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by

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ON THE SUSTAINABILITY OF ISLAMIC BANKS: A THEORETICAL AND EMPIRICAL ANALYSIS

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Abstract

The purpose of this Thesis is to study theoretically and empirically the sustainability of Islamic Banking system. In order to do so, a literature review is undertaken firstly to show that, in practice, Islamic Banks lose their distinctive features and tend to resemble conventional banks. Indeed, these banks which tend to deviate from Profit and Loss Sharing (PLS) paradigm and have an elusive contribution to sustainable development are not close to people and do not ensure a good governance. Thus, Islamic Banks could not be considered as sustainable.

Secondly, we focus on the social utility of Islamic banking system by taking the Tunisian case as an example. We explore the prerequisites that should be observed to implement this system in Tunisia and we study private agents' and entrepreneurs' potential demand of Islamic banking products and services by analyzing the results of two Surveys. According to our results, Islamic Finance is perceived as a seductive phenomenon. Nevertheless, the development of this industry appears to be difficult because it requires a sound knowledge of its products by corporate decision makers of the Tunisian companies and households, skilled and trained human resources in Islamic Finance and the implementation of an appropriate and dedicated regulation to this finance. Therefore, all stakeholders should collaborate in order to ensure the establishment of a sustainable Islamic banking system in Tunisia.

Thirdly, we study empirically the sustainability of these banks at macroeconomic level by estimating a dynamic panel model approach as developed by Arellano and Bover (1995) and by Blundell and Bond (1998) which assesses the impact of the development of this system on long-run macroeconomic growth. We find that the business conditions of Islamic banks in the host countries cannot establish a relationship between Islamic finance development and economic growth through Schumpeterian hypotheses.

Finally, we examine the sustainability of Islamic banking system at the microeconmic level by attempting to assess the performance of Islamic banking taking into account the fulfillment of Shariah objectives and the satisfaction of all stakeholders, namely Regulators, Civil Society, Customers, Employees, Managers, Shareholders and Shariah Advisers. To do so, we develop an overall index baptized Shariah-Compliant Performance Index (SCPI) by aggregating all appraised performance scores using multi-attribute utility theory. Our findings show that all studied Islamic Banking groups do not perform well. Therefore, none of these banks is sustainable and hence achieves *Maqasid Al-Shariah*.

Keywords: Islamic Finance, Islamic banking, Sustainability, Multi-attribute utility theory, panel study, Survey.

Résumé

L'objectif de cette thèse est d'étudier théoriquement et empiriquement la durabilité du système bancaire islamique. Pour ce faire, nous entreprenons en premier lieu une revue de la littérature qui montre que, dans la pratique, les banques islamiques perdent leurs caractéristiques distinctives et ont tendance à ressembler aux banques conventionnelles. En effet, la plupart des banques islamiques tendent à s'écarter du paradigme "Partage des Pertes et des Profits" (PPP), ont une contribution élusive au développement durable, ne sont pas très proches des individus et n'assurent pas une bonne gouvernance et un bon suivi par le "Shariah Supervisory Board" (SSB). La pratique bancaire islamique actuelle ne pourrait pas donc être considérée comme durable.

En deuxième lieu, nous nous concentrons sur l'utilité sociale du système bancaire islamique en prenant comme exemple la Tunisie. En effet, nous explorons les préalables qu'il convient d'observer pour une mise en place efficace de solutions islamiques dans ce pays et nous étudions la demande potentielle des produits et des services bancaires islamiques auprès des particuliers et des entrepreneurs en analysant les résultats de deux enquêtes. Ces résultats révèlent que le développement de cette industrie semble être difficile. En effet, ce dernier nécessite une bonne connaissance de ses produits par les ménages et les décideurs des entreprises, des ressources humaines bien formées et compétentes dans la finance islamique et la mise en place d'une réglementation dédiée et appropriée à cette finance, tout en encourageant le développement de la concurrence dans ce domaine. Ainsi, pour établir un système bancaire islamique durable en Tunisie, tous les acteurs économiques doivent collaborer.

Par la suite, nous étudions empiriquement la durabilité de ces banques à l'échelle macroéconomique en estimant un modèle de panel dynamique développé par Arellano et Bover (1995) et par Blundell et Bond (1998) afin d'évaluer l'impact du

développement de ce système sur la croissance macroéconomique à long terme. D'après les résultats de notre étude, les conditions d'exercice des banques islamiques dans les pays d'accueil ne permettent pas d'établir une liaison entre le développement financier islamique et la croissance économique à travers les hypothèses schumpetériennes.

Enfin, nous examinons la durabilité du système bancaire islamique à l'échelle microéconomique en essayant d'évaluer la performance de ce système tout en prenant en considération la réalisation des objectifs de la Chariah et la satisfaction de tous les intervenants à savoir les régulateurs, la société civile, les consommateurs, les employés, les gestionnaires, les actionnaires et les experts de la Chariah. Pour ce faire, nous référons à la théorie d'utilité à multi-attributs afin de développer un indice nommé "Shariah-Compliant Performance Index" (SCPI). Les résultats indiquent que tous les groupes bancaires islamiques qui ont fait l'objet de notre étude ne sont pas performants. Par conséquent, aucune de ces banques n'est durable et donc ne réalise pas *Maqasid Al-Chariah.*

Mots clés: Finance islamique, système bancaire islamique, durabilité, théorie de l'utilité multi-attributs, étude de panel, enquête.

DEDICATION

This Thesis is dedicated to

My dear parents *Habib* and *Monia,*

My dear husband *Kais* and my adorable sons *Ghassen* and *Iyed*,

My brother *Chedi,* his wife *Amina,* and his daughter *Yassemine,*

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List of Acronyms

A	Accessibility
ABD	Assiduity of Board of Directors
ACSD	Apparent Commitment in Sustainable Development
ADSD	Actions Devoted to Sustainable Development
ANBM	Annual Number of Board Meetings
ATMs	Automated Teller Machines
B	Branches
C	Customers
CA	Competitive Advantages
CAEP	Coherence with the Adopted Economic Policy
CBs	Conventional Banks
CG	Corporate Governance
CR	Credit Risk
CS	Civil Society
D	Deposits to liabilities
DEWR	Directors - Employees Welfare Ratio
Di	Diversity
DPO	Dividends payout
E	Employees
EcS	Economic Sustainability
EJ	Establishing Justice
ES	Executive Side
GQ	Governance Quality
GSR	Global Solvency Ratio
I	Inclusion
IBFIs	Islamic Banks and Financial Institutions
IBR	Interbank Ratio

IBs	Islamic Banks
ICNP	Immediate Contribution to the National Product(loans/GDP)
IEBD	International Employees in the Board of Directors
IF	Islamic Finance
IFIs	Islamic Financial Institutions
IFPS	Islamic Finance Products and Services
IME	Islamic Moral Economy
IR	Insolvency Risk
L	Loans to Assets
LADSF	Liquid assets to Deposits and Short-term Funding Ratio
LDSF	Loans to Deposits and Short-term Funding Ratio
LR	Liquidity Risk
M	Managers
NAC	Number of Audit Committee Members
NACM	Number of Audit Committee Meetings
NIP	Number of Islamic Products
NPLCR	Nonperforming Loans Coverage Ratio
NPLLRE	Impaired Loans less Reserves for Imp Loans/ Equity
NPLR	Nonperforming Loans Ratio
NSSB	Number of Shariah Supervisory Board's members
NSSBM	Number of SSB Meetings
OER	Operating Expenses Ratio
P	Profitability
PIBD	Percentage of Independent non-executive directors in BOD
PLS	Profit and Loss Sharing
PLSP	Profit-Loss Sharing Products
PSR	Profit Sharing Ratio
PW	Promoting Welfare
QH	Qard Hasan to total Islamic modes of finance

R	Regulators
RCCR	Regulatory Capital to Credit Risk
RI	Remuneration & Incentives
RIW	Redistribution of Income and Wealth
ROAA	Return on Average Assets
ROAE	Return on Average Equity
S	Shareholders
SA	Shariah Advisers
SCPI	Shariah-Compliant Performance Index
SCR	Sustainable Corporate Responsibility
SD	Sustainable Development
SF	Sustainable Finance
SoR	Social Responsibility
SQ	Service Quality
SRI	Socially Responsible Investments
SSB	Shariah Supervisory Board
TW	Total Wage
WDSD	Writing Devoted to Sustainable Development
WS	Workforce Side
Z	Zakat to Total Assets
ZI	Zakat to Net income

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General Introduction

The major subprime crisis has affected profoundly and thus transforming the face of global finance. This global financial crisis has led to the emergence series of paradigms, both at the macroeconomic level and the microeconomic level. At the macroeconomic level, this crisis makes us aware of the fact that the balance of world savings has shifted, over the last ten years, and has continually balanced around the emerging countries which have accumulated and will permanently accumulate foreign reserves. These countries are called to participate in defining the conditions of the crisis.

At the microeconomic level, we could consider the fact that recent developments of financial economy are profoundly challenged by the current crisis; such as certain market activities and, more generally, some business models of banking. Furthermore, The global financial crisis has sharply contributed to increasing unemployment of about 210 million people across the world (IMF and ILO (2010)). This crisis has conducted experts in finance and academics to review current practices and seek innovative solutions in order to attain banking sustainability. Consequently, a new concept baptized "sustainable bank" has emerged.

Moreover, these problems urged developed countries to a growing interest in non-conventional finance and in particular “Islamic Finance” to attract Muslim population’s savings as well as the capital of Islamic financial system increasing investment and thus reducing unemployment. Indeed, the direct impact of the subprime crisis on Islamic banking sector was minimal due likely in part to its intrinsic principles. Islamic banks were not caught by toxic assets as *Shariah* law prohibits interests.

According to academic studies and professional reports, Islamic Finance has not been affected by the major crisis. Indeed, Islamic Banks have seen less exposed to systematic risk due to the US borne subprime crisis. Nonetheless, their exposure to Lehman assets and to “Asset Back and Securities” products (ABS) being secured by

Subprime mortgages in the USA has had limited effect. This crisis has raised several questions and issues to developed financial system and has incited economies like the UK to express profound interest in "Islamic Finance" as also Sustainable Finance Mechanisms whose outlines will be defined.

Over the last two decades, this finance has experienced a considerable progress. However, since 2015, IF growth drop from double-digit growth ranging between 10 percent and 15 percent to a single digit. This slack off in growth will continue in 2017 due to few major factors; namely low oil prices and lack of regulation. Islamic banks asset growth declined from 12 percent in 2014 to around 7 percent in 2015. Standard and Poor's think that this downward trend will continue in 2016 and 2017 attaining a growth rate of around 5 percent (for more details see Standard and Poor's (2016)).

In addition, several researchers argue that IF as practiced today does not genuinely reflect principles of Islamic teachings. In addition, the more the current Islamic banking practices diverge from the Profit and Loss Sharing (PLS) paradigm, the more Islamic banks lose their distinctive features and tend to behave similarly to conventional banks. This finding has been indicated by Bourkis and Nabi (2013), who have shown that there is no significant difference between Islamic Banks and Conventional Banks in terms of the financial crisis effect on the banking soundness as measured by the Z-score and capital to asset ratio. They explain these results by the fact that IBs are mimicking commercial strategies of their conventional counterparts and diverging from their theoretical business model. Furthermore, these banks are indistinguishable from conventional banks in terms of their liquidity situation and the level of their non-performing loans. However, IBs outperform Conventional Banks as regards to the return to asset indicator during and after the financial crisis. The authors argue that this outperformance seems to be partially due to the differences in the provisioning strategies of the two categories of banks during this major crisis and to the better cost efficiency of IBs during the year 2009. This has led

us to ask a question about the sustainability property of this nonconventional banking system.

In this context, our main contribution is mainly to analyze theoretically and empirically the sustainability property of Islamic banking system. We believe that this is the first research that has dealt with the issue and analyzes Islamic banking from a sustainability point of view. Also, we have produced a survey of the literature debating whether or not the Islamic Bank has the same characteristics as the Sustainable Bank. In addition, we propose to provide an empirical answer to the following question: " Would Islamic Bank be a sustainable bank?".

Our main model attempts to test the following hypotheses:

- H_1: Islamic banking system is a solution among others to countries in crisis such as Tunisia.
- H_2: There is a positive correlation between Islamic banking development and macroeconomic growth.
- H_3: IBs could be considered as sustainable banks

So that, the remaining of this study is organized as follows:

In the first chapter, we attempt to study theoretically the sustainability property of Islamic Banks. We undertake a literature review to show whether or not Islamic Banks:

- contribute to the financial stability,
- are socially responsible
- are close to people
- and, then ensure a good governance and monitoring

In the second and the third chapters, we focus on the issue of social utility of Islamic banking system by taking as an example the Tunisian case. We aim to show that if

the Islamic banking system could be a solution among others to handle the current economic crisis in Tunisia. Indeed, the implementation of this financial system requires some essential prerequisites and a study of Islamic Financial Products and Services (IFPS) potential demand by entrepreneurs and private agents in different Tunisian areas in order to get a clearer picture about this type of potential customers' behavior and expectations.

Chapter two attempts to explore these prerequisites that need to be considered requiring a study Tunisian economic agents' demand for Islamic banking products and services by analyzing the results of a national Survey based on a Quota sampling method. This Survey has been administered mainly by a face to face method in order to select the number of interviewed persons by Governorate and by Gender. The sample obtained includes 1,600 individuals from different social categories with a minimum age of 18 years. This is the first study of its kind to take into consideration the private agents distributed in interior regions and include socio-demographic factors in the analysis.

The third chapter study the entrepreneurs' potential demand in disadvantaged areas such as the northwest region of Tunisia by conducting a regional Survey in order to respond to the following question "if we implement these Islamic finance prerequisites, are Tunisian businesses, located in the Northwest region of the country, willing to demand these financial tools from Islamic structures?". Our sample includes 30 Tunisian Northwest region firms from the governorates of Beja, Kef, Jendouba, and Siliana.

In the fourth chapter, we study the sustainability of Islamic Banks at the macroeconomic level. In order to do so, we examine the role of Islamic Finance as a growth driver, via the banking practice. Based on a sample composed of 15 countries observed in five successive sub-periods of four years over the period 1990-2009, we estimate a dynamic panel model approach as developed by Arellano and Bover (1995) as well as by Blundell and Bond (1998).

The fifth chapter attempts to analyze sustainability at the microeconomic level by assessing the performance of Islamic banking taking into account the fulfillment of Shariah objectives and the satisfaction of all stakeholders, namely Regulators, Civil Society, Customers, Employees, Managers, Shareholders and Shariah Advisers.

We believe that this is the first attempt to develop such a model. Indeed, we identify first the main Shariah objectives and the relevant stakeholders of an Islamic Bank. Next, we suggest a list of attributes and sub-attributes in order to evaluate the performance with respect to each stakeholder and to Maqasid Al-Shariah adopting a multi-attribute utility approach. Then, we develop an overall index, named Shariah-Compliant Performance Index (SCPI), by aggregating all appraised stakeholders' performance scores. Finally, we apply this approach to a sample of 7 major banking groups over the period 2005-2012.

Chapter I

Is Islamic Banking Sustainable: a Literature Review

1. Introduction

Until the recent financial crisis, Islamic Financial Institutions grew by 15-20% per annum. However, since 2008, their growth has been more modest, less than 10% per annum, but is still higher and better than the performance of the conventional financial institutions (Asutay (2012)). Furthermore, recent reports show that the assets of IFIs have reached about USD 1.2 trillion. Nevertheless, it still constitutes a small portion of the global financial system (*The Banker (*2010)).

Some researchers criticize the actual practice of Islamic Finance Institutions by considering them similar to their conventional counterparts (Zahar and Hasan(2001), Chong and Liu (2009), Beck et al (2013)). This prompts us to wonder about the sustainability of the currently practiced Islamic Finance.

Sustainability is an emerging concept that has been introduced recently in the Islamic Finance literature by very few studies; namely Aliyu (2014) and Aliyu et al. (2017). However, evaluating theoretically the sustainability of this finance as practiced today is not yet analyzed. In what follows, we try to respond theoretically to the issue of Islamic finance sustainability by focusing on Islamic banking system. In the third section, we refer to the literature to study the sustainability of normative Islamic finance in general. In the fourth section, we examine the central issue of the chapter relating to the performance of Islamic banking system. Then, the last section is the conclusion.

2. Sustainable Finance and Sustainable banking concepts

2.1. Sustainable Finance: origins and scope

According to Soppe (2004), the sustainability as a societal phenomenon was launched in the strict environmental interpretation during United Nations conferences in the 1970s and 1980s. After that, during the 1980s and the 1990s, sustainability was

gradually entering the business ethics literature and the management literature as Corporate Social Responsibility (CSR).

However, as stated before, the Sustainable finance (SF) origins go back only to the global financial crisis (2007-2008) period. Its concept is not yet clearly defined, today. It is still evolving and is a subject of full debate. Christian De Boissieu (2011) defines SF as a set of financial instruments and mechanisms of sustainable development. It synthesizes a number of new financial frontiers such as infrastructure and green growth financing as well as Carbone Finance. This Sustainable finance is also linked to anything concerning SME, capital growth for employment and activities and microfinance.

Grandin and Saidane (2011) go on to argue that SF is not built only on the Socially Responsible Investments (SRI) - Sustainable Corporate Responsibility (SCR) nexus (as it is presented by Gollier (2009, 2007), Soppe (2009) and Strandberg (2005)) but it includes also the social role and financial intermediation specificities. It appears that SF should contribute to the social welfare at the microeconomic and macroeconomic levels. So that, this finance should be:

- extremely crisis resistant
- based on new financial and new individual behaviors to ensure a better governance at both the macro and micro level.
- used to finance sustainable growth through strong financial intermediaries with sustainable services who are conscious of their social responsibility and invest in long -term Green Business by referring to SRI and to SCR.
- close to people by providing microfinance products.
- inclusive and non-proselytizing. It does not seek to promote a simplistic vision of the conventional finance. It should not reject the conventional finance.

2.2. What about the banking sector?

The concept of sustainable banking is also evolving. The first trend relates the sustainability of banking on its contribution to sustainable development. Indeed, Bouma, Jeucken and Kilkers, (2001) define sustainable banking as "a decision by banks to provide products and services only to customers who take into consideration the environmental and social impacts of their activities". Aliyu et al. (2017) define sustainable banking as "the ability for banks to have long-term solvency and prosperity that would impact on societal well-being and environmental protection".

Marcel Jeucken (2001) denotes that " Sustainability and banking are sometimes lumped together with sustainable investing, also known as socially responsible investing (SRI), in which investments are made in a limited group of more sustainable sectors or companies. SRI is up and coming in many countries and is given a lot of attention by the media, the public and by banks.". He argues that the banking sector has been slower to pick up the challenge of sustainability than other sectors. Indeed, he shows empirically that, over the first 80 banks in the world, there are only four pro-active banks (namely Credit Suisse, UBS, Rabobank and Deutsche Bank) that are well underway.Saidane and Pauget (2011) emphasize the importance of sustainability in the banking sector. According to them, SF is based on the Sustainable Bank (SB). They argue that this bank is a response to the financial crisis. It reflects **all economic stakeholders'** and some financiers' security and stability need.

Rebai et al (2012) and Rebai (2014) precise that a Sustainable Bank ″should be suitable for that changing world". It should attempt to ensure a strong and recurring value creation while not only respecting its traditional stakeholders (i.e regulators,

shareholders, customers, managers, employees (Avkiran and Morita, 2010)) but also taking into account the civil society[1] as a whole.

Therefore, Financial intermediary in the sustainable banking is based on:

- the customer's satisfaction
- a good profitability which well places it in the market
- a superior performance in the medium and long term which ensures its sustainability
- a contribution to the whole financial system stability by controlling risk level and monitoring systemic risk.

In other words, the SB is an institution which relies on the Growth-Governance-Risk paradigm (GGR) (Saidane and Pauget (2011)). Thus, this bank should:

- provide products and services that respect the environment (growth)
- ensure a good governance
- ensure a better risk management in the case of high volatility and a speculation due to ample liquidity.

The most recent definition is that of Rebai (2014) who describe the sustainable bank as " a trustworthy bank accounting for all its **internal and external stakeholders**. It ensures intermediation activities that care in particular about **social and environmental** aspects with **short, medium and long-term** horizons. It establishes **ethical values** and contributes to the stability and soundness of the financial system by **adequately managing various risks** as well as seeking **continuous** and **optimal tradeoff** among **its stakeholders' interests".**

[1] Civil Society includes individuals, non-governmental organizations and institutions that manifest interests and will of citizens.

3. Islamic Finance and Sustainability

In view of the Shariah principles on which based, of the innovations that it creates and of the continuous supply of innovative products, Islamic Finance (IF) can constitute a sustainable economic system (Kaouther Jouaber and Elyès Jouini (2011)).

3.1 Islamic Finance reduces the systemic risk

According to Jouaber and Jouini (2011), Islamic finance can reduce systemic risk. It has sustainable objectives which are characterized by its intrinsic moral dimension and its moral responsibility. The authors recall that to have a sustainable and resilient finance face crisis, some economists propose a financing without interest (such as Fisher (1935), Simons (1948) and Friedman (1969)), based on asset-backed contracts (Metzler(1951)) and which responds to the following principles of Islamic law (Shariah):

- **The prohibition of Riba**, ie usury or fixed interest resulting from one-time flow.

- **Profit and loss sharing**: Transactions must be based on fairness. This principle requires that the benefits and losses resulting from a transaction should be shared among investors. Thus, the two parties should be treated as partners, with the allocation of the profits and the losses, to each of them, in proportion to their contribution to the transaction;

- **Al-Gharar and Al-Maysir.** That is, unfair contracts that involve extreme risk (Maysir) or speculation (Gharar) are unenforceable. The price, issues and contractual terms must be agreed by the parties at the time of their conclusion;

- **Asset-backed contracts:** all transactions have to be backed by a real economic transaction that involves a tangible asset.

- Ethical Investment: Investments that have illicit (haram) themes are prohibited, and any transaction which, for example, plans to handle pork, drugs, weapons or alcohol is prohibited.

- **Payment of Zakat** by the bank to benefit society, (Lewis and Algaoud (2001), Nathan and Rebiere (2007) and Basah and Yusuf (2013)).

3.2 Islamic Finance and sustainable development

Literature underlines the important role that plays IF on sustainable development through CSR and SRI and hence it ensures the stability of overall financial system (Kahf (1999), Farook and Lanis (2007), Dusuki and Dar (2007), Sairally (2007), Zinkin (2007), Ullah and Jamali (2010), Basah and Yusuf (2013)). In fact, IF is based on Shariah which is not only a legal but also a moral framework (Basah and Yusuf (2013)). Its concept has the following three implications:

- In the Moslem religion, CSR is a moral and religious action founded on the belief that a corporation should be salutary in spite of the financial consequences. That is why businesses should not be driven by profit maximization alone, but by the search of felicity in this life and in Hereafter.

- Moreover, Islamic guidance which is based on the principles of justice compromises between the individuals' rights and their duties and responsibilities towards others and between self-interest and altruism.

- Finally, the concept of reward is enlarged by including in this world and also Hereafter. This can provide a strong and self-enhancing motivation for good without forgetting somebody's aspiration for personal gain.

Moreover, the concept of CSR is consistent with the concept of *Tawhid (*Unity) and trusteeship (Basah and Yusuf (2013)). In fact, the human being has a moral obligation towards other human beings, society, and the natural environment. Zinkin (2007)

also argues that Islam has instructions coherent with a modern view of what should be done to improve the social, human, and natural environment. He also finds that Islamic principles are in accordance with the UN Global Compact principles[2].

This is confirmed by Hayat (2013) in his study "Islamic Finance and Socially Responsible Investing". According to the author, IF and SRI share some obvious similarities in their objective (do good; avoid harm), methods (for example: exclusionary screening), and claims (an emphasis on ethics). Both of them have the similar expectations among their proponents of being ethically different from conventional finance. Furthermore, they face similar criticisms of being unable to live up these expectations, as shown by the form-over-substance debate in IF and the green-washing debate in SRI. These two segments are relatively small and growing.

However, Hayet (2013) argues that IF and SRI are not actively collaborating for some obvious reasons including their different: geographic areas of concentration, differences in target markets, preoccupation with their own growth, perception and reputational concerns, cultural barriers, industry leaders' lack of initiative, and an insufficient understanding of one another (Novethic (2009), Hayet (2013)).

3.3 Islamic Finance, disparities and social inequalities

The link between IF, poverty and social exclusion has been subject to debate. On one hand, Siddiqi (2008) acknowledges and regards: "it must take into consideration the actual focus of Islamic economics on IF and the lack of Islamic economic literature on poverty eradication, inequality, and development". Moreover, according to Farooq (2009), we cannot expect that Islamic financial industry would provide a serious solution to poverty and under-development for two reasons. First of all, IF does not

[2] The UN Global Compact's ten principles in the areas of human rights, labour, the environment and anti-corruption

seek to support development or to reduce poverty and does not try to overcome problems arising from this objective. Second, we should not expect that only IF reduces poverty, because the latter is not essentially a financial issue.

On the other hand, some attributes to IF an important role in combatting social exclusion and in improving the welfare (Bremer (2004) and Ebrahim (2009)). Indeed, beyond their role in providing social services, Islamic charities have served as redistributive mechanisms to reduce disparities and inequalities by providing aid to the poor. These organizations offer the opportunity to the rich to express their solidarity with the poor. They recognize their obligations to help and to struggle against poverty, its causes and its effects (Bremer (2004) and Ebrahim (2009)). This process creates a social link by keeping the lower income groups integrated into society. It can also reduce poverty and accelerate economic growth.

This potential would enable millions of poor Muslims who still reject the conventional microfinance products and express an increasing demand for access to Islamic financial services. Indeed, according to the Consultative Group to Assist the Poor (CGAP)[3] study published in 2009, 72% of people living in Muslim countries have no access to financial services.

[3] CGAP is hosted by the World Bank but operates as an independent entity. On the French level, it adheres to the French Development Agency (AFD) and the Ministry of Foreign Affairs (Department of International Cooperation and Development). According to the CGAP's study, Islamic microfinance has a total estimated world market of only 380,000 customers and has only 0.5 percent of total microfinance outreach. 300,000 people worldwide benefit from Islamic microfinance in 126 Islamic institutions operating in 14 countries. In addition, about 80,000 customers are affected by a cooperative network in Indonesia. The offer of the Islamic microfinance is concentrated in several Asian countries: Indonesia, Bangladesh and Afghanistan. These countries capture 80% of global outreach. The average amount of Islamic micro-credit is similar to that of conventional micro-credit. However, the demand of the Islamic microfinancial products is strong. Surveys conducted in Algeria, Jordan and Syria, revealed that between 20 and 40% of respondents do not want to benefit from traditional microcredit for religious reasons.

4. Islamic Banking System and sustainability

As mentioned above, the sustainability is an emerged concept that has been recently introduced on Islamic Finance. However, the few studies that discuss the sustainability of Islamic banking, namely Aliyu (2014) and Aliyu et al. (2017) focus only on presenting its framework. Indeed, Aliyu (2014) proposes a framework based on structure, functions, capacities, Islamic moral economic mode, banking business, and accountability. He ignores many factors that may contribute to an IB efficiency. For its part, Aliyu et al. (2017) focus only on the IFIs sustainability and the effect of their financial activities on society and environment. They present then the findings of research on the link between IBs and sustainable development. So that, the authors do not analyze the sustainability of Islamic Finance as practiced today by the banking sector.

In practice, many studies show that most Islamic banks lose their distinctive features and tend to resemble conventional banks. This is confirmed by Bourkis and Nabi (2013) who show that there is no significant difference between IBs and CBs in terms of the impact of the financial crisis on the banking soundness (which is assessed by the Z-score and capital to asset ratio). They explain these results by the fact that IBs are mimicking the commercial strategies of their conventional counterparts and diverging from their theoretical business model.

4.1 Islamic Banks and financial stability

Profit and Loss Sharing (PLS) contracts, which are based on the Mudharaba (profit-sharing) and Musharaka (joint venture) concepts of the Islamic contract (Chong and Liu (2009)) (see Box 1), are considered as an alternative to interest-based contracts. In other words, the concepts of PLS ensure that Islamic banking transactions are without interest and complying with the Shariah requirements.

Through PLS paradigm, resources can be efficiently allocated. Indeed, the profit sharing ratio is influenced by market forces, so that capital will flow into those

sectors and hence the highest profit-sharing ratio is offered to investors. In addition, the PLS contracts induce a more efficient allocation of capital since the return on capital and its allocation depends on the productivity and viability of the project (Chong and Liu (2009)).

Chong and Liu (2009) add that the PLS paradigm offers the following advantages:

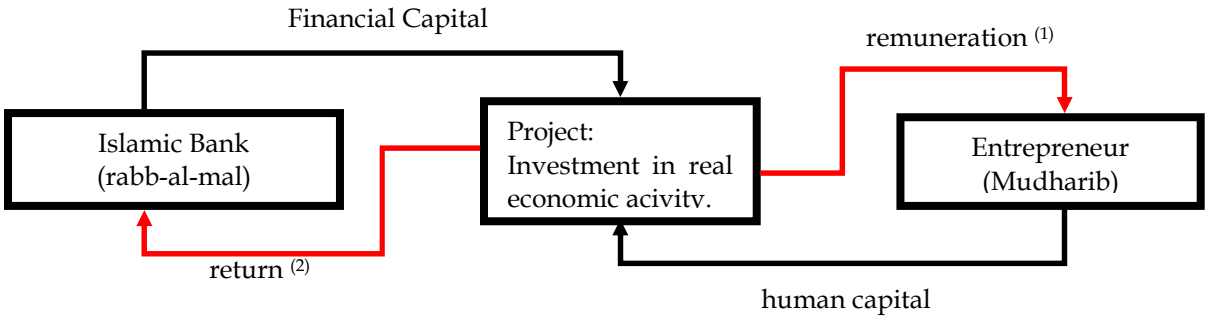
1. The assets and liabilities of IBs are integrated such that sharing profits and losses between the borrowers and the banks which, for their part, share profits and losses with depositors.

2.In theory, the risk sharing feature of this paradigm allows IBs to lend on a longer-term basis to high-return projects and hence to boost economic growth.

3. This paradigm creates also a greater market discipline. In fact, IBs have to exert more efforts so as to distinguish good customers by accepting to lose more than conventional banks. Depositors are obliged to choose their banks more carefully and to monitor them more actively in order to invest their funds prudently.

Box 1: Mudharaba and Musharaka Contracts

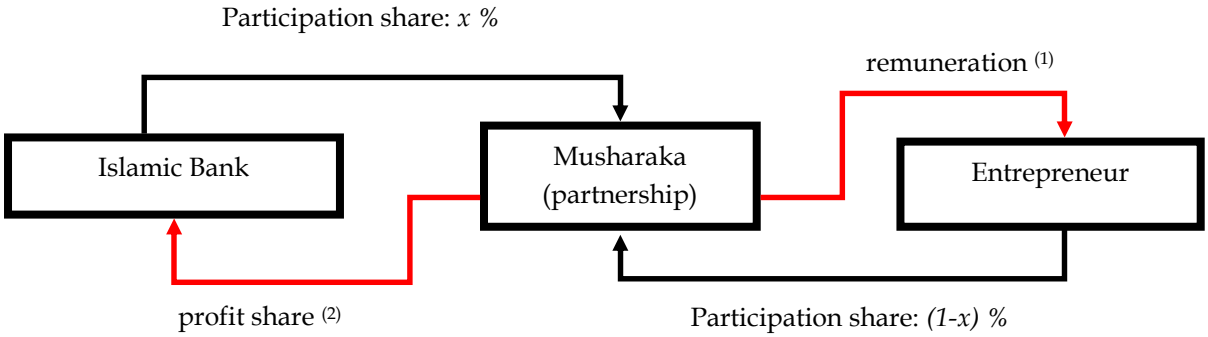
A. Mudharaba contract



(1) share of profits in case of gain ; otherwise nothing.
(2) profits share in case of gain ; otherwise, the investor assume the integrality of the loss.

The obligations of Mudharaba contract for the partners comply the following principles:
- The bank provides to the customer (Mudharib) the required amount of funding in order to finance a project but the Mudharib does not contribute to investment. He contributes however to the project management which he is responsible for.

- The profits obtained are shared between the bank and the Mudharib according to proportions determined by an advanced mutual agreement. However, the bank bears all losses, except in the case of Mudharib's negligence or error. In other terms, the bank loses the funds involved in a transaction, whereas the entrepreneur loses the fruits of its labor and wastes the time spent in his activity. ***B. Musharaka contract : joint-venture***



(1) share of profit in case of gain ; otherwise, the entrepreneur supports his share of loss.
(2) profit share in case of gain ; otherwise, the investor support his share of loss.

IB and its customer work together to implement a project. That is a partnership between the bank and its customer based on profit and loss sharing. The property right is proportional to the contribution of each stakeholder.
Benefits are shared according to agreed shares beforehand. These shares may be different from the capital share of each stakeholder. Losses must be shared on a pro-rata basis according to the contribution of each partner.

In summary, Islamic banking activities through PLS contracts can contribute to achieving justice, fairness and to build a balanced society as envisioned by Islamic economics (Dusuki and Abdullah (2007)). This confirms Siddiqi (2006)'s point of view that financial system based on profit sharing will be more stable than one dominated by debts. Moreover, the PLS paradigm will improve inclusiveness, intermediation, financial stability, and economic growth through the mobilization of domestic and international resources for infrastructure and other substantial investments (Ahmed et al. (2015)). However, some reject the idea that the abolition of interest in the banking system and its substitution for the PLS in Islamic banking, with « two-tiers Mudharaba » in assets and liabilities, make return rate certain (Siddiqui (2008)). Since profit levels from banking Investments are unknown, the return rate still unknown.

