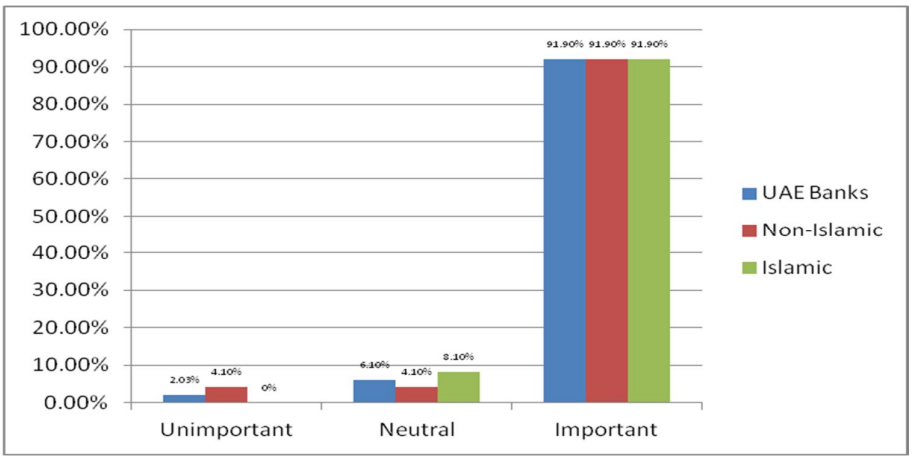


Figure 5.45.b. Cash flow (3-categories)

5.2.1.2.6.2.4 Capital

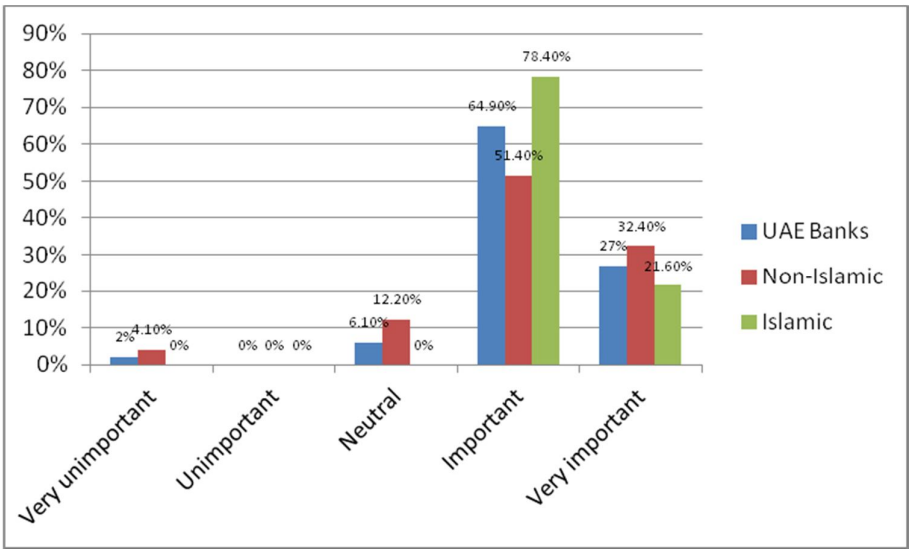


Figure 5.46.a.Capital (5-categories)

When asked about the importance of capital the majority of the respondents (64.9%) from UAE banks consider it important and very few considered it very unimportant using 5-category responses. The majority of managers (51.4%) from Non-Islamic banks consider capital important. Similarly, the majority of managers (78.4%) in Islamic banks were also found to consider the capital important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks

in the category ‘Important’. Islamic bank managers are more likely to consider the capital important using 5-category responses.

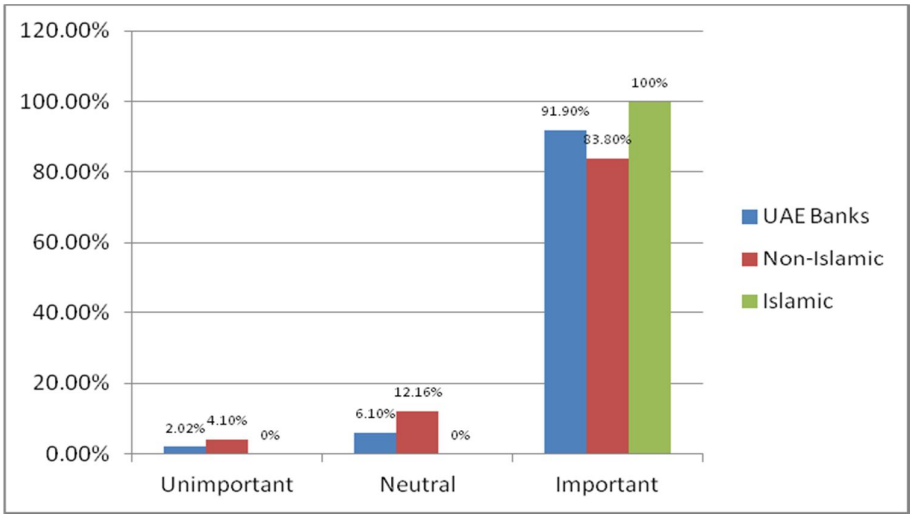


Figure 5.46.b.Capital (3-categories)

Figure 5.46.b shows that most of the managers (91.9%) in UAE banks consider capital important and only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider capital an important factor. A moderate difference (10% <difference<25%) was seen between the Islamic and Non-Islamic banks for the category ‘Important’ as Islamic banks appeared to be more likely to give importance to the capital. The main difference is in the strength of the response but they generally have similar opinion on the issue.

5.2.1.2.6.2.5 Collateral

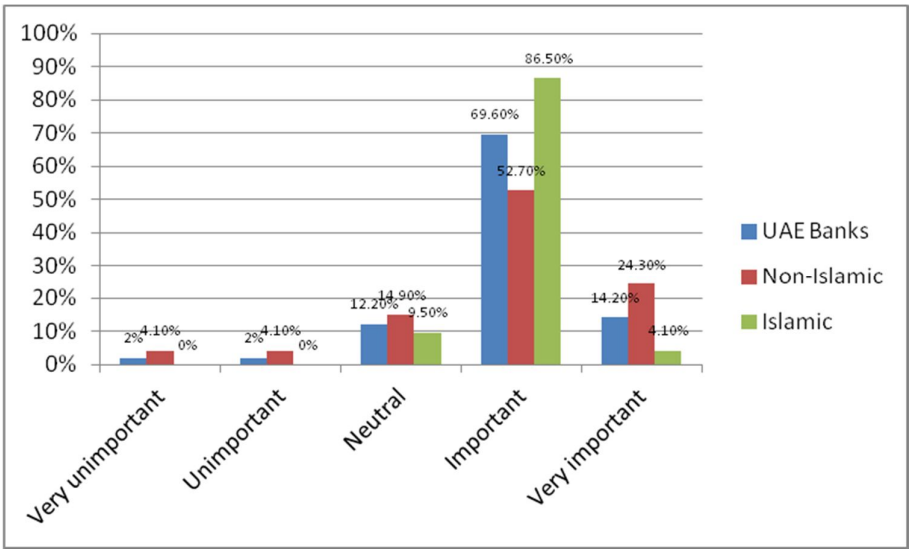


Figure 5.47.a. Collateral (5-categories)

When asked about the importance of collateral, the majority of respondents (69.6%) from the UAE banks consider the collateral as an important factor and a few of them consider it very unimportant using 5-category responses. The majority of managers (52.7%) from Non-Islamic banks consider collateral important. Similarly, the majority of managers (86.5%) in Islamic banks also consider the collateral important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic banks in the category 'Important' and a moderate difference (10% <difference<25%) was seen in the category 'Very important'. Non-Islamic bank managers are more likely to consider collateral very important whereas Islamic bank managers are more likely to consider collateral important using 5-categories responses.