Furthermore, Islamic banking, as it is practiced today, tends to deviate substantially from the PLS paradigm (Zahar and Hasan(2001), Chong and Liu (2009), Beck et al (2013)). In fact, the PLS principle is never strictly applied. The more Islamic banks lose their distinctive features, the more they tend to resemble conventional banks. Indeed, IBs financing is still based largely on the less risky and shorter term non-PLS modes (namely Murabaha and leasing (Ijara), see Table 1.1). Even though these types of financing modes are permissible under the Shariah, they ignore the spirit of the usury prohibition. Table 1.1 confirms these findings. In fact, according to IRTI's 2011 database, 78.89 % of deposits are based on Murabaha contracts. For the same year, however, Mudharaba and Musharaka instruments of financing (both joint venture capital products and asset-based) remained respectively on the average about 1.33% and 3.8%.

Table 1.1: Islamic Modes of Finance in 2011 (Total value in USD and otherwise in %)

Country	Qard Hasan in %	Murabaha & Deferred Sales in %	Leasing & Hire Purchase in %	Mudharaba in %	Musharaka in %	Salam in %	Istisna in %	Other in %	Provisions in %	Total Value of Islamic Financing (100%)
Albania	-	140.56	-	-	-	-	-	-	40.56	17 027
Bosnia and Herzegovina	-	104.71	-	-	-	-	-	-	4.71	133 422
United Kingdom	-	45.82	42.87	0.72	0.87	-	-	13.95	2.51	810 317
United Arab Emirates	0.19	35.50	47.07	4.88	5.06	2.41	5.52	5.57	6.53	35 750 571
Bahrain	0.00	82.26	16.19	2.40	5.42	-	0.01	0.08	6.35	10 000 532
Jordan	0.35	80.91	20.28	0.17	0.79	0.12	-	-	2.62	3 284 949
Kuwait	-	86.95	17.97	-	-	-	1.71	0.29	6.91	32 384 261
Palestine	-	60.28	2.05	4.27	-	-	2.15	33.31	2.05	193 516
Qatar	0.00	78.84	15.14	1.15	0.17	-	5.21	0.23	0.74	20 590 651
Saudi Arabia	-	97.98	0.54	-	1.59	-	0.00	3.27	3.38	64 769 878
Syrian Arab Republic	0.74	99.97	1.13	-	-	-	0.34	0.88	3.06	737 748
Yemen	0.00	48.61	0.34	28.31	15.95	-	12.81	0.00	6.02	419 901
Bangladesh	1.71	83.32	22.22	0.01	1.37	0.97	-	3.15	0.21	9 062 409
Indonesia	14.26	52.53	0.65	10.85	23.85	-	0.24	0.00	2.38	6 636 293
Islamic Republic of Iran	2.44	89.12	0.12	1.02	6.04	0.11	-	149.58	5.21	121 742 597
Malaysia	0.02	53.68	26.89	0.05	2.95	-	0.62	18.83	3.05	58 571 859
Pakistan	0.01	74.16	10.68	0.63	11.72	1.14	8.19	2.37	8.88	3 236 230
Philippines	-	101.61	-	-	-	-	-	-	1.61	3 499
Turkey	-	98.15	1.23	-	-	-	-	2.58	1.96	21 850 759
Egypt	-	117.08	-	-	-	-	-	-	17.08	2 391 057
Gambia	0.56	127.42	0.64	-	5.87	-	3.34	-	37.84	4 803
Sudan	0.03	56.48	0.56	21.79	7.77	0.15	10.90	7.37	5.04	4 290 502
Tunisia	0.21	102.59	-	-	-	-	-	-	2.81	280 563
South Africa	-	64.80	-	-	19.43	-	-	16.34	0.58	347 876
Total in %	**1.05**	**78.89**	**11.91**	**1.33**	**3.80**	**0.28**	**1.20**	**50.03**	**4.37**	**397 511 218**

source: IRTI database, IBIS portal (2012)

After studying Islamic banking in Malaysia, Chong and Liu (2009) find that the adoption of the PLS paradigm has been much faster on the liability side than on the asset side. Only 0.5% of IB assets financing based on *Mudharaba* and *Musharaka* financing. Whereas, 70% of total Islamic deposits are based on *Mudharaba* deposits on the liability side. Although this important percentage, Islamic deposits are not really

without interest but are similar to deposits of the conventional bank. Therefore, IBs deposit PLS practices are closely fixed to the CBs deposit rate setting practices. So that, the return of *riba* is important through different mechanisms into the IB operations. The interest is still used as a benchmark to measure the time cost of money in IBs in their project evaluation, markup value and beyond. This is confirmed by a number of recent studies, such as Gan and Kwek (2010) and Chong and Liu (2009), which prove the correlation between IBs returns and the change in the interest rates and monetary operations. Chong and Liu (2009) relate this correlation to competitive reasons. The competition makes the practices of Islamic banking unable to diverge from those of its counterpart. The authors relate also this link to the importance of investment in non-PLS financing. Indeed, the characteristics of Islamic deposits risk and return should be alike to those of the IB financing portfolio. However, in practice, most IBs depositors choose to invest in non-PLS financing. In this case, IBs are totally exposed to the risk of loss (for more details see Chong and Liu (2009).

4.2 Islamic Banks and Social responsibility

Since the establishment of Islamic banks, one of their main objectives is to practice social activities to alleviate poverty and create a better community. That is why these banks have to comply with CSR expectations (Asutay (2012), Basah and Yusuf (2013)). All Islamic moral economy (IME) axioms, particularly *tawhid, adalah, rububiyah, and tazkiyah*, directly refer to social development, environmental concerns, and human and economic development. In other words, IBs should have the same objectives as SRI by investing in companies where human rights are not violated and the natural environment is not damaged (Ullah and Jamali (2010)). These banks must also not finance any enterprise involved in activities relating to pork, pornography, tobacco, gambling, and alcoholic liquors (Nathan and Ribiere (2007)). Consequently, IBs bring ethical values and CSR to banking practices simply because they should be tolerated by the Shariah, which is full of moral values (Kahf (1999), Dusuki and

Abdullah (2007)). Ullah and Jamali (2010) add that Shariah principles provide a broader framework for CSR and should encourage these banks to seriously pursue it.

In practice, a few IBs such as Dubai Islamic Bank, Faisal Islamic Banks in Egypt and Sudan, and Jordan Islamic Bank, have stated articles that impose on Islamic banks to undertake social activities. The Act of the Sudanese Faisal Bank in 1977 stated that the first goal of the bank is to work according to Islamic principles in order to support the development of society. Additionally, the Act of Jordan Islamic Bank in 1978 stated that the objective of the bank is to fulfill economic and social needs. A special section about the social services of this bank is included (Al-Qadi (2012)).

However, the contribution of Islamic banks and financial institutions (IBFIs) to economic and social development is negligible (Asutay (2012)). The financing of value added creating industries, long-term financing and contributing to social and human development are required. Nevertheless, the performance of IBs over the years has not been encouraging for economic and social development. This is confirmed by evidences which show that IBs rarely offer long-term financing to entrepreneurs seeking capital (Aggarwal and Yousef (2000), Iqbal and Molyneux (2005), Zubair Hasan (2007), Nagaoka (2007) and Jan (2011)).

Furthermore, a number of financial practitioners do not perceive a link between IFIs (bank and non-bank types) and SRI funds. This is why Sairally (2007) finds that Islamic Financial practitioners have a minor concern in CSR, especially environmental issues. Zubairu et al (2011) confirm this finding after examining the social reporting practices of Islamic banks in Saudi Arabia. The authors show that IBs in Saudi Arabia have much more in common with their conventional counterparts. In addition, financing sectors such as agriculture, industry, and manufacturing have not played a major part in the financing strategy of IBs (Jan (2011)).

For these reasons, the contribution of most IBs to sustainable development is rather elusive, since they opt for short-term financing which brings a much higher return at

the maturity of their financing evidences and responds only to their self-interest (Asutay (2012)). Nevertheless, recently, these banks improve their practices towards social objectives but they still far from the fulfillment of the Shariah objectives (Nor and Hashim (2014), Mallin et al. (2014), Platonova et al. (2016)). So that, IBs should have higher motivations to act proactively in the interest of the whole society.

4.3 IBs proximity to economic agents

A large literature mentions that Islamic microfinance[4] is best provided by non-bank institutions. However, several authors believe that with the Mudaraba and Murabaha, Islamic banks may be involved in this field (Ahmad (2003), Ahmad and Ahmad (2009), and Dhumale Sapcanin (1999), Wilson (2007), etc.).

In their technical note, Dhumale and Sapcanin (1999) analyzed how Combining Islamic banking with microfinance. They took into consideration the three main instruments of Islamic finance; Mudaraba, Musharaka, and Murabaha, trying to integrate them in conceiving a successful microfinance program.

4.3.1 The Mudharaba model

In this model, the program of microfinance and micro-enterprise are partners. The program invests money and the micro-entrepreneur invests only work. The micro-entrepreneur is rewarded for his work and shares the profits. The program shares only benefice. Nevertheless, the model presents a series of difficulties due to the lack of the micro-entrepreneurs' specific responsibility which makes it more difficult to establish the exact share of the profits. In other words, these models are complicated.

[4] Islamic microfinance is the meeting of two growth industries: micro-finance and Islamic finance. This micro-finance has the ability to combine the religious principle that takes care of the less wealthy and the power of the microfinance which is anxious that poor get access to financial services. An important role in struggling against social exclusion and improving welfare is attributed to Islamic finance (Bremer (2004) and Ebrahim (2009)).

It is difficult to understand, to manage and to treat them. Thus, people who are involved need specific training in this field. For this reason and for a better management of the profit sharing system, Mudaraba model might be easier for companies with a longer lucrative cycle.

4.3.2 The Murabaha model

By this contract, the microfinance program buys goods and resells them to small businesses at cost increased by administrative costs. The borrower often repays in equal installments, whereas the program has the goods until payment of the last installment. According, to empirical studies and relying on real experiences, other modes of Islamic financing (as Bai Mouajjal) can also be introduced by microfinance institutions to meet the needs of customers. In short, this can be realized by the following examples which demonstrate that Islamic finance can contribute to social welfare and reduce poverty by adopting microfinance services.

a. Bank Rakyat Indonesia (BRI) in Indonesia

Indonesia is one of the most renowned in the field of micro-finance with 44 million depositors, 30 million borrowers, including individuals and micro enterprises and a total asset of 141 billion. About 80% of microcredit in Indonesia come from commercial sources. The BRI is the largest and most profitable microfinance institutions in the commercial world. BRI raises its funds inside and is able to cover its costs. In addition, it finances its expansion from its profits. To maximize its outreach and remain profitable, the BRI must rely on its customers both poor and non-poor and respond to their demand for loans. In this regard, including the non-poor clients, the BRI can extend its social proximity work to the poor. Recently, the BRI and several other commercial banks have recently begun to venture into Islamic banking by setting up Islamic commercial units. The BRI says it seeks to accelerate growth through such banking based on Shariah law given that Islamic banking business performed better than the Shariah units of conventional banks.

b. North- Mali Program in Mali

The North-Mali Program was established in collaboration with German Technical Cooperation and the German Financial Cooperation (KFW) in the old civil war zones of Mali. A local bank, Azaouad Finance plc, has been chosen to make loans in accordance with the Shariah and to promote the collection of savings without interest, but by participating in profits and losses of the borrower. Financial services offered by the bank have had a great success. The business relationship of local traders has reached Abidjan and the Arabian Peninsula. The bank also has a program to support women entrepreneurs. It has also initiated cooperation with the National Agricultural Development Bank to adopt the SWIFT international payments system.

c. Rural Development Scheme (RDS), Bangladesh

The RDS of Islamic Bank Bangladesh Limited (IBBL) was initiated in 1995. Its goal is to eliminate poverty in rural areas through the development approach of the community. This program is to meet the investment needs of poor micro-entrepreneurs, that is to say, households with less than 0.5 hectare of cultivable land. The RDS also focuses on health, sanitation, and education of its beneficiaries. He has provided microfinance services in 812 villages from 52 IBBLs' windows. It distributed a total of Tk 243.58 million with a rate of return of 12% for 23,184 clients (organized into 7012 groups and 1733 centers) with a recovery rate of 99%. IBBL also runs Islamic Bank Foundation (IBF), a fund created from **Zakat**, charity donations and income of the bank which must be purified. The dominant mode of financing used by the RDS is the Bai-Mouajjal.

Nevertheless, Islamic finance as currently practiced fails to cater to the needs of the community and to contribute effectively to the economic development of Muslim countries and communities by resolving their main problem which is poverty (Siddiqi (2006)). In fact, most Islamic Banks do not introduce micro-finance programs to their banking system. Therefore, Some current proposals envisage obliging IBs to allocate a small fraction of their resources for supplying interest-free loans (Qard Hasan) to consumers. In this case, repayment is guaranteed by a third party such as the central bank and any losses sustained on this activity are to be compensated out of a reserve built on charitable funds (Zarqa (2004)).

Table 1.1 shows that most IBs do not supply the Qard Hasan instrument of financing or allocate a very small proportion which is much lower, (tends to 0%). Although the proportion of Qard Hasan in Indonesia is high (14.26 %), the total average of this instrument is still very feeble (1.05 %).

According to the Koran, IBs have also to pay Zakat, which its main purpose is a redistribution of wealth (Lewis (2001)):

"The usury that is practiced to increase some people's wealth, does not gain anything with Allah. But if you invest in zakat, seeking Allah's countenance, these are the ones who receive their reward manifold" (30:39).

In fact, the Zakat is a mechanism to achieve justice, equality, and a minimum standard of living in society (Imam and Kpodar (2010)). It also enhances productivity in economic activities (Rosly (1989)). The less money in circulation generates a lower production, a higher unemployment, and hence reduced incomes (Al-Qadi(2012)).

Maali et al. (2006) investigate the annual reports of 29 Islamic banks from the Middle East and confirm the importance of paying Zakat by IBs. Indeed, the comparison between CSR disclosures (including Zakat disclosures) by Zakat paying banks with those of non-Zakat paying banks shows that Zakat paying banks provide more CSR disclosures than non-Zakat paying banks.

IBs should therefore yield more Islamic financial products or Islamic micro-financial products to help the needy and the poor and then alleviate poverty and reduce social inequalities. Indeed, An investment in poverty removal now can bring huge possibilities for profit making tomorrow as the market expands (Siddiqi (2006)). These Islamic financial products should protect all against the risk of loss while motivating wealth owners to finance projects that empower the poor and improve their economic environment.

4.4 Does IBs ensure a good governance and monitoring?

According to Chong and Liu (2009), every contract in Islamic banking must be well defined and without ambiguity in order to avoid *gharar* transactions. Islamic banking must also ensure the entire operations of the business that are in accordance with the Shariah regulations (Khan(1987), Ahmad and Hassan (2007); Nathan and Ribiere (2007); Dusuki (2008), Chong and Liu (2009), Hasan and Dridi (2010), Ullah and Jamali (2010) , Abdullah et al (2013), Basah and Yusuf (2013)). Indeed, a failure to comply with the principles of Islamic finance could expose IBs to reputational risk (Abdullah et al (2013)).

Therefore, these banks are subject to an additional layer of governance represented by the Shariah Supervisory Board (SSB) (Grais and Pellegrini (2006), Nathan and Ribiere (2007), Besar et al. (2009), Abdullah et al. (2013) and Basah and Yusuf (2013)). The objectives of the SSB are to ensure that IBs operate in conformity with the Shariah and to minimize risk (Rammal (2006)).

However, after evaluating the Corporate Governance (CG) performance of IBs, A number of studies conclude that none of these banks have developed an understanding of Islamic CG model (for example, Safieddine (2009)). Moreover, the transparency level on *Shariah* governance matters is still low (Besar et al. (2009), Hasan (2011) and Abdullah et al. (2013)). Abdullah et al. (2013) explain that the IBs stakeholders' demand for transparency is not high enough to encourage the SSBs to make higher levels of disclosure in their reports. Indeed, the IBs stakeholders seem to be passive towards the disclosure provided, resulting in a lack of implementation of guidelines and practices by IBs. For this reason, Abdullah et al. (2013) suggest that "the SSB should exercise its accountability by disclosing more in the SSB report".

Some studies point out other problems related to moral hazard and asymmetric information. In fact, serious difficulties are encountered by IBs concern the introduction of profit sharing arrangements (Khan (1985), Khan and Mirakhor (1987),

Khan and Mirakhor (1994), Ali (2001), Bashir (2001), Siddiqi (2006)). It is impossible to develop a system of contracts between borrowers and lenders which would keep monitoring costs at a reasonable level and eliminate the moral hazard problem when the borrower and the lender have an asymmetric information about the investment efficiency. This explains the reasons behind the dominance of debt contracts with fixed returns, despite the promises of sharing.

5. Conclusion

In summary, many studies argue that IBs should offer only products that are conform to the Shariah law and hence should be sustainable. However, this is too difficult to be realized since these banks seem to seek their well-being rather than the social welfare. In fact, as we have seen before, in practice, IBs lose their distinctive features and tend to resemble conventional banks. Indeed, most IBs tend to deviate from PLS paradigm. In addition, the contribution of most of these banks to sustainable development is elusive (Asutay (2012). They are not also close to people and they do not ensure a good governance. Therefore, we could not consider these banks as sustainable.

Chapter II

Exploratory analysis:

Prerequisites and Potential of Islamic Finance: A Study of The Tunisian Market

1. Introduction

After the Revolution of December 17th, 2010- January 14th, 2011, the economic and financial situation has worsened in Tunisia. Indeed, economic growth slowed to 2.1 per cent during the first half of 2014. Moreover, the trade deficit increased to 18.2 per cent, with a persistent energetic deficit. Furthermore, the current account deficit widened to 29.3 per cent. The inflation rate also increased from 5.7 per cent in June 2014 to 6 per cent year-on-year in July of the same year (HuffPost Maghreb (2014))[5]. This affected the unemployment rate which jumped to 18.9 per cent in 2011 and then declined gradually to 15.7 per cent in September 2013. Most of the unemployed people are unqualified workers. However, unemployment among young graduates has attained the highest rate of 33.5 per cent in September 2013. In addition, Tunisia has to resolve the problem of decentralization by including rural and interior regions in the dynamic of economic development. Indeed, 29 per cent of the population in the center-west region are under national poverty line.

Concerning the Tunisian banking sector, it suffers actually from an economic slowdown. This sector has indeed been influenced by the dramatic drop of tourism which represents 40 per cent of the seven major banks NPL, particularly State-owned banks. In addition, the local banking system has suffered for two years of a significant lack of liquidity amounting to 4.3 billion dinars (2.65 billion dollars) in October 2013. This is clearly exemplified by the deposit-loan ratio that continues to drop, as funds provided by customers increased only by 3.7 per cent during the first 8 months of the year, compared to 5 per cent over the same period in 2012, certainly because of massive withdrawals. The Tunisian Central Bank has taken major steps towards rising banking supervision. It has highlighted its objective of creating robust banking supervisory practices.

[5] http://www.huffpostmaghreb.com/2014/09/02/tunisie-taux-de-croissance-2014_n_5751820.html

The Tunisian financial sector suffers in fact from a lack of innovation, liquidity and good governance... This problem has a bad effect on macroeconomic development. For this reason, authorities try to implement Islamic financial products and services (IFPS) in the Tunisian banking system. So, could Islamic finance be a solution to resolve the Tunisian financial and economic crisis by enhancing regional development? What prerequisites should be observed to implement Islamic financial products and services? Do Tunisians accept to deal with Islamic Banking? How may the socio-demographic factors affect their potential demand?

For this reason, prerequisites must be implemented and a study of private agents' potential demand for IFPS in different Tunisian regions is essential in order to get a clearer picture about this type of potential customers' behavior and expectations. The purpose of this study is thus to propose the prerequisites that should be observed in order to implement these IFPS. The Islamic banking system that would be developed should ensure the satisfaction of all stakeholders namely the Tunisian Government, Customers, Civil Society, Shariah advisers, Managers, Shareholders, and Employees. This study consists also in analyzing Tunisians' potential demand for these products and services taking into account the socio-demographic factors.

This study is organized as follows. First, a review of the existent literature about potential demand for IFPS in Tunisia and about the influence of socio-demographic factors on customers' behavior has been done. Second, we explore the prerequisites that should be observed. Finally, we study Tunisians' potential demand of Islamic banking products and services by analyzing the results of the national Survey. After that, we discuss the results obtained. Finally, we present the key conclusions of the paper, some limitations, and managerial implications.

2. Literature Review

2.1. Islamic Finance in Tunisia: potential demand studies

Islamic finance industry is still underdeveloped in North Africa. In Tunisia, it represents only 2.5 per cent of the total assets against 42 per cent in the United Arab Emirates and 61 per cent in Saudi Arabia (Standard & Poor's (2012)). This underdevelopment was quite often related to political considerations. In fact, according to Chadli Ayari, the Tunisian Central Bank governor, "it was not easy to implement an Islamic Finance which is integrated into the national banking system, in Tunisia. And now, this is done, and it is acquired". This is confirmed by Mahmoud Mansour, Deputy General Manager of Al Baraka Bank, who argues that the Islamic Finance direction in the country has been modified by the Tunisian revolution (for more details see Thomson Reuters et al (2013)). Despite this modification, the competitive landscape of Islamic banking is still stable. It comprises actually only three Islamic banks. The pioneer one is Al Baraka bank which is established in 1983 and since 2013, it supplies both offshore and local retail activities. We find also Zitouna Bank initiated in 2010 by Sakhr Al Matri, the son-in-law of the deprived president. The last one is Noor Islamic Bank which is a regional office.

Therefore, the hard situation of Tunisian banking sector, the underdevelopment of the Islamic banking industry, and the modification of Islamic Finance direction incite a few researchers to study the potential demand of Islamic Finance by individuals or households in Tunisia; namely Ammar Ayachi at al. (2012), Ajili and Ben Gara (2013), Saidane (2014) and Thomson Reuters, IRTI and CIBAFI (2013)).

The pioneers are Ammar Ayachi at al. (2012) who exposed the survey results of 30 Tunisian Northwest companies from Kef, Jendouba, Beja and Siliana and 670 individuals. The authors show that Tunisians, entrepreneurs and households, perceive Islamic Finance as a seductive phenomenon. However, the expansion of this industry necessitates **well formed and competent human resources** and

dedicated and appropriate regulations must be set up for this finance while encouraging the development of competition in this area. Moreover, the development of the **individuals' level of knowledge** of Islamic Finance and its products and the encouragement of the **geographic proximity** of Islamic Banks to customers are important in order to ensure the development of Islamic Finance industry.

This strong potential demand for Islamic products and services is confirmed by Thomson Reuters et al. (2013) which, by conducting an online and offline Survey with a representative target sampling from key geographic areas of Grand Tunis, Sfax, Sousse, and others, show also a large number of people who accept to deal with Islamic Windows. However, these respondents call for the adherence to Islamic rules in order to deal with this type of banks and they have expressed a need for more understanding and education in this field. The authors find also that 57% of the respondents are unsatisfied, 7% of them are unbanked and Tunisians have not the savings culture deeply rooted. This would encourage potential customers to choose to bank with an Islamic bank.

By examining both the demand determinants and the Islamic Finance products supply, Ajili and Ben Gara (2013), for their part, highlight the importance of developing a certain degree of Islamic finance knowledge by stakeholders. In other words, the authors find that the explanatory factors of a reticent behavior vis-à-vis this finance depend on its knowledge degree. To explain the reason for this reticence, the professionals interviewed put forward economic, legal and regulatory as well as technical and organizational arguments; namely the absence of a special legal framework and relatively high fiscal costs, the lack of specialists in this domain, the lack of information and the weak familiarization with Islamic Finance Products. For their part, the potential customers add political and historical reasons, specifically the absence of political will, the fear of activities with Islamic connotation, as well as psychological and cultural constraints; namely the lack of knowledge of Islamic

Finance and cultural resistance. From these points of view, Ajili and Ben Gara (2013) conclude that there are the following three *sine qua non* conditions to develop Islamic finance in Tunisia: **Information**, **training**, and **adapting the legal and regulatory framework** to the Islamic Finance specificities.

Saidane (2014) confirms these views by affirming the existence of prerequisite conditions to implement Islamic banking system in Maghreb. In addition to the conditions suggested by Ajili and Ben Gara (2013), the author thinks that Authorities should also make an effective effort to **strengthen financial depth of Islamic Finance industry**.

In brief, these researchers agreed on the importance of improving the individuals' level of knowledge about Islamic Finance, reforming a regulatory, fiscal and accounting framework to ensure that the Shariah rules are properly observed. Nevertheless, the results of these works do not reflect the behavior and preferences of all Tunisians. Indeed, all of these studies do not take into consideration the standpoints of the Tunisian inland areas inhabitants. These regions suffer from the highest rate of poverty, especially that of the center-west in which 29 percent of the population are under national poverty line. In addition, according to ITCEQ (2012), the regional development indicator (RDI) of these regions is very low; namely, Kasserine which has the lowest RDI with 0.16 (see Table 2.1).

Table 2.1: Governorates classification according to regional development indicator

Rank	Governorate	RDI	Rank	Governorate	RDI
1	TUNIS	0.76	13	MEDENINE	0.50
2	ARIANA	0.69	14	BIZERTE	0.49
3	BEN AROUS	0.66	15	MAHDIA	0.42
4	MONASTIR	0.64	16	GAFSA	0.41
5	SOUSSE	0.62	17	LE KEF	0.40
6	NABEUL	0.57	18	BEJA	0.39
7	SFAX	0.56	19	ZAGHOUAN	0.39
8	TATAOUINE	0.55	20	SILIANA	0.36
9	MANOUBA	0.53	21	JENDOUBA	0.31
10	GABES	0.53	22	SIDI BOUZID	0.28
11	TOZEUR	0.51	23	KAIROUAN	0.25
12	KEBILI	0.50	24	KASSERINE	0.16

source: compilation ITCEQ (2012)

Moreover, the previous works do not include the socio-demographic factors in their analyses.

2.2. Do socio-demographic factors influence the potential customers' behavior?

In Islamic banking literature, numerous studies show the importance of socio-demographic factors introduction in the analysis process. According to them, these factors may influence the customers' behavior and hence the potential demand for Islamic banking products and services (For more details see Jamshidi et al. (2013) and Jamishidi et al. (2014)). For this reason, Islamic Financial Institutions (IFIs), specifically Islamic Banks, should adopt an adequate marketing strategy by taking into account the demographic profile of their potential customers.

Okumus (2005) exerts a major effort in this sense by determining the Special Finance Houses (SFH) customers' profile that would be considered as a base of financing and savings plan. Moreover, he takes into consideration different socio-demographic items to appraise the level of customer's awareness and satisfaction with this bank. That is why, he proposes the following factors: *gender, age, religion, Practicing Religion, level of education, type of employers, Type of Business/Job, Years in Business/Job* and *monthly net income*. The author finds that these factors affect the degree of

awareness and satisfaction. In addition, the SFH customers' profile is characterized by a young age and a low or middle income of customers.

For their part, Mansor and Che-Mat (2009) and Amin (2012) show that demographic items affect the usage intention of Islamic credit card. Indeed, in their study, Mansor and Che-Mat (2009) find that the income level influence significantly the customers' usage of this type of cards; whereas the gender does not play any role in Islamic credit card usage. On the other hand, the result got by Amin (2012) demonstrates the important role played by *age*, *marital status*, *religion,* and *educational level* in Islamic card usage.

These factors also affect the possible usage of other Islamic banking products and services. For instance, Amin (2007) studies the customers' perception on Islamic automobile financing. The findings demonstrate that the individual differences concerning Islamic automobile financing are well explained by the following demographic items: *age*, *marital status*, *gender*, *occupation*, *race*, *education,* and *income level*. For their part, Abdul-Hamid et al (2011) appraise the factor which affects Islamic home financing awareness and adoption. According to them, the level of awareness is influenced significantly by the respondents' *age* and *education group*.

However, all these studies do not explore the Islamic people's socio-demographic characteristics that could be potential customers of an IFPs. They focus only on satisfaction analysis, the usage intention of an Islamic product or the behavior when a new Islamic product is introduced...Whereas, the principal contribution of the current paper is to study the potential demand in a market where Islamic Finance is underdeveloped.

Another contribution consists in adding the factor *governorate* in order to study the customers' behavior in each Tunisian governorate. This is more difficult to realize in the other countries since the Tunisian surface is much smaller than theirs. This addition may enrich our study and let us know how Islamic banking can promote the financial sector and regional development by resolving problems such as

unemployment and decentralization. We introduce also the following factors in our study: *gender*, *age*, *level of education*, *type of employers*, *annual income* and *civil status*.

3. Prerequisites that should be observed

As we have seen, the development of Islamic banking industry in Tunisia necessitates the implementation of many prerequisites. The objective of this section is to present these conditions and to propose how to implement IFPS in Tunisia that satisfy all stakeholders; namely the Tunisian Government, Managers, Employees, Customers, Civil Society, Shareholders, and Shariah Advisers.

3.1. Fill the legal vacuum and loopholes particularly vis-à-vis of customers

In the Tunisian case, the legal vacuum impedes significantly the flowering of the Islamic financial industry (Dekli (2012)). This can give free rein to illicit practices (non-conform to the Shariah principles) that harm this industry. Most observers in the Sub-Saharan Africa or in the Maghreb feel that retail Islamic banks do not really propose "real Islamic products". The products which are named Islamic are in reality masked by conventional products. In Tunisia, the finance act of 2012 introduced the first official texts about Islamic financial products. It formulated brief definitions of some Islamic financial products and harmonized the tax system of these products with that of classical financial products.

Then, IF has been strengthen through the adoption of different legislations namely those for Sukuk (Law No. 2013-30 dated July 30, 2013), Islamic Investment funds (Law No. 2013-48 dated December 9, 2013), and Takaful (Law No. 2014-47 dated July 24, 2014), as well as the approval of the new banking Law No. 48 of July 11, 2016. In the last law, a number of changes have been introducing in order to organize Islamic Banking sector activities. The section 11 of this act presents the legislative framework of Islamic banking activities in Tunisia. The sections 12, 13, 14 and 15 precise the legal status of Murabaha, Ijara, Istisnaa and Salam contracts. Section 16 defines investment deposits based on Mudharaba or Wakala contract. The law 2016-48 allows also

conventional banks to carry out Islamic finance transactions after the central bank approval (even in the case of Islamic windows). So that, the central bank has as mission to ensure the conformity of Islamic banking transactions with the standards promulgated by specialized international organizations such as AAOIFI (Accounting and Auditing Organization for Islamic Financial Institutions) and CIBAFI (General Council for Islamic Banks And Financial Institutions). It is also expected to elaborate a circular that presents the different categories and the characteristics of Islamic finance products and another one which identifies the conditions for the Islamic windows opening6.

However, regulators must elaborate more laws that take into consideration the protection of Islamic banks and their depositors. Moreover, laws and regulations dedicated to Islamic Microfinance must be elaborated. This may encourage IBs to attract another type of customers namely poor people. In the seminar[7] organized by the Tunisian Professional Association of Banks and Financial Institutions, many experts emphasized the importance to create a separate department for Islamic finance, a Shariah board, and an audit firm specialized in Islamic Finance which carry out external audits[8].

For this reason, it is necessary to ameliorate more the legislative framework and to reform the fiscal and accounting ones inspired by the experiences of other countries such as Malaysia and Indonesia.

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[6] for more details see the site: http://islamicfinancenews.com/news/islamic-finance-development-tunisia

[7] a seminar under the theme 'Implementation of an Islamic window in a universal bank organised on November 16th, 2016

[8] for more details see the site: http://www.islamicfinancenews.com/authors/mohamed-araar

3.2. Strengthening financial depth of an embryonic financial industry

Some studies such as Goaied and Sassi (2011) and Ammar Ayachi et al. (2013) show that, at this time, Islamic Banking has a limited effect on economic growth. This banking system is associated, on average, with low economic development (Gheeraert (2014)). This would be the consequence of the non-maturity of the Islamic financial system. It is necessary to attain a critical size in order to be able to amortize costs and thus improve economic development. Indeed, the size is one of the biggest problems that Islamic Banks have to face over the next few years to further assert their competitiveness. This limited size does not foster returns to scale. After comparing at world level, the average size, in term of assets, of the ten largest conventional banks to that of the ten largest Islamic Banks, we can remark that the Islamic banks balance sheet is over 20 billion dollars while that of conventional banks is higher than 1000 billion dollars (Saidane (2014)). Such a low size contributes only to an increasing of banking costs. These financial arrangements costs are diluted to a small clientele base. The Islamic Financial stakeholders are of modest size compared to the western universal banks. they will likely have to think about gathering together in order to strengthen the financial base.

3.3. Improving the Human Capital

Today, the human capital is one of the main impediments to the Islamic Financial development. Aliyu et al. (2017) underline the importance of the IBs staff equipment with the required skills and knowledge of the Islamic financial transactions. Indeed, The experts' number or *Shariah scholars* is very low. Worldwide, we have less than 100 experts for more than 300 Islamic Financial Institutions (Saidane 2014)). According to Nasreddine Dekli, the legality of Islamic financial operations regarding their principles and their values are subject to only *Shariah Board* opinions whose independence can be strongly limited since it is appointed by managers of Islamic banks. In these cases, it is obvious that the real decision-making power belongs to the managers of these banks who can cause potential conflicts of interests (Dekli (2012)).