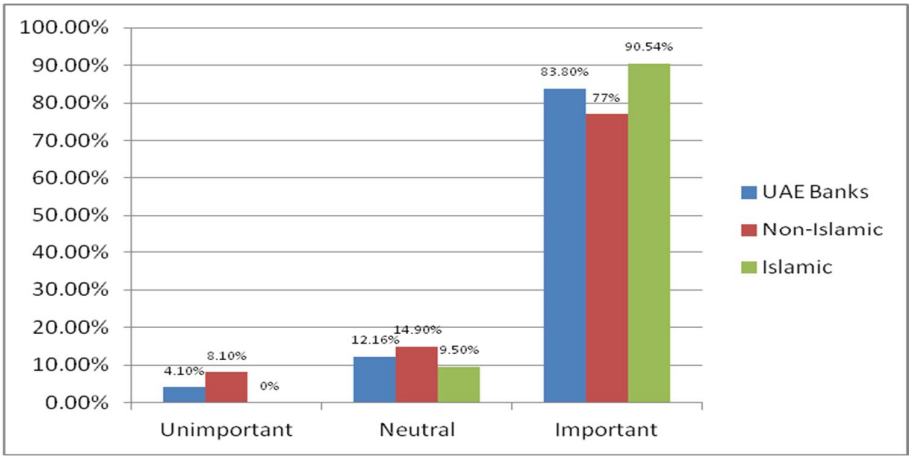


Figure 5.47.b. Collateral (3-categories)

Figure 5.47.b shows that most of the managers (83.8%) in UAE banks consider collateral important and only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider collateral as an important factor. A slight difference (0%<difference<10%) was seen between the Islamic and Non-Islamic banks for the category 'Neutral' and a Moderate difference (10%<difference<25%) for the category 'Important' as Non-Islamic banks appeared to be more neutral and Islamic banks are more likely to consider collateral as important. The main difference is in the strength of the response to the issue, with the different types of bank having similar general opinions on it.

5.2.1.2.6.6 Conditions

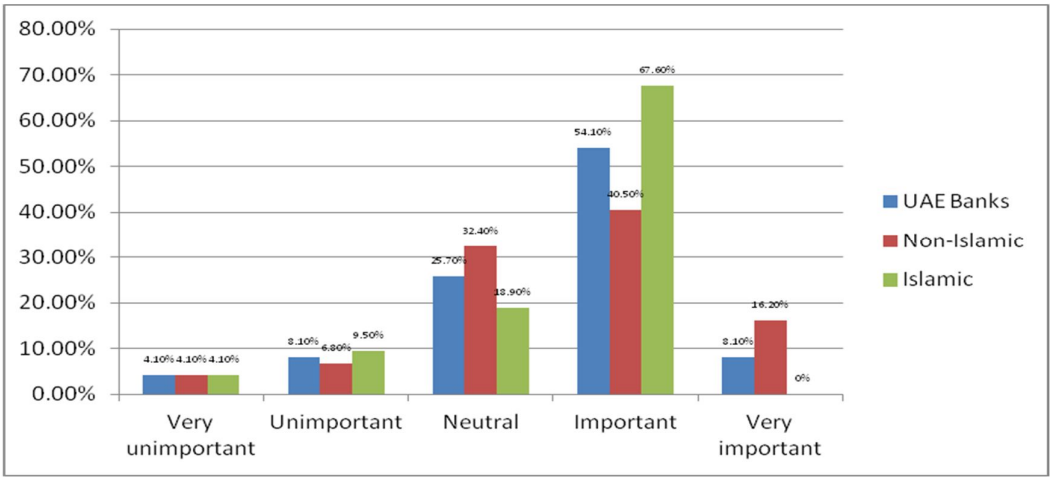


Figure 5.48.a. Conditions (5-categories)

The survey result on the importance of conditions shows that the majority of the respondents (54.1%) from UAE banks consider conditions as an important factor and only a few of them consider it very unimportant using 5-category responses. The majority of managers (40.5%) from Non-Islamic banks consider conditions important. Similarly, the majority of managers (67.6%) in Islamic banks also consider conditions important. A large difference (difference>25%) was seen between the managers in Islamic and Non-Islamic managers in the category 'Important' and a moderate difference (10%<difference<25%) was observed in the category 'Neutral' and other categories showed a slight difference. Islamic bank managers are more likely to give importance to the conditions and Non-Islamic banks appeared to be more neutral on the issue.

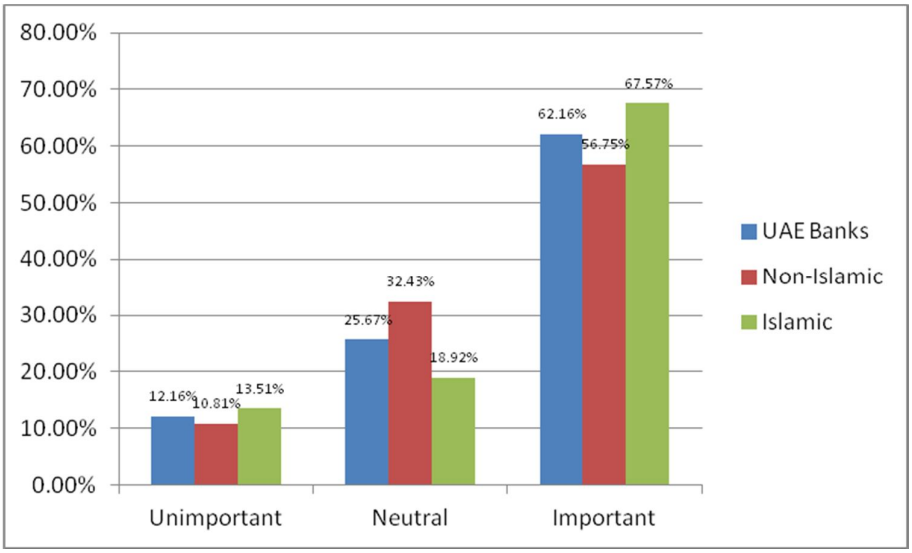


Figure 5.48.b. Conditions (3-categories)

Figure 5.48.b shows that most of the managers (62.16%) in UAE banks consider conditions important while only a few of them consider it unimportant using 3-category responses. The majority of managers from both Islamic and Non-Islamic banks consider conditions as an important factor. A moderate difference (10%<difference<25%) was seen between Islamic and Non-Islamic banks for the categories 'Neutral' and 'Important' as Non-Islamic banks appeared to be more neutral and Islamic banks give more importance to the issue. Nevertheless the main difference was seen in the strength of the response with managers from Islamic and Non-Islamic banks having broadly similar opinions on the issue.

PART 2 DESCRIPTIVE STATISTICS

Descriptive statistics is used to summaries the result or simply u can say that descriptive statistics used to show the basic characteristic of the data set. Descriptive statistic is used to present data in sensible and summarized way. Frequencies are used on demographic variables of the respondents. Mean, ranking, standard deviation, skewness and kurtosis values are calculated for all the factors and 7 computed variables separately considered under the current study.

Table 5.3 Respondent's Demographic information

S.no.	Variables	Frequency	Percent
1	**Year of service**		
	1-5	25	16.9
	6-10	66	44.6
	11-15	37	25.0
	above 15	20	13.5
2	**Year of experience issuing Credit**		
	1-5	82	55.4
	6-10	54	36.5
	11-15	3	2.0
	above 15	9	6.1
3	**Academic Qualification**		
	secondary school	6	4.1
	undergraduate	33	22.3
	postgraduate	76	51.4
	professional diploma	33	22.3
4	**Training Attended**		
	once a week	14	9.5
	once a month	64	43.2
	once in 6 months	61	41.2

	once a year	9	6.1
5	**Authorized credit limit**		
	less than 100,000	35	23.6
	100,000-200,000	35	23.6
	200,000-300,000	36	24.3
	300,000 or more	42	28.4

Table 5.3 shows frequencies and percentage of the demographic variables. Most of the respondents (66 out of 148) are having 6 to 10 years of service in the organization. Whereas 37 respondents are having 11 to 15 years of service within organization, 25 respondents are having 1 to 5 years of service and 20 respondents have above 15 year of services within organization. Results reveal that 55% of the respondents have experience of 1 to 5 years of issuing loan and credit whereas 36% of the respondents have experience of 6 to 10 years in issuing loan or credit. Academic qualification shows that 51% of the respondents are postgraduates whereas 22% are having professional degrees and 22% are undergraduates. Results also show that 43% of the respondents attend training programs once a month whereas 41% respondents attend training programs once in six month. Authorize credit limit show that 24% of the respondents can provide credit up to AED 100,000 and another 24% of the respondents can issue loan up to AED 200,000 whereas 28% of respondents can issue credit more than AED 300,000 and approximately 24% of respondents can issue credit up to AED 300,000.