Islamic Banks have not the structure, the ability, the environment and the staff to achieve their objectives. The lack of *scholars* and experts could act as a barrier to the market development. For example, Nizam Yacoubi, the most renowned *Shariah Scholar* in the world, work in 85 banks. Idem for Abdul Satar Abu Ghuddah who is the second most coveted in the world (Ünal (2011)). It is reasonable to assume that recruiting executives and qualified staff should be conducted on the basis of mastering banking techniques and the knowledge of Muslim contracts law standards. Nevertheless, at the moment, the balance in profiles has not been yet acquired. Moreover, there is still a gap between the Islamic finance technicians who emerge often from conventional finance and Muslim law doctors who could be unaware of the finance rudiments. Islamic Finance lacks therefore executives who have dual competence. This weakness characterizes also Europe and USA and could slow down its expansion beyond the Islamic historical countries. It could also enfeeble the efficient performance of IBs and hence lead to non-performing loans and their failure. For these reasons, these banks should do more effort in order to improve their staff's professionalism through training and ensure their customers' satisfaction. Other studies call also for improving the knowledge of this finance for Islamic financial regulators and experts (Archer and Haron (2013), Archer and Karim (2013), Nienhaus (2013), White and King (2013), Mallin et al. (2014)).

3.4. Encouraging academic research which remains embryonic and disorganized

Improving the human capital needs the establishment of a recognized training at the academic level. However, the starting-point consists exactly in organizing renowned research teams from big universities and in conveying rigor to the employed methods and the analyses of the conclusions reached without any proselytizing. For instance, the setting up of Tunisian Doctoral School in Islamic Finance (TDSIF) is becoming more urgent. It would constitute the backbone of the research and the doctoral courses in this area. Without the TDSIF, the visibility of Islamic Finance on the academic and professional levels will remain unclear. Therefore, improving the

higher education of Islamic Finance, in general, and Islamic Banking, in particular, may improve the performance of human resources as well as the innovation in this sector. This development of supply quality influences the customers' satisfaction and hence would increase the demand for Islamic banking products.

3.5. Ensuring a good governance

To have a good governance, Monetary authorities should implement a *Shariah Board* or a *Compliance Committee* which will include the representatives of the authorities and various economic stakeholders involved: Religious Experts, Ministry of Finance, TCB, Financial Market Council (FMC), the bankers, Civil Society... This Shariah Board which must be implemented at the national level without excluding the creation of a Shariah Board within each bank should comprise Tunisian or foreign religious experienced. The establishment of a Shariah Board and of a supervisory body should be independent of the supervisory authorities that exist.

3.6. Assessing the potential customers

Before setting up Islamic financial structures, the customers' potential should be assessed by studies and surveys. This valuation allows us to construct a good customer segmentation to ensure appropriate products. Moreover, a preliminary market study about the opportunity of Islamic Finance introduction provides a market segmentation by taking into account the level and the type of Tunisian Savings. These prerequisites and these improvements ensure the success of the future Islamic Banks in Tunisia. Otherwise, their raison d'être could be altered and their effectiveness could be weakened (Saidane (2014)).

3.7. Ensuring that the bank size well affects earnings growth and Islamic banking in general

Some recent studies (such as Ammar Ayachi et al. (2013)) do not validate the assumption that Islamic finance plays an important role as a driver of growth in the

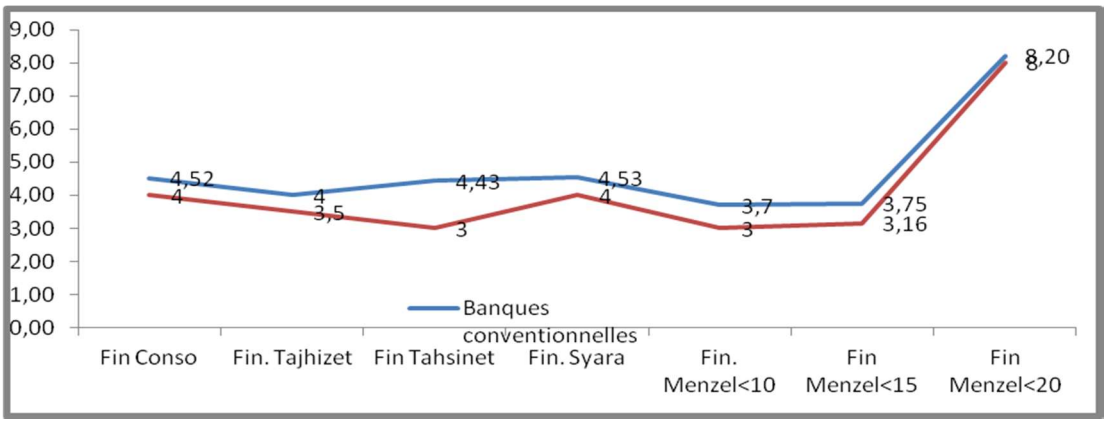
Schumpeterian sense. This limited effect on growth may be a consequence of the Islamic financial system immaturity.

The size is indeed one of the biggest challenges that Islamic Banks have to face in the upcoming years in order to enable their competitiveness (Zaher and Hassan (2001), Ammar Ayachi et al. (2013) and Gheeraert (2014)). Gheeraert (2014) confirms the importance of the size by showing that, only in the medium Islamic banking penetration group, Islamic banking is a significant complement to conventional banking.

Therefore, the size is another challenge facing Islamic banks. It is observed that most of these banks are retail banks. In other words, the majority of Islamic financial institutions are extremely small and cannot remain serious players in a market that continues to grow and attract major international banks. It should be mentioned that Islamic finance would only represent today around 1 per cent of conventional finance. To be competitive in a broad sense, Islamic banks should merge or cooperate. They must also make fundamental strategic decisions about the type of banking model they want to develop.

If we compare the products and services costs, in 2012, of 10 Tunisian banks (Attijari Bank, BH, BIAT, ATB, UIB, BT, STB, BNA, UBCI, AB) to those of Zitouna bank, we find that the latter has a competitive cost structure (see Figure 2.1).

Figure 2.1: Financing costs Comparison: Conventional banks vs Zitouna Bank (Mai 2012)



In fact, according to Figure 5.2, it seems that the households average financing cost is 4.73% in conventional banks and 4.09% in Zitouna Bank. The spread which is equal to 0.64% measures the Zitouna Bank competitiveness cost vis-à-vis of the 10 other Tunisian banks.

4. The potential demand for Islamic Finance Products and Services in Tunisia

4.1. Methodology

4.1.1. The Survey

At the beginning, our Survey covered the period which is defined from 30th March to 15th May 2012. In order to enrich our study by taking into consideration all Tunisian governorates and to obtain results that would be closer to reality, other persons were questioned from 15th March 2013 to 01st April 2014. The Survey was conducted online (over 280 persons) and offline (over 1,720 respondents). About 2000 questionnaires were distributed to respondents over the two periods. After the elimination of some questionnaires, we obtained a sample which comprises 1,600 persons from different social categories with a minimum age of 18 years. This sample was stratified according to "governorate" and "gender". The respondents' distribution of this current study was consistent with the results of the 2004 National Census (see Table II.1 in Appendix1 of this Chapter).

4.1.2 The Survey Instrument

This Survey consists in assessing the potential demand for Islamic financial products (IFPs). To do this, we tried to response to the following questions:

- Do Tunisians know Islamic Finance?
- Would they be interested in Islamic Financial products?
- What are the respondents' requirements?

For this reason, the questionnaire consists of four sections. The first one includes information about the level of knowledge of Islamic Finance in Tunisia. The second section consists in studying the potential customers' interest to use Islamic Financial Products (IFPs). The latter section includes five parts: interested or no by Islamic banking, the reasons of recourse to IFPs, the reaction when Islamic products and services are more expensive than those of Conventional Banks as well as the expectations of potential customers. The third section includes information about the respondents' requirements. This section is also divided into the following sub-sections: the obstacles to use IFPs and the competitive advantages of Islamic Banks. Finally, the fourth section comprises the demographic information, namely governorate, gender, age, level of education, type of employers, annual income and civil status. In total, there are 62 items to respond to the cited questions. The types of questions are multiple answers or unique choice item. Moreover, concerning the data analysis, we apply SPSS 19.0 and R 3.1.0 versions.

4.1.3. The Respondents' profile

The distribution of population by regions is as follows: 594 persons are resident in North-East of Tunisia, 181 in the North-West, 235 in the Central-East, 289 in the Central- West, 289 in the South-East and 90 in the South-West. The distribution of respondents by governorate is represented in Table II.1 in Appendix 1.

Table 2.2: Respondents' demographic profile

Descriptions		Frequency	Percentage
Gender	Male	802	50.1
	Female	798	49.9
Age	Lower than 25 years	250	15.6
	between 26 and 40 years	684	42.8
	between 41 and 60 years	495	30.9
	more than 60 years	171	10.7
Level of Education	Illiterate	128	8.0
	Primary education	224	14.0
	Secondary education	540	33.8
	Higher education	708	44.3
Type of Employers	Private sector	454	28.4
	State	416	26.0
	Self-employed	163	10.2
	Unemployed	205	12.8
	Student	123	7.7
	Retired	97	6.1
	Other	142	8.9
Civil Status	Married	936	58.5
	Single	575	35.9
	Divorced	46	2.9
	Widowed	43	2.7
Annual Income	Lower than 3,500 TD	662	41.4
	between 3,500 and 10,000 TD	535	33.4
	between 10,000 and 25,000 TD	333	20.8
	higher than 25,000 TD	70	4.4
Have account in Islamic Bank	Yes	88	5.5
	No	1512	94.5
Have an account	Islamic Bank	88	5.0
	Conventional Bank	793	49.8
	The post Office	439	27.6
	Have not an account	350	22.0
Reasons to have not an account	Have not enough resources to open an account	190	55.6
	Have been refused to open a basic bank account	16	4.7
	Have not confidence in the banks	34	9.9
	Very high commissions and management fees	26	7.6
	Do not find it useful	100	29.2

As can be seen in Table 2.2, 50.1 and 49.9 per cent of the respondents were male and female respectively and 58.5 per cent of them were married. The majority of the respondents were between 26 and 40 years (42.8 per cent), followed by the 41- 60 years (30.9 per cent) and less than 25 years (15.6 per cent). In terms of employment, most of the respondents were private employees (28.4 per cent) and government employees (26.0 per cent) while the rest were grouped in 5 other categories (*self-*

employed, unemployed, student, retired and *other*). In terms of education, the majority of the respondents had a high degree (44.3 per cent) and 33.8 per cent of them had a secondary education. In addition, the major annual income levels of respondents were lower than 3,500 TD with 41.4 per cent (such that 18.58 per cent of them were students) and between TD 3,500 -10,000 (33.4 per cent).

Furthermore, only 5 per cent of the respondents hold accounts and/or use the services offered by the Tunisian Islamic Banks. However, 49.8 per cent indicate that they bank in a conventional bank as well as 27.6 per cent have an account in a post office. Among the 22.0 per cent of the persons who have not an account, 55.6 per cent have not enough resources to open one.

4.2. Tunisians' knowledge Level of Islamic Finance

The object of this section is to show if individuals understand the concept of Islamic Banking.

Table 2.3: Description of the Respondents' knowledge level of Islamic Finance

Descriptions		Frequency	Percentage
Do Tunisian hear about Islamic Finance?	Yes	697	43.6
	No	903	56.4
What products do Tunisian know?	Mudharaba	54	3.38
	Musharaka	62	3.88
	Murabaha	120	7.51
	Ijara	48	3.01
	Salam	21	1.31
	Istisnaa	23	1.44
	Qard Hasan	25	1.57
	Sukuk	20	1.25
	Others	35	2.19
	Do not know any product	1411	88.35
Do they know the Tunisian Islamic banks?	Zitouna Bank	1063	66.94
	Al Baraka Bank	309	19.5
	Noor Bank	10	0.63
	Do not know any bank	490	30.86

According to the Survey, **43.6 percent of the respondents say they have an idea about Islamic Finance.** Only 11.65 percent of them were able to cite at least one

Islamic Financial product (IFP). The Murabaha product is the most known with 7.51 percent (see Table 2.3). This highlights the Tunisian general public's lack of knowledge of Islamic Finance and its products.

Table 2.4: Knowledge of Islamic Finance and knowledge of IFPs

Do you hear about Islamic Finance? → **knowledge of the Islamic products** ↓	Yes		No		Total
	Eff.	% Obs.	Eff.	% Obs.	
Mudharaba*	54	7.8%	0	0.0%	54
Musharaka*	61	8.8%	1	0.1%	62
Murabaha*	119	17.1%	1	0.1%	120
Ijara*	46	6.6%	2	0.2%	48
Salam*	21	3.0%	0	0.0%	21
Istisnaa*	23	3.3%	0	0.0%	23
Qardh hassan*	25	3.6%	0	0.0%	25
Sukuk*	20	2.9%	0	0.0%	20
Others*	35	5.0%	0	0.0%	35
Any product*	513	73.7%	898	99.7%	1411
Total	697	43.6%	903	56.4%	1600

Notes: (*) denotes the significance level of 1 per cent

Table 2.4 confirms the above results. Indeed, most people reporting that they have an idea on Islamic Finance do not cite any product. However, there are some who contradict themselves (see Table 2.4). These persons cite the following products: *Murabaha*, *Musharaka,* and *Ijara*. They have heard about these products without knowing exactly their meanings.

Table 2.5: Knowledge of Islamic Finance and Demographic factors: level of education and Annual Income

		Knowledge of Islamic Finance			
		No		Yes	
Level of study*	Illiterate	106	82.8%	22	17.2%
	Primary education	155	69.2%	69	30.8%
	Secondary education	310	57.4%	230	42.6%
	Higher education	332	46.9%	376	53.1%
Annual income*	< 3,500 D	415	62.6%	248	37.4%
	3,500 - 10,000 TD	314	58.7%	221	41.3%
	10,000 - 25,000 TD	148	44.4%	185	55.6%
	> 25,000 D	26	37.7%	43	62.3%

Notes: (*) denotes the significance level of 1 per cent.

According to Table 2.5, 53.1 percent of respondents who have a higher education level have an idea on Islamic banking. Nevertheless, 82.8 percent of illiterates do not hear about Islamic Finance. Thus, Tunisian Islamic Banks should make efforts to introduce Islamic finance to this category of persons through Media, by encouraging and financing Illiterates' education and etc. Moreover, 62.3 percent of respondents whose annual income is higher than 25,000 TD have a basic idea about Islamic Finance, knowing that 69.6 percent of them have a high level of study. However, 62.6 percent of the respondents whose annual income is lower than 3,500 TD have no idea on Islamic banking since Tunisian Islamic banks such as Zitouna bank and Al Baraka Bank do not offer microfinance products to this type of potential customers. That is why, this category of respondents could not deal with Tunisian Islamic banks and hence they feel being denied access to these types of products. For this reason, poorer agents are not seeking information about Tunisian Islamic Banks.

Table 2.3 shows also that **Zitouna Bank is the most known Islamic Tunisian bank** with 66.94 per cent followed by Albaraka Bank. However, 30.86 percent of the respondents do not know any Tunisian Islamic bank. In addition, 51.8 percent of the respondents who say they have no idea about Islamic Finance hear about Zitouna Bank and 13.2 percent of them know Al Baraka Bank (see Table 2.6).

Table 2.6: Knowledge of Islamic Finance and knowledge of Tunisian Islamic banks

Do you know Islamic Finance? → / knowledge of Tunisian Islamic banks ↓	Yes		No		Total
	Eff.	% Obs.	Eff.	% Obs.	
Zitouna bank*	595	**85.4%**	468	**51.8%**	1063
Al baraka bank*	190	27.3%	119	**13.2%**	309
Noor bank	10	1.4%	0	0.0%	10
Any bank*	81	11.6%	409	45.3%	490
Total	**697**	**43.6%**	**903**	**56.4%**	**1600**

Notes: (*) denotes the significance level of 1 percent

To improve the General Public knowledge of Islamic Financial products (IFPs), a key factor to Islamic Financial development in Tunisia, the Tunisian authorities, the

financial operators, the universities and the associations have to disclose and to present these Islamic products to the public. For instance, this could be achieved through Tunisian Media.

4.3. Could Tunisians be interested in Islamic Financial Products (IFPs)?

According to the Survey, **64.9 percent of the respondents (that is, 1,039 persons) would be attracted by the Interest-Free Financial Products offering** (see Table 2.7). In this section, we will analyze these potential customers' behavior by studying their needs, their expectations as well as the reasons to choose to deal with Islamic Financial structures.

Table 2.7: Potential customers' behavior

Survey item	Frequency	Percentage
Are you interested in Islamic banking?		
No	561	35.1
Yes	1039	64.9
The most interesting products according to the respondents		
opening an account and using different means of payment	439	42.3
investment products	193	16.7
financing of vehicles	369	35.6
real estate financing	489	47.2
business financing	458	46.3
consumption financing	182	17.6
financing studies	233	22.4
Reasons to have recourse to IFPs		
religious conviction	767	75.2
lower cost	316	31.0
diversification	121	11.9
innovation	196	19.2
What is the reaction of potential customers when the IFPs are more expensive?		
Work with Islamic Banks, regardless the cost	496	47.8
Work with Conventional Banks	316	30.5
Work with both Islamic and Conventional banks	225	21.7
The expectations of potential customers		
Carry out financial transactions in a legal framework	676	42.2
Strong support for projects financing	440	27.4
Carry out financial transactions at lower costs	487	30.4

4.3.1 The most interesting products according to the respondents

According to Table 2.7, among persons who accept to deal with Islamic banking, 47.2 per cent would like ***to purchase or to build a piece of real estate***. Next, we find that the ***setting up and financing of businesses*** which captures the attention of 46.3 percent of the respondents followed respectively by *opening an account and using different means of payment, financing of vehicles, financing studies, investment products and consumption financing* (see Table 2.7). However, the relative importance of the selection criteria is perhaps influenced by the variation in some socio-demographic factors such as *governorate*, *annual income*, *gender*, etc.

Table 2.8: Relationship between the products chosen by the respondents and Demographic Factors

	Governorate		Age		Gender		Level of Education		Type of employers		Annual Income		Civil Status	
The most interesting products	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.
Opening an account and using different means of payment	101.508	.000**	5.843	0.12	1.103	0.294	30.997	.000**	23.185	.001**	16.388	.001**	8.076	.044*
Investment products	95.821	.000**	6.822	0.078	9.819	.002**	28.957	.000**	5.253	0.512	15.156	.002**	3.447	.328[a]
Financing of vehicles	76.786	.000**	19.304	.000**	6.451	.011*	65.891	.000**	42.834	.000**	11.273	.010**	23.092	.000**
Housing financing	43.607	.006**	26.004	.000**	1.519	0.218	31.468	.000**	35.968	.000**	24.664	.000**	9.342	.025*
Business financing	55.176	.000**	21.511	.000**	1.867	0.172	28.558	.000**	21.442	.002**	9.895	.019*	30.232	.000**
Consumption financing	35.584	.045*	4.047	0.256	0.105	0.746	18.019	.000**	4.746	0.577	12.355	.006**	2.25	.522[a]
Financing studies	38.291	.024*	10.863	.012*	1.061	0.303	42.803	.000**	32.207	.000**	8.879	.031*	4.781	.189[a]

Notes:(**), (*) denote the significance level of 5 per cent and 1 per cent respectively.
Sign.: Significance (Pearson chi-square tests)

For this reason, in this part, we will analyze the data by using **Pearson chi-square tests**[9] in order to examine the relationship between the respondents' personal characteristics and ***the most interesting Islamic financing products***. This test is employed to determine whether there is a significant discrepancy between the

[9] we refer to SPSS 19 to do this study

expected frequencies and the observed frequencies in one or more categories (Cooper and Schindler (2008) and Sekaran (2003)). The results of the χ^2 tests are represented in Table 2.8.

The results in the above table indicate that there is a statistically significant relationship at the level of 5 per cent between the following variables: ***governorate, level of education*** as well as ***annual income*** and all variables describing financial products. Consequently, the findings suggest that Islamic banks need to tailor their Islamic financing facilities by taking into consideration first their clients' governorate, level of education and annual income.

The demand for the products related to the **real estate financing is most prevalent** in the following **governorates**: *Ariana, Beja, Ben Arous, Bizerte, Gafsa, Kef, Manouba, Monastir, Nabeul, Siliana,* and *Tunis*. Indeed, we can explain the very important demand of housing financing in the "Grand Tunis" area (*Ariana* (61.9 per cent), *Ben Arous* (56.6 per cent), *Manouba* (55.9 per cent) and *Tunis* (62.8 percent) by a low supply which is translated by a high cost of housing. Islamic Banks should offer, in these governorates, a wide range of Islamic products related to the real estate activities such as ***Ijara*** and ***Murabaha***. This Islamic product offering should be competitive with that of conventional banks to attract more persons.

Nevertheless, according to Table II.2 in Appendix 2, **the demand for products related to business financing** exceeds that for housing products in the following governorates: *Kairouan, Kasserine, Kebilli, Mahdia, Medenine, Monastir, Sidi Bouzid, Tozeur, and Zaghouan*. Whereas, the demands for both business financing product and housing product are equal in *Jendouba* (with 46.9 per cent) and in *Tataouine* (with 63.2 per cent). However, the demand for business financing products is higher than 50 percent in *Gabes, Manouba, Siliana* and *Tunis*. Therefore, Islamic Banks should take into consideration two categories of persons (see Table II.3 in Appendix 2). The first one is composed of unemployed, students and others whose annual income is lower than 3500 TD (with 51 per cent) most of them living in disadvantaged areas, such as

Kasserine, Sidi Bouzid, Jendouba, Siliana, whose **employment and wealth index**[10] is lower than 0.32. This is due to the high unemployment rate (up to 29 per cent in *Kasserine*) and to the low density of small and medium enterprises (0.2 against 3.1 in Tunis) in these governorates. The poverty rate is also relatively high (27.5 per cent in *Sidi Bouzid* as against only 6.9 percent in Tunis). Islamic Banks should therefore propose financial and micro-financial products (such as ***Mudharaba, Qard Hasan,...***) that help this category of respondents to improve their social standing. They should also pay Zakat whose main purpose is a redistribution of wealth (Lewis (2001)). The introduction of a micro-financial program in Tunisian Islamic Banking would help the needy and the poor and then alleviate poverty and reduce social inequalities. The second category contains the respondents whose ***annual income*** is higher than 25,000 TD with 60.9 per cent. These persons are the self-employers who want to expand their businesses. In this case, Islamic Banks should propose a wide range of Islamic products such as ***Musharaka, Murabaha, Istisna, Salam (***designed for Transactional Commodity Finance***), Ijara (leasing)***,...

Whatever their level of education, most of the respondents prefer housing and business financings. All these persons except illiterates choose first real estate financing with a percentage higher than 38 percent (see Table II.3 in Appendix 2). Nevertheless, 53.1 percent of the respondents with a high level of education opt for business financing (against 55.8 per cent who choose housing financing).

According to Table 2.8, there is a statistically significant relationship between both the variables of ***age*** and ***Type of employers*** and the following variables: **financing of vehicles, housing financing, business financing and financing studies.** In fact, if we refer to the *age* factor, we find that the respondents whose age is lower than 25 years and is higher than 60 years choose first business financing and those whose age

[10] This index is determined by ITCEQ (*Institut Tunisien de la Compétitivité et des Etudes Quantitatives)*

is between 26 and 60 prefer housing financing. this finding is consistent with previous results and reality. Indeed, the potential customers whose age is lower than 25 years are unemployed, students and temporary workers with an annual income less than 3,500 TD and have a high, secondary or primary school education. Furthermore, the persons surveyed who work in state and private sectors prefer real estate financing products.

Moreover, a significant relationship between ***Civil Status*** and **financing of vehicles, housing financing,** and **business financing**. In fact, 49.7 percent of the married persons are interested first in real estate financing and 55.1 per cent of the singles would like to finance businesses.

4.3.2 Reasons to resort to IFPs

In this section, we will study the factors that would attract potential customers to Islamic Banking (that are religion, innovative products and services, diversification, lower cost of products and services). The Investigation reveals that the principal reason to incite households to deal with Islamic Banks is ideological. Indeed, 75.2 percent of the subsample respondents will resort to IFPs because of their religious conviction (see Table 2.7).

Table 2.9 shows that there is a significant relationship, at the level of 1 percent, between only ***governorate factor*** and ***all the variables representing the Reasons*** criteria. We remark that all potential customers except those who live in *Tozeur* choose the same reason. The latter's principal reason to deal with Islamic banking is offering a competitive cost with 61.5 per cent against 53.8 per cent for the religious conviction reasons.

Moreover, more than 30 percent of the potential customers accept to deal with IFPS, provided that their costs are competitive with those of Conventional banks. That so, to expand and to gain market share, Islamic banks must seek to compete with

conventional banks and must not be based only on their products compliance with the Shariah principles (see Table 2.7).

Table 2.9: Relationship between the Reasons of using Islamic Financing products and Demographic Factors: Pearson Chi-Square Test

Reasons	Governorate		Age		Gender		Level of Education		Type of employers		Annual Income		Civil Status	
	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.
Religious conviction	94.265	.000*	9.889	.020*	2.875	0.09	10.932	.012*	17.492	.008*	1.624	0.654	9.379	.025*.a
Low Cost	68.933	.000*	3.955	0.266	5.572	.018*	6.417	0.093	15.285	.018*	0.645	0.886	7.07	0.07
Diversification	77.027	.000*.a	1.751	0.626	1.782	0.182	5.563	0.135	9.4	0.152	4.188	0.242	13.08	.004*.a
Innovation	51.876	.001*	2.999	0.392	2.161	0.142	33.955	.000*	9.058	0.17	19.119	.000*	6.314	.097a

Note: (*) denotes the significance level of 5 per cent and 1 per cent respectively.
Sign.: Significance (Pearson chi-square tests)
a. More than 20 % of this sub-table cells have an expected number cell lower than 5. The Chi-square results may not be valid.

Nevertheless, this finding has to be qualified by the fact that consistency with Shariah argument far outweighs the Cost argument. In fact, the ideological reason is cited by more than 90 per cent respondents in the following governorates: *Mahdia, Medenine, Sfax,* and *Sidi Bouzid* (see Table II.4 in Appendix 3).

In addition, more than 30 percent of persons who live in *Sidi Bouzid, Sousse* and *Tunis* choose IFPs because of their innovation (see Appendix 3). This could reveal the Islamic Finance capacity to distinguish itself from the conventional finance by supplying innovative products that respond to the expectations of the unsatisfied or poorly satisfied conventional bank customers. This is a marketing argument that Islamic Banks could work on and could use it to enhance Islamic Finance development in Tunisia.

4.3.3 What are The expectations of potential customers?

The survey shows that **42.2 percent want to carry out financial transactions in a legal framework (conform to Shariah), 30.4 per cent want to carry out transactions**

at lower cost and 27.4 percent wish to have a strong support by Islamic Banks for projects financing (see Table 2.7).Therefore, this survey indicates that most interviewees are interested in **an Islamic banking supply which is competitive and compatible with their religious convictions.**

Table 2.10: Relationship between the potential customers' expectations and Demographic Factors

	Governorate		Age		Gender		Level of Education		Type of employers		Annual Income		Civil Status	
Expectations	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.	χ^2	Sign.
Transactions in a legal framework	134.603	.000*	18.096	.000*	3.914	.048*	25.612	.000*	14.203	.027*	10.615	.014*	4.041	0.257
Strong support for projects financing	54.3	.000*	4.132	0.248	6.37	.012*	17.416	.001*	21.309	.002*	9.272	.026*	7.969	.047*
Transactions at lower costs	62.672	.000*	12.091	.007*	4.683	.030*	9.439	.024*	22.04	.001*	0.911	0.823	5.347	0.148

Notes: (*) denote the significance level of 5 per cent and 1 per cent respectively.
Sign.: Significance (Pearson chi-square tests)

However, these findings depend on the socio-demographic characteristics of each respondent. Indeed, the results in the above table indicate that there is a statistically significant relationship at the level of 5 per cent between the following variables: ***governorate, level of education, Type of employers*** and all variables describing potential customers expectations. Consequently, the findings suggest that Islamic banks need to assess the expectations of their potential customers by taking into consideration first their clients' governorate, level of education and Type of employers.

Table II.5 in Appendix 4, further confirms that, for potential customers, religion is the key determinant to resort to IFPs. Indeed, most of the surveyed persons would like first financial operations in a legal framework (which are conform to the Shariah principles) except for residents of the governorates of ***Zaghouane, Tozeur, Siliana, Kebili, Kasserine, Jendouba,*** and ***Beja*** which are ranked last according to the regional development indicator determined by the Ministry of the Regional Development and Planning. As we have suggested before, Islamic Banks should exert an effort to

attract the denied persons in these governorates by providing Islamic Microfinance products and services.

In addition, 41.5 percent of the ***Illiterates*** would like that Islamic Banks help them to start up businesses by providing financial products and services at lower cost (see appendix 4 Table II.5) because most of them have low income. So, they want to improve their standard of living by implementing micro-projects.

According to Table 2.10, there is also a statistically significant relationship between both the variable of ***annual income*** and the following variables: **transactions in a legal framework** and **Strong support for projects financing.**

Moreover, Table II.A.6 in Appendix 4 clearly indicates that we have almost the same proportion for the variables " strong support in creating businesses" and " transactions at lower cost" for the respondents whose income is lower than 3,500 TD. This category represents the poor such as workers, unemployed, temporary workers, farmers... They seek an unconditional aid to finance a microenterprise, to be married, to purchase food and to educate their children. In fact, social and economic support are essential for lifting these individuals out of poverty. Tunisian Islamic Banks should therefore refer to foreign Islamic Banks that have succeeded in this field such as Maybank in Malaysia and Bank Rakyat Indonesia (BRI) in Indonesia.

The other persons surveyed want more transparency in Tunisian Islamic Banking by providing products that are really consistent with the Shariah principles. They expect that these banks ensure good governance and hence good services.

4.4. The Respondents' Requirements

In this section, we will study the sample's behavior (1,600 persons' behavior). Moreover, to examine the respondents' requirements we will highlight the obstacles that prevent individuals to use IFPs and the competitive advantages of Tunisian Islamic banks according to them.

4.4.1 The obstacles to use Islamic Financial Products

4.4.1.1 Cross-tabulated Results

According to the Survey, **48.5 percent of the respondents (that is 734 persons) maintain that their lack of knowledge of IFPs may hinder their recourse to these products** (see Table 2.11)**.** This proportion is very high as regards the illiterates with 61.3 percent (see Appendix 5 Table II.9). Furthermore, more than 60 percent of persons who live in *Gabes, Sfax, Sousse, Tataouine,* and *Tozeur* have no idea about the Islamic Banking (see Appendix 5 Table II.8).

Moreover, the non-proximity of Islamic Banks to potential consumers represents the second obstacle to resort to IFPs. Indeed, 43.3 percent (655 persons) think that IFPs do not exist in their area of residence. However, 56.79 percent of them live in governorates where there exist Islamic Banking agencies. For instance, 64.8 percent of persons who live in *Gabes* say there is no Islamic Banks in their governorate (see Table II.8 in Appendix 5). This could be translated by the fact that many Tunisians are not aware of Islamic Banks presence in their region. In addition, **23,2 percent of the population could not recourse to IFPs since their costs would be higher than those of the conventional products** (see Table 2.11). More than 35 percent of persons who live in *Ariana, Monastir*, and *Tunis* refuse to deal with Tunisian Islamic Banks if they are more expensive than their conventional counterparts.

Table 2.11: Obstacles to use Islamic Financial Products

What are the obstacles to use Islamic Financial Products?	Frequency	Percentage
Lack of knowledge	734	48.5
Poor performance of Tunisian Islamic Banks	270	17.8
Absence of Islamic products in their area of residence	655	43.3
High cost	351	23.2
Lack of confidence	105	6.9

We added in our study the variable "Lack of confidence"[11] because of some persons' reactions. In fact, 32 persons (3.12 percent) are interested in Islamic Finance but the lack of confidence may prevent them to deal with Tunisian Islamic Banks. The lack of confidence proportion is very high for questioned persons with a high level of education (It is equal to 13.8 percent). Moreover, this problem is expanded in *Tunis* and *Nabeul* with more than 15 per cent. In addition, many people do not accept to deal with Zitouna Bank due to its past related to Sakhr El Matri. Nevertheless, they say that they accept to use Islamic Financial products which will be supplied by their banks. They want to be loyal to their conventional banks and encourage them to open Islamic Windows. Whereas, another category of persons refused to respond to our questionnaire because of the survey topic. They, in fact, find difficult to accept the notion of "Islamism" because of political reasons, the emergence of terrorism and misconceptions... These persons refuse Islamists' accession to power. Many other obstacles are cited by the persons questioned such as the age for Seniors and the lack of resource to open an account for the poor and some housewives.

4.4.1.2 Multivariate analysis to describe individuals reactions

To understand more the questioned persons' reactions we try, in what follows, to divide our sample by constituting three homogenous groups. We begin first of all by using the Multiple correspondence analysis to study the data of the following active variables[12]: "Lack of knowledge"(*obstc_unknown*), "Poor performance of Tunisian Islamic Banks"(*obstc_poorperform*), "Absence of Islamic products in their area of residence"(*obstc_absen_p*) and "High cost"(*obstc_cost*). This method allows us to study the relationship between these four qualitative variables simultaneously observed for the 1,600 individuals. It is also used to construct *scores* as a prerequisite

[11] We studied the behavior of persons whose the order number is higher than 677.
[12] To do that we refer to R Software (see Lê et al. (2008))

for a mixed method approach combining k-means and Hierarchical Clustering methods.

We use also the following supplementary variables: "*governorate*", "*study_lev*" (study level), "*interet_pf*" (interested by Islamic financial products), "*age*", "*type_employer*" (type of employers), "*civi_status*" (civil status) and "*annual_income*".