Model 1

Table 5.4 Descriptive Statistics of Individual Factors

Factors	Mean	Ranking	Std. Deviation	Skewness		Kurtosis	
	Statistic		Statistic	Statistic	Std. Error	Statistic	Std. Error
verfication_of_applicant_data	1.0000	1	.00000	.	.	.	.
Q27_consider_5C	1.0676	2	.25185	3.481	.199	10.256	.396
credit_quality_report	1.2838	3	.45236	.969	.199	-1.076	.396
use_of_derivatives	1.3986	4	.49128	.418	.199	-1.850	.396
borrowers_performance	1.4122	5	.91048	2.101	.199	2.995	.396
credit_risk_assessment	1.4257	6	.80889	2.121	.199	3.897	.396
interbank_exposures	1.4932	7	.50165	.027	.199	-2.027	.396
RAROC	1.5068	8	.50165	-.027	.199	-2.027	.396
year_of_issuing	1.5878	9	.80752	1.596	.199	2.403	.396
penalties_for_Credit_officiers	1.5946	10	.49264	-.389	.199	-1.874	.396
credit_ceiling_allocated	1.6351	11	.76620	1.006	.199	.356	.396
percentage_of_baddebts	1.7162	12	.75629	.525	.199	-1.073	.396
credit_to_relatives	1.8716	13	.33565	-2.245	.199	3.080	.396
Rate_of_lending	1.9122	14	1.27738	.901	.199	-1.014	.396
share_default_information	1.9459	15	.22689	-3.985	.199	14.068	.396
year_of_service	2.3514	16	.91744	.314	.199	-.675	.396
training_attended	2.4392	17	.74893	-.036	.199	-.317	.396
credit_limit_authorize	2.5743	18	1.13743	-.088	.199	-1.396	.396
acdemic_qualification	3.1419	19	1.12492	.501	.199	-.514	.396

Q28a_Character	3.3108	20	.97486	-.660	.199	.625	.396
Q25a2_Nonstateowned	3.3176	21	.78278	.323	.199	1.174	.396
Q26d_in_busniess_lesst han_2years	3.5068	22	.90724	-.685	.199	.758	.396
Q28e_conditions	3.5405	23	.90635	-.956	.199	.915	.396
Q25c1_setupyear_newly setup	3.8108	24	.89101	-1.372	.199	2.494	.396
Q24e_internal_matrix	3.8243	25	.70678	-1.143	.199	3.729	.396
Q25d1_CH_directorPer sonalGurantee	3.8446	26	.69706	-.512	.199	.568	.396
Q25a1_stateOwnership	3.8581	27	.77381	-1.356	.199	3.195	.396
Q24c_past_experience	3.8851	28	.84534	-1.628	.199	3.892	.396
Q24a_financial_perform ance	3.8851	28	.76952	-.890	.199	2.416	.396
Q9_nonfinancial_data_i mportant	3.8986	29	.64671	-1.738	.199	6.967	.396
Q25c2_setupyear_provi dingBusinessPlan	3.9122	30	.69916	-1.815	.199	5.895	.396
Q28d_colletral	3.9189	31	.72387	-1.512	.199	4.680	.396
personal_experience_in _lending	3.9527	32	.64243	-2.299	.199	9.230	.396
Q25b1_CS_medium	3.9730	33	.72793	-1.568	.199	5.019	.396
Q10_credit_screening_ methods	4.0135	34	.26047	.623	.199	12.184	.396
Q25d2_CH_propertyDe posit	4.0203	35	.68482	-1.572	.199	6.306	.396
Q24b_operating_efficie ncy	4.0405	36	.63758	-1.950	.199	9.257	.396
Q26e_in_business_more than_2years	4.0473	37	.69335	-1.553	.199	6.144	.396

Q25b2_CS_oldestablished	4.0608	38	.65180	-1.853	.199	8.547	.396
Q24d_bank_rating_Credit_quality	4.0743	39	.59580	-2.370	.199	13.182	.396
Q26a_Fixed_assets	4.0743	39	.57251	-.654	.199	2.788	.396
Q24f_counter_party	4.0811	40	.63368	-2.017	.199	10.026	.396
data_reliable_helpful	4.1081	41	.31157	2.550	.199	4.564	.396
Q26b_accounting_turnover	4.1081	41	.70117	-1.593	.199	6.300	.396
Q28b_cashflow	4.1351	42	.69643	-1.659	.199	6.760	.396
Q8_financial_statements	4.1486	43	.49986	.283	.199	.570	.396
Q28c_capital	4.1486	43	.70339	-1.643	.199	6.537	.396
Q26c_profitability	4.2838	44	.70025	-1.903	.199	7.894	.396
Valid N (listwise)							

Table 5.4 shows the mean value, ranking of the mean values, standard deviation, skewness and kurtosis of all the factors that are used to measure credit risk management practices. Highest rank is given to the value having lowest mean. The smallest and the largest mean values are observed to be 1.000 (verification of applicant data) and 4.2838 (Profitability). So there effective ranks are from 1 to 44. From the table, it can be observed that most contributing factors in credit risk management practices are Applicant data (factor of lending policy), 5C's (factor of expert system), Credit Quality report (factor of Lending policy), Use of derivate (factor of Lending policy), borrower performance (factor of Lending policy), credit risk assessment (factor of Lending policy), inter-bank exposure (factor of Lending policy), RAROC (factor of Lending policy), penalties for credit officer (factor of Lending policy).

Whereas least contributing factors in credit risk management practices are Profitability (factor of company factor variable), capital (factor of expert system), financial statements (factor of lending decisions), cash flow (factor of expert system), accounting turnover (factor of company factor variable), counter-party (Factor of

bank-wise exposure), fixed asset (factor of company factor variable), and bank rating credit quality (Factor of bank-wise exposure).

Model 2

Table 5.5 Descriptive statistics of Variables

Variables	Mean	Ranking	Std. Deviation	Confidence interval (95 percent)
	Statistic		Statistic	
lending_decision	4.0243	7	.28752	(3.9776, 4.0710)
company_factor	4.0041	6	.56927	(3.9116, 4.0965)
bank_wise_exposure	3.9651	5	.58942	(3.8693, 4.0608)
Corporate_borrower	3.8497	4	.59493	(3.7530, 3.9463)
expert_system	3.3536	3	.52594	(3.2682, 3.4390)
demographic_var	2.4189	2	.51022	(2.336, 2.5018)
Lending_Policy	1.5535	1	.22191	(1.5175, 1.5896)
Valid N (listwise)				

Table 5.5 shows the mean value, ranking of the mean values, standard deviation, and confidence interval at (95%) of seven variables used for the study that are contributing to measure credit risk management practices. Highest rank is given to the value having lowest mean. The smallest and the largest mean values are observed to be 1.5535 (lending policy) and 4.0243 (lending decision). So there effective ranks are from 1 to 7. From the table, it can be observed that most contributing variables in credit risk management practices are lending policy, demographic variable, expert system followed by corporate borrower, bank-wise exposure, company factor and lending decision in banks working in UAE.