4.4.1.2.1. Results of the Multiple Correspondence Analysis (MCA)

First of all, we can see that the first factor explains 31.77 percent of the total inertia, and the second factor represents 28.16 per cent. In other words, the first factorial plane allows us to graphically represent more than half of the total information (59.92 percent) about the statistic correspondences between the different obstacles that impede individuals to deal with Islamic Banks.

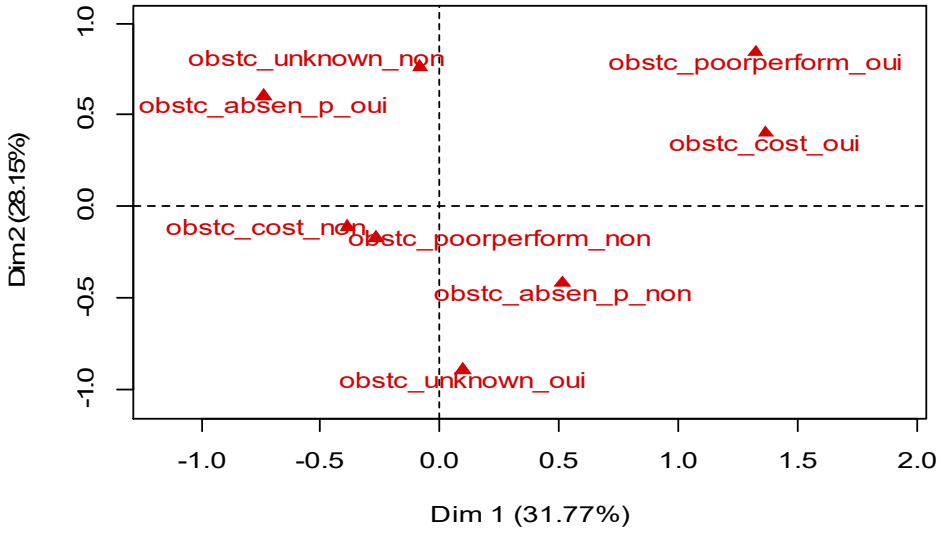
Table 2.12: Contribution to total variance axis

	Dim.1	Dim.2	Dim.3	Dim.4
Eigenvalue	0.318	0.282	0.212	0.189
Percentage of variance	31.768%	28.155%	21.208%	18.869%
Cumulative percentage of variance	31.768%	59.923%	81.131%	100.00%

The study of the contribution[13] of different active modalities to the different MCA factors enables us to more understand these obstacles.

[13] The contribution (or absolute contribution) measures the element participation (modality, variable, frequency or individual) to the construction of a factor axis.

Figure 2.2: The first plane representation: active modalities of the Obstacles



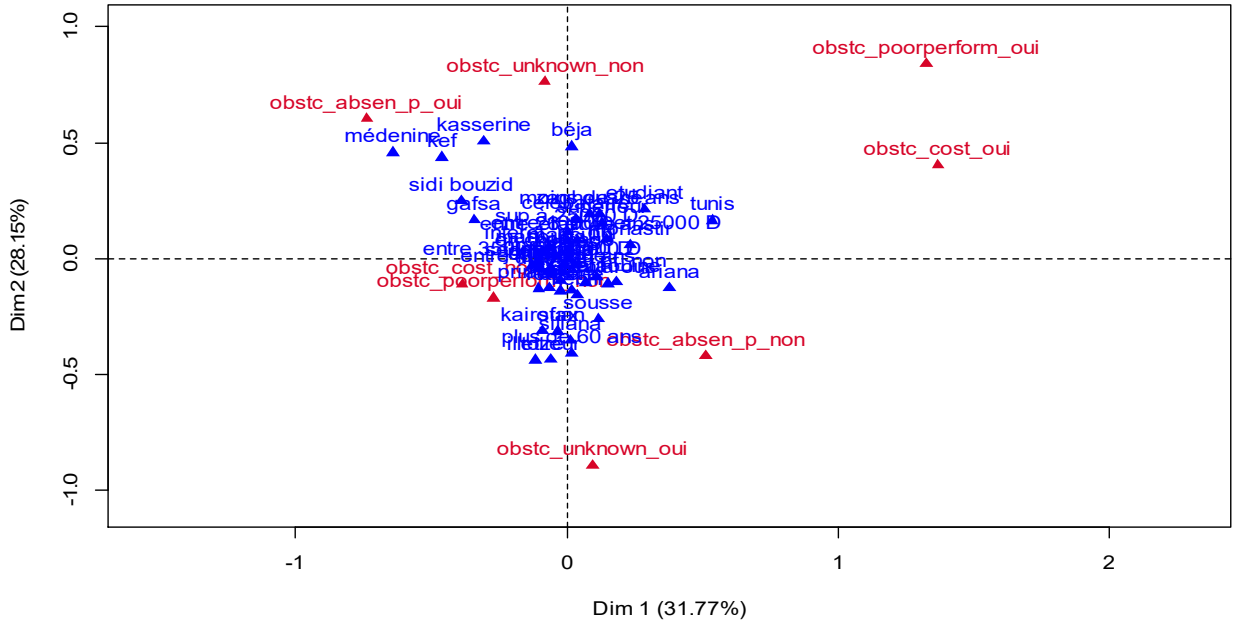
In fact, according to Figure 2.2, the coordinates[14] for the first axis (see also Table II.10 in Appendix 5) show that the group of individuals who require the presence of Islamic products in their residence area in order to deal with Tunisian Islamic Banks or Islamic windows opposes to all the other groups. the point " *obstc_cost_oui* " has the more significant coordinates with a contribution equals to 32.42 percent for the first axis and a cosine-square[15] equal to 0.53. The high cost may prevent these individuals to use IFPs. Note also that the point " *obstc_unknown_non* " has a very low contribution for the first axis (0.29 per cent).

The second axis is mainly built by the obstacle "*lack of knowledge*" with 32.75 percent which opposes simultaneously to " *obstc_poorperform_oui* ", "*obstc_absen_p_oui*" and " *obstc_cost_oui* ". The brake " *obstc_unknown_oui* " is the only item which is well plotted on the second axis (with a cosine square 0.683).

[14] The coordinates indicate the relative positions of different classes or individuals on the axes. They also enable to position along each-other.
[15] The cosine -square, or relative contribution, measures the quality of the element representation (modality, variable, frequency or individual) on a factor axis.

As regards supplementary modalities, their positions should be tempered by their test values. These values enable the quality of representation of classes describing illustrative variables to be assessed. Indeed, the larger will be the test-value, in absolute terms, the more significant will be the corresponding modality (CISIA (2001)).

Figure 2.3: The first factorial plane: the Obstacles' illustrative and active factors



According to Figure 2.3, most inhabitants of *Tunis* and most persons with a high level of education, mainly students, accept to deal with Islamic Banks if they provide cheap high-quality products and services. The test-values of these variables are significant and higher than 3 (Table II.11 in Appendix 5).

Furthermore, most people of *Medenine, Sidi-Bouzid, Kasserine* and *Kef* seek the geographic proximity. In this case, the lack of information does not appear to have acted as an inhibiting factor.

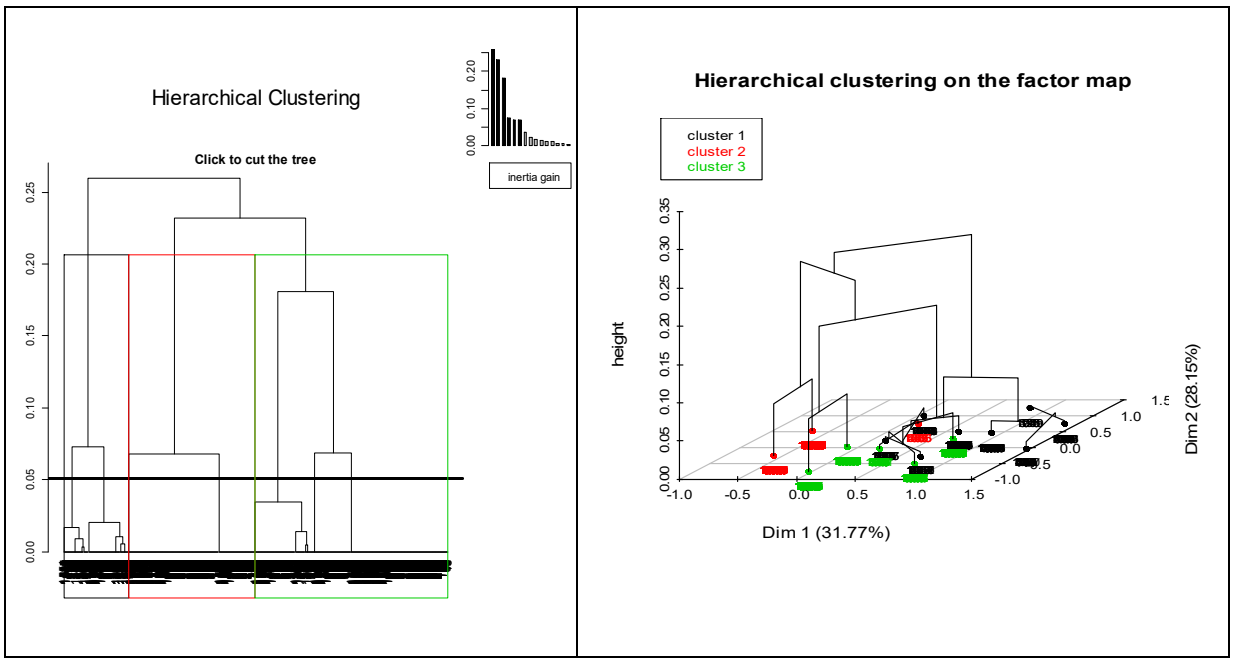
4.4.1.2.2. Results of the Hierarchical Clustering on Principal Components

The Hierarchical Clustering on Principal Components (HCPC) confirm these proximities. Indeed, we obtain the following three homogeneous classes (see Figure 2.4)[16]: Class 1: (271 individuals), Class 2: (525 persons) and Class 3 (804 individuals).

For each cluster, the most characteristic modalities are settled following the decreasing values of a criterion. The latter, or the test-value, is similar to the absolute term of a standard normal variable which, if it is higher than 1.96, will be significant at the level of 5 percent (Lebart (1989)). The test value also allows us to distinguish between the modalities that are positively correlated with the class (i.e overrepresented) and those which are negatively correlated with the category (i.e under-represented) that have a negative v.test (see Tables II.A.12, II.A.13 and II.A.14 in Appendix 5). All modalities listed in the tables II.A.12, II.A.13 and II.A.14 in Appendix 5 are significantly correlated with the cluster and the others are not correlated.

[16] In the Dendrogram below (Figure 4.4) the scale represents the relative distance between or among problem types or the degree of clustering.

Figure 2.4: a Dendrogram for different obstacles to use IFPs



According to Table 2.13, the variables " *obstc_poorperform*", " *obstc_absen_p*" and "*obstc_cost*" are those which best characterize the partition in three homogeneous classes with the lowest probabilities that are equal to 0, 6.48×10^{-266} and 1.21×10^{-262} respectively.

Table 2.13: Chi-square test: description of the clusters by the active and illustrative variables describing Obstacles

	p.value	df
obstc_poorperform	0.000000e+00	3
obstc_absen_p	6.483752e-266	3
obstc_cost	1.213124e-262	3
obstc_unknown	5.349157e-56	3
governorate	1.899731e-20	69
study_lev	6.562102e-12	9
interet_pf	3.015787e-11	3
age	3.120454e-10	9
type_employer	3.144324e-04	18
civi_status	8.110176e-04	9
annual_income	4.664010e-02	9

The interpretation of the dendrogram (Figure 2.4) and Table II.A.12, Table II.A.13 and Table II.A.14 in Appendix 5 leads to the following conclusions:

- **Cluster 1: 16.94 per cent of the population are highly demanding persons**

This cluster is characterized by the highly demanding persons who seek the cheap high-quality products and services to deal with Islamic Banks. Indeed, the most overrepresented modalities in this Class are "*obstc_poorperform_oui*" (yes) and "*obstc_cost_oui*" with test values equal respectively to 37.96 and 6.63 (see Table II.12 in Appendix 5).

Moreover, 100 percent of persons require strong performance of Islamic banks, 29.26 percent seek, at the same time, a lower cost of Islamic financial products and services. 60.52 percent of persons in this category has a high level of education. In addition, 30.87 percent of the *Tunis* residents, 30.91 percent of *Gabes* residents and 29.54 percent of *Beja* residents belong to this Class. In other words, the more exigent potential customers are from *Tunis, Gabes,* and *Beja* and have a high level of education.

- **Cluster 2: 32.81 percent of respondents in our sample seek the geographical proximity**

This cluster is characterized by persons who look for the close geographic proximity (with 80.03 percent). They are neither interested by the cost nor by the performance (see Table II.13 in Appendix 5). Moreover, the misunderstanding of the Islamic banking concept does not prevent 71.24 percent of them to use IFPs. Most of these persons (that is 75.62 percent) are interested in this type of products and hence encourage Tunisian Islamic Banks to open more branches especially in their residence area. These potential customers are from *Medenine, Sidi Bouzid, Kasserine, Gafsa,* and *Kef*.

- **Cluster 3: 50.25 per cent demand more information about Islamic banking and a lower cost of IFPs**

This Cluster includes 64.67 percent of persons who claim that Tunisian Islamic Bank should make effort to introduce Islamic finance. Moreover, 67.90 percent of respondents refuse to deal with these banks if their products and services are more expensive than those of Tunisian conventional banks. However, for most of the respondents in this class, the absence of the Islamic branches in their residence area and the poor performance of Islamic banks do not constitute an obstacle to use IFPs. This class contains 60.78 per cent of the non-interested in Islamic banking. Some of these persons are the retired Seniors whose age is higher than 60 years who refuse to deal with Islamic banks because of their age. We find also individuals with low level of education (illiterates and primary level). Indeed, as we have seen before, this category of individuals do not hear about Islamic Finance and most of them have a low annual income and are temporary workers (*type_employer=other*). For this reason, they require a low cost of product or service to finance micro-enterprises or to improve their social standing. Other persons who are non-interested by Islamic banking are those who have contacted Tunisian Islamic banks (Zitouna or Albaraka bank) and they have remarked that they are more expensive than their counterparts. The last category consists of those who do not have confidence in Islamic banking. Most of these people are from *Kairouan, Ariana,* and *Bizerte* (see Table II.14 in Appendix 5).

4.4.2 The competitive advantages of Islamic banks

Over 56.9 per cent of interviewed people think that Islamic Banks and financial institutions could be considered as complementary systems to Conventional Banks. However, they believe that the interest free financial system should better meet potential customers' demand while preserving its essential advantages.

Table 2.14: Essential advantages of Islamic Banks

What are the competitive advantages of Islamic Banks?	Frequency	Percentage
Good report quality/ price	476	31.3
Conformity to Shariah	843	55.4
Absence of Riba	1050	69.0
Absence of speculation	392	25.8
Profit and Loss Sharing	326	21.4

Indeed, 69 percent precise that the absence of interest is crucial in the Islamic banking system. 55.4 per cent claim that these products should comply with the Shariah principles. 25.8 percent of the respondents state that the absence of speculation is an essential advantage, followed by the loss and profit sharing (with 21.4 per cent). Nevertheless, a good report of quality/price of products and services is a competitive advantage for 31.3 percent of the respondents (see Table 2.14).

The results of Multivariate Correspondence Analysis (see Figure 2.5) have been conducted on the variables describing the competitive advantages of Islamic Banks, from the respondents' point of view. These active variables are as follows: Absence of Riba (*advtg_no_riba*), Absence of speculation (*advtg_no_spec*) , Profit and Loss Sharing (*advtg_sharing*) , Conformity to Shariah (*advtg_sharia*) and Good report quality/ price (*adv_ratio_q_p*). The study of individuals' opinions on this subject, allow us to have a more accurate idea about the level of knowledge of the following Shariah principles on which Islamic Finance is based:

- **The prohibition of Riba**, ie usury or fixed interest resulting from the one-time flow.
- **Profit and loss sharing**: Transactions must be based on fairness. This principle requires that the benefits and losses resulting from a transaction should be shared among investors. Thus, the two parties should be treated as partners with the allocation of the profits and the losses to each of them in proportion to their contribution to the transaction;

- **Al-Gharar and Al-Maysir**. That is, unfair contracts that involve extreme risk (Maysir) or speculation (Gharar) are unenforceable.
- **Asset-backed contracts:** all transactions have to be backed by a real economic transaction that involves a tangible asset.
- Ethical Investment: Investments with illicit (haram) themes are prohibited.

Moreover, we use the following supplementary variables: "*governorate*", "*study_lev*" (study level), "*interet_pf*" (interested by Islamic financial products), "*age*", "*type_employer*" (type of employers), "*civi_status*" (civil status) and "*annual_income*" (see Figure 2.6).

As a complement to this study, we conduct a Hierarchical Clustering on Principal Components (HCPC) analysis which is presented in Figure 2.7. We note that the obtained results are satisfactory since the first axis explains that about 34.5 percent of the total variance and the second one 23.7 per cent. Therefore, the two first axes account for approximately 58.2 percent of the total information about the statistic correspondences between the different Islamic Banks essential advantages, proposed by the respondents (see Table 2.15).

Table 2.15: Contribution to total variance axis

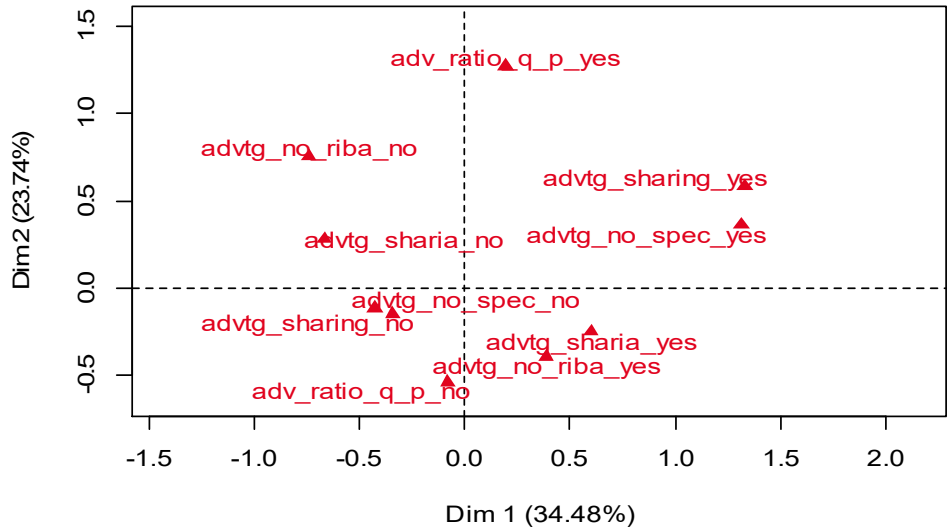
	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
Eigenvalue	0.345	0.237	0.151	0.145	0.122
Percentage of variance	34.483%	23.739%	15.072%	14.493%	12.214%
Cumulative percentage of variance	34.483%	58.222%	73.293%	87.786%	100.00%

On the positive side of the first axis, we find the favorable responses for all advantages cited before. On the negative side, we find the group of individuals who think that these advantages are not essential for Islamic banking (see Figure 2.5).

Moreover, according to Figure 2.5, the point " *advtg_no_spec_yes* " has the more significant coordinates with a contribution equals to 24.69 percent for the first axis and cosine-square equals to 0.56. (see also Table II.15 in Appendix 6) . These respondents state that Islamic Banks must not invest in risky financial transactions as

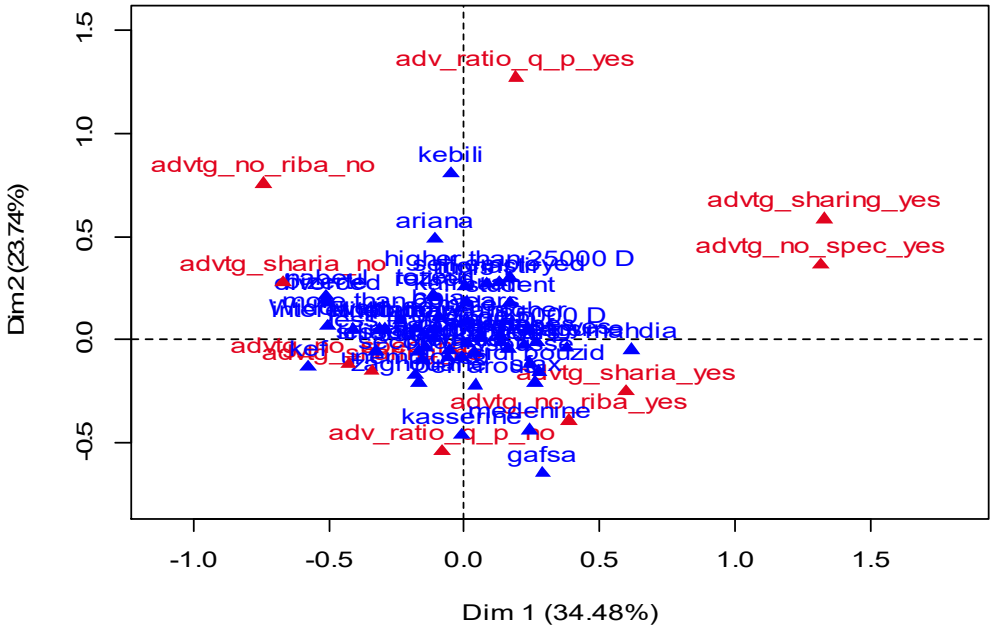
in conventional banking. Therefore, the absence of speculation is an essential advantage for the normative Islamic Banks. We find after that, the point "*advtg_sharing_yes*" which has also significant coordinates with a high contribution equals to 21.08 percent for the first axis and cosine-square equals to 0.46. This group of individuals seekss fairness by requiring the implementation of the profit and loss sharing principle in Islamic banking. Note also that the point " *adv_ratio_q_p_yes* " has a very low contribution for the first axis (0.64 percent).

Figure 2.5: The first plane representation: active modalities of the Advantages



The second axis is principally built by the advantage " Good quality/ price report " with 40.73 percent. These individuals consider that Islamic Banks are very similar to their counterparts and their unique essential advantage is to provide high-quality and low-price products and services. In addition, the variables " advtg_sharia_yes" and " advtg_no_riba_yes" oppose simultaneously to "advtg_no_spec_yes", "advtg_sharing_yes" and " adv_ratio_q_p_yes". The last advantage is the only item which is well plotted on the second axis (with a cosine square 0.689).

Figure 2.6: The first factorial plane: the Advantages' illustrative and active factors



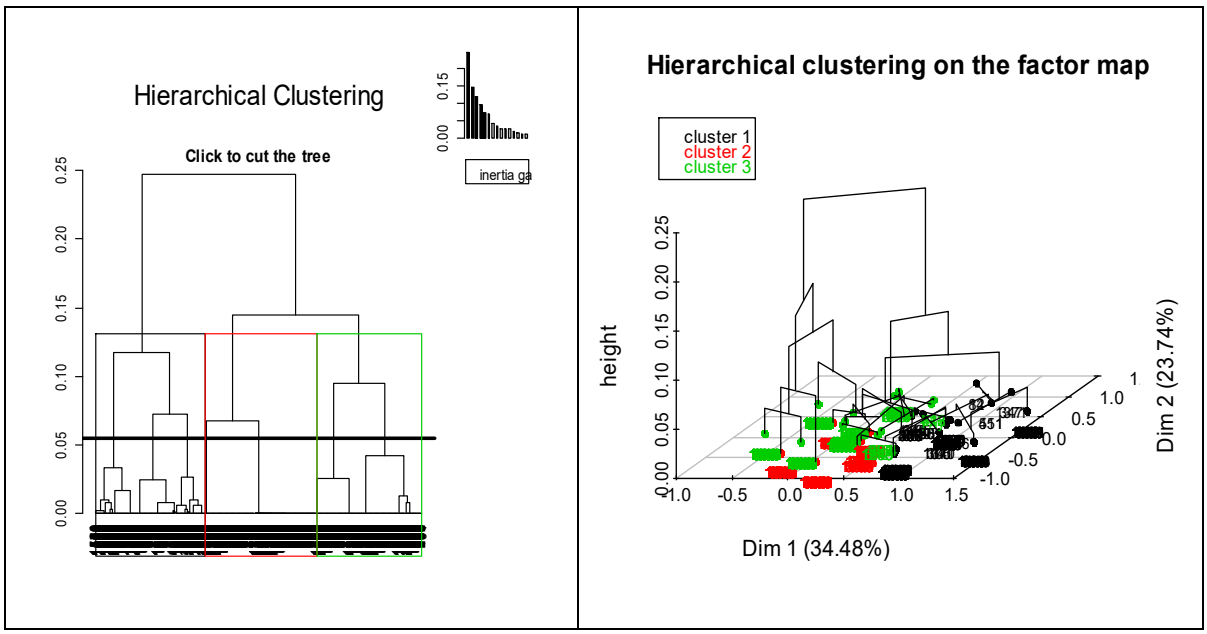
As we have seen, **the first axis** divides the population into two groups: those who have a **favorable response for each advantage** and those **who have not**. The supplementary modalities permit us to describe these individuals by presenting their socio-demographic characteristics (see Table II.16 in Appendix 6 and Figure 2.6). The most overrepresented illustrative modalities are " interet_pf_yes" and "higher" with test values equal respectively to 12.04 and 8.29.Hence, the positive part is described by the individuals who are interested in Islamic finance and have a high level of education. Most of these persons are from *Gabes, Gafsa, Mahdia, Medenine, Sfax, Sidi Bouzid* and *Sousse*. Their age is between 26 and 40 years. In addition, most of them work in state institutions and their annual income is between 10,000 - 25,000 D. The other individuals think that Tunisian Islamic banks have not these advantages or they are not a good feature of Islamic Banks. Those respondents are from *Bizerte, Jendouba, Kef* and *Nabeul*. They are more than 40 years old and most of them have not a high degree of education. Indeed, most of these individuals are unemployed and temporary workers with a very low annual income (less than 3,500 DT).

Concerning **the second axis**, we find those who choose Absence of speculation, Profit and Loss Sharing and Good report quality/ price as an essential feature of Islamic Banks. Most of these individuals are from *Ariana, Kebilli, Monastir, Nabeul* and *Tunis*. The majority of them also are male who are self-employed with a high annual income (higher than 25,000TD). The advantages " the compliance with Shariah" and "the absence of Riba" are chosen by respondents from *Gafsa, Kasserine, Medenine,* and *Sfax*. Most of them are unemployed female.

The Hierarchical Clustering on Principal Components (HCPC) method enables us to analyze deeper these findings. In fact, we obtain the following three homogeneous classes (see Figure 2.7): Class 1: (376 individuals), Class 2: (685 persons) and Class 3 (539 individuals).

As we have done previously, we will refer to the significant test-values to describe these clusters. Additionally, to better target our population, we are going to add to our illustrative variables the following ones: Knowledge of Islamic Finance (*knowledge_fi*), have recourse to IFPs (*recours_pf*), *Murabaha, Musharaka, Mudharaba, Ijara*, Zitouna Bank (*bq_zitouna*) and Al Baraka bank (*bq_baraka*). As we have seen in Section 4.2, the last six variables represent the most known Islamic products and Tunisian Islamic Banks by the respondents. All modalities listed in Table II.A.17, Table II.A.18, and Table II.A.19 in Appendix 6 are significantly correlated with the cluster and the others are not correlated.

Figure 2.7: A Dendrogram for different competitive Advantages of Islamic Banks



According to Table 2.16, the variables " *advtg_no_riba* ", " *advtg_no_spec* ", and "advtg_sharing" are those that best characterize the partition in three homogeneous classes with the lowest probabilities that are respectively equal to 0, 6.87×10^{-199} and 1.22×10^{-136}.

Table 2.16: Chi-square test: Description of the clusters by the active and illustrative variables describing Advantages

	p.value	df
advtg_no_riba	0.000000e+00	2
advtg_no_spec	6.877779e-199	2
advtg_sharing	1.223668e-136	2
advtg_sharia	5.430100e-73	2
adv_ratio_q_p	4.757146e-34	2
interet_pf	4.671598e-30	2
governorate	1.301188e-29	46
study_lev	2.610009e-17	6
age	2.775708e-11	6
civi_status	1.268460e-05	6
type_employer	5.317494e-05	12
annual_income	8.932711e-05	6

Therefore, the interpretation of the Dendrogram (Figure 2.7) and Table II.A.17, Table II.A.18 and Table II.A.19 in Appendix 6 leads to the following conclusions:

- **Cluster 1: 23.5 percent of the population want a normative and ideal Islamic Bank**

These individuals want Tunisian Islamic Banks to be normative by really responding to the Islamic law requirements such as the prohibition of Riba, the interdiction of speculation and the profit and loss sharing with respectively 97.61 per cent, 82.98 per cent and 65.42 per cent of the persons in that Cluster. In addition, 93.35 per cent of respondents in this group think that the conformity to the Shariah principles is a competitive advantage of Islamic Banks. Whereas, only 36.27 per cent of the questioned persons consider that good quality - cheap cost is an essential feature of the Tunisian Islamic Banks (see Table II.17 in Appendix 6).

Furthermore, we notice that there is a link between the knowledge of Islamic finance and the response of the questioned persons. We have a positive and significant value test. In other words, most of the persons of this first category who are the most demanding have at least a basic idea about Islamic Finance. Indeed, Most of the respondents who cited one of the most known IFPs (at least 53 percent) belong to this group. Moreover, 58.51 per cent of people from this Cluster are familiar with Islamic Banking. In addition, 72.07 per cent of them know Zitouna Bank and 30.05 per cent hear about Al Baraka Bank. Most of these individuals (that is 61.17 per cent) have also a high level of education, work in state institutions, have an annual income between 10,000 - 25,000 D and live in *Sousse* and *Mahdia*. Among these persons we find 10.64 percent who have recourse to Zitouna or Al Baraka Bank.

- **Cluster 2: 42.81 percent of respondents state that the unique advantage is the absence of Riba**

This Cluster is characterized by the respondents who state that the unique advantage of Islamic banks is to provide interest-free products and services (see Table II.18 in Appendix 6). Most of these persons have indeed no idea about IFPs. That is over 95 per cent do not know IFPs and 84.52 per cent do not hear about Albaraka Bank. In addition, 52.68 per cent of the unemployed and 47.96 per cent of the persons with

secondary level of education belong to this class. Most of these respondents who are from *Sidi-Bouzid, Kasserine, Gabes, Sfax*, and *Ben-Arous* may confuse the absence of Riba with the absence of the profit margin received by Islamic Banks. They think that these banks should only provide the interest-free loan (Qard Hasan).

- **Cluster 3: 33.69 percent think that the absence of Riba is not a competitive advantage**

All persons belonging to this Class (that is 100 per cent) think that the absence of Riba is not a competitive advantage for Islamic banks (see Table II.19 in Appendix 6). However, 44.02 percent state that Islamic Banks should differ from their counterparts by supplying products and services with higher quality and lower cost. Moreover, 52.319 % of the persons belonging to this class are not interested in Islamic banking. In addition, 67.53 per cent of them say that they have no idea about Islamic finance and more than 95 per cent do not know any Islamic product. This explains, in fact, the presence of 54.69 per cent of the illiterates and 44.2 percent of the persons with primary level of education in this Cluster. The latter contains also 44.9 percent of the persons with annual income lower than 3,500 TD and whose age is higher than 40. These poor people are especially looking to obtain products at lower cost and hence to improve their standard of living. The respondents in this group are from *Bizerte, Jendouba, Nabeul, Kef, Ariana, Kairouan,* and *Siliana*.

5. Discussion

In brief, for the individuals, the potential of Islamic banking products market appears significant and it is essentially based on a motivation of compliance with the Islamic religion principles.

To transform this potential to reality:

- It needs to develop the level of knowledge of Islamic finance and its products

- To analyze deeper the individuals' behavior, Islamic banks should take into account the level of Islamic Finance knowledge and the following socio-demographic characteristics: the governorates, the level of education, the annual income, the age and the type of employer.
- It also needs to develop the geographic proximity of Islamic banks or Islamic supply to customers
- Tunisian Islamic Banks should supply Islamic financial or micro-financial products (such as Qard Hasan, Zakat, Mudharaba...) to aid the poor and the needy to improve their standard of living and hence reduce unemployment and social inequalities.
- Islamic Banks should also provide competitive products and services at lower cost and higher quality that are really compliant with the Shariah principles.

Even though the cost factor does not appear to hamper the Islamic Finance development, we suggest to increase competition between Islamic Banks in order to ensure a rapid and perennial development of this Finance.

6. Conclusions, limitations, and managerial implications

In this study, we focused on social utility of Islamic banking system by taking as an example the Tunisian case. We exposed the prerequisites that should be implemented in order to target a growing potential demand of Islamic Finance. Indeed, it seems necessary to *fill the legal vacuum and loopholes particularly vis-à-vis of customers, Strengthen financial depth of an embryonic financial industry, improve Human Capital, Encourage academic research which remains embryonic and disorganized, ensure a good governance* and *be sure that the banks earnings are growing well.*

Furthermore, we studied the individuals' potential demand for Islamic financial products in different Tunisian regions. To do so, we conducted a national Survey based on Quota sampling method to select the number of interviewed persons by

Governorate and by gender. We obtained then a sample which includes 1,600 persons from different social categories with a minimum age of 18 years.

We found that this potential demand is significant but Tunisian Islamic Banks should exert more efforts to enlarge existing customer base. So, to ensure a good implementation of an Islamic banking system, all stakeholders should work together. In fact, contrary to its counterpart, Islamic Finance is based on multi-stakeholder approach. It consists on realizing the objectives of Shariah that assure the whole mankind's welfare. Therefore, satisfying all involved parties makes the banking system sustainability sure.

For this reason, the Tunisian Government should establish legislative, fiscal and accounting framework that contributes to the social welfare. This regulation should facilitate the implementation of all IFPS such as Sukuk, Mudharaba, Musharaka, Murabaha, Qard Hasan, Zakat, Muzaraa, Ijara, Salam, Istisnaa. For instance, the Sukuk issue helps the Tunisian Government to finance infrastructure specifically in disadvantaged areas. This would encourage innovative investment and hence contribute to economic growth.

Concerning the managers of Tunisian Islamic banks, they should not look only for profitability in order to satisfy shareholders. They should also seek to attract different categories of customers. This would be realized by taking into account the socio-demographic characteristics. In other words, they should supply Islamic microfinance products to ensure the inclusion of poorer agents. This will alleviate poverty, reduce inequalities and hence boost regional development and economic growth. These banks should also provide competitive products and services at lower cost and higher quality that are really compliant with the Shariah principles to encourage entrepreneurs or richer agents to invest in profitable and innovative projects, especially in economically disadvantaged areas. This may strengthen accountable decentralization and fight income inequality in Tunisia. However, this could not be realized without advertising and education. That is why Tunisian

authorities, the financial operators, Universities, and Associations should resort to Tunisian Media to disclose and to present these Islamic products to the public, namely illiterates and semi-illiterates.

For their part, Civil Society and Shariah Advisers should monitor these banks in order to guarantee a good governance and the social inclusion. In other words, the experts of Shariah should control the compliance with the Islamic law principles, the establishment of justice by providing Profit and Loss Sharing Products (Mudharaba and Musharaka) as well as the redistribution of wealth by Zakat, Qardh Hasan... This would increase the level of customers' confidence and then increase the demand for Islamic finance products and services.

However, due to financial constraints, the study suffers from some limitations. In fact, we have not focused on the rural and urban areas of each governorate. The inclusion of the factor "Area" may ameliorate the quality of our data and hence enrich our analysis. In addition, though the paper employs a large questionnaire dataset (1,600) which was stratified according to "governorate" and "gender", due to the financial constraints we could not do this stratification with the rest of demographic characteristics such as level of education, annual income, age, etc. Further research is needed in order to assess the effect of this potential demand on regional development and then on Tunisia's economic growth.

Chapter III

Exploratory analysis:

Potential of Islamic Finance: a Survey of Tunisian Firms in the Northwest Region

1. Introduction

After the Revolution of December 17th, 2010- January 14th, 2011, the economic and financial situation is worsened in Tunisia. Indeed, economic growth slowed to 2.1 percent during the first half of 2014. Moreover, the trade deficit increased to 18.2 percent, with the persistent enlargement of the energetic deficit. Furthermore, the current account deficit widened to 29.3 percent. The inflation rate increased also to 6 percent year-on-year in July 2014 from 5.7% in the previous month (HuffPost Maghreb (2014).

Islamic Finance interest, in Tunisia, started really with this Revolution. Nevertheless, the implementation of Islamic solutions in this country requires prerequisites and a more detailed knowledge of their costs and return structures compared with their conventional counterparts. In fact, authorities should make a substantial effort to *fill legal vacuum and loopholes particularly vis-à-vis of customers, strengthen financial depth of an embryonic financial industry, improve the human capital and encourage academic research* (Saidane (2014)).

In addition, a study of Islamic products potential demand by entrepreneurs in Tunisian areas is essential in order to get a clearer picture about this type of potential customers behaviors and expectations. This study allows us also to respond to the following question: "if we implement these prerequisites, Tunisian companies, in particular that of the Northwest region, are they ready to deal with Islamic structures?". To achieve this study, we developed a questionnaire which was sent to the entrepreneurs of the Tunisian Northwest region (Kef, Jendouba, Beja, and Siliana). The analysis of our Survey is performed with Sphinx IQ software.

2. Islamic Finance: Survey of Tunisian Firms in the Northwest Region

As we have seen in the previous chapter, the researchers agreed on the importance of improving the level of knowledge of individuals about Islamic Finance, reforming a regulatory, fiscal and accounting framework to ensure that the Shariah rules are

properly observed. Nevertheless, none of these studies assessed the Tunisian entrepreneurs' behavior and preferences. Do the latter accept to deal with Tunisian Islamic banks and why not invest in sustainable development projects which will address the situation in the disadvantaged regions?

The purpose of this survey is to assess the potential demand of Islamic Finance products by entrepreneurs. To do so, we tried to respond to the following questions by undertaking the survey among the entrepreneurs of the Northwest region:

- Do entrepreneurs of the Northwest region know Islamic Finance?
- How are Islamic banks and financial institutions perceived by these entrepreneurs?
- What are the entrepreneurs' needs and expectations?

2.1 Survey Instrument and Description of the sample

Our sample includes 30 Tunisian Northwest region companies (Beja, Kef, Jendouba, Siliana). We focus on this region because the surface of the industrial areas in coastal areas is remarkable compared with interior ones. Indeed, the coastline captures more than 80% of the industrial areas surface. The Northeast (Grand Tunis, Bizerte, Nabeul and Zaghouan) covers all by itself 58% of the total surface (1,906 hectares of the industrial areas). On the other side, the Northwest governorates (Beja, Jendouba, Kef, Siliana) own only 233 hectares of the industrial areas, just 7% of the total surface, and those of the Center-West have only 309 hectares (less than 10% of the total surface). This is what justifies the choice of the Northwest region as priority regional development area in our study.

To achieve this study, it took us about one and a half months (from 30 March to 15 May 2012). First, the anonymous questionnaires were sent by fax and e-mail (see Appendix 1). We received only 6 responses. we tried then to contact directly the officials (face to face). In order to do so, we moved to the industrial areas of Beja, Jendouba, and Kef. We were able to contact only 24 entrepreneurs.

The questionnaire consists of four sections. The first section includes information about the level of knowledge of Islamic Finance by entrepreneurs of the Northwest region. The second one consists in studying the potential perception of Islamic Banks and Financial Institutions by these entrepreneurs. The latter section includes three parts: conformity to the Shariah principles, quality of IFPSs, the contribution of Islamic Finance Institutions to the socio-economic development. The third section includes information about the needs and expectations of the Northwest region entrepreneurs. Finally, the fourth section comprises information about the companies, namely governorate, number of employees, turnover, industry sector, and the position of the respondent in this company.

In total, there are 59 items to respond to the cited questions. The types of questions are Likert 5 point agree/disagree scale, multiple answers or unique choice item. The analysis of our Survey is performed with Sphinx IQ software.

Table 3.1: Distribution of firms by employees number, turnover and activity sector

Descriptions		Frequency	Percentage
The number of employees in your company is:	Lower than 10	7	23.3
	Between 10 and 49	9	30.0
	Between 50 and 199	12	40.0
	More than 199	2	6.7
Your turnover is:	Lower than 100.000 DT	5	16.7
	Between 100.000 TD and 1.000.000 TD	9	30.0
	Between 1.000.000 TD and 10.000.000 TD	11	36.7
	Higher than 10.000.000 TD	5	16.7
Your industry sector is	Industrial	19	63.3
	Commerce	5	13.3
	Service	5	20
	Tourism	0	0
	Agricultural	1	3.3

We have 7 firms whose workforce is « lower than 10 », 9 with a number « between 10 and 49 », 12 which have « between 50 and 199 » employees and 2 have «more than 199 ». The distribution of businesses by turnover is as follows: 5 which have a turnover lower than 100,000 dinars, 9 with a turnover between 100,000 and 1,000,000 TD, 11 which have a turnover between 1,000,000 and 10,000,000 of dinars and 5 of

which the turnover is higher than 10,000,000 of dinars. Moreover, the majority of the respondents (63.3 percent) represents industrial companies (19) followed by 5 commercial firms, 5 companies of service and only 1 agricultural company (see Table 3.1).

2.2 Islamic Finance knowledge by entrepreneurs of the Northwest region

Around only **37 percent of the surveyed entrepreneurs (11 among them) say they are aware of Islamic Finance**. Among these directors, 72.7 percent cited at least one Islamic Finance product. The product Murabaha is cited by 47 percent of the interviewed. **18 percent of the entrepreneurs are not familiar with any Islamic Financial product** (see Table 3.2).

Table 3.2: Distribution of the entrepreneurs according to their knowledge of Islamic finance

Descriptions		Frequency	Percentage
Do you know Islamic Finance?	Yes	11	36.7
	No	19	63.3
if yes, what financial products are you most familiar with?	Mudharaba	1	3.3
	Musharaka	3	10.0
	Murabaha	8	26.7
	Ijara	1	3.3
	Qard Hasan	1	3.3
	Any product	22	73.3
What are the Tunisian Islamic banks that you know?	Zitouna Bank	25	83.3
	Al Baraka Bank	10	33.3
	Noor Bank	0	0
	Any bank	5	13.3
What kind of bank do you deal with?	Islamic bank	2	6.7
	Conventional bank	24	80.0
	Both of them	5	13.3

The Survey also shows that the most known Tunisian Islamic Bank is Zitouna Bank which is cited by 83.3 percent of the respondents. Moreover, 33.3 percent of the respondents know Al Baraka Bank. However, only **13.3 percent of businesses interviewed do not know any Islamic bank** (see Table 3.2).

Table 3.3: Intersection of the question "turnover of the company" with the question "Do you know Islamic finance?"

Do you know Islamic Finance? / Turnover of the company	yes		no		Total	
	Eff.	% Obs.	Eff.	% Obs.	Eff.	% Obs.
lower than 100,000 TD	1	20.0%	4	80.0%	5	100%
between 100,000 TD and 1,000,000 TD	2	22.2%	7	77.8%	9	100%
between 1,000,000 and 10,000,000 TD	7	63.6%	4	36.4%	11	100%
higher than 10,000,000 TD	1	20.0%	4	80.0%	5	100%
Total	11	36.7%	19	63.3%	30	

The Percentages are computed according to the number of observations (in line).
The values in blue are significantly over-represented (at the risk threshold of 5%).
p-value = 14.16% ; chi2 = 5.45 ; dl = 3 (the relation is very few significant)

According to Table 3.3, the relationship between "the knowledge of this finance" and "turnover" is very few significant at the level of 15 percent with p-value equal to 14.6 percent. Overall, we can conclude that the turnover has very little influence on the factor "whether or not be informed about Islamic Finance". Indeed, most of the entrepreneurs stating they are familiar with Islamic finance have a relevant turnover which is between 1,000,000 TD and 10,000,000 TD. Nevertheless, the relationship between the "number of employees" and the question" do you know Islamic Finance" is not significant. This does not enable us to note that the large companies of the Northwest region have a clear picture of this finance.

Table 3.4: Intersection of the variable "knowledge of Islamic products" with the question "Do you know Islamic finance?"

Do you know Islamic finance? / Knowledge of Islamic products	Yes		No		Total
	Eff.	% Obs.	Eff.	% Obs.	Eff.
Mudharaba	1	9.1%	0	0.0%	1
Musharaka	3	27.3%	0	0.0%	3
Murabaha	8	72.7%	0	0.0%	8
Ijara	1	9.1%	0	0.0%	1
Qard hasan	1	9.1%	0	0.0%	1
Any product	3	27.3%	19	100.0%	22
Total	11	36.7%	19	63.3%	30

The Percentages are computed according to the number of observations in the column.
The sum of lines and/ or the columns is different from the number of the observations because of the multiple responses.
The values in blue are significantly over-represented (at the level of 5%).
p-value = 0.01% ; chi^2 = 25.6 ; dl = 5 (the relationship is very significant)

In addition, 72.7 percent of the respondents who are familiar with Islamic finance cited at least one Islamic product. However, they have mentioned only the products presented in the table above. Therefore, these firms, namely industrial ones, do not know the other Islamic products (such as Salam, Istisnaa, Sukuk,...) that can be used by them to undertake financing operations. Furthermore, the very significant relationship between this two variables, the "knowledge of Islamic finance" and the knowledge of its products", enables us to confirm that the entrepreneurs who say they know Islamic Finance have a basic idea about it. We can therefore conclude that these results show that the entrepreneurs of the Tunisian Northwest region have not a clear idea about Islamic Finance and its products.

2.3 Perception of Islamic banks and financial institutions by the entrepreneurs of the Northwest region

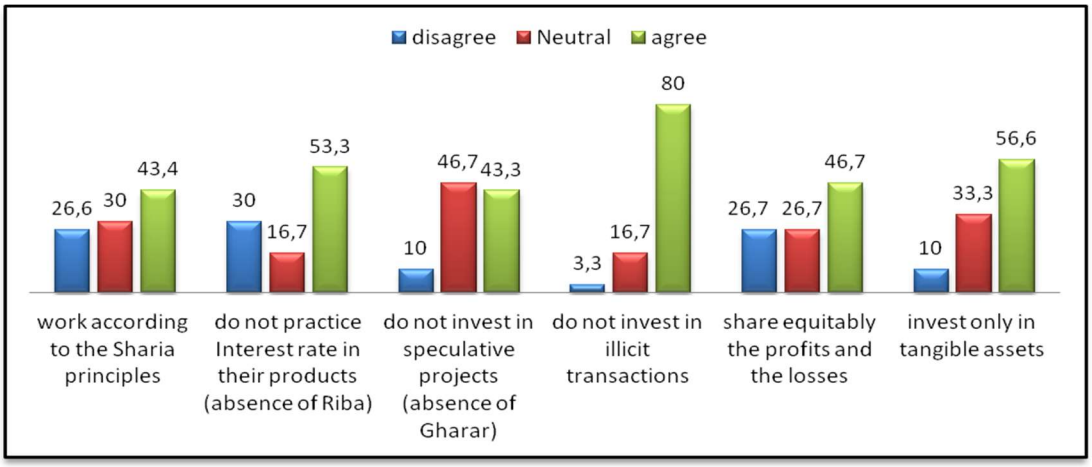
2.3.1 Conformity to the Shariah principles

In this part, we try to assess the entrepreneurs' opinions on the compliance of the services and the products supplied by the Tunisian Islamic Banks to the Shariah principles, by using a five-point Likert scale (from absolutely disagree to absolutely agree). Indeed, according to the Survey, **26.6 percent of the respondents think that Islamic banks do not really respect the Shariah rules**, 30 percent of the executives say that Islamic banks use interest rates in their products and 26.7 percent think that Islamic Banks do not fairly share the profit and the loss (see Figure 3.1 and Table III.1 in Appendix 2).

These results reveal that about 30 percent of the population do not have faith in Tunisian Islamic banking. In fact, they think that these banks are similar to their counterparts. They also indicate that Zitouna Bank is not an Islamic Bank because its past related to Sakhr El Matri and their employees who assimilate the cost of financing to the interest rate. Therefore, these banks must take more effort in order to

scrupulously respect Islamic finance principles and to attract the entrepreneurs who have not confidence in them and also the neutral ones.

Figure 3.1: Islamic banking Services and products and Shariah principles



In what follows, we use the Ascending Hierarchical Classification (AHC) or clustering analysis to assess the perception of the Northwest Region entrepreneurs on the conformity of the Tunisian Islamic products and services (namely those of Zitouna Bank and Al Baraka Bank) to the following Shariah rules:

- The prohibition of Riba or fixed interest resulting from the one-time flow.
- Profit and loss sharing
- The prohibition of Al-Gharar and Al-Maysir.
- Asset-backed contracts: investment only in tangible asset
- prohibition of illicit Investments (gambling, pork, alcohol ...).

The clustering analysis lets us create a new variable which indicates the class that each individual belongs to. In order to qualify these clusters, we compute for each of them the predefined criteria average values. For this reason, we propose the following active variables which are presented in Table 3.5:

- BI_Sharia: Islamic Banks work according to the **Shariah** principles
- BI_interest: these banks do not practice Interest rate in their products

- BI_gharar: they do not invest in speculative projects
- BI_sharing: they share equitably the profits and the losses
- BI_illicit: they do not invest in illicit transactions
- BI_tangible: they invest only in tangible assets

Table 3.5: Variables used to construct the typology

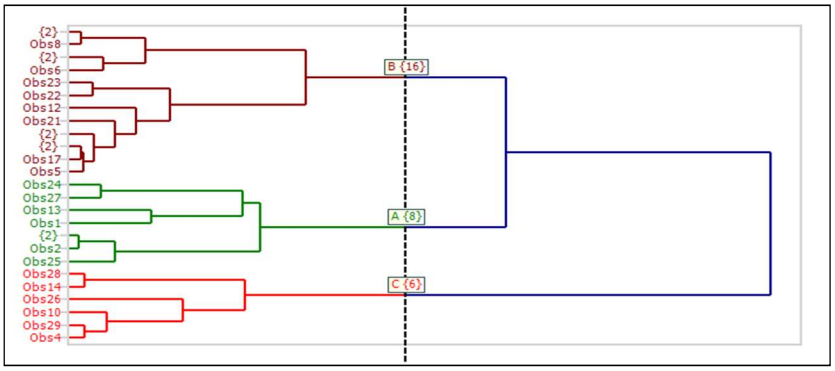
	Average	Min	Max	Standard deviation
BI_gharar	3.43	1.00	5.00	0.94
BI_interest	3.30	1.00	5.00	1.18
BI_Sharia	3.20	1.00	5.00	1.06
BI_sharing	3.20	1.00	5.00	1.06
BI_illicit	3.00	1.00	4.00	0.74
BI_tangible	2.60	1.00	4.00	0.86

Valorization of levels: from absolutely disagree (1) to absolutely agree (5).

Since our sample size is fairly small (we have only 30 companies) we use the Ward error sum of squares hierarchical clustering method[17] for Euclidean distance (see Ward (1963)) which is considered as the most suitable method for spherical data and enables us to obtain the most accurate classification (Everitt (1974), Mojena (1978) and Ferligoj and Batagelj (1982)). The dendrogram below depicts the last steps of the companies regrouping procedure. Therefore, the Ward criterion determine the optimal grouping where homogeneous observations are grouped together as clusters.

[17] This method distinguished by its using of an approximate analysis of variance (ANOVA) in order to assess the distance between classes. In summary, this method attempts to minimize the Sum of Squares (SS) of all classes couple (hypothetics) may be formed at each stage (Ward (1963)). In general, this method is very efficient, even if it tends to create small classes.

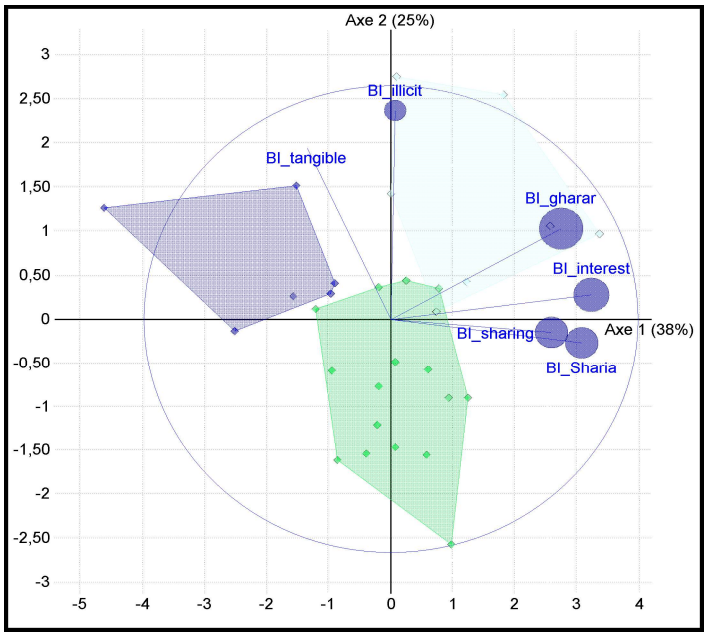
Figure 3.2: Dendrogram: Companies classification by their profile according to the cited modalities



The use of Ward's method proves an apparently natural stopping criterion for the clustering (Meltoni et al. (1996) and Wilks (2011)). In this case, the best stopping criterion (equals to 1.84) proposes a partition of entrepreneurs in three categories (see Appendix 2 Table III.3). Class A represents 26.7 percent of the population. The cluster B is the biggest one with 53.3 percent. Finally, Class C represents 20 percent of the population (see Figure 3.2).

The results of the typology depend on the dispersion of the considered criteria (standard of deviation) and their interdependences (correlations). These results are presented in the Principal Component Analysis (PCA) map below.

Figure 3.3: Principal Component Analysis: a simultaneous cross between variables describing the Islamic banking products and services conformity to the Shariah principles[18]



This map allows us also to have a basic picture about the entrepreneurs' perceptions. Indeed, we remark that, in the first horizontal axis, the entrepreneurs, who argue that Tunisian Islamic banks provide without interest products and services in accordance with the Shariah principles and they share equitably the profits and the losses, oppose to those who think that these banks invest only in tangible assets.

The second axis is characterized by the entrepreneurs who think that Islamic Banks should invest in licit and tangible assets. In fact, the variables BI_tangible and BI_illicit have the higher contributions with respectively 40.70 percent and 37.91

[18] This map indicates also the covariation of partial satisfactions. The more the latters converge in the same direction, the less the distinction between partial satisfaction elements is relevant. Cronbach's alpha (equals to 55) completes this information by indicating that the conditions of explanatory variables independence are fairly well satisfied. In addition, the first factorial plane, in this map, allows us to present more than the half of total information (62.3%) which describes the entrepreneurs' point of view about the Tunisian Islamic Banks products and services conformity to the Shariah principles.

percent. Nevertheless, the contributions of variables BI_sharing and BI_Sharia to this axis are weak and negative with respectively -3.31 percent and -1.77 percent (see Table III.2 Appendix 2). These entrepreneurs state that the Tunisian Islamic banks do not respect the Shariah rules.

The Fisher test is used to check the appropriateness of classification: each class is easily distinguishable from the others in the considered criteria average values. Moreover, the application of this test enables us to more explain the characteristics of each cluster.

Table 3.6: The Criteria values by classes (conformity to the Shariah principles)

	Class A	Class B	Class C
BI_gharar	3.88	3.13	2.50
BI_interest	4.50	3.25	1.83
BI_Sharia	4.00	3.31	3.00
BI_sharing	3.63	2.56	3.33
BI_illicit	3.88	3.44	1.67
BI_tangible	3.13	2.13	3.17

BI_Sharia: p=**2.8**%; F=**4.07** (**Significant**)
BI_interest: p=<0.1%; F=20.86 (Very Significant)
BI_gharar: p=10.1%; F=2.47 (not very Significant)
BI_illicit: p=<0.1%; F=10.12 (Very Significant)
BI_sharing: p=<0.1%; F=17.80 (Very Significant)
BI_tangible: p=0.2%; F=7.77 (Very Significant)

The Table below shows that this classification is relevant. Indeed, according to Fisher test[19], the criteria BI_Sharia, BI_interest, BI_illicit, BI_sharing, and BI_tangible *are significant* at the level of 5 percent. Nonetheless, the criterion BI_gharar is fairly insignificant at the level of 15 percent with a probability equals to 10.1 percent.

[19] The Fisher tests resulting from the ANOVAs on the internal variables (those which used to construct the typology). The best classification is that which supplies the highest Fs.

Table 3.7: Position of criteria according to clusters[20]

Classe A	Classe B	Classe C
	BI_Sharia =	
BI_interest +		BI_interest -
BI_illicit +	BI_illicit -	
		BI_sharing -
	BI_tangible -	BI_tangible =

The signs indicate if the significant criteria of classes are higher(+), lower (-) or equal (=) to average values.
The Table shows the modalities which are significantly over-represented (lower number of observations: 5).

The above Table highlights the businesses positioning of each cluster. We can therefore describe the three classes as follows:

Cluster A: It is strong in the variables BI_interest and BI_illicit. It represents the group of entrepreneurs who think that Islamic banks do not practice interest rate in their products and do not invest in illicit transactions. We can see also that the average values of the different criteria are higher than 3. This group of the entrepreneurs have confidence in Islamic banks and think that the products and the services of the latter are conform to the Shariah requirements. Islamic banking system is perceived very convenient for these respondents. We can name this cluster as " the class of the confident entrepreneurs".

Cluster B: It is weak in BI_illicit and BI_tangible. This is the group of firms who state that Islamic banks invest in illicit transactions and do not invest only in tangible assets. Nevertheless, these entrepreneurs have not an idea about the conformity of the supplied products to the Shariah principles. We can also note that the average

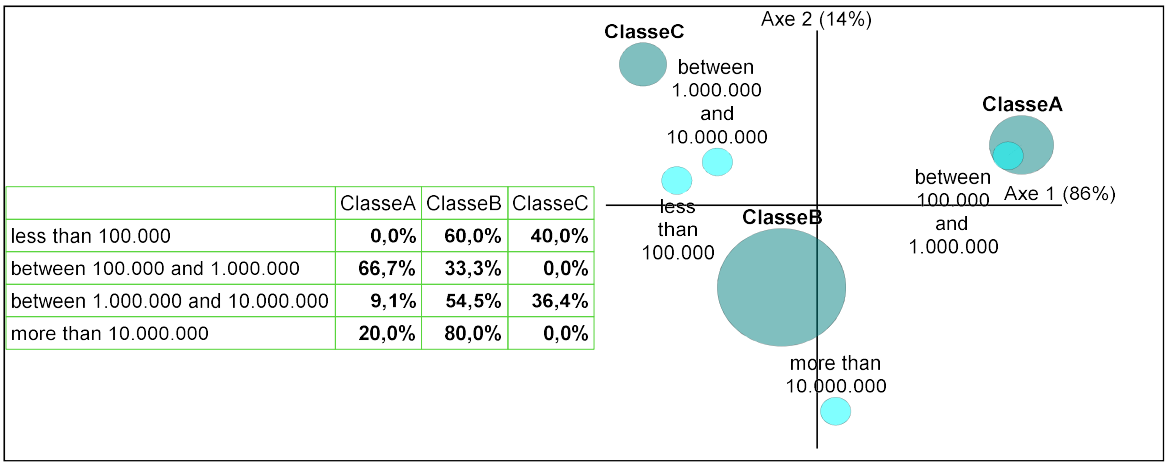
[20] The Table presents the overrepresented elements (under Chi²) for the three classes. It indicates, line after line, the features of each profile for all sample variables. An empty cell indicates that there is any significant element. Moreover, the table gives for each explanatory variable modality the remarkable elements with an average value significantly higher (+), equal (=) or lower than the average of all modalities.

values of the other criteria are higher than 3. These entrepreneurs contradict themselves and are hesitant. In fact, they are neutral about the compliance of the Islamic products and services with the Shariah principles and, at the same time, they think that these banks invest in the illicit transaction and non-tangible assets. These entrepreneurs do not therefore refuse automatically this finance. However, This confusion and the lack of understanding Islamic Finance could prevent them to deal with the Tunisian Islamic Banking system. We can rename this cluster as the class of "the neutral and the unknowledgeable entrepreneurs".

Cluster C: It is weak in BI_interest and BI_sharing. It represents the group of entrepreneurs who say that Islamic Banks practice interest rates in their products and they do not share profits and losses. Moreover, the average value of the BI_Sharia criterion is lower than 3. This implies that these entrepreneurs think that Islamic Banks provide products and services non-conform to the Islamic Law principles. These respondents have thus not confidence in Islamic Banks. According to them, Islamic Banking System is similar to its conventional counterparts and regulators try to cover up this reality. They also think that the Murabaha financing mode ignores the spirit of the usury prohibition and hence it can be considered as an interest based loan. Therefore, this cluster can be considered as the "very suspicious entrepreneurs'" class.

In what follows, we will use the Chi-square test to assess the link between the constructed typology and the variables describing our sample. We find that only the relationship between turnover and this typology is significant at the level of 5 % with a probability p= 2.2 %. Nevertheless, our clustering does not depend on the variables "workforce" and "activity sector" which have probabilities equal to 65% and 24%, respectively.

Figure 3.4: Sample distribution by turnover in different classes: Factorial Correspondence Analysis



	ClasseA	ClasseB	ClasseC
less than 100.000	**0,0%**	**60,0%**	**40,0%**
between 100.000 and 1.000.000	**66,7%**	**33,3%**	**0,0%**
between 1.000.000 and 10.000.000	**9,1%**	**54,5%**	**36,4%**
more than 10.000.000	**20,0%**	**80,0%**	**0,0%**

p = 2.2% ; Chi2=14.75 ; ddl=6 (Significant)
The overrepresented elements are colorated in blue.

The confidents (**Class A**) are rather the companies of which the turnover is between 100,000 and 1,000,000 Tunisian Dinars. Their directors think that Islamic products and services are Shariah compliant. The modalities "**cluster B**" and "**cluster C**", representing the businesses, which have neutral and suspicious directors, do not have any characteristic feature.

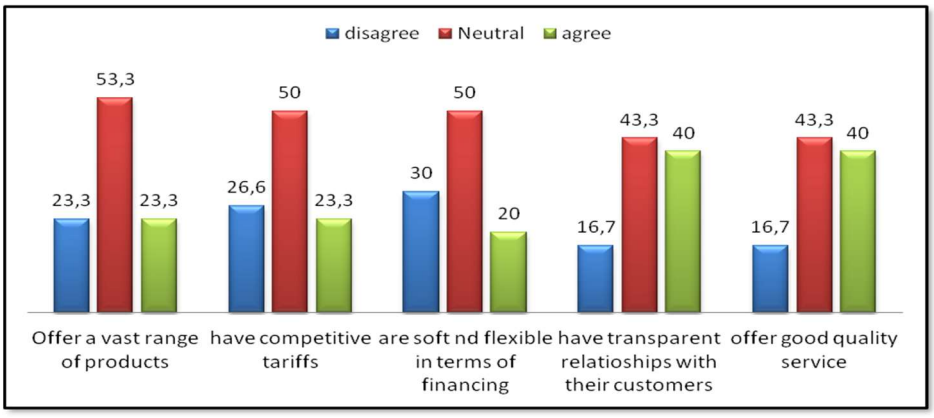
As we have seen, the entrepreneurs of the Tunisian Northwest region are not clear about Islamic Finance. For this reason, they do not have a high opinion of Islamic Finance rules. This may affect their views about the compliance of the Tunisian Islamic banks products and services with the Shariah principles. As a consequence, the lack of Islamic Finance understanding may impede the expansion of Islamic banking in Tunisia.

2.3.2 Quality of Islamic Banking products and services

Concerning the quality of Tunisian Islamic Banks products and services, the Survey reveals that a high proportion of entrepreneurs have no views on the question (see Figure 3.5). This proves once more the lack of knowledge of Islamic Finance and its flat development in Tunisia.

Figure 3.5 shows that the entrepreneurs have a positive attitude vis-à-vis the relationship quality between Islamic Banks and their customers (transparency and good service quality). However, there is a pre-mitigated view on the Islamic Banks ability to response to all entrepreneurs needs and to provide competitive consumer pricing (see also Table V.4 in Appendix 3).

Figure 3.5: The quality assessment of Tunisian Islamic Banks products and services



In the rest of this subsection, we will use principle components analysis and we will construct a typology in order to better characterize the companies according to their response to this question. The variables used to build this typology are:

- **BI_quality:** Islamic banks offer good quality service,
- **BI_flexibility:** They are soft and flexible in terms of financing,
- **BI_transparency:** they have transparent relationships with their clients,
- **BI_vastRproduct:** They provide a vast range of products,
- **BI_tarif:** They have competitive tariffs.

These variables are represented in the Table below:

Table 3.8: The used Variables in order to construct the second typology

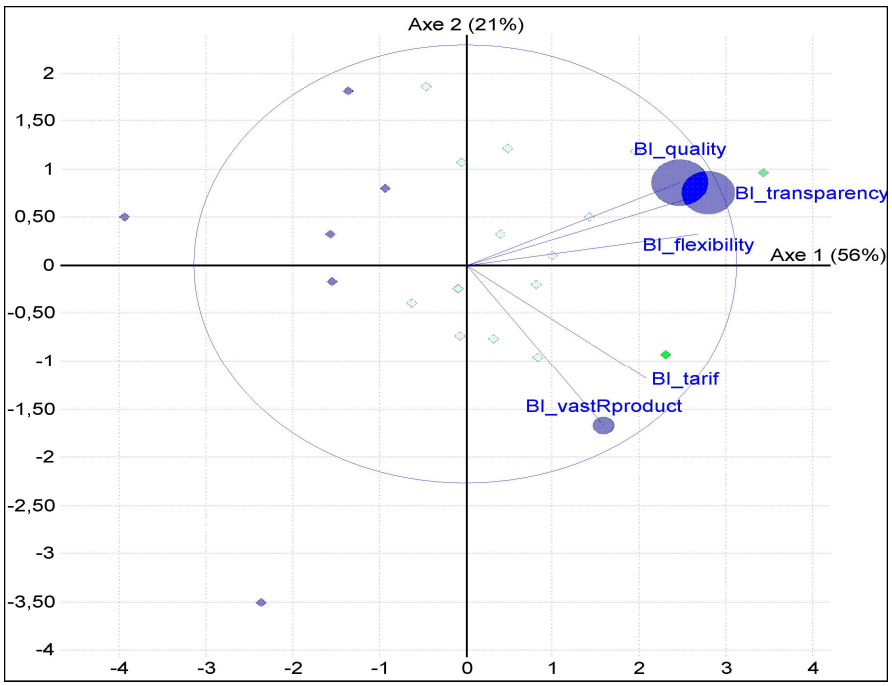
	Average	Min	Max	Standard of Deviation
BI_quality	3.27	1.00	5.00	0.87
BI_transparency	3.23	1.00	5.00	1.07
BI_vastRproduct	3.00	2.00	4.00	0.69
BI_tarif	2.83	1.00	4.00	0.95
BI_flexibility	2.83	1.00	5.00	0.95

Cronbach's Alpha=0.79

Valorization of levels: from absolutely disagree (1) to absolutely agree (5).