5.3. Conclusion

In UAE banks, majority of the managers have 6-10 years of service and very few have 15+ years of experience. The majority of the respondents from UAE banks had 1-5 years of service issuing loan. In regards to the highest academic qualification, the majority of respondents were Post graduate. The UAE banks provide training to their staff mostly once a month. The survey results regarding credit limit that the credit officers can authorize showed uniform distribution among various categories of 300000 or more, 200000-300000, 100000-200000 and less than 100000.

The respondents from UAE banks agree that the data (financial and non-financial) and credit screening methods are reliable and helpful and personal experience play an important role in lending decisions. The respondents from UAE banks agree that financial statements and Non-financial data are important. The survey result on the question if credit officers are allowed to give credits to relatives showed that majority of them are not allowed. The rate of return on lending, percentage of bad debt out of total loan and the percentage of credit ceiling allocated to different industries in UAE banks is 5-10% according to the majority of the respondents. The survey result about the frequency of credit risk assessment review and examining borrower's performance in the bank show that most of the staff from the UAE banks review once a month.

On the factor of preparation of 'Risk Adjusted Return on Capital (RAROC)' framework for risk pricing and having a framework to study inter-bank exposures, almost an equal distribution was observed for the Yes and No response. The UAE banks appeared to use 'Derivatives' to manage credit risk and do not share default information among banks in most of the cases. Verification of applicant's data is done in the UAE banks when making lending decision. The survey result showed that majority of the respondents from UAE banks said that they do not penalize the officers that issue default loan.

UAE banks agree that the study of financial performance, operating efficiency and past experience are important in lending decisions. For evaluating bank wise exposure the UAE banks consider bank rating on credit quality, internal matrix, counter party or country risk are important.

Among the factors to be considered when lending to corporate borrowers the state-owned enterprise, capital size with reference to medium, small sized firm and old-established firm are important for the UAE banks. The other important factors are set up year with reference to a newly set-up firm and providing business plan, director/owner's personal guarantee, property deposit and fixed assets for the UAE banks when lending to the corporate borrowers. The profitability and accounting turnover of a company are also important factors while lending to corporate borrowers. The UAE banks give importance to company being in business for more than 2 years and also less than 2 years, though slightly less number of respondents are neutral on the latter issue. Majority respondents were neutral on the importance of the non-state-owned enterprise in UAE banks.

Majority of the respondents from UAE banks agree that they use all 5Cs in lending decisions. UAE banks consider cash flows, capital, collateral and conditions important, however they are neutral on the importance of character.

Large differences were found between the Islamic and Non-Islamic banks on the issue of importance given to the business which are in operation for less than 2 years, importance of non-state owned enterprise when lending to corporate borrowers, development of frame work to study interbank exposures, development of Risk Adjusted Return on Capital (RAROC) framework for risk pricing, percentage of credit ceiling allocated to different industries, rate of return on lending-Islamic banks higher, importance of non-financial data, credit limit that credit officers can authorize for the category 200000-300000-islamic banks and frequency of trainings on credit risk.

Islamic banks are much more likely to give importance to the businesses which are in operation for less than 2 years in comparison to Non-Islamic banks. On the issue of importance to non-state owned enterprise when lending to corporate borrowers Islamic banks are much likely to be neutral than Non-Islamic banks. The Non-Islamic banks are much more likely to develop RAROC framework for the risk pricing whereas Islamic banks are much more likely to have a framework to study interbank exposures. Islamic banks are much more likely to have higher percentage of credit ceiling allocated to different industries and rate of return on lending than Non-Islamic banks. Islamic bank managers compared to Non-Islamic bank managers are much

more likely to agree that non-financial data are important. Islamic bank managers are much more likely to have credit limit authorization in the category 200000-300000 and receive trainings on credit risk more frequently.

Moderate differences were found for the variables: years of service within the organization, years of service issuing loans, highest academic qualification, importance of financial statements of companies, percentage of bad debt out of total loans, credit risk assessment, frequency of borrower's performance, use of derivatives to manage credit risk, sharing of default information among banks-non, penalizing credit officers that issue default loans non, importance of operating efficiency, past experience, state-owned, medium and small sized firm, old established firm, newly set-up firm , director/owner of the company gives personal guarantee, providing property deposit, accounting turnover, in business for more than 2 years, capital, collateral, conditions.

Islamic banks are more likely to have staff with higher years of service within the organization and higher years of service issuing loans. Islamic banks are more likely to have more undergraduate staffs. Islamic banks are more likely to give importance to financial statements, operating efficiency, past experience, state-owned enterprises, medium and small sized firms, old and established firms and newly set up firms. Similarly, Islamic banks are more likely to give importance to the director/owner's personal guarantee, firms providing property deposit, accounting turnover of company, firms which are in business for more than 2 years, capital and collateral than Non-Islamic banks. Non-Islamic banks are more likely to be neutral on conditions of economy and the sector to which the firm belongs but Islamic banks are more likely to consider conditions of economy as important. Islamic banks are more likely to have lesser percentage of bad debt than Non-Islamic banks. Islamic banks are more likely to have higher frequency of credit risk assessment and borrower's performance examination. And Non-Islamic banks are more likely to use derivatives for credit risk management and share default information among banks compared to Islamic banks.

Slight differences were found between Non-Islamic and Islamic banks for the variables personal experience, credit screening methods, credit allowed to relatives, preparation of credit quality report, study of financial performance, internal matrix,

character, bank rating on credit quality, counter party or country risk, providing business plan, profitability, and all the 5Cs.

Non-Islamic banks are slightly more likely to agree that personal experience play an important role in lending decision and credit screening methods are reliable. Credit officers are not allowed to give credit to their relatives in Non-Islamic banks slightly more than Islamic banks. Non-Islamic banks are slightly more likely to prepare credit quality report, give importance to study of financial performance, internal matrix for studying bank-wise exposure, character and firms which are not set up and provide a business plan for loan. Islamic banks are slightly more likely to give importance to bank rating on credit quality, counter party or country risk, profitability and consider all 5Cs while making lending decisions.

No difference was seen for the variables data are reliable and helpful in lending decisions, do you verify applicant's data. Both Islamic banks and Non-Islamic banks agree that data (financial and non-financial) are helpful in lending decisions and they verify applicant's data.

5.4 Reliability Analysis

Reliability

Reliability includes stability and consistency in measurement (Sekaran, 1992) by using the alpha coefficient of Cronbach's. It is used for internal consistency of reliability. For likert scales, it is vital to calculate and report Cronbach's alpha coefficients for internal consistency reliability. As the reliability value of 0.5 to 0.6 is acceptable in many researches, the measurement instrument used in this study is considered acceptable (Churchill, 1979). In the present study Cronbach's Alpha is 0.902 (see table 5.6) when reliability test is applied on individual factors. Results of table 5.7 show that Cronbach's alpha value is 0.804 which shows data is reliable on 7 variables used under study. Hence, the study is reliable.

Table 5.6 Cronbach's Alpha on individual factors

Questions/ Factors	**Subjects**
48	148
Cronbach's Alpha	0.902

Table 5.7: Cronbach's Alpha value on 7 variables

Reliability Statistics	
Cronbach's Alpha	N of Items
.804	**7**

PART 3: INFERENTIAL STATISTICS ANALYSIS TO DIFFERENTIATE THE CREDIT RISK MANAGEMENT PRACTICES BETWEEN ISLAMIC AND NON-ISLAMIC BANKS

5.5 Introduction

This part aims to further investigate the differences between the Islamic and Non-Islamic banks by applying inferential statistics to the survey data. The non-parametric test used in the analysis is Mann-Whitney U test for independent samples.

5.6 Inferential Statistics

5.6.1 Testing of Equality of Means

Independent sample t-test is not applied because the assumptions of normality and assumption of homogeneity of variance is not fulfilled (refer to appendix 3 and 4). The t-test of independent samples tests the Null hypothesis if there is no significant difference between the means of Islamic and Non-Islamic banks. Test of normality shows significant p-value for all variables at 1% significance level (refer to appendix 4) whereas in independent sample t-test table, Levene's Test for Equality of Variances shows significant value for all variables except lending policy which means assumption of equal variance is violated (refer to appendix 3).