The study of the contribution of active modalities to the different principal component analysis factors enables us to have an initial idea of how Tunisian Islamic Banking is perceived by the entrepreneurs of the Northwest Region (see Figure 3.6). Indeed, according to Figure 3.6, the first factorial plane allows us to graphically represent more than half of the total information (79.79 percent) about the statistic correspondences between the different characteristics of Islamic products and services (such that the first factor explains 61.28 percent of the total inertia).

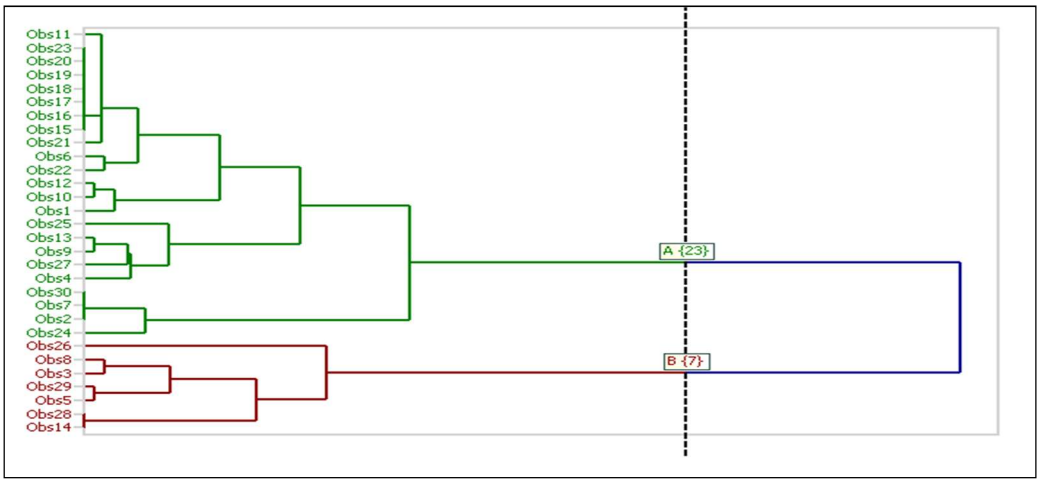
Figure 3.6: Principal Component Analysis: a simultaneous cross between variables describing the perception of Islamic banking products and services by the entrepreneurs



Moreover, this map shows that there are two groups of entrepreneurs. In fact, we can see that, in the first horizontal axis, all factors have a positive contribution. This axis is mainly built by "BI-transparency" (with cosine square 2.05) and "BI-flexibility" (with cosine square 1.39). In the vertical axis, the variables "BI-quality", BI-transparency and "BI-flexibility" have a positive contribution with respectively 11.90%, 8.25%, and 0.68%. However, "BI-tarif" and BI-vastRproduct" have negative contributions with respectively -58.55% and -20.62% (see Table III.5 in Appendix 3). We can divide then our sample into two categories. The first one is characterized by the entrepreneurs who argue that Tunisian Islamic banks provide good quality products and services, are soft and flexible in terms of financing as well as have a transparent relationship with their customers. the second category contains the entrepreneurs who have a negative view about the quality of Islamic products and services. They state that these banks do not provide consumers with competitive prices and product choices.

The hierarchical clustering results confirm the PCA analysis. Indeed, the Ward's stopping criterion proposes a classification in two classes (see Figure 3.7 and Table III.6 in Appendix 3).

Figure 3.7: Dendrogram: classification of the companies by their profile according to the modalities describing the quality assessment



According to the Ward's stopping criterion, the AHC proposes a partition into two classes (see Figure 3.7 and Table III.6 in Appendix 3). The cluster A which is the biggest represents 76.67 percent of the population. Class B contains only 7 companies (23.3 percent).

According to the Table below, the criteria average values are over 3 for the cluster A and lower than 2.5 for the class B. The average value of the criterion " *BI_vastRproduct*" is less than 3 in the two clusters. Although the entrepreneurs of the Northwest Tunisian Region do not have a clear sense of the Islamic Finance and its products, they are right to perceive the range of Tunisian Islamic Banks as very limited. This limitation is due to the absence of the special legal and regulatory framework.

Table 3.9: Criteria values by classes (quality of products and services)

	Class A	Class B	Total
BI_vastRproduct	2.13	1.57	2.00
BI_tarif	3.13 (+)	1.86 (-)	2.83
BI_flexibility	3.13 (+)	1.86 (-)	2.83
BI_transparency	3.65 (+)	1.86 (-)	3.23
BI_quality	3.52 (+)	2.43 (-)	3.27

All variables are significant at the level of 5% according to the Fisher test.
The signs indicate if the significant criteria of classes are higher(+), lower (-) or equal (=) to average values.
The Table shows the modalities which are significantly over-represented (the lowest number of observations: 5).

We can then characterize these classes as follows:

Cluster A (class of neutrals): the average values of the cited criteria for this group of businesses is near to 3. We can hence confirm the already found result that most of the respondents in this cluster have not clear idea about the quality, the transparency and the tariffs of Tunisian Islamic Banks products and services. Nevertheless, the average values of " BI_transparency" and " BI_quality" are higher than 3.5. this reflects the presence of a number of entrepreneurs have a positive perception that Islamic banks offer good quality services and have transparent relationships with their customers.

Cluster B (class of unsuspecting entrepreneurs): In this case, the average values of all criteria are lower than 2.5. This group of entrepreneurs does not appreciate the range of products, the tariffs, the flexibility in terms of financing and the transparency of Tunisian Islamic Banks (Zitouna Bank and Al Baraka Bank). They think that Islamic products and services are very expensive. Moreover, according to these questioned persons, the Islamic banking system is based on lies, namely Zitouna Bank of which the past is related to a robber (Sakhr El Matri). In addition, Islamic banks are similar to their conventional counterparts. For these reasons, these entrepreneurs do not have confidence in them.

Therefore, Tunisian Islamic Banks should do more to develop their range of products, by proposing for example Islamic Microfinance products, and their geographic expansion as well as take measures to reinforce their competitiveness.

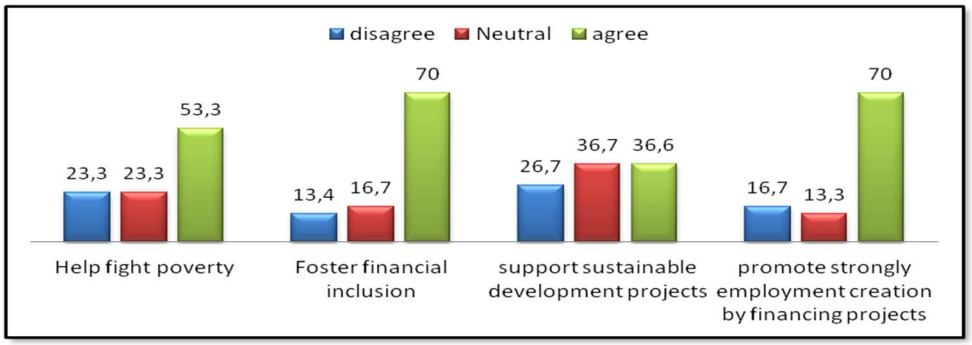
2.3.3 Islamic Financial institutions and Socio-economic development:

In theory, Islamic Finance can contribute to socio-economic development. Indeed, this finance plays an important role in sustainable development through Corporate Social Responsibility (CSR) and Socially Responsible Investments (SRI) and hence it ensures the stability of overall financial system (Kahf (1999), Farook and Lanis (2007), Dusuki and Dar (2007), Sairally (2007), Zinkin (2007), Ullah and Jamali (2010), Basah and Yusuf (2013)). Indeed, since the establishment of Islamic banks, one of their main objectives is to practice social activities to alleviate poverty and create a better community. That is why IBs have to comply with CSR expectations (Asutay (2012), Basah and Yusuf (2013)). In addition, this finance has a meaningful role in combating social exclusion and in improving the welfare (Bremer (2004) and Ebrahim (2009)). So how entrepreneurs of Northwest Tunisian region perceive the contribution of Tunisian Islamic banks (Zitouna Bank and Al Baraka bank) to socio-economic development?

Most of the entrepreneurs think that Islamic Banks and financial institutions contribute to the socio-economic development (*cf*. Figure 3.8). Indeed, 53.3 percent of the managers state that Islamic financial systems help to fight against poverty, 70 percent of them think that they foster financial inclusion (that is the access to financial services) and 70 percent say that these Islamic financial structures could strongly promote the employment creation by financing profitable projects (see Figure 3.8 and Table V.7 in Appendix 4). However, Islamic Finance role in sustainable development is not perceived strong. Only 36.6% (that is 11 entrepreneurs) consider it as strongly supporting sustainable development projects.

This favorable opinion reveals that most of the respondents accept to cooperate with Islamic Banks in order to improve living conditions in the Tunisian Northwest region if their practices are truly conformed to the Shariah rules. This is demonstrated by the results presented in Figure 3.8.

Figure 3.8: Entrepreneurs' views about the Islamic banking - socio-economic development nexus



As we have done before, we will refer to the clustering analysis to better target the entrepreneurs' views about the contribution of Islamic banking to socio-economic development. Therefore, we will refer to the following variables:

- **BI_inclusion:** Islamic Banks foster financial inclusion,
- **BI_employment:** They strongly promote employment creation through financing projects,
- **BI_poverty:** They help to fight poverty
- **BI_support:** They support sustainable development projects (see Table 3.9).

Table 3.10: The used Variables to construct typology

(contribution to socio-economic development)

	Average	Min	Max	Standard of Deviation
BI_inclusion	3.57	1.00	5.00	0.97
BI_employment	3.53	1.00	5.00	1.11
BI_poverty	3.37	1.00	5.00	1.03
BI_support	3.03	1.00	5.00	1.03

Cronbach's Alpha=0.83

Valorization of levels: from absolutely disagree (1) to absolutely agree (5).

According to Figure 3.8, the first factorial plane enables us to graphically represent 83.52% of the total information about the statistic correspondences between the modalities describing entrepreneurs views (such that the first factor only explains 66.83 percent of the total inertia).

Figure 3.9: PCA: a simultaneous cross between variables describing the entrepreneurs' views about the link between Islamic banking and socio-economic development

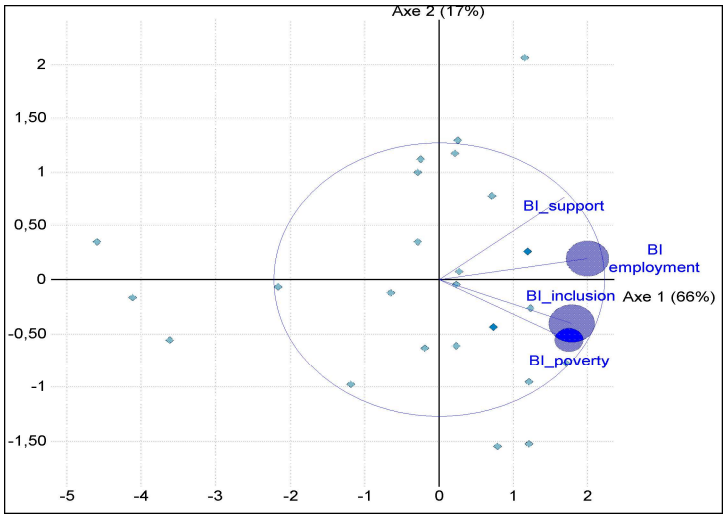


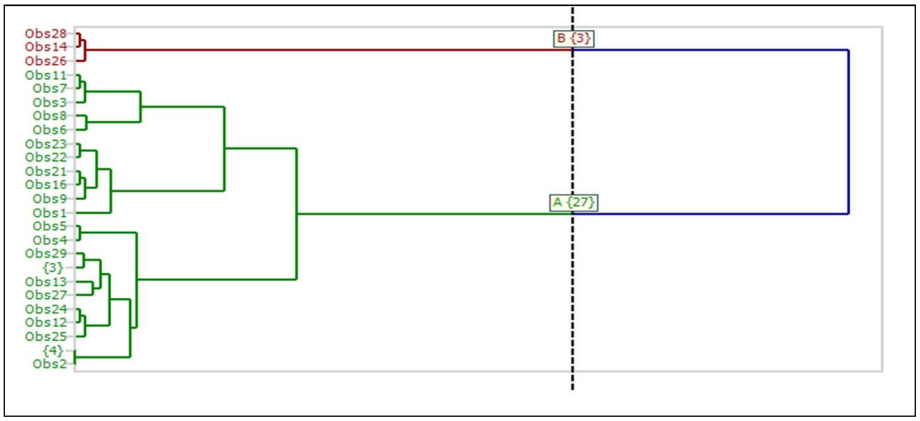
Figure 3.9 also shows that we can divide our population into two categories of entrepreneurs. In the vertical axis, the variables "BI-poverty" and "BI-inclusion" have a positive contribution with respectively 34.86% and 12.14%. Nevertheless, "BI-support" and "BI-employment" have negative contributions with respectively -49.76% and -3.24% (see Table III.8 in Appendix 4). These results show that the group of entrepreneurs who think that Islamic Banking system alleviates poverty and promotes financial inclusion opposes to those who argue that these banks do not support strongly sustainable development projects and do not help to eliminate unemployment.

In the horizontal axis, all variables have positive contributions which are higher than 20%. the point " BI-employment " has the more significant coordinates with a contribution equals to 35.51 percent for the first axis and a cosine-square[21] equal to 0.92. These respondents state that Islamic banks strongly promote employment creation through financing profitable projects.

In this case, the Ward's stopping criterion which is equal to 3.49 proposes a partition in two classes (see Table III.9 in Appendix 11). For this reason, the dendrogram below (see Figure 3.10) confirms the CPA results and proposes the following two classes:

- Class A represents 90 percent of our sample.
- Class B includes only three companies (10 percent).

Figure 3.10: Classification of businesses by their profile according to the modalities describing the entrepreneurs' views about Islamic banks contribution to socio-economic development



According to the Table below, the average value of BI-Support is over 3 for the cluster A and equals to 1 for Class B. Most of the entrepreneurs of the Northwest Tunisian Region are neutral about the role played by the Islamic Banks on

[21] The cosine -square, or relative contribution, measures the quality of the element representation (modality, variable, frequency or individual) on a factor axis.

supporting sustainable development projects. We can explain this neutrality by the lack of information about the products and services provided by these banks or about the term of sustainable development.

Table 3.11: Criteria values by classes (contribution to socio-economic development)

	Class A	**Class B**	Total
BI_poverty	3.56 (+)	1.67 (-)	3.37
BI_inclusion	3.81 (+)	1.33 (-)	3.57
BI_support	3.26 (+)	1.00 (-)	3.03
BI_employment	3.81 (+)	1.00 (-)	3.53

The Fisher test shows that this classification is very significant at the level of 5%.
We can thus identify these two classes as follows:

Cluster A: In this case, all criteria except "BI-support" have an average value higher than 3.5 (see Table 3.11). These entrepreneurs have a positive opinion about the contribution of the Islamic banks to the socio-economic development. In fact, they think that these banks are trying to alleviate poverty, foster financial inclusion and promote employment creation through financing projects. Nevertheless, as we have seen, these respondents are neutral about the role played by these banks in supporting sustainable development projects. Tunisian Islamic Banks must work harder to attract these companies by contacting their directors who do not refuse to deal with them in the future. The actual lack of information prevent these entrepreneurs to use Islamic products and services.

Cluster B (class of very unsuspecting entrepreneurs): the values of criteria which describe this class are near or equal to 1. These entrepreneurs have a prejudice against Islamic banking system. They think that Islamic banks do not play an important role in socio-economic development. They have no confidence in these banks. These companies have a turnover which is between **1,000,000 and 10,000,000 TD.** We remark also that these businesses always belong to the class of the "suspecting entrepreneurs", in the three subsections. The leaders of these companies have unfavorable opinions in respect to the Islamic Banks products and services

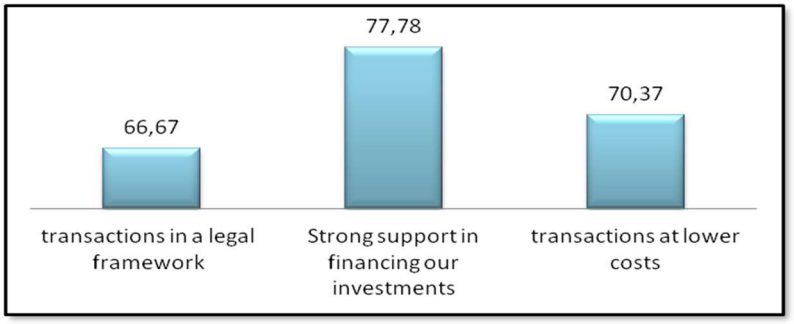
conformity to the Shariah principles, the quality of these products and services and then their contribution to the socio-economic development.

In brief, the Survey shows a significant potential for Islamic Finance among the entrepreneurs of the Northwest region. Indeed, 58.3 percent of the respondents state that they are ready to change their bank to an Islamic one, if their actual bank does not develop Islamic products offer. Moreover, **29.2 percent of the questioned entrepreneurs accept to deal with Islamic structures when Islamic windows are opened in their bank.** This is even more prestigious given that 80 percent of the Northwest region entrepreneurs work only with conventional banks.

2.4 The needs and the expectations of the entrepreneurs of the Northwest Region

A significant proportion of the questioned entrepreneurs, that is 80 percent, think that Islamic Banks serve as an alternative banking system - complement to conventional banks. Nevertheless, these banks should respond to the expectations and the needs of these companies.

Figure 3.11: The entrepreneurs of the Northwest region expectations

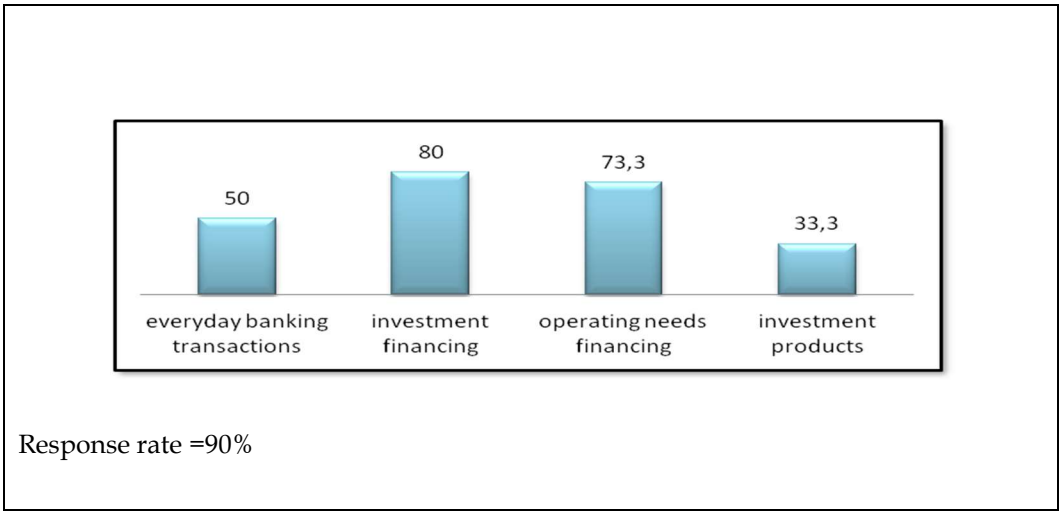


Response rate=90%

Most entrepreneurs (that is 77.8 percent) **want to carry out transactions at a lower cost**. Second, 70.4 percent of the interviewees are waiting for a strong support by

Islamic Banks for the financing of their investments. Then, 66.7 percent want to carry out their operations in a legal framework (conform to Shariah) (see Figure 3.11). Therefore, this survey indicates that most of the entrepreneurs are interested in **an Islamic banking supply which is competitive and compatible with their religious convictions**.

Figure 3.12: The needs of the Northwest region companies



Concerning the needs of the Northwest region companies are concerned, the majority of the entrepreneurs would have recourse to Islamic banking services in order to finance their investments as well as their operating needs. Indeed, 80 percent of them want to finance their investments and 73.3 percent want to finance their operating needs (see Figure 3.12).

It is noteworthy that the majority of these directors would like that Tunisian Islamic Banks provide products and services which **are not expensive and help them in their investment and operating needs financing while respecting the religious values.**

3. Discussion

In short, there is certainly a potential market for Islamic Finance among the companies of the Tunisian Northwest region. Indeed, **87%** of them state that they are

interested in Islamic products. **58%** of these entrepreneurs would even be ready to leave their conventional bank to work with an Islamic bank.

However, according to this Survey, it would not be easy to transform this potential into a real market and to develop it:

- The factors cost, proximity, flexibility and satisfaction of the needs have an important impact on the entrepreneurs' choice of the ideal bank, even if their religious conviction is strong and incites them to work with Islamic Banks.
- The firms needs of Islamic banks are similar to those of conventional banks. There is hence a strong competition between Islamic Banks and their conventional counterparts to attract this category of customers which would be more important than that with individual customers.
- The entrepreneurs' confidence as regards the compliance of Islamic banking with the Shariah rules is very doubtful.

4. Conclusion

It is obvious that the entrepreneurs perceive Islamic Finance as a seductive phenomenon. Its foundation and its functioning constitute favorable factors to its development. Moreover, the proposition of competitive low-cost products which respond to the needs of customers as well as the geographic and psychological proximity heavily contribute to the expansion of this scope.

Nevertheless, the development of this industry appears to be difficult. Indeed, the latter requires a sound knowledge of its products by corporate decision makers of the Tunisian companies and households, skilled and trained human resources in Islamic Finance and the implementation of an appropriate and dedicated regulation for this finance, while still encouraging the development of competition in this area. However, there was the law 2001/65 relating to the credit institutions which does not forbid the creation of banks that have specific features in terms of products and intervention techniques. It is also worthy to note that the government has already put

in place several standing committees affecting all banking and financial areas in order to elaborate a legal and regulatory framework dedicated to Islamic Finance products(Islamic Banking, Takaful, Investment funds, Islamic Microfinance, Sukuk, Ijara, ...). Consequently, new legislations namely those for Sukuk (Law No. 2013-30), Islamic Investment funds (Law No. 2013-48), Takaful (Law No. 2014-47) and IF products (Law No. 48- 2016) such as Murabahah, Ijarah, Mudharabah, Musharakah, Istisnah, Salam, Wadiah Istithmarya have been elaborated in order to organize this banking sector. This will contribute significantly to the development of Islamic Finance in a potentially promising market.

Chapter IV

Sustainability at macroeconomic level: Does Islamic Banking promote growth?

1 Introduction

Islamic finance is based on strict religious principles, Shariah, where Islamic banking institutions are seeking to implement or to avoid in order to attract new customers. The most important Islamic financial characteristic of Shariah is the strict prohibition of giving or receiving a fixed or a predetermined interest rate on a financial transaction.

In the past two decades, Islamic Finance had experienced a considerable expansion. The Arthuis report notes that quantifiable data concerning Islamic Finance would be partial and flawed[22]. However, all experts agree to point out that the global Islamic Finance market would exceed today over 500 billions of dollars, that is ten times more than since 20 years[23]. A Standard & Poor's study even indicates that it would have reached an amount of $2.1 trillion of dollars at the end of 2016 and are expected to strike $3 trillion of dollars in the next decade. According to Standard&Poor's, The global Islamic banking market size is around 1,600 millions of dollars and its assets growth decreased from 12% in 2014 to around 7% in 2015. The geographical distribution of this market is as follows: more than 80% of the industry assets allocated to the Gulf countries (GCC) plus Malaysia and Iran. In the last 20 years, these assets rose in annual average from 15 to 20%. However, this growth drops to single-digit growth since 2015. Today, Islamic Finance operates through over 300 institutions and responds to the needs of more than 1.6 billion Muslims (Standard and Poor's (2016)). Despite the preponderance of these assets in certain geographic areas, the access to financial services is always available through Islamic subsidiaries of international financial institutions in many countries like Indonesia, India, China,

[22] Rapport d'information sénatoriale n° 33 du 17 octobre 2007 de la commission présidée par Jean Arthuis, commission des Finances, France (see "http://www.senat.fr/noticerap/2007/r07-033-notice.html").

[23] See Institute of Islamic Banking and Insurance, Moody's, Standard and Poor's. See also *2007 Review & 2008 Outlook: Islamic Finance*, Moody's Investors Service, 26 February 2008.

Japan, North Africa (such as Algeria, Morocco, Tunisia), Germany, Switzerland, Luxemburg, United Kingdom, the United States and Canada.

Literature provides conflicting predictions on the possible role of Islamic finance at the macroeconomic level. Some studies imply that Islamic finance has an effect on the improvement of financial development and the acceleration of growth (Siddiqui (1983), Chapra (1993), Kazamain (1993), El-Galfy and Khiyar (2012), Gheeraert and Weill (2015) and Imam and Kpodar (2015)). This finance would be considered a real growth vector. However, some studies suggest that the Islamic financial system is not very viable. It presents challenges and unresolved issues that may limit its ability to serve the financial development and economic growth (Uzair (1978), Iqbal and Khan (1981), Khan and Mirakhor (1994), Zubair Hasan (2008)). In this chapter, we are concerned about the Islamic Finance character as a growth driver. The idea that the financial system can boost economic growth dates back to Schumpeter (1911)[24]. The author maintains that services provided by banks, such as the mobilization of savings, the evaluation of projects, risk management, convenience of transaction, can promote the technological innovation and then economic growth. Banks identify and select profitable investments. They do not just transfer the characteristics of saving of which they are depository, but they create through credit a bank deposits transformed to borrowers. The empirical studies which verify the link between Islamic Finance and macroeconomic growth are very rare and obtain contradictory conclusions. Whereas the link between Islamic microeconomic banking and economic growth is not yet established in this field.

The aim of this chapter is to answer the following question: Can we argue that the actual practice of contemporary Islamic Banks contribute to the dynamic

[24] The links between financial sector and economic growth have been the subject of various theoretical and empirical studies. Early on, Bagehot (1873), Schumpeter (1911), Gurley and Shaw (1955) but also Goldsmith (1969) and McKinnon (1973) showed that financial sector has played an important role on economic growth acceleration.

macroeconomic growth? We focus therefore on observed Islamic banking practices and not on normative Islamic Finance stated by the religious scriptures. We then present, in the second section of this work, the debate on the role of Islamic finance in the economy in general. In the third section, we examine empirically the central issue of the paper. The last section is the conclusion.

2. Empirical and literature review

The debate on the link between the improvement of Islamic financial development and the acceleration of the macroeconomic growth does not seem to have come to a conclusion and it remains open.

2.1 Islamic Finance and Economic Role

Some studies emphasize its role in development and macroeconomic growth (Uzair (1978), Chapra (1993) and Siddiqi (1983), Khan and Mirakhor (1994)). For example, in Iran, Islamic banks invest in major projects that contribute to improved growth of economic sectors such as agriculture (Karamain (1993) and Saffari (1998)). Islamic finance also seems to play a vital role in economic development through the mobilization of savings (Zaher and Hassan (2001)).

Khan et Mirakhor (1994) complete this vision by showing that Islamic monetary policy is conducted in a framework, where all the traditional tools available in a modern economy, are at the disposal of monetary authorities, except the discount rate and other tools that involve the use of interest. These tools can be effective both in the Islamic system and in the conventional system.

The authors state that the main objective of this monetary policy is to ensure macroeconomic stability characterized by a stable price level and a viable balance of payments. The establishment of a stable macroeconomic environment is a prerequisite for the growth of savings, the investment and the contribution of foreign capital. The latter are all essential to the process of economic growth. In fact, without

that macroeconomic stability, economic growth may be weak and unsupported. In addition, according to these authors, without this growth, structural and social transformation that make up the Islamic development process will not exist, and the other objectives of Islamic society (ie equitable distribution of resources and revenues, creating jobs, improving the level and quality of life and reduction of poverty) may not be achieved. Nevertheless, other studies consider that Islamic finance plays first an important role against social exclusion. Islamic charities are seen as reducing social gaps and inequalities by providing services to the poor (Bremer (2004) and Ebrahim (2009)). This link lets keep the lower income groups integrated within the majority of society and, subsequently, it can reduce poverty and accelerate economic growth.

2.2 Islamic Finance and macro-monetary issues

Available research suggest that Islamic financial system is not very viable in macro-monetary level. It presents challenges and unresolved issues that may limit its ability to serve the financial development and economic growth.

2.2.1 Money Supply Problem

Islamic financial institutions, due to the uncertainties induced by the inflationary risk, are not supposed to create money *ex nihilo* before to create wealth as the conventional financial institutions (Moaté (2011). In principle, Islamic central bank sheet structure should clarify that it only uses money supply - currencies - which is created by conventional central banks. In other words, the ability of the banking system to create the money supply through credit creation is limited in a banking system without interest. This question was also addressed by Uzair (1978). According to the author, in an Islamic economy, there is no distinction between "capital" and "firm". This fusion of capital and firm into a single factor may limit the ability of commercial banks to create credit and increase monetary supply in economy. Thus, the fear of creating unnecessary and unbridled credit can be

excluded. The central bank can determine the real volume of money supply by controlling the ratio of benefit sharing. It would not be therefore necessary to eliminate the possibility of money creation by Islamic commercial banks. In countries where the process of monetization is still at the initial stage, there may be another reason for the creation of money. However, this money creation must be limited and controlled by the central bank to ensure the stability of the Islamic financial system and to avoid reckless leverage. Indeed, Islamic financial institutions should develop transactions on real good and services. Any uncertain contract which is based generally on the probability of a future event is not allowed; we talk about *gharar*.

However, Central Bank can determine the real volume of the *ex-post* money supply by controlling the Profit sharing ratios. Therefore, it would not be necessary to eliminate the possibility of money supply by Islamic commercial banks. In countries where the monetizing process is at the initial state, there may be another reason for monetary creation. Nevertheless, the latter should be limited and monitored by the Central Bank in order to ensure Islamic Financial system stability and to avoid the reckless leverage effects. In other words, Islamic Banks may admit the creation of money in proportions that are fixed by Islamic central bank and basing on already existing or created assets. Chapra (1983) introduces this nuance in a very clear manner. The money supply Mo realized by Islamic Central Bank should respond to the growth, welfare and stability objectives that are sought by the society. The money creation Mo would depend on a combination of the two following policies: fiscal policy (interest-free financing of social projects) and monetary policy (interest-free loans destined to banks). Thus, with its interest-free financings via commercial banks or government, Central bank participates in the form of interest-free advances an amount Mo to society's valuable projects. It gets paid the amount Mo by the returns from the projects in which it has been engaged under the principle of Mudharaba.

For their part, Iqbal and Khan (1981) treated the possibility of using the profit sharing ratio as a monetary instrument for distributing resources according to social priorities. According to these authors, the absence of interest rate does not suppress the instruments of monetary policy because the profit sharing ratios may serve as monetary instruments. Zubair Hasan (2008) has addressed the problems of creation and control of credit in a free interest banking system.

The author said that the credit creation in itself is not Islamic, the key is how the credit is generated and used. He supports the idea that credit creation cannot be denied because it is necessary to meet the needs of banks in the short term and to adjust, without friction, the money supply and seasonal and unavoidable fluctuations of demand unavoidable. Moreover, the creation and the control of credit are essential for the future development of Islamic banking. This creation of credit money has also become imperative for the budgetary needs. However, Islamic banks cannot create credit ex nihilo. For this reason, the author has proposed to create a banking system in competition with traditional commercial banks. Then, Islamic banks can create deposits of credit. Hasan (2008) also indicates that credit creation is controlled by the central bank in a limited way and the expected results are not always reached. In fact, money demand, fiscal policies, foreign exchange transactions are wearing out the supervisory power of central bank credit. In his study, the author found that the conventional instruments of credit control are ineffective for use in the Islamic banking system and suggested the inclusion of a cash advances ratio to banks.

2.2.2 Absence of an interbank market

According to Khan and Mirakhor (1994), Islamic banks are also disadvantaged in the case of short-term financial instruments. For example, there is no equivalent of an interbank market in an Islamic system where the banks could invest funds overnight or borrow to meet temporary liquidity needs. Experts in "financial engineering" are urgently needed to create instruments that satisfy the requirements of liquidity

which will comply with Islamic rules. According to Khan and Mirakhor (1994), Islamic banks will have to face to another difficulty which consists in organizing their relations with foreign banks and more generally, establishing international operations. The author argues that solving this problem requires the creation of financial instruments that are both consistent with Islamic principles and acceptable by financial institutions based on interest, including foreign banks.

2.2.3 Islamic banks with limited size

Size is another challenge facing Islamic banks (Zaher and Hassan (2001)). It is observed that most of these banks are retail banks with small size compared to its counterparts (see Table 4.1). For instance, the largest Islamic Bank in Egypt " Faisal Islamic Bank of Egypt" is almost ten times smaller than its conventional counterparts National Bank of Egypt, the largest conventional Bank in Egypt. In other words, the majority of the Islamic Financial Institutions are extremely small and cannot remain serious players in a market that continues to grow and attract major international banks. It is worth noting that Islamic Finance still would only represent over 1 % of the conventional finance.

Table 4.1: Size of the principal Islamic Banks in North Africa compared to the size of Conventional Banks

Islamic Bank	Rank	Assets (millions of $)	Leader of classic sector	Assets (millions de $)
Faisal Islamic Bank of Egypt	43	5,087	**National Bank of Egypt**	46,380
Al Baraka Bank, Egypt	81	2,135	**Misr Bank**	28,899
Al Baraka Bank, Algeria	116	1,015	**Crédit Populaire d'Algérie**	6,856
Al Wava Bank, Mauritania	118	992	**Banque Mauritanienne pour le Commerce International**	12,922
Al Baraka Bank, Tunisia	163	418	**Banque International Arabe de Tunisie**	4,719

Sources: The Banker, Top 500 Islamic Financial Institutions, FT Business, London, November 2010 and The Banker, Top 1,000 World Banks, FT Business, London, July 2010.