A one-way ANOVA is used when you have three or more categorical, independent groups, but it can be used for just two groups (but an independent-samples t-test is more commonly used for two groups).

For that reason, with respect to normality and homogeneity of variance – an alternate (non-parametric) test such as the Mann-Whitney U test should be used instead of the independent-samples t-test.

5.6.2 MANN-WHITNEY U TEST

5.6.2.1 Introduction

The Mann-Whitney U test is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed. The Mann-Whitney U test is often considered the nonparametric alternative to the independent t-test although this is not always the case.

5.6.2.2. Assumptions of Mann-Whitney U Test

1. Dependent variable should be ordinal or continuous. Ordinal variable includes likert scales.
2. Independent variable should be based on two independent categories.
3. **Independence of observations**, which means that there is no relationship between the observations in each group or between the groups themselves.
4. A Mann-Whitney U test can be used when your two variables are **not normally distributed.**

5.6.2.3 Hypothesis

$\mathbf{H_0}$: m1 = m2; There is no statistically significant difference in the means of the variable between Islamic and Non-Islamic banks.

$\mathbf{H_1}$: m1 $\neq$ m2; There is a statistically significant difference in the means of the variable between Islamic and Non-Islamic banks.

We use a two-tailed test and a significance level of .05 and 0.10.

The results obtained from Mann-Whitney U test has been presented in the Table 5.8.

Table 5.8 Mann-Whitney U test

Ranks				
	bank_type	**N**	**Mean Rank**	**Sum of Ranks**
Bank_wise_exposure	islamic	74	73.09	5409.00
	conventional	74	75.91	5617.00
	Total	148		
Company_factor	islamic	74	78.66	5820.50
	conventional	74	70.34	5205.50
	Total	148		
Expert_system	islamic	74	66.85	4947.00
	conventional	74	82.15	6079.00
	Total	148		
Lending_decision	islamic	74	79.43	5877.50
	conventional	74	69.57	5148.50
	Total	148		
Corporate_borrower	islamic	74	76.55	5664.50
	conventional	74	72.45	5361.50
	Total	148		
Lending_Policy	islamic	74	84.47	6251.00
	conventional	74	64.53	4775.00
	Total	148		
Demographic_var	islamic	74	77.85	5761.00
	conventional	74	71.15	5265.00
	Total	148		

Table 5.8 is very useful because it indicates the difference between Islamic and non-islamic banks on 7 variables under study. Bank-wise exposure shows a very small difference between Islamic and non-islamic banks which cannot be considered a significant difference between two types of banks. Company factors, demographic

variables and corporate borrowing also do not show a significant major difference between Islamic and non-islamic banks whereas lending policy, lending decision and expert system show a major difference between mean ranking of Islamic and non-islamic banks. According to mean rank results, Islamic banks are performing better than non-islamic banks in implementing lending policies and lending decisions. Whereas non-islamic banks are better in expert system than Islamic banks according to the mean rank results.

Table 5.9 Test Statistics

	bank_wise_exposure	**company_factor**	**expert_system**	**lending_decision**	**Corporate_borrower**	**Lending_Policy**	**demographic_var**
Mann-Whitney U	2634.000	2430.500	2172.000	2373.500	2586.500	2000.00	2490.000
Wilcoxon W	5409.000	5205.500	4947.000	5148.500	5361.500	4775.00	5265.000
Z	-.418	-1.302	-2.231	-1.652	-.603	-2.898	-.971
Asymp. Sig. (2-tailed)	.676	.193	.026*	.099**	.547	.004*	.332
a. Grouping Variable: bank_type							
• Significant at 5% level • Significant at 10%							

Table 5.9 shows the significance value of the test. Specifically, the **Test Statistics** table provides the test statistic, *U* value, as well as the asymptotic significance (2-tailed) *p*-value.

From above table it can be concluded that expert system of Non-islamic banks was statistically significantly higher than Islamic banks working in UAE (U= 2172, p-value= 0.026). Lending policy of Islamic banks significantly different from non-islamic banks and shows a higher value (U=2000, P-value= 0.004). Lending decision is also significant at 10% significance level (U=2373.500, p-value= 0.09) and Islamic banks showed higher value than non-islamic banks in UAE. Other variables (such as bank-wise exposure, company factors, corporate borrowing, and demographic

variable) do not show any significant difference between Islamic and non-islamic banks working in UAE.

PART 4 REGRESSION ANALYSIS

5.7 Introduction

The regression analysis has been applied on UAE banks to discover how the credit risk management practices influence the rate of return on lending in UAE banks. Alternatively, regression analysis is also applied on Islamic banks and non-islamic banks separately to see the difference between them.

Regression analysis is applied to see the relationship between dependent and independent variables. Dependent variable is profitability for which rate of return on lending is used as a proxy. Whereas independent variables are bank-wise-exposure (BE), company factors (CF), expert system (ES), lending decision (LD), corporate borrower (CB), demographic variables (DV), and lending policy (LP). Regression analysis is applied based on type of bank i.e. Islamic and non-islamic bank.

5.8. Regression Equation

Following regression equations are regressed.

5.8.1. Equation 1

Profitability = $\beta_0 + \beta_1 BE + \beta_2 CF + \beta_3 ES + \beta_4 LD + \beta_5 CB + \beta_6 DV + \beta_7 LP + \mu$

5.8.2. Equation 2

Profitability (Islamic banks) = $\beta_0 + \beta_1 BE + \beta_2 CF + \beta_3 ES + \beta_4 LD + \beta_5 CB + \beta_6 DV + \beta_7 LP + \mu$

5.8.3. Equation 3

Profitability (Non-islamic banks) = $\beta_0 + \beta_1 BE + \beta_2 CF + \beta_3 ES + \beta_4 LD + \beta_5 CB + \beta_6 DV + \beta_7 LP + \mu$

Table 5.10 Regression Analysis on UAE banks

Variables	B	Std. Error	T	Sig.
(Constant)	-4.250	1.314	-3.235	.002
Bank_wise_exposure	1.291	.361	3.574	.000
Company_factor	-2.335	.523	-4.463	.000
Expert_system	-.527	.238	-2.215	.028
Lending_decision	-1.368	.313	-4.369	.000
Corporate_borrower	1.736	.503	3.454	.001
Demographic_var	.864	.149	5.798	.000
Lending_Policy	5.838	.491	11.880	.000
	F	24.174		
	Sig.	.000		
	R^2	.547		
Dependent Variable: Rate_of_return_on_lending				

Table 5.10 shows the regression analysis results of the individual explanatory variables on dependent variable. Results show that R square for bank operating in UAE is .547 which means 54.7% variation in profitability of banks is due to explanatory variables i.e. bank wise exposure, demographic variable, Lending Policy, Lending decision, expert system, Corporate borrower, company factor and remaining 45.3% variation is due to other factors. F-statistics of Islamic bank is significant at 1% level so overall model is good fit.

Coefficient results of UAE banks show that bank-wise exposure (p-value= 0.000), corporate borrower (P-value= 0.001), demographic variable (p-value= 0.000), Lending policy (0.000) has a positive and significant relationship at 1% significance level with profitability of UAE banks. Whereas company factor (p-value= .000), expert system (P-value= .028) and lending decision (P-value= .000) has a negative but significant relationship with profitability of UAE banks.