To be competitive in a broad sense, Islamic banks should merge or cooperate. They must also make fundamental strategic decisions about the type of banking model they want to develop in the future. Therefore, Islamic financial system would still present challenges and unresolved issues.

3. Review of the literature: Financial Development - Economic Growth nexus

The idea that financial system can stimulate economic growth is developed since the study of Schumpeter (1911). The author affirms that services provided by banks (mobilizing savings, assessing projects, management of risk, easing the exchange of goods and services.) can encourage technological innovations and hence economic growth by identifying and funding profitable investments. There are several empirical studies that analyze the finance - growth nexus.

3.1 Cross country studies

The first significant comparative study between several countries is made by Goldsmith in 1969. Goldsmith (1969) sought to respond to the two following hypothesis: finance exerts a causal influence on growth and the mixture of markets and intermediaries influences economic growth. He studies 35 countries over the period 1860-1963 and he finds a positive correlation between the size of the financial intermediary sector and the quality of financial functions provided by the financial sector. Furthermore, he refers to the graphic analysis which proves a positive correlation between financial development and the level of economic activity. Yet, there are no causal interpretations in this study.

To show whether the level of financial development predicts economic growth, King and Levine (1993a) improve Goldsmith (1969) study by using a cross-section of 77 countries. As a result, they find a strong positive relationship between each of the financial indicators averaged over the 1960-1989 period (*Depth* = liquid

liabilities[25]/GDP, *BANK* = Deposit bank domestic credit/[deposit bank domestic credit + central bank domestic credit] and *PRIVY* = gross claims on the private sector /GDP) and the three growth indicators (Real per capita GDP growth, Real per capita capital growth and Total Productivity growth (Solow residual)). They find also that financial depth is a good predictor of the economic growth rate and the relationship between the initial level of financial development and growth is economically large. However, the authors do not present causal interpretations on the link between finance and growth and focus only on one segment of the financial system, banks.

A more recent research focuses on the stock market and growth. In fact, the Levine and Zervos (1998) aim is to assess the relationship between long-run economic growth and the operation of equity markets in a sample of 42 countries over the period 1976-1993. Following Atje and Jovanovic (1993), Levine and Zervos (1998) add measures of stock market and banking development (*Turnover ratio*[26] and *Bank Credit*[27]) to cross-country studies of growth. As King and Levine (1993), they find that developed debt and equity markets contribute to long-run economic growth. They find also that countries with better developed financial systems show superior growth in capital-intensive sectors that rely particularly heavily on external finance. Nevertheless, the Levine and Zervos (1998) model does not show the negative aspects of stock market liquidity and does not deal with the issue of causality. Furthermore, they use other components of the financial sector. For example, Yartey (2008) improves this study by examining empirically the institutional and macroeconomic determinants of stock market development using a panel data of 42

[25] Liabilities= currency held outside the banking system + demand of banks and nonbank financial intermediaries +and interest-bearing liabilities of banks and nonbank financial intermediaries

[26] Value of the trades of domestic shares on domestic exchanges as a share of market capitalization of domestic shares in 1976 or the closest date with data.

[27] Bank credit to the private sector / GDP in 1976 or the closest date with data

emerging market countries for the period 1990 to 2004. Accordingly, macroeconomic factors include income level[28], savings and investment[29], stock market liquidity[30], macroeconomic stability[31] and private capital flows[32]. Institutional factors include political risk, bureaucratic quality[33], law and order, corruption[34], and democratic accountability[35]. He finds a positive relationship between both macroeconomic and institutional factors and stock market development in emerging markets. Yartey (2008) finds also a non-monotonic relationship between banking sector development and stock market development in emerging market countries.

To deal with the issue of causality, recent research uses instrumental variables to extract the exogenous component of financial development and to assess whether the finance-growth nexus is driven by simultaneity bias. Thus, we need instrumental variables that explain cross-country differences in financial development but are uncorrelated with economic growth beyond their link with financial development. First, there is Levine (1998) study which complements that of Laporta et al. (1998, 1997) by examining the relationship between legal systems and banking development. In the other words, the author examines whether the legal system which is an exogenous component of banking-sector development play a positive role on the stimulation of economic development. He obtains a strong positive

[28] the log GDP per capita in US dollars to measure the income level

[29] gross domestic savings as percentage of GDP and gross domestic investment as a percentage of GDP

[30] value traded as a percentage of GDP

[31] two measures of macroeconomic stability: real interest rate and current inflation

[32] is measured using foreign direct investment as a percentage of GDP and net private capital flows as a percentage of GDP

[33] measures the institutional strength and quality of bureaucracy such that the variable ranges from 0 to 4

[34] refers to corruption in the political system and ranges from 0 to 6. The higher the value of the corruption index the lower the level of corruption

[35] measures how responsive the government is to its people and ranges from 0 to 6

relationship between banking development and both the rights of creditors and the efficiency of contract enforcement. Next, he assesses the link between banks and growth. As a result, the exogenous component of banking development, the legal environment, is positively associated with economic growth. That is, financial development promotes economic growth using the legal origin variable as an instrument for his measures of financial development. Another more recent research which takes also the La Porta et al (1998) measures of legal origin as instrumental variables is that of Levine, Loayza, and Beck (2000). Levine et al. (2000) built on King and Levine (1993) study. Their aim is to examine whether the legal origin variables explain the financial intermediary indicators and hence affect economic growth. According to Levine et al. (2000), the legal origin instruments are highly correlated with financial intermediary development indicators. Thus, there is a very strong connection between the exogenous component of financial intermediary development and long-run economic growth. Finally, La Porta, Lopez-de-Silanes and Shleifer (2002) show whether government ownership of banks is associated with lower financial development and lower growth of per capita income and productivity. To do this, they refer to data on government ownership of banks from 92 countries around the world and construct various measures of government ownership. They find that « government ownership of banks is associated with slower financial and economic development, including in poor countries."

Deidda and Fattouh (2008) examine the relationship between both bank and stock market development (financial institutions) and growth by including an additional interaction term (*Interact*) between the measures of banking (*Bank)* and stock market development (*Tor(*stock market turnover ratio)) such that it equals to: *Interact* = *Bank* ×*Tor*. In addition, they use different instrumental variables (IV) estimation to control for potential simultaneity bias and reverse causality from growth rates to bank and stock market development. Finally, Deidda and Fattouh (2008) get a significant negative interaction effect. In fact, at higher levels of stock market development, the contribution of bank development to long-run growth becomes less positive.

3.2 Panel Studies

The cited cross-country studies typically employ Barro's (1991) regression model and augment it with some financial development indicators. Although efforts have been made by using 2SLS or IV estimators to account for the potential endogeneity of financial variables, this single equation approach does not capture the full interaction between financial development and economic growth. In more recent years, researchers have tried to improve the econometric shortcomings associated with pure cross-sectional studies by taking into account the time dimension and by accounting for other determinants of growth to avoid potential biases induced by omitted variables, correcting for simultaneity. The empirical results of Levine (1999), Beck *et al.* (2000), Levine *et al.* (2000), Rousseau and Wachtel (2000) and Beck and Levine (2004) end to the same conclusion that the measures of financial development have a positive impact on economic growth.

Rousseau and Wachtel (2000) make an important contribution to the literature by using dynamic panel estimation techniques. In fact, in addition to what we have noted above, the panel techniques avoids also biases associated with cross-country regressions by using instrumental variables and GMM dynamic panel estimator and controlling for unobserved country-specific effects. Moreover, it permits the use of instrumental variables for all regressors and thereby provides more precise estimates of the finance-growth relationship. The aim of Rousseau and Wachtel (2000) study is to assess the relationship between stock markets, banks, and growth. They employ M3/GDP to measure bank development and the Levine and Zervos (1998) measures of stock market size and activity, which they deflate by the price index of the national stock exchange to eliminate price changes from their measure of how well the stock market functions. Rousseau and Wachtel (2000) use the difference panel estimator developed by Arellano and Bond (1991) and Holtz-Eakin et al. (1990) and Arellano and Bover (1995). This panel technique differences the growth regression to remove any bias created by unobserved country-specific effects and instruments the right-

hand-side variables (the differenced values of the original regressors) using lagged values of the original regressors to eliminate potential parameter inconsistency arising from simultaneity bias. The authors find that both banking and stock market development explain subsequent growth.

Another recent research uses the GMM system estimator to examine the relationship between financial intermediary development and growth is that of Levine, Loayza, and Beck (2000). Levine et al. (2000) use panel data for 77 countries over the period 1960-1995 which are averaged over seven non-overlapping five-year periods. As a result, they observe a positive relationship between the exogenous component of financial development and economic growth, productivity growth, and capital accumulation.

In a similar vein, Beck, Levine, and Loayza (2000) examine the relationship between financial development and the sources of growth (productivity growth, physical capital accumulation, and savings). They examine also an assortment of indicators of financial intermediary development and use a variety of conditioning information sets to assess the robustness of the results. According to Beck et al (2000), the finance-capital accumulation link is not robust to alternative specifications. However, there is a robust link between financial development indicators and both economic growth and productivity growth.

While Beck et al (2000) and Levine et al. (2000) examine linear models, more recent research suggests that the effect of financial development on capital accumulation, productivity growth, and real per capita GDP growth may depend on other factors. For example, Rioja and Valev (2004a) find by using the same econometric methods and data that finance enhances growth in rich countries primarily by speeding up productivity growth, while finance promotes growth in poorer countries primarily by accelerating capital accumulation.

On the other hand, Beck and Levine (2004) focus on longer-run growth factors. They use the same methodology and refer to data sample for 40 countries and 146 observations such that data are averaged over five 5-year periods between 1976 and 1998. They employ the measures of stock market used by Levine and Zervos (1998) and Rousseau and Wachtel (2000): Value traded and Market capitalization and use Bank credit as a measure of bank development. In addition, the authors include a measure of market liquidity which is *the turnover ratio*[36]. They conclude that the exogenous components of both bank and stock market development have an economically large impact on economic growth.

To study the role of legal institutions, financial deepening and political pluralism on growth rates, Hasan, Wachtel and Zhou (2009) use sub-national data, that is panel for 31 provinces in Mainland China with annual data for 1986-2002. They investigate three facets of institutional development: financial sector development, development of legal institutions and the introduction of political pluralism. Similar to Beck et al. (2000) and Levine et al. (2000), Hasan et al. (2009) employ an augmented GMM procedure outlined in Arellano and Bover (1995) and developed in Blundell and Bond (1998) [two-step system GMM estimations], which combines the regression in differences with the regression in levels (see Bond 2002). As a result, Hasan et al. (2009) show that the institutional development plays a strong role in promoting economic growth. In fact, They find higher growth rates, holding constant a set of standard economic variables, in the regions with more rule of law, more property rights awareness and protections, more active capital markets and a more open political environment.

Kpodar (2005) studies the link between financial development and economic growth in developing countries such that he takes into account the specificity of the Sub-

[36] It indicates the trading volume of the stock market relative to its size and equals to the value of the trades of shares on domestic exchanges/ total value of listed shares.

Saharan African countries. He finds that the marginal impact of financial development on growth is more feeble in Sub-Saharan Africa than in the other developing countries. This is due to the presence of a high level of ethnolinguistic fragmentation, a high number of countries whose banking structure is in permanent crisis, a public interventionism marked in the operation of the financial system, a strong concentration of the banks, and a weak legal environment, in these countries.

3.3 Finance and growth in MENA and South-East Asia regions

In the last decade, Arab and Asian countries achieved significant progress in financial sector reforms such that economic growth is always associated with increasing financial deepening. The aim of this section is to present some studies on this relationship in the Middle East and North Africa (MENA) region and in some South-Eastern Asia countries.

First, Al Karasneh and Bolbol (2006) study the growth and corporate governance implications of market concentration only in the GCC banking sector. According to them, good corporate governance is based on four principles: fairness, transparency, accountability and responsibility. In fact, they argue: "more competition enhances good corporate governance, and in turn good corporate governance strengthens financial systems, and a robust financial and banking system should ultimately benefit economic growth and well-being." To show this, they use data cover 50 GCC banks over the period 1995-2004 and include in the OLS estimators the interaction variable, *Bank Development*Bank Concentration*, to capture the variation of the effect of banking structure at different stages of financial development. As a result, Al Karasneh and Bolbol (2006) find that "bank market concentration seems to have a positive effect on growth in the GCC countries likely because of scale economies, although this effect depends on the level of financial development".

Then, to examine whether financial development leads to economic growth or vice versa in the small open economy of Malaysia, Ang and McKibbin (2007) use

multivariate cointegration techniques and control the various macroeconomic shocks experienced by this country. After referring to time series data from 1960 to 2001, the authors find "that both financial repressionist policies and real interest rates affect financial deepening negatively". From the comparison of the results of Malaysia with the experiences of other countries, Ang and McKibbin (2007) argue that " for countries with financial repression works positively on financial development, the finance-growth nexus is likely to be a bi-directional one. However, if financial repression is harmful for the development in the financial system, then a finance-led growth seems unlikely."

Finally, Abu-Bader and Abu-Qarn (2008) examine the causal relationship between financial development and growth for six Middle Eastern and North African (MENA) countries[37] for the past five decades, within a quadvariate vector autoregressive framework. The authors use various financial measures and include the investment/GDP ratio to determine whether financial development affects economic growth through enhancing efficiency or indirectly by increasing resources for investments. They obtain results that show strong evidence for unidirectional causality running from financial development to economic growth. Accordingly, this causality ran through enhancing investment efficiency rather than through enhancing capital accumulation.

3.4 Islamic Finance and Economic Growth

Most of the previous studies on IF-economic growth nexus focus only on the local level and it is difficult to generalize their results (El-Galfy and Khiyar (2012)). These studies demonstrate a positive impact of Islamic banking on a country's economic growth (such as Furqani and Mulyany (2009), Abduh and Chowdhury (2012), Abduh

[37] Algeria, Egypt, Morocco, Syria, Tunisia,…

and Omar (2012), Tabash and Dankhar (2014), Hachicha and Ben Amar (2015) and Kalim et al. (2016)).

There are a few studies that examine empirically the relationship between Islamic banking and macroeconomic growth. Ammar et al. (2013) whose results are presented in the following section were the first to do it. Gheeraert and Weill (2015) focus also on the link between Islamic banking development and macroeconomic efficiency. They refer to the stochastic frontier approach in order to estimate technical efficiency. The authors assess then the relatioship between the inefficiency of each country and Islamic banking development. Contrarily to its counterpart, Islamic banking development has a positive impact on efficiency. However, this effect is related to a certain development level and is observed since IB development is assessed by means of the importance of credit or deposits. In their study, Gheeraert and Weill (2015) consider only the years 2000-2005 and do not include the recent period particularly that of the financial crisis. This would influence negatively the obtained results since, during the last period, Islamic banking is changed considerabely.

Contrarily to the latter study, Imam and Kpodar (2015) concentrate on Islamic banking development - economic growth nexus by using data during the period 1990-2010. They use the following indicators in order to assess Islamic banking development: Loans by IBs to GDP, IBs assets to GDP, IBs deposits to GDP and an Islamic banking composit indicator (loans extended by IBs to the private sector/ nominal GDP). The authors use pooling and fixed effect and GMM regressions in order to evaluate this nexus. Imam and Kpodar (2015) find that although IBs development has a positive effect on growth, this system still provides less "bang for the buck" than conventional banks. Nevertheless, the authors call for future studies that confirm these results and eliminate the uncertainities related to this effect.

4. Islamic finance, growth driver: empirical verification[38]

In line with Schumpeter (1911), literature intensively discussed the Conventional finance role as macroeconomic growth source. However, Islamic banks cannot create credit *ex-nihilo* as conventional commercial bank, have not an interbank market, still have a limited size; and have not the same attributes as their counterparts. Can we hence affirm that these banks contribute to the macroeconomic dynamic of their host countries' growth?

4.1 Methodology

4.1.1 Sample

Our analysis focuses on a panel of aggregated banks' balance sheets by country. The sample contains 15 countries (Bahrain, United Arab Emirates, Jordan, Kuwait, Qatar, Saudi Arabia, Bangladesh, Indonesia, Malaysia, Pakistan, Turkey, Egypt, Iran, Sudan and Yemen). This study covers the period from 1990 to 2009. This period is divided in five successive sub-periods (1990-1993, 1994-1997, 1998-2001, 2002-2005 and 2006-2009), equivalent to 5 observations by country. This allows to focus on long-term relationship between the development of Islamic finance and economic growth. In total, we have 75 observations[39]. Therefore, our sample is composed from aggregated data by country and deals exclusively with Islamic Banks. The different variables are provided from the database of Islamic Banks and Financial Institutions (IBIS[40]) for

[38] The results of this work are published in the paper: Ammar Ayachi R., Ben Slama M. and Saidane D. (2013), "La Pratique Actuelle Des Banques Islamiques Favorise-t-elle La Croissance ?", Etudes en Economie Islamique, 6 (1/2), pp. 57–82.

[39] In our study, we exploited IBIS database (Islamic Banks and Financial Institutions Information). That is a portal which is designated at the community of researchers and finance professionals working in the area of Islamic economics and finance. It is an IRTI's portal (Islamic Research and Training Institute). It provides detailed data and information on the activities of Islamic finance institutions. The historic of available data is since 1990.

[40] www. ibisonline.net

data on the Islamic financial system, and the World Bank database and International Monetary Fund for the macroeconomic data (cf. Appendix of the Chapter III).

4.1.2 Definitions and measures of variables

There are three types of variables that are introduced in our model. First, the growth variable which is the dependent variable in the model. Then, there are the indicators of financial development. Finally, we introduce a matrix of conditional information to control the variables that affect economic growth in the long term.

4.1.2.1 Growth Indicator

We choose as an indicator of economic growth the *logarithm of real GDP per capita* (Levine et al. (2000), Beck et al. (2000) and Beck and Levine (2004)).

4.1.2.2 Financial Development Indicators

Due to the absence of data, we propose only the following indicators:

Depth (Depth): This variable is given by King and Levine (1993a, b). Several authors including King and Levine (1993a, b), Levine et al. (2000), Kpodar (2005) identify a significant correlation between financial depth and economic growth. To measure financial depth these authors use the aggregate M3 corresponding to financial system liquid liabilities divided by GDP. Indeed, money supply (currency + demand + Interest-cost banking and non-bank) is essentially related to the ability of the financial system to provide liquidity. Literature shows that the size of the financial sector is positively correlated with the provision of financial services. In addition, the depth of the financial sector is a good indicator of the rate of economic growth. For our part, we use the aggregate M3/PIB provided by IBIS database for our Islamic Banks sample. This measure constitute an indicator of Islamic finance development and include the liquid liabilities of the selected Islamic Banks.

Islamic financing (Finis / GDP): In their 1998 study, Levine and Zervos add the measure of banking sector development (bank credit) to the cross-sectional studies of growth. According to these authors, this measure is equal to bank credit in the private sector divided by GDP in 1976 or the most recent date. Several authors, including Levine and Zervos (1998), Rousseau and Wachtel (2000), Beck and Levine (2004) show that the level of banking sector development is significantly and positively correlated with subsequent growth rates. The authors have emphasized the important role of detail activities in stimulating economic growth.

In our study, we use the total value of Islamic financing that meets Islamic requirements instead of bank credit which is based on the interest rate (Islamic Financing / GDP). The total value of this financing is equal to the sum of the following operations: Qard Hasan, Murabaha, Ijarah, Moudharaba, Musharaka, Salam, Istisna.

Investment to GDP (Invest / GDP): Abu-Bader and Abu-Qarn (2008) include the investment ratio to GDP to determine whether financial development affects economic growth by improving efficiency or indirectly by increasing investment resources. They obtain results that show strong evidence of unidirectional causality from financial development to economic growth. Therefore, this causality is passed through improving the efficiency of investment rather than improving the capital accumulation.

In our study, we measure the investment level via the volume of global banking activity translated by retail and wholesale activities[41]. This variable translates the

[41] In accordance with universality, the bank can develop several trades. In this study, we will distinguish between the intermediation oriented retail business and trades which include the CIB (Corporate and Investment Banking operations) and asset management named « Wholesale Banking ». In other terms, we will distinguish between retail activities (traditional) which consists of transforming deposits to loans and wholesale operation (non-traditional).

financial development measured not only by retail activity but also by the banking activity which is addressed to corporates.

4.1.2.3 Control Variables

We selected as control variables for this work the ratio of government consumption/GDP *(Government consumption)* as an indicator of macroeconomic stability (Easterly and Robelo (1993) and Fisher (1993)), the ratio of trade openness (export + import)/GDP *(Trade openness)* to capture the degree of openness (Sachs and Warver (1995)), the rate of inflation *(Inflation),* the logarithm of initial inscription in school to control the accumulation of human capital *(Education).*

4.1.3 The Model

In our study, we refer to the methodology of Beck and Levine (2004). Thus, to measure the impact of Islamic financial development on economic growth, we use the generalized method of moments (GMM) developed for dynamic panel models Holtz-Eakin et al. (1990), Arellano and Bond (1991) and Arellano and Bover (1995). The estimated model is as follows:

$$ly_{i,t} - ly_{i,t-1} = \alpha ly_{i,t-1} + \beta' X_{i,t} + u_i + e_{it} \text{ ; i = 1, ..., N, t = 1, ..., T} \quad (1)$$

Where $ly_{i,t}$ represents the log of GDP per capita, $X_{i,t}$ represents the vector of explanatory variables including indicators of financial development measured by the variables *Depth, Finis / GDP* and *invest / GDP,* u_i is the specific effect to each country which is unobservable, and e_{it} is the error term. i and t represent respectively the countries index and time index (five four-year subperiods). We introduce a temporal dummy variable to control the time specific effect.

Arellano and Bond (1991) propose an application of the generalized method of moments (GMM)[42] using all conditions of orthogonally that exist between the lagged endogenous variable and the error term. The advantage of this method for the analysis of growth lies in the correct treatment of the problem with correlated individual effects and the possibility to take into account the potential endogeneity of explanatory variables. Arellano and Bond (1991) propose to differentiate the equation (1):

$$(ly_{i,t} - ly_{i,t-1}) - (ly_{i,t-1} - ly_{i,t-2}) = \alpha(ly_{i,t-1} - ly_{i,t-2}) + \beta'(X_{i,t} - X_{i,t-1}) + (e_{it} - e_{it-1}) \quad (2)$$

Indeed, although this transformation enables to eliminate the endogeneity related to the unobserved country specific effect, it introduces, from now on, a new bias of endogeneity since the new error term $(e_{it} - e_{it-1})$ is correlated with the lagged dependent variable $(ly_{i,t-1} - ly_{i,t-2})$. Under the hypothesis the error term, e, is not serially correlated and the explicative variables, X, are weakly exogenous, Arellano and Bond (1991) propose to apply the following moment conditions:

$$E[ly_{i,t-s}(e_{it} - e_{i,t-1}) = 0 \quad \text{For} \quad t = 3, \ldots \ldots .., T \quad (3)$$

$$E[X_{i,t-s}(e_{it} - e_{i,t-1}) = 0 \quad \text{For} \quad t = 3, \ldots \ldots .., T \quad (4)$$

The first difference GMM estimator of Arellano and Bond (1991) is taken for each period of the first difference of the estimated equation to eliminate the country specific effects and then to instrument the explanatory variables of the first difference equation by their level lagged values of a period or more.

[42] Using the GMM dynamic panel can provide solutions to the problems of simultaneity bias, reverse causality and omitted variables. A dynamic model is a model in which one or more lags of the dependent variable appear as explanatory variables. Unlike the GMM dynamic panel, standard econometric techniques such as OLS does not provide efficient estimates of such a model because of the presence of the lagged dependent variable in the equation right.

The GMM estimator at the second difference is obtained by adopting an estimation method in two stages. In the first stage, the error terms are supposed to be independent and homoscedastic both between countries and over time. The residues retained from the first stage are used at the second stage to construct a consistent estimate of the variance-covariance matrix and hence to soften independence and homoscedasticity hypotheses. Thus, the second step estimator is asymptotically more efficient relatively to the estimator of the first stage. However, there exists conceptual and statistical problems lied to this estimator in difference. Conceptually, we would like study the link between Islamic financial sector development and economic growth, in the various countries. Yet, this differentiation in level eliminates the inter-countries variations and takes into account only intra-countries variations. Statistically, Blundell and Bond (1998) show that, in case of persistent variables in time, the lagged values of these variables are weak instruments of the first difference equation. This influences the asymptotic and in finished sample performance of the MMG estimator in difference. Therefore, the variance of these estimator coefficients increase.

According Blundell and Bond (1998), in the case of small samples (as ours), the Monte Carlo simulations show that the weakness of these instruments may provide biased coefficients. The differentiation can therefore absorb the bias caused by the errors of variables measure by diminishing the ratio signal to noise. Thus, to reduce this bias, we use the GMM estimator in system that combines in one system a regression in difference and a regression at level (Arellano and Bover (1995) and Blundell and Bond (1998)). Accordingly, additional moment conditions are used by supposing that explanatory variables are stationary:

$$E\left[(ly_{i,t-s} - ly_{i,t-s-1})(u_i + e_{it})\right] = 0, \text{ for } s=1 \qquad (5)$$

$$E\left[(X_{i,t-s} - X_{i,t-s-1})(u_i + e_{it})\right] = 0, \text{ for } s=1 \qquad (6)$$

This GMM estimator in system is thus the most suited to our empirical study, given that our sample is quite small especially when we estimate our model with the following parameters: N = 15 and T = 5. Finally, we use a Sargan / Hansan test of over-identification that tests the validity of lagged variables as instruments, and the autocorrelation test of Arellano and Bond (1995) where the null hypothesis is the absence of second order serially correlation of the equation in difference errors.

4.2 Results and interpretations

4.2.1 Descriptive study

Descriptive statistics are recapitulated in Table 4.2. The results show a large dispersal as regards the financial development variables *(Depth, Finis / GDP* and *invest / GDP)*. These variables record lower limits almost null. This result indicates a certain weakness for the level of development of Islamic finance for certain countries. Indeed, Indonesia records the lowest level of the Islamic financial depth for the period 1990-1993. For its part, Turkey has the lowest level regarding the variable *Finis / GDP* between 1990 and 1993. In addition, Pakistan has the lowest ratio, invest/GDP, during the period 1994 – 1997.

Table 4.2: Descriptive Statistics

Variable	Observations	Average	Standard deviation	Min	Max
Log GDP per capita	75	7.953	1.533	4,516	11.174
Depth	70	1.095	4.014	0,000058	27.248
Finis/PIB	69	0. 121	0. 377	0.000026	3.081
Invest/PIB	68	0. 439	1.536	0.000000812	9.845

During the period 1998-2001, the financial depth indicator *(Depth)* has the maximum value in Malaysia with a percentage equal to 3.82%. However, during other periods, Islamic financial deepening (*Depth)* in Malaysia is very low. This is due to the importance of the ratios M3/GDP in 2000 and 2001 respectively equal to 5.94% and 9.35%. Whereas, the liquid liabilities ratios of Malaysian Islamic Banks *(Depth)* are very important during these two years, the growth indicator (log (GDP per capita))

decreases from 8.3 in 2000 to 8.26 in 2001. Similarly, the investment to GDP ratio is 17.58% in 2000 and 21.77% in 2001. This leads us to have a higher ratio of investment in Malaysia compared to other countries during the period 1998-2001.

On the other hand, the correlation matrix in Table 2.3 indicates a weak correlation between the dependent variable (log GDP per capita) and financial development variables. However, we register a little high level of correlation for the couple: *Depth* and *Invest/GDP*.

Table 4.3: Correlation Matrix

Variable	Log GDP per capita	Depth	Finis/GDP	Invest/GDP
Log GDP per capita	1			
Depth	0.063	1		
Finis/GDP	-0.019	0.479	1	
Invest/GDP	0.165	0.854	0.438	1

4.2.2 Estimation

The estimation results according to the approach of Arellano and Bover (1995) and Blundell and Bond (1998) are shown in Table 4.4. We have made three estimates by introducing each time a control variable in our model to reduce the number of instruments for dynamic panel data in the presence of a very small number of observations (Beck and Levine (2004)).

Table 4.4: Estimation with Arellano and Bover (1995) / Blundell and Bond (1998) approaches

Dependent Variable: Log (GDP per capita)

Regressors	(1)	(2)	(3)
Depth [b]	-0,3619 [0,541] (0,655)	-0,7672* [0,093] (0,868)	-0,5264 [0,259] (0,983)
Invest/GDP [b]	0,3323 [0,594] (0,646)	0,7820 * [0,082] (0,822)	0,4865 [0,308] (0,993)
Finis/GDP [b]	0,2176*** [0,001] (0,654)	0,2661*** [0,000] (0,031)	0,2436*** [0,000] (0,034)
Initial GDP per capita	1,1623*** [0,000] (0,000)	0,9595*** [0,000] (0,282)	0,9309*** [0,001] (0,394)
Education [a]	-0,3241 [0,732] (0,272)	-0,0004 [1,000] (0,860)	0,4040 [0,432] (0,854)
Trade openness [b]	-0,0444 [0.958] (0.042)		
Inflation [a]		2,196*** [0,060] (0,340)	
Government consumption[b]			-0,6597*** [0,000] (0,559)
Constant	-0,2350 [0,893] (0,011)	2,0176 [0,345] (0,330)	0,7814 [0,757] (0,094)
Sargan test [c]	0,2489	0,6084	0,5659
Serial correlation test: AR(2) [d]	0,4039	0,2957	0,3938
Wald test	0.000	0.000	0.000
Number of countries	15	15	15
Number of observations	45	45	45

P-values of the two-stage estimation are between [ ] and that of one step estimation are in ( ).

The regressions also include dummies variables of different periods which are not reported in the table.

*, **, *** Indicate significance respectively at a threshold of 10%, 5% and 1% for the two-stage estimation.

[a] In the regression, this variable is included as log(1+variable).

[b] In the regression, this variable is included as log(variable).

[c] The null hypothesis is that the used instruments are not correlated with the residuals.

[d] The null hypothesis : the errors in the first-difference regression do not represent second-order correlation

Our model verifies the impact of Islamic financial development on economic growth. The financial development is measured by three variables, namely: *Depth, Finis / GDP* and *invest / GDP*. According to our estimation, *Depth* and *Finis / GDP* are statistically significant. The depth of Islamic finance *(Depth)* measured by the ratio M3/GDP has a negative sign in all estimates. **An improvement by a point of percentage of M3/GDP ratio would lead to a decrease of the growth rate by 0.767 %.** Therefore, Islamic financial deepening has a negative impact on economic growth, but it is very low. This reflects the severity of liquidity problem in Islamic banking sector. Although this result is not expected, it can be explained by the fact that financial deepening, measured by the increase in money supply in the presence of an unfavourable environment to Islamic finance , generates without doubt an increasing of financial and operational costs (eg infrastructure costs). Islamic banks operate probably in an area of increasing returns to scale. According to Abbas and Mirakhor (2011), the main causes of Islamic banking liquidity are the following:

- the limited availability of the Shariah-compatible money market and intra-bank market,
- the limited number of Shariah-compliant financial instruments in the secondary market,
- the availability of only interest based channels for liquidity management
- The complication of certain features of some Islamic financial instruments such as Murabaha.
- The importance of IBs demand deposits that can be retired anytime.

Due to the lack of liquidity in the medium and long term, IBs could not invest in longer maturities and are unable to supply long term investment opportunities (for more details see Abbas and Mirakhor (2011)). This implies that Islamic financial system is not yet mature. The costs of financial arrangements, which are very high, are diluted to a small clientele. In this case, financial deepening is not efficient.

According to literature, investment is a source of economic growth because it makes the Human labor more efficient. However, the inefficient investment may reduce growth. The results found in Table 4.4 let us reject the hypothesis that investment via Islamic banking sector has a negative impact on economic growth. Indeed, the variable *Invest/GDB* is significant at a threshold of 10% and its coefficient has a positive sign. That is, an increase of Investment/ GDP ratio by 1% would lead to an increase of growth rate by 0.782 %. Similarly, the Islamic financial indicator (*Finis / GDP)* is significant at the level of 1% and with a positive sign. Therefore, the development of the Islamic financial activity has a positive impact on growth. Nevertheless, the coefficient of this Islamic financial indicator which is equal to the maximum of 0.266 is less than 1. In other words, **an increase of one percentage point of the Islamic financial share in the GDP would lead only to an additional economic growth of 0.266 %.**

The two financial development measures based on both retail and corporate activities have a positive and significant impact on economic growth. Nonetheless, being a measure of global Islamic banking activity, *Invest/GDB* has the highest marginal effect. Although there is a positive effect on growth, this impact is still feeble. This might be a consequence of the partial or truncated application of Islamic financing modes and instruments in the studied countries. In addition, this banking sub-sector is relatively isolated. This would affect the measured economic performances. This result does not coincide with that of Beck and Levine (2004) who studied the impact of financial development in general on economic growth. In fact, the variable of *Bank Credit*, which is similar to our variable of Islamic finance, is statistically and economically significant. These authors' regression coefficients, that are very high compared to those of Islamic financing, are in most cases larger than 1. This explains the important role played by the banking sector development in improving economic growth. Comparing this result with ours, we can explain this phenomenon by the fact that **conventional finance dominates our economic system. It has, at the moment, a more interesting impact on economic growth than Islamic**

finance. This limited effect on growth can be a consequence of the Islamic financial system immaturity. Indeed, the failure of Islamic banking sector in the studied countries, may be explained by the following two elements:

- Quantitatively, in the vast majority of countries, this subsector is clearly minority and moreover the institutions do not attain the critical size which might explain the cost concentration on a small customer base.

- Qualitatively, the effect of this subsector on country's growth indicator is seriously "parasitized" by the existence of other contributors to growth that are conventional banks.