Table 5.11 Regression Analysis on Islamic and Non-Islamic banks

	Islamic bank			Non-Islamic bank		
	B	**T**	**Sig.**	**B**	**T**	**Sig.**
(Constant)	4.568	.581	.563	-4.234	-3.820	.000
Bank_wise_exposure	1.291	2.078	.042	1.186	3.346	.001
Company_factor	-5.739	-3.518	.001	-1.508	-2.738	.008
Expert_system	-1.751	-2.040	.045	-.435	-1.347	.183
Lending_decision	-2.209	-2.847	.006	-.534	-1.868	.066
Corporate_borrower	4.158	3.250	.002	.792	1.705	.093
Demographic_var	.520	2.052	.044	.679	3.827	.000
Lending_Policy	8.558	9.839	.000	3.902	8.759	.000
	F	23.121		**F**	12.077	
	Sig.	.000		**Sig.**	.000	
	R^2	.710		**R^2**	.562	
Dependent Variable: Rate_of_return_on_lending						
Predictors: (Constant), bank_wise_exposure, demographic_var, Lending_policy, lending_decision, expert_system, Corporate_borrower, company_factor						

Table 5.11 shows the regression analysis results of the individual explanatory variables on dependent variable. Results show that R square for islamic bank is .710 which means 71% variation in profitability of islamic banks is due to explanatory variables i.e. bank wise exposure, demographic variable, LP, lending decision, expert system, Corporate borrower, company factor and remaining 29% variation is due to other factors. F-statistics of Islamic bank is significant at 1% level so overall model is good fit.

Results of Non-islamic bank shows that R-square is .562 which means 56.2% variation in profitability is due to explanatory variables i.e. bank wise exposure, demographic var, Lending Policy, lending decision, expert system, Corporate borrower, company factor and remaining 43.8% variation is due to other factors. F-statistics of non-islamic bank is significant at 1% level which mean model is good fit.

Coefficient results of Islamic bank show that company factor (p-value= .001), expert system (P-value= .045) and lending decision (P-value= .006) has a negative but significant relationship with profitability at 5% significance level. Whereas, bank wise exposure (P-value= .042), corporate borrower (P-value= .002), demographic variable (P-value= .044), lending policy (P-value= .000) has a positive and significant relationship with profitability of Islamic bank. Coefficient results of non-islamic bank shows that company factor (P-value= .008) has negative and significant relationship with profitability of non-islamic banks. Expert system (P-value= .183) and lending decision (P-value= .066) shows a negative and insignificant relationship with profitability of non-islamic bank. Bank wise exposure (P-value= .001), demographic variable (P-value= .000) and lending policy (P-value= .000) has positive and significant relationship with profitability of non-islamic bank.

5.9. Estimated Regression Equations

5.9.1. Equation 1

Profitability = - 4.250 + 1.291 BE - 2.335 CF - 0.527 ES - 1.368 LD + 1.736 CB + 0.864 DV + 5.838 LP + μ

Interpretation:

Constant is - 4.250 which means that if all explanatory variables that are present in the study are held constant then profitability of UAE banks will be equal to - 4.250. Beta value of bank-wise exposure (BE) is 1.291 which states that with the change (increase/Decrease) in BE by one degree, profitability will change (increase/ Decrease) by 1.291 degrees. Beta value of company factor (CF) is -2.335 which shows the negative relation and by change (increase /Decrease) of one degree in CF, profitability will change (decrease/Increase) by 2.335 degrees. Beta value of expert system (ES) is -0.527 which shows the negative relation and by change (increase

/Decrease) of one degree in ES, profitability will change (decrease/Increase) by 0.527 degrees. Beta value of lending decision (LD) is – 1.368 which shows the negative relation and by change (increase /Decrease) of one degree in LD, profitability of UAE banks will change (decrease/Increase) by 1.368 degrees. Beta value of corporate borrower (CB) is 1.736, which means that with change in corporate borrower by one degree, profitability will change in the same direction by 1.736 degrees. Beta value of demographic variables (DV) is 0.864, which means that with change in DV by one degree, profitability of UAE banks will change in the same direction by 0.864 degrees. Beta value of lending policy (LP) is 5.838, which means that with change in lending policy by one degree, profitability of UAE banks will change in the same direction by 5.838 degrees.

5.9.2. Equation 2

Profitability (Islamic banks) = 4.568 + 1.291 BE - 5.739 CF - 1.751 ES - 2.209 LD + 4.158 CB + .520 DV + 8.558 LP+ μ

Interpretation:

Constant is 4.568 which means that if all explanatory variables that are present in the study are held constant then profitability of islamic banks will be equal to 4.568. Beta value of bank-wise exposure (BE) is 1.291 which states that with the change (increase/Decrease) in BE by one degree, profitability will change (increase/ Decrease) by 1.291 degrees. Beta value of company factor (CF) is -5.739 which shows the negative relation and by change (increase /Decrease) of one degree in CF, profitability will change (decrease/Increase) by 5.739 degrees. Beta value of expert system (ES) is -1.751 which shows the negative relation and by change (increase /Decrease) of one degree in ES, profitability will change (decrease/Increase) by 1.751 degrees. Beta value of lending decision (LD) is –2.209 which shows the negative relation and by change (increase /Decrease) of one degree in LD, profitability will change (decrease/Increase) by 2.209 degrees. Beta value of corporate borrower (CB) is 4.158, which means that with change in corporate borrower by one degree, profitability will change in the same direction by 4.158 degrees. Beta value of demographic variables (DV) is 0.520, which means that with change in DV by one degree, profitability will change in the same direction by 0.520 degrees. Beta value of

lending policy (LP) is 8.558, which means that with change in lending policy by one degree, profitability will change in the same direction by 8.558 degrees.

5.9.3. Equation 3

Profitability (Non-islamic banks) = - 4.234 + 1.186 BE - 1.508 CF - 0.435 ES - 0.534 LD + 0.792 CB + 0.679 DV + 3.902 LP + μ

Interpretation:

Constant is - 4.234 which means that if all explanatory variables that are present in the study are held constant then profitability of islamic banks will be equal to -4.234. Beta value of bank-wise exposure (BE) is 1.186 which mean that with the change (increase/Decrease) in BE by one degree, profitability of non-islamic will change (increase/ decrease) by 1.186 degrees. Beta value of company factor (CF) is -1.508 which shows the negative relation and by change (increase /Decrease) of one degree in CF, profitability will change (decrease/Increase) by 1.508 degrees. Beta value of expert system (ES) is -0.435 which shows the negative relation and by change (increase /Decrease) of one degree in ES, profitability will change (decrease/Increase) by 0.435 degrees. Beta value of lending decision (LD) is -0.534 which shows the negative relation and by change (increase /Decrease) of one degree in LD, profitability will change (decrease/Increase) by 0.534 degrees. Beta value of corporate borrower (CB) is 0.792 which mean that with the change (increase/Decrease) in CB by one degree, profitability of non-islamic will change (increase/ decrease) by 0.792 degrees. Beta value of demographic variables (DV) is 0.679 which mean that with the change (increase/Decrease) in DV by one degree, profitability of non-islamic will change (increase/ decrease) by 0.679 degrees. And beta value of lending policy (LP) is 3.902 which mean that with the change (increase/Decrease) in LP by one degree, profitability of non-islamic will change (increase/ decrease) by 3.902 degrees.

5.10 Conclusion

In short, most of the credit risk managers of UAE banks are Post Graduates, and they have credit trainings at least once in a month time. It shows that UAE banks have highly educated credit risk managers and banks invest in their regular trainings. They do credit review of their borrowers once a month. They use both financial and Non-

financial data in lending decisions. The credit risk officers are not allowed to give credit to their relatives. The banks in UAE however do not share default information which is not a very good practice. Information of borrower's payment behavior can help to avoid further losses to banks and create a sound banking practice. The banks use derivatives for credit risk management and they consider cash flows, capital, collateral and conditions important. The results obtained cannot be compared with previous studies as no similar studies have been done.

Differences have been found between Islamic banks and Non-Islamic banks credit risk management (Hameeda and Ajmi, 2012) contrary to no differences found by the study conducted by Shafique et al. (2013). However, the previous studies are not similar exactly in terms of variables used hence all the results are not comparable. Islamic banks are found to be practices more liberal credit risk management practices. They are more willing compared to the Non-Islamic banks to lend to borrowers with less than 2 years in business and have higher percentage of credit ceilings allocated to different industries. They have more frequent trainings on credit risk management for their staff compared to Non-Islamic banks. They give more importance to property deposits. They use framework to study inter-bank exposures and use derivatives for credit risk management. On the other hand Non-Islamic banks are more into using RAROC framework for risk pricing and give more importance to cash flows in lending decisions.

According to results of non-parametric independent sample t-test (Mann-Whitney U test), expert system, lending decision and lending policy differs significantly between Islamic and non-islamic banks operating in UAE. While, there exists no difference between bank-wise exposure, corporate borrower, company factor and demographic variables of Islamic and non-islamic banks of UAE.

Results of regression analysis revealed that all credit risk management practices variables (bank-wise exposure, company factor, expert system, lending decision, demographic variable, corporate borrower, and lending policy) have significant effect on profitability of UAE banks. Moreover, company factors, expert system and lending decision have negative effect on profitability of UAE banks.

Results of Islamic bank regression analysis showed that all credit risk management practices variable have significant effect on profitability of Islamic banks whereas

company factor, expert system and lending decision have negative relationship with profitability of Islamic banks. Because expert system, lending decision and company factors have influence on issuing credit to customer as one of the sources of income of banks are rate of return on lending. And if credit is not approved by the credit officer based on these variables, bank cannot have that part of the profit.

Results of non-islamic banks showed that bank-wise exposure, company factor, demographic variable, and lending policy have significant relationship with profitability of non-islamic bank whereas expert system, lending decision, and corporate borrower have insignificant effect on profitability of non-islamic banks.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1. Major Findings from data analysis chapter

1. **Overall,** descriptive statistics of individual factors show most contributing factors in credit risk management practices are Applicant data (factor of lending policy), 5C's (factor of expert system), Credit Quality report (factor of Lending policy), Use of derivate (factor of Lending policy), borrower performance (factor of Lending policy), credit risk assessment (factor of Lending policy), inter-bank exposure (factor of Lending policy), RAROC (factor of Lending policy), penalties for credit officer (factor of Lending policy).
2. Whereas, descriptive statistics when applied to 7 variables which are computed from 48 factors asked through questionnaire, results reveal that lending policy, expert system and demographic variable are most important variable in credit risk management practices in UAE banks.
3. Results of independent sample t test show that (Mann-Whitney U test) Islamic and non-islamic banks differ in 'expert system', 'lending policy' and 'lending decisions'. Islamic banks are performing better making lending decision and lending policies than non-islamic banks. Whereas non-islamic (conventional) banks are having better expert system than Islamic bank. One of the reasons of having better expert system than Islamic banks is that conventional banking system is old and has a great experience in banking field and has a strong position in market.
4. Regression analysis showed that all explanatory variables i.e. bank-wise exposure, experts system, company factors, lending decision, corporate borrowers, demographic variables and lending policy have significant influence on the profitability of UAE banks. Whereas expert system, lending decision and company factors show negative relationship with profitability.
5. Regression analysis results showed that all independent variables i.e. bank-wise exposure, experts system, company factors, lending decision, corporate

borrowers, demographic variables and lending policy have a significant effect on profitability of islamic banks operating in UAE. Whereas, expert system, lending decision and company factors show negative relationship with profitability.

6. Regression analysis showed that bank-wise exposure, company factors, demographic variables and lending policy have a significant effect on profitability of non-islamic banks operating in UAE. Whereas experts system, lending decision, and corporate borrowers shows insignificant relationship with profitability. Like Islamic banks, expert system, lending decision and company factors show negative relationship with profitability of non-islamic banks of UAE.

6.2. Conclusion

The study focuses on the credit risk management practices in UAE banks and its impact on rate of return on lending. Besides, it also attempts to identify any differences between Islamic and Non-Islamic banks' credit risk management practices and its impact on rate of return on lending in UAE.

This study is based on quantitative research method and data is collected first hand by using 'Questionnaire technique'. Data has been collected from 6 banks which include 3 Islamic banks and 3 non-islamic banks. 148 questionnaires have been filled by senior credit risk managers of six leading banks operating in UAE.

It has been found that Islamic banks have better lending decisions in comparison to Non-Islamic banks. The former tends to give more importance to data, personal experience, financial and non-financial data and credit screening method compared to the latter. The analysis shows that bank-wise exposure evaluation has a major impact on profitability. It asserts that the use of study of financial performance, operating efficiency, past experience, bank rating, internal matrix and counterparty risk are adding value though positive impact on profitability for both Islamic and Non-Islamic banks. It provides an evidence to provide a guideline to managers that in order to increase profitability via credit risk management; banks should consider the financial performance, operating efficiency, bank ratings internal matrix and counter party risk aspects. Besides, it also highlights the fact that expert system of 5 Cs and company

factors of borrower i.e. their fixed assets, accounting turnover, profitability and length of time period in business are not effective in adding value to banks. The factors are negatively affecting banks' profitability. Banks should analyse further why these credit risk management practices are not positively associated with profitability.

6.3. Recommendations

6.3.1 Staff training on credit risk should be more frequent as they appeared to acquire better skills in managing credit risk in UAE banks. It means lending to better customers i.e. with lesser chances of default of loans. But then it also means that those good customers will bargain for lower rate of interest to be charged by bank.

6.3.2 Banks should give more importance to cash flow when lending. The borrowers with better cash flow position will have lesser difficulties in paying interest and principal amount to banks. This again may lead to a situation that customers with good cash flow positions may bargain for lower rate of interest which decreases the rate of return on lending for bank.

6.3.3 It appears that in UAE banks with the higher years of service within the organization, higher are the chances of return on lending. Hence the banks should have a policy to retain its staff for better performance.

6.3.4 UAE banks should reconsider its percentage of credit ceiling allocated to different industries as it is evident from the finding that higher the percentage allocated, the higher is the rate of interest charged by banks. It may be due to the fact that the allocation is leading to a riskier position taken by banks.

6.3.5 The internal matrix to study bank-wise exposure is probably not properly applied in Islamic banks in UAE. The internal matrix leads to lesser risk and hence a lower rate of return of the banks. However, it does not appear to be the case with Islamic banks in UAE. Hence, the matrix needs to be properly applied in the banks.

6.3.6 The Islamic bank management in UAE should try to increase its use of derivatives to manage risk which could help the bank to be in a position to be able to offer loans with lower rate of return i.e. lesser expensive to its borrowers.

6.4. Limitations of the study

The present study is composed of only 6 banks from UAE. A bigger sample could have presented a better result. The study does not use complex credit risk model testing and usage.

6.5. Future possible research

Further research can be done on the impact of government intervention, enterprise management and bank structures, market volatility on credit risk management. Similarly, how the entry by foreign banks affects the operation of domestic banking firms, taxation and regulation indicators, exchange rates as well as indicators of the quality of the offered services can be researched.

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Appendix 1

QUESTIONNAIRE

Questionnaire for Senior Credit Risk Managers from UAE Commercial Banks

Name of the bank (tick)

National Bank of Abu Dhabi ☐
Abu Dhabi Commercial Bank ☐
Emirates Bank International ☐
Emirates Islamic Bank ☐
Mashreq Islamic Bank ☐
Abu Dhabi Islamic Bank ☐

1. **Years of service within the organization:**

   1-5 ☐ 6-10 ☐ 11-15 ☐ 15+ ☐

2. **Years of experience issuing loans:**

1-5 ☐ 6-10 ☐ 11-15 ☐ 15+ ☐

3. **Highest academic qualification before joining the bank**

Secondary school ☐ Undergraduate ☐ Postgraduate ☐
PhD ☐ Professional Diploma ☐

4. **How often do you attend training courses on credit risk management?**

Once a week ☐ Once a month ☐
Once every 6 month ☐ Once a year ☐

5. **What is the credit limit that you can authorize (AED)?**

Less than 100,000 ☐ 100,000 – 200,000 ☐ 200,000 – 300,000 ☐
300,000 or more ☐

6. **When making decisions, do you find data are reliable and helpful?**

Strongly agree ☐ Agree ☐
Neither Agree or Disagree ☐ Disagree ☐
Strongly disagree ☐ Don't know ☐

7. Your personal experience plays an important part in making lending decisions

Strongly agree	☐	Agree	☐
Neither Agree or Disagree	☐	Disagree	☐
Strongly disagree	☐	Don't know	☐

8. Financial statements of different companies are important when issuing credit

Strongly agree	☐	Agree	☐
Neither Agree or Disagree	☐	Disagree	☐
Strongly disagree	☐	Don't know	☐

9. Non-financial data are important in issuing credit

Strongly agree	☐	Agree	☐
Neither Agree or Disagree	☐	Disagree	☐
Strongly disagree	☐	Don't know	☐

10. Do you think credit screening methods are reliable

Strongly agree	☐	Agree	☐
Neither Agree or Disagree	☐	Disagree	☐
Strongly disagree	☐	Don't know	☐

11. Are credit officers allowed to give credits to relatives?

Yes ☐ No ☐

12. What is the rate of return on lending in your bank?

5-10% ☐ 10-15% ☐ 15-20% ☐ 20%+ ☐

13. What is the percentage of bad debt out of total loans?

5-10% ☐ 10-15% ☐ 15-20% ☐ 20%+ ☐

LENDING POLICY

14. What is the percentage of credit ceiling allocated to different industries by the bank?

5-10% ☐ 10-15% ☐ 15-20% ☐ 20%+ ☐

15. How often do you have Credit Risk assessment reviewed in your bank?

Monthly ☐ Quarterly ☐ Bi-annually ☐ Annually ☐

16. How often do you examine borrowers' performance?

Monthly ☐ Quarterly ☐ Bi-annually ☐ Annually ☐

17. Do you prepare regular 'Credit Quality Reports'?

Yes ☐ No ☐

18. Have you developed the 'Risk Adjusted Return on Capital (RAROC)' Framework for Risk Pricing in your bank?

Yes ☐ No ☐

19. Have you developed any framework to study inter-bank exposures?

Yes ☐ No ☐

20. Does your bank use 'Derivatives' (credit default swap) to manage Credit Risk?

Yes ☐ No ☐

21. Do you share default information among banks?

Yes ☐ No ☐

22. Do you verify applicant's data?

Yes ☐ No ☐

23. Are there penalties for credit officers that issue default loans?

Yes ☐ No ☐

CREDIT RATINGS

24. Please indicate the relative importance of the following aspects that you consider for evaluating bank-wise exposures (on a scale of 1 to 5, where 1 = very unimportance, 2=unimportance,3=neither importance or unimportance,4= important ,5 = very importance)

	1	2	3	4	5
Study of Financial Performance					
Operating Efficiency					
Past Experience					
Bank rating on Credit Quality					
Internal Matrix for studying					
Counter party or country risk					

25. Which factors do you consider when lending to corporate borrowers? (on a scale of 1 to 5, where 1 = very unimportance, 2=unimportance,3=neither importance or unimportance,4= important ,5 = very importance)

		1	2	3	4	5
Ownership background	State-owned					
	Non-state-owned					
Capital size	Medium size and small firm					
	Old well-established					
Set up year	Newly set up					
	Providing business plan					
Credit history	Director/owner of the company gives personal guarantee					
	Providing property deposit					

26. What importance do you give to company factors while making lending decisions? (on a scale of 1 to 5, where 1 = very unimportance, 2=unimportance,3=neither importance or unimportance,4= important ,5 = very importance)

	1	2	3	4	5
Fixed assets					
Accounting turnover					
Profitability of company					
In business less than 2 years					
In Business more than 2 years					

EXPERT SYSTEM

27. Do you consider all the 5 Cs' when you give loans?

Yes ☐ No ☐

28. Please rank the 5Cs' in order of importance, (on a scale of 1 to 5, where 1 = very unimportance, 2=unimportance,3=neither importance or unimportance,4= important ,5 = very importance)

	1	2	3	4	5
Character					
Cash Flow					
Capital					
Collateral					
Conditions					

Appendix 2

Reliability Analysis

Case Processing Summary

		N	%
Cases	Valid	148	100.0
	Excluded[a]	0	.0
	Total	148	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.804	7

Case Processing Summary

		N	%
Cases	Valid	148	100.0
	Excluded[a]	0	.0
	Total	148	100.0

a. List-wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.902	48

Appendix 3

INDEPENDENT SAMPLE T-TEST

Model 2

Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
bank_wise_exposure	Equal variances assumed	21.562	.000	-.255	146	.799	-.02477	.09721
	Equal variances not assumed			-.255	82.173	.799	-.02477	.09721
company_factor	Equal variances assumed	28.022	.000	.663	146	.508	.06216	.09377
	Equal variances not assumed			.663	79.501	.509	.06216	.09377
expert_system	Equal variances assumed	21.474	.000	-1.042	146	.299	-.09009	.08644
	Equal variances not assumed			-1.042	91.446	.300	-.09009	.08644

lending_decision	Equal variances assumed	23.115	.000	.342	146	.733	.01622	.04741
	Equal variances not assumed			.342	116.900	.733	.01622	.04741
Corporate_borrower	Equal variances assumed	32.027	.000	.551	146	.582	.05405	.09804
	Equal variances not assumed			.551	78.414	.583	.05405	.09804
Lending_Policy	Equal variances assumed	.013	.910	3.649	146	.000	.12786	.03504
	Equal variances not assumed			3.649	144.998	.000	.12786	.03504
demographic_var	Equal variances assumed	.779	.379	.321	146	.748	.02703	.08414
	Equal variances not assumed			.321	145.568	.748	.02703	.08414

Appendix 4

TEST OF NORMALITY

Tests of Normality							
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	bank_type	Statistic	Df	Sig.	Statistic	df	Sig.
bank_wise_exposure	islamic	.322	74	.000	.821	74	.000
	conventional	.229	74	.000	.782	74	.000
company_factor	islamic	.448	74	.000	.602	74	.000
	conventional	.216	74	.000	.802	74	.000
expert_system	islamic	.337	74	.000	.705	74	.000
	conventional	.176	74	.000	.843	74	.000
lending_decision	islamic	.523	74	.000	.269	74	.000
	conventional	.275	74	.000	.865	74	.000
Corporate_borrower	islamic	.315	74	.000	.712	74	.000
	conventional	.222	74	.000	.831	74	.000
Lending_Policy	islamic	.156	74	.000	.895	74	.000
	conventional	.277	74	.000	.808	74	.000
demographic_var	islamic	.186	74	.000	.913	74	.000
	conventional	.261	74	.000	.838	74	.000
a. Lilliefors Significance Correction							

Appendix 5

Letter of Appreciation

Dear Participant,

Thank you for agreeing to complete a questionnaire as part of my research. Attached is a copy of the questionnaire I would be very grateful if you would complete and return it to me.

The title of my research project is "Credit Risk Management: A Case Differentiating Islamic and Non-Islamic Banks in UAE"

And I am interested in exploring the General view of UAE financial sector credit risk management practices and how it affects the rate of return on lending.

Before you complete the enclosed questionnaire I wish to confirm that:

- The Dean of the Business school has given permission for this research to be carried out.
- Your anonymity will be maintained and no comments will be ascribed to you by name in any written document or verbal presentation. Nor will any data be used from the questionnaire that might identify you to a third party.
- You are free to withdraw from the research at anytime and/or request that your questionnaire be excluded from the findings.
- I will write to you on completion of the research and a copy of my completed research report will be made available to you upon request.
- If you have any queries concerning the nature of the research or are unclear about any question please contact me at:
  [redacted]

Finally, I would like to thank you for taking the time to help me with my research. I really appreciate your contribution.

Yours sincerely,

Hassan Al Suwaidi
PhD Scholar
London Metropolitan University, London.