The results shown in Table 4.4 sustain therefore the hypothesis that Islamic finance have not a growth role according to Schumpeter. It is a finance that does not amortize the functioning costs of the emerging Islamic financial industry. Regarding the control variables, *initial GDP per capita, Inflation* and *Government expenses*, they are significant and their signs are their signs are consistent with theoretical predictions. The variables *Education* and *Trade openness* are not significant in any regression. The sign of the *trade openness* variable is negative (-0.210) but it does not seem to hamper growth in the studied countries. Moreover, for all regressions, the tests related to the GMM estimator are all conclusive. The Sargan test (p = 0.7) can not reject the hypothesis of the lagged variables validity in terms of levels and differences as instruments. As for as, the autocorrelation test, it does not reject the hypothesis of no second order serially correlation.

In Table 4.5, we find the estimation results in difference according to the GMM approach of Arellano and Bond (1991). These results are similar to those of the first table (Table 4.4). In fact, according to the first column the variable *Depth* is significant at 1% with a negative coefficient (-0,718). The Variable *Finis / GDP* is always significant at a threshold of 5% with coefficients that are less than 1. Indeed, the coefficient of Islamic financing is equal to the maximum of 0.234 *(cf.* Column 3).

Table 4.5:Estimation by the approach of Arellano and Bond (1991)

Dependent Variable: Log (GDP per capita)

Regressors	(1)	(2)	(3)
Depth [b]	-0,4678**	-0,5541**	-0,7180***
	[0,016]	[0,022]	[0,008]
	(0,603)	(0,410)	(0,230)
Invest/GDP [b]	0,4767**	0,6171**	0,7407***
	[0,021]	[0,016]	[0,008]
	(0,601)	(0,394)	(0,230)
Finis/GDP [b]	0,1028	0,1612	0,2345**
	[0,295]	[0,407]	[0,039]
	(0,064)	(0,014)	(0,008)
Initial GDP per capita	1,6082***	1,2679***	0,8839**
	[0,000]	[0,006]	[0,017]
	(0,000)	(0,000)	(0,001)
Education [a]	0,3405	0,0111	0,4534**
	[0,602]	[0,983]	[0,023]
	(0,851)	(0,836)	(0,454)
Trade openness [b]	-0,5947		
	[0.309]		
	(0.206)		
Inflation [a]		0,9967**	
		[0,015]	
		(0,240)	
Government consumption[b]			-0,5917***
			[0,000]
			(0,042)
Constant	-3,8767*	-0,8738	1,6528
	[0,093]	[0,845]	[0,606]
	(0,008)	(0,755)	(0,453)
Sargan test [c]	0,4013	0,3560	0,3638
Serial correlation test: AR(2) [d]	0,2925	0,3604	0,1448
Wald test	0.000	0.000	0.000
Number of countries	15	15	15
Number of observations	45	45	45

P-values of the two-stage estimation are between [ ] and that of one step estimation are in ( ).

The regressions also include dummies variables of different periods which are not reported in the table.

*, **, *** Indicate significance respectively at a threshold of 10%, 5% and 1% for the two-stage estimation.

[a] In the regression, this variable is included as log(1+variable).

[b] In the regression, this variable is included as log(variable).

[c] The null hypothesis is that the used instruments are not correlated with the residuals.

[d] The null hypothesis : the errors in the first-difference regression do not represent second-order correlation

Regarding the control variables from Table 4.5, *inflation* and *Government consumption* are significant. The results show that a decrease of government consumption by one percentage point would increase growth by 0.592 percentage point. Similarly, an increase of inflation rate by one percentage point would increase growth by 0.997 percentage point.

5. Conclusion

In our study, we attempted to examine the role of Islamic finance via the banking activity practice as the engine of macroeconomic growth. Based on a sample of 15 countries observed in five successive sub-periods of four years from 1990 to 2009, we estimated the dynamic panel model approach by Arellano and Bover (1995) / Blundell and Bond (1998).

According to our estimation, the three variables measuring the development of Islamic finance *(Depth* , *Invest/GDB* and *Finis / GDP)* are statistically significant. The depth of Islamic finance *(Depth)* measured by the ratio M3/GDP has a negative sign. This reflects the fact that financial deepening, measured by the increase of money supply in the presence of an unfavourable environment, cannot be efficient. On the other hand, the Islamic financing *(Finis / GDP)* and Investment (*Invest/GDB)* have a positive sign. Both of these indicators have a positive impact on economic growth. The values of coefficients associated with these variables (in all cases are less than 0.8) do not validate the assumption that Islamic finance plays an important role as a driver of growth in the Schumpeterian sense. In other words, the business conditions of Islamic banks in the host countries cannot establish a relationship between Islamic finance development and economic growth through Schumpeterian hypotheses which concern an internal and coherent banking system for a given country. Moreover, the effect of this subsector on country's growth indicator is seriously "parasitized" by the existence of other contributors to growth that are conventional banks. This limited effect on growth may be a consequence of the Islamic financial system immaturity. As Zaher and Hassan (2001)) note, the size is indeed one of the

key challenges facing Islamic banks over the next years in order to better improve their competitiveness. This limited size does not foster returns to scale. On the contrary, it generates an increasing of banking costs. These costs are diluted to a small customer base. There remains also the monetary creation issue which is still embryonic in the academic works. This latter aspect which is macro-monetary in nature constitutes without doubt one of the points that should be clarified by more extensive studies. We think indeed that the driver role of Islamic finance and its real and positive impact on macroeconomic growth need to be strengthened by measures and a process of an impulse monetary policy through a common action of Islamic countries' Central banks. This action would help in particular strengthening the size of this evolving banking industry.

Chapter V

Sustainability at microeconomic level:
An Islamic Banking Sustainable Performance Index

1. Introduction

Nowadays, the world begins realizing the existence of Islamic banks (IBs) especially it has better survived than Conventional Banks facing thus the global financial crisis. This has prompted several researchers to study the performance of IBs. However, most of previous research efforts on the Islamic banking performance adopt solely shareholders' points of views in their assessment. Recently, a small number of studies propose to evaluate IB performance in the light of Maqasid al-Shariah. It is obvious that both points of views (shareholders' and Shariah Advisers' ones) are necessary but not sufficient. Indeed, as indicated by Freeman (1984), ignoring the interests of a particular stakeholder for a given company may be harmful for its wellbeing. This suggests rethinking about the development of a more adequate performance evaluation process. Specifically, it becomes crucial to design a system that allows Islamic banks to control, monitor and continuously point-out lacks and rooms for improvement while being in coherence with the Shariah objectives.

The main purpose of this chapter is to study the sustainability of Islamic banking at the microeconomic level. to do this, a performance evaluation model keeping track of IB the features is developed. The specific objectives of this chapter are:

- developing a model enabling the evaluation of an IB performance while considering both the satisfaction degree of its main involved parties and the accomplishment degree of the Shariah objectives.
- identifying the main stakeholders of an IB as well as suggesting a list of relevant indicators to assess the performance with respect to each stakeholder and to *Maqasid Al-Shariah*.
- developing an overall index by aggregating all appraised performance scores using multi-attribute utility theory. This suggested index is baptized Shariah-Compliant Performance Index (SCPI).
- deriving some discussions and conclusions particularly concerning the accordance of used financing techniques and the adopted economic policy.

2. Literature Review

Performance assessment is a key tool to evaluate the success of any business including banking. That is why; a great interest has been devoted to the analysis of financial institutions performance. Accordingly, many methodologies have been used. Each of these methods has its specific strengths and weaknesses (Wu (2012), Rebai (2014), and Rebai et al., 2016). The early related studies restrict the assessment of performance to only financial measures and have neglected non-financial ones. To remedy to this weakness, some contemporary performance methodologies involving in particular the use of both financial and non-financial measures have appeared.

Studies related to IBs performance evaluation may be classified in two main streams. The first one adopting Ismail's framework (such as Yudistira (2004), Akhter et al. (2011), Ansari and Rehman (2011), Hanif et al (2012), Siraj and Pallai (2012), Erol et al (2013) and Rosman et al. (2013)) considers IB as a commercial entity carrying out business in conformity with Shariah (Lewis and Algaud (2001) and Satkunasegaran (2003)). This view assumes that IB should respond to the Shariah principles and not necessarily to all Shariah objectives. It supposes in particular that other institutions have the mission to achieve some of them. For instance, the government shall contribute to the social welfare. Almost all IB-performance-evaluation studies assuming Ismail's framework use only financial benchmark as the sole performance measure. Such evaluation could encourage managers to take short-term actions while they ignore long-term plans. Moreover, it fails to identify and integrate all factors that are critical in contributing to business excellence as affirmed by Hasan (2004) and Valiris et al. (2005). In addition, this evolution would give erroneous present and future decisions and would fall short in reaching *Maqasid Al-Shariah*.

The second trend based on Chapra's model views IB as an institution which is not only profit oriented, but it is has also to seek the promotion of Islamic norms and values as well as the protection of the Islamic society's needs as a whole (see for example, Siddiqui (1983, 1985), Chapra (1985, 1992, 2000), Ahmad (2000), Rosly and

Bakar (2003), Naqvi (2003), Asutay (2012), Basah and Yusuf (2013)). In other words, according to this view IB tries to fulfill all Shariah objectives (Maqasid Al Shariah) by promoting social welfare programs and activities, alleviating poverty, and reducing social inequalities without ignoring its commercial viability. Nevertheless, a few serious attempts have been done to evaluate IB performance only in the light of Maqasid Al-Shariah. All these studies develop a multi-dimensional performance evaluation using many indicators relative to Shariah objectives.

Kuppusamy et al. (2010) develop a system using several measures in order to show that both profitability and Shariah conformity could be reached simultaneously. For their part, Hameed et al. (2004) develop an index called "Islamicity disclosure index" to examine how well the organization is disclosing the information published in annual reports. This index consists in three key indicators: Shariah compliance, corporate governance and social/environment. They also talk about developing another index which is named "Performance Islamicity index" by only discussing seven related ratios.

Furthermore, by referring to Abu Zahrah's and Al Ghazali's theories and by adopting the Simple Additive Weighting Method, Mohammed et al. (2008) build an index to evaluate the fulfillment of Shariah objectives baptized Maqasid Index (Hwang and Yoon (1981)). Specifically, in their assessment, the authors consider only two of Abu-Zahrah's objectives: 'Educating individual' and 'Promoting welfare'. While adopting the same methodology, Mohammed and Mohd Taib (2010) improve the last study by introducing the third Abu-Zahrah's objective: 'Establishing justice'. Maqasid index has been also applied by Antonio et al. (2012) to assess Islamic banking industries performance in Indonesia and Jordan.

All these previous studies consider either shareholders' value maximization or Maqasid Al-Shariah index as the only main indicators of an IB performance. The first type of studies mainly states that a well-performing IB is one which makes large profits. This means that an IB is successful if its shareholders are amply satisfied.

However, the second type of studies assumes that a well-performing IB is one which has its activities in line with the Shariah requirements.

As we know, only Ngalim and Ismail (2014) and Hameed et al. (2004) discuss the necessity to take into account more than one facet to evaluate an IB performance. Indeed, Ngalim and Ismail (2014) specifically argue the importance of considering both conventional and Shariah-compliant measures in the evaluation of an IB's performance. This is justified by the fact that an IB is considered as both a business entity and a tool of Shariah. The authors suggest some instructions on developing a list of indicators including measures which point out the intermediation function of an IB. Similarly, Hameed et al. (2004) argue the need to introduce various sides in the assessment of an IB performance in which they consider its main stakeholders' points of view. In particular, they take into account the Shariah side through the adoption of Shariah adviser as one among main IB stakeholders.

Nevertheless, none of all these studies clearly discusses how to balance multiple criteria and no thoughtful effort has been made to develop an index to appraise an IB performance with a global score that incorporates both Shariah-compliant measures and the main banks' stakeholders perceptions. This shortage has motivated us to propose in the rest of this chapter a new performance evaluation system for Islamic banks integrating Shariah objectives and stakeholders' points of views.

3. Structure of the model

As revealed previously, our purposal with this model is to provide an evaluation of both the accomplishment degree of the *Shariah* objectives as well as the satisfaction degree of each main *IBs* involved parties adopting a multi-attribute utility approach. To accomplish this, we first introduce the main recognized *Shariah* objectives and then we discuss the foremost stakeholders of an *IB* while suggesting a list of relevant criteria and sub-criteria for each of the selected stakeholders.

3.1 Maqasid Al-Shariah

Many researchers such as Bourkhis and Nabi (2013) argue that, in practice, *IBs* lose their distinctive features and tend to resemble their conventional counterparts. These *IBs* are mimicking the commercial strategies of conventional banks and diverging from their business model. To better assess the performance of *IBs* by confirming or infirming this point of view, we need to identify the objectives of *IBs* from the relevant literature related to the theory of Islamic law objectives or *Maqasid Al-Shariah*.

The conception of *Maqasid Al-Shariah* was first developed by Al-Ghazali (d.1111/1997) pointing out that they consist on promoting "*the well-being of all mankind which lies in safeguarding their faith (ad-din), their lives (an-nafs), their intellect (al-aql), their posterity (an-nasl) and their wealth (al-mal)*". The most significant development of *Maqasid Al-Shariah* theory occurred after two centuries through the works of Al-Shatibi (d.1388) and Ibn Taymiyyah (d.1328) (Al-Raysuni (1992)). Then in 1945, a renewed interest in these objectives began with Ibn Ashur (1945)'s study.

However, although most scholars strike a deal on the general objectives of the *Shariah* that are to promote welfare (*Jalb al-Masalih*) and avoid vices (*Dar al-Mafasid*) (Ibn Ashur (1945/1998)), some of them differ in their specific objectives classification. Indeed, according to Ibn Ashur, these objectives include the preservation of order, the promotion of human welfare, the prevention of corruption, the establishment of justice, and maintaining stability and harmony (Mohammed et al (2008)). However, Abu Zaharah (1958) argues that these specific objectives should include *Tahdhib al-Fard* (*Educating the individual*), *Iqamat al-Adl* (*Establishing justice*) and *Jalb al-Maslahah* (*Promoting Welfare*).

3.2 Suggested stakeholders

The review of the literature shows a small number of studies (Hempel et al. (1994), Garcia-Cestona and Surroca (2008), Dusuki (2005, 2008), Avkiran and Morita (2010),

Rebai et al. (2012) and Rebai (2014)) that discuss the concept of stakeholders in the banking context. Hempel et al. (1994) identify four groups: surplus units, deficit units, owners and regulators. Garcia-Cestona and Surroca (2008) recognize also four social groups as a saving bank stakeholders: depositors, employees, founder entities, and public administrations. For his part, Dusuki (2005, 2008) adopts seven stakeholder groups: customers, depositors, local communities, managers, employees, regulators and *Shariah* advisers. Whereas, Rebai et al. (2012) and Rebai (2014) specify six involved parties: Regulators, Consumers, Managers, Employees, Civil Society and Shareholders. However, only Dusuki (2005, 2008) analyses the stakeholder concept from an *IB* framework, while all the other authors discuss this concept within conventional banking context.

Although, the broadest classifications are those given by Dusuki and Rebai ones', they differ in two points. First, an additional stakeholder, the *Shariah* advisers, is introduced in Dusuki classification. The *Shariah* advisers are defined as *Shariah* experts who are appointed to sit in the *Shariah* Advisory Councils for an *IB*. Second, Dusuki's classification considers the Local communities as a stakeholder whereas Rebai's one uses civil society as a wider-ranging concept. In fact, the Local communities include only people who do not have any direct banking relationship with the considered *IB*. While, the civil society embraces all individuals, non-governmental organizations, and institutions that manifest interests and will of citizens. Since one among main objectives of this model is to take into account *Maqasid Al-Shariah*; namely, the social goals, in the performance evaluation of an *IB*, we believe that the civil society concept is more adequate to reach this purpose. Accordingly, in the following, we propose to enlarge Rebai's classification by adding *Shariah* advisers as a specific stakeholder for *IBs*.

3.1.1 Regulators

The regulation aims to protect the financial system users and to ensure the stability and the integrity of this system as a whole. For this reason, regulators (such as

Central Bank) should impose some prudential norms and think about the degrees of risk monitoring as a fundamental measure of banks' performance. In this study, we will focus on the following three major risk categories: *liquidity risk, Insolvency risk,* and *credit risk*.

3.1.1.1 Liquidity risk (LR)

LR is the risk that the bank may be unable to meet its short-term financial demand. In other words, this type of risk arises due to the uncertainties associated with converting a security or assets into a medium of exchange without a loss of capital and/or income in the process. This amount of liquid asset has to be bigger than resources of the same duration.

Note that *LR* needs to be controlled more closely for *IBs* compared to its conventional counterparts since the sale of liabilities beyond their nominal value is prohibited by the *Shariah*, which explains the importance of considering this kind of risk in *IBs* performance evaluation. To evaluate LR, we propose the following three ratios:

- *Liquid assets to Deposits and short term funding Ratio (LADSF):* This is a deposit run off ratio. It shows what percentage of customer deposits and short-term funds can be met if they are withdrawn suddenly. The higher this percentage will be, the more liquid and the less vulnerable to a classic run will be the bank. This ratio is used by Akhter et al (2011) and Hanif et al. (2012).
- *Loans to Deposits and short term funding Ratio (LDSF):* it is a ratio between the banks total loans and total deposits and short-term funding. It assesses the degree of relatively illiquid assets which have to be funded by the stable sources. If *LDSF* is lower than 1, the bank will rely on its own deposits to lend to its customers without any outside borrowing. If it is higher than 1, the bank has borrowed money that it relent at higher rates instead of relying entirely on its own deposits. If the ratio is too low, banks may not be earning an optimal return. If the latter is too high, the banks may not have enough liquidity to cover any unexpected funding requirements or

economic crises. Hence, the higher the figure of LDSF is, the more is the bank relying on borrowed funds and illiquid. This measure is used by Hassan (1999) and Ansari and Rehman (2011))

- *Interbank Ratio (IBR):* it is equal to money lent to other banks divided by money borrowed from other banks. It reflects the interbank position regarding interbank market. If the ratio is higher than 1, then it indicates that the bank is net placer in the market place, and hence is more liquid (Schaeck and Čihák (2007)).

3.1.1.2 Insolvency risk (IR)

IR refers to the failure to pay depositors due to funds insufficiency. To assess the *IR* that the bank face, regulators may use Global Solvency Ratio (GSR) criterion. This ratio indicates the coverage degree of banks' assets by equity. The higher the ratio is, the safer the bank is. Indeed, if the bank incurs a greater portion of equity in its activity, hence it will have a tendency to adopt less risky activities. We note that the worst value proposed by Basel III is equal to 8 %.

3.1.1.3 Credit risk (CR)

CR is the risk of counterparty' s inability to meet its obligations toward the bank in all forms of Islamic contract (for more details see Chatti (2012)). To assess this risk, we refer to the following four ratios:

- *Nonperforming Loans Coverage Ratio (NPLCR):* reserves for impaired loans divided by gross impaired loans. The higher this figure is, the better situation of the bank.
- *Regulatory Capital to Credit Risk (RCCR):* total regulatory capital as a percentage of risk weighted credit risk. It is an indicator of the bank's ability to survive any credit risks' difficulties. The higher the ratio is, the more secure is the bank.
- *Nonperforming Loans Ratio (NPLR):* it corresponds to impaired loans(NPL) divided by gross loans. This ratio measures the ability of banks to absorb potential losses from its impaired loans. The lower this ratio is, the better the assets quality.

Akhter et al (2011) and Hanif et al (2012) use this ratio to evaluate the bank's quality of assets and loans.

- *Impaired Loans less Reserves for Imp Loans/ Equity (NPLLRE):* it is important to monitor the trend and the level of this ratio because the equity is considered as the ultimate cushion for loan losses. The lower the value of this ratio is, the safer will be the bank.

3.1.2 Civil Society

It is obvious that *Maqasid Al-Shariah* consider in particular civil society's interests; that is why, it is essential to take into account its points of views in the performance evaluation process. However, since the incorporation of the civil society as a stakeholder is somewhat recent, their related data are still to be scarce in most sources of information. This is emphasized in the case of IB. Recently, a few IB started to devote an annual report to Sustainable Development (SD) discussing either their apparent commitment in this topic or probably their associated real devoted actions. To assess performance from civil society's points of views, we propose to use two attributes; namely, banks *actions devoted to SD (ADSD)* and their *apparent commitment in SD (ACSD)*.

3.1.2.1 Actions devoted to SD (ADSD)

ADSD for a given bank can be classified into four groups those related to: *Governance Quality (GQ), Social Responsibility (SoR), Economic Sustainability (EcS)* and *Environmental sustainability (EvS)*. Nevertheless, the absence of data about the *EvS* actions for almost banking groups (only Maybank and Kuwait Finance House) prevents us from focusing on this kind of actions.

3.1.2.1.1 Governance Quality (GQ)

Ensuring the sustainability of any business, as well as warranting at least two of the *Shariah* objectives (Establishing Justice, and Promoting Welfare) could not be

achieved without good governance. Specifically, both the board of directors, the board of the *Shariah* supervisory, and the Audit committee members should undertake, perform, and respect properly their roles.

Therefore, to assess the performance of each banking group **board of directors**, we propose three measures; namely Assiduity of Board of Directors (ABD), Percentage of independent non-executive directors in BOD (PIBD), and Annual Number of Board Meetings (ANBM). The *ABD* indicates the degree of the board of directors assiduity. The ANBM provides also information about the transparency, the engagement and the level of the bank corporate governance. It gives an idea about the seriousness of the board of directors in their day-to-day bank's activities. According to Hameed et al (2004), the ANBM should take place at least four times a year. The PIBD reflects the ability of BOD to take impartial decision related to management practices. That is, a certain percentage of independent director facilitates this task. According the Malaysian Code on Corporate Governance, this board should incorporate at least two out of nine of directors who should be independent non-executive (for more details see Hameed et al. (2004)). That is, the higher the ABD, the PIBD, and the ANBM, the more are the board directors involved in the bank's governance.

In Islamic banking, a good governance is relied also on the Shariah Supervisory Board (SSB). This board ensures the Shariah-compliance of services provided by the bank. For this reason, we propose the following two variables to evaluate the performance of each banking group's Shariah Supervisory Board: *Number of SSB's members (NSSB)* and *Number of SSB Meetings (NSSBM)*. According to AAOIFI each Islamic bank should have at least three members in its SSB (ICD and Thomson Reuters (2014)). Moreover, the *NSSBM* reflects the capacity of SSB in ensuring the compliance of the bank activities with the principles of Shariah as well as the performance of the *ex-ante* and the *ex-post* audit (Hameed et al. (2004)).

Finally, we propose *number of audit committee members (NAC)* and *number of audit committee meetings (NACM)* in order to assess the performance of audit committee members (NAC). This committee consists at least in three non-executive directors whose majority is independent. In addition, the *NACM* reflects the integrity of this committee who should meet at least once a year with the external auditors.

3.1.2.1.2 Economic Sustainability (EcS)

While working within *Shariah* framework, *IBs* can play a crucial role in ensuring *EcS* through the mobilization of resources. Indeed, Islamic financing system has two principal modes of financing: Profit & Loss Sharing Financing (*PLSF*) which is a participation form (e.g. *Mudharaba* and *Musharaka*) and non-profit & loss sharing financing (*NPLSF*) which is a trading and leasing form (e.g. *Murabaha*). It is often supposed that PLSF activities represent better the spirit of the *Shariah* than *NPLSF* ones that do not contribute to reduce income inequalities and generation of funds as done through *PLSF* actions. That is why; it is believed that an *IB* should assign more funds for *PLSF* activities than for *NPLSF* ones. Nevertheless, it is important to note that the *NPLF* activities are characterized by some advantages. In fact, they do not only complement the *PLSF* ones, but also they are less risky and more liquid than participatory financing modes.

Therefore, to appraise the bank economic contribution, we suggest three sub-criteria: *the immediate contribution to the national product* (*ICNP*), *loans* (*L*), and *Coherence with the adopted economic policy (CAEP)*. *ICNP* measures the immediate contribution of the bank in the country's national product and hence to its overall economic growth. This ratio is loans to GDP. The other ratio (*loans* (*L*)) is calculated as the total *loans* (*L*) divided by the total assets. It permits us to evaluate the bank size. Moreover, this ratio measures the bank involvement in economic growth through its lending activity. The *CAEP* lets us appreciate the harmony between banks financing activities and the economic policy adopted by their host countries.

3.1.2.1.3 Social Responsibility (SoR)

In order to ensure a better contribution of *IBs* to the development and stability of the economy, we conjecture that any preference to one or to the other of these financing forms should only be based on social and economic considerations. In other words, we believe that an *IB* can contribute to the development and the prosperity of the economy by financing it transparently and efficiently in accordance with the marked economic policy to meet the needs of different sectors and economic agents in the society.

It is well recognized that an *IB* has not only to focus on maximizing profit, but it is also expected to look for the wellbeing of the society as a whole as supported by the *Shariah*. In particular, an *IB* has to contribute to the protection of human rights such as combating social exclusion and fighting poverty. The appreciation of the involvement of an *IB* in social considerations can be done through the evaluation of its contribution to inclusion dimensions.

To evaluate ***Diversity (Di)***, we use the proportion of *the International Employees in the Board of Directors* (IEBD). The higher the proportion is, the more open the bank is.

To evaluate ***Inclusion (I)*** dimensions, we advocate the use of two ratios; namely, *Zakat Ratio (Z)* and *Qard Hasan Ratio (QH)*. The first ratio, defined as Zakat paid to net assets, reflects the level of income and wealth transformation in favour of the poor and the needy. Indeed, Zakat is an annual payment ranging from 2.5 percent to 20 percent of the value of specified types of property owned by the wealthy with the primary objective to alleviate poverty. In fact, according to the verse of Surat At-Taubah[43], the *Zakat* is obligatory in Islam and it must be distributed to the poor[44], the

[43] *"The charity (Zakat) is only for the poor, the needy, those employed to collect (the Zakat), those whose hearts will be inclined (towards Islam, by giving them Zakat), for slaves, for those in debt, for the Cause of Allah, and for the wayfarer (i.e. destitute traveler). It is an obligation imposed by Allah, and Allah is the All-Knower, the All-Wise." (Quran (9/60)).*

needy[45] (the deprived), to those who are unable to pay their debts[46], etc. That is, this ratio indicates to some extent the contribution degree in filling the inequality gap between the wealthy and the poor people. This measure has been already adopted by Hameed et al. (2004), Mohamed and Taib (2008), and Antonio et al. (2012). The higher this ratio is, the greater the bank's contribution to the poverty alleviation is.

The second ratio, defined as Qard Hasan to net assets, indicates the contribution degree of an IB to banking services access for low income people. This ratio indicates as well the involvement of a given IB in one of the Shariah's objectives, which is redistribution of income and wealth.

a. Apparent Commitment In Sustainable Development (ACSD)

Due to the absence of data related to SD, we use only *Writing Devoted to SD (WDSD)* as criterion. we attribute 1 for the bank that has a sustainable report and 0 otherwise. This may give an idea about the bank involvement in SD. However, this measure give only a limited idea on the bank commitment in this domain. Indeed, this variable does not reflect the number of information provided about bank's sustainability- related activities.

[44] **The Poor (*Fuqaraa*):** They are those who are not able to support themselves with sufficient means, except for very little, which is less than half (a year).

[45] **The Needy (*Masaakeen*):** They are those who are able to support themselves with sufficient means for half of the year or more, but not enough for the entire year. So they should receive support that will complete the year for them. If a person does not have any cash on him, but yet has some other source of income, such as a profession, a salary or investment profits that will support him financially, he should not be given Zakaat.

[46] **Those in debt:** They are the ones who owe debts. This is on the condition that they do not possess that which will enable them to remove their debts. (explained by Imaam Muhammad bin Saalih Al-'Uthaimeen).

3.1.3 Customers

Satisfying customers is one of the important keys to success for any business. For instance, to appraise customers' satisfaction, one can use the following attribute A*ccessibility (A)* to the bank; *Competitive Advantages (CA)*, and *Service Quality (SQ)*.). For each of these criteria, we propose a set of sub-criteria which can be defined as follows:

3.1.3.1 Accessibility (A)

To evaluate *A*, we can only propose two sub-criteria because of the absence of data in the annual reports of the proposed Islamic Banking groups. These criteria are: *branch density* (*B*) and *Automated Teller Machines density* (*ATMs*). So, the higher the number of branches and the number of ATMs are, the higher the bank accessibility is.

3.1.3.2 Service Quality (SQ)

The banks that offer a diversified package of financial services should be considered for a holistic view of the relationship between them and their customers (Proença and de Castro (2005)). Indeed, in order to satisfy their customers, Islamic Banks should supply good quality Islamic services which are conform to the Shariah principles. This quality differs from one bank to another. A good services quality may develop sustainable and a mutually beneficial relationship with customers (see Rebai (2014)). Therefore, due to the absence of data in annual reports, we propose to use deposits evolution expressed by customers' *deposits to liabilities ratio (D)* and loans evolution defined by *Loans to Assets (L)* as a proxy for SQ. These sub-criteria give us a clear picture about the Islamic banking business relationship dynamic. Indeed, by increasing their supply of financing products, Islamic banks may affect positively their customers' satisfaction. Moreover, if the customers raise the amount of deposits in their bank, the latter would be satisfied.

3.1.3.3 Competitive Advantages (CA)

To assess CA, we focus on the Islamic products presented in each Islamic banking group. Therefore, we propose the four following sub-criteria: Number of Islamic Products (NIP), profit-loss sharing products (PLSP), Qard Hasan/total Islamic modes of finance (QH) and Murabaha (MUR). The PLSP which are divided in two sub-criteria (Mudharaba (MUDH) and Murabaha (MUSH)) are destined to investment. It reflects the entrepreneurs' satisfaction level. IBs may provide QH in order to finance micro-projects or the consumption of poor customers (such as wedding, building). The Murabaha funding is for commerce and services.

3.1.4 Employees

To appraise employees' satisfaction degree, *Benefits Factors* and *Societal Factors* can be adopted. The higher are these factors, the more satisfied employees are. In our study, we will use only "Remuneration and incentives" (RI) measured by the average remuneration per employee in order to evaluate the benefit factor. Therefore, the employees will be more satisfied, if the evolution of remuneration is high. However, since the studied banks are located in different countries we take into consideration the purchasing power parity. Our use of a limited number of criteria is explained by the lack of information provided in Islamic Banking groups annual reports; namely Bank Syariah Mandiri (Indonesia), Al Rajhi Bank (Saudi Arabia) and Albaraka Banking Group (Bahrain).

3.1.5 Managers

To assess an *IB* performance from managers' points of view, one can advocate the two following criteria: *Executive side (ES)* and *Workforce side (WS)*.

3.1.5.1 Executive side

In this part, we suggest two criteria in order to assess an IB performance from managers' points of view: *Return on Average Assets (ROAA)* and *Operating Expenses*

Ratio (OER). The *ROAA* which refers to *Net Profit to Average Assets* indicates the efficiency and effectiveness of the bank management (Akhter et al. (2011)). The higher the profitability ratio, the more efficient is the manager in allocation assets for Net Profit and the better the bank performance will be. This ratio is commonly used by Ansari and Rehman (2011). The other measurement of management efficiency, the OER, reveals if the manager can expand operations without dramatically rising expenses. The lower the OER, the more the manager is able to scale production efficiently.

3.1.5.2 Workforce side

According to Hameed et al. (2004), the disclosure of the details remuneration of each director in the annual report promotes the principles of accountability and fairness. This may enhance transparency and facilitate the identification of the director's underpayment or overpayment. Thus, to ensure a good performance, managers should be motivated by receiving adequate salaries and bonuses. For this reason, the level of managers' salaries and bonuses given by a sustainable bank should be reasonable. We hence include the sub-factor Total Wage (TW) indicating average salaries and bonuses. We multiply this TW by the purchasing power parity conversion factor in order to compare the managers' salaries levels of the chosen Islamic banking groups. The latter which have the higher average total wage, ensure more the satisfaction of their managers.

3.1.6 Shareholders

Any business has to satisfy its shareholders by ensuring *profitability*. Note that high level of *profitability* does not warrant the soundness of the related bank (European Central Bank (2010)). However, soundness cannot be guaranteed without a minimum level of *profitability*. Accordingly, we suggest to use Return on Average Equity (*ROAE*) and *Dividends payout (DPO)* as bank profitability indicators. The first ratio assesses the bank profitability in relation with the Average Shareholders' Equity

over a financial year. This measure may give a more precise depiction of a bank corporate profitability than the ROE ratio, especially where the value of the shareholders' equity has changed significantly during a fiscal year. The high level of this ratio reflects the better use of capital. This ratio is used by Ansari and Rehman (2011).

The *DPO* ratio indicates the share of profits which is utilized in the payment of dividends. The higher this proportion is, the higher the risk of investment in dividends is. Indeed, the bank pays in this case more than its earns by yielding dividends with a ratio which exceeds 100% . On the contrary, if this proportion is low, the growth potential of distributions is high. In this respect, the bank may reinvest earnings in order to grow its capital by sporting low (or zero) dividend payout ratios. Therefore, a sustainable bank should balance the profit sharing with shareholders and the proportion of benefits which will be reinvested in order to ensure its development.

3.1.7 Shariah Advisers

As debated previously, adopting Abu Zahrah's theory, *Maqasid Al-Shariah* are classified in three main objectives; namely, *Educating individual*, *Promoting welfare*, and *Establishing justice*. It is assumed that *Shariah* advisers, when evaluating an *IB*, are supposed to assess its compliant degree with *Shariah* objectives. As a result of shortage of data on the annual reports, we limit our assessment to only *Promoting Welfare* and *Establishing Justice* objectives.

3.1.7.1 Establishing justice (EJ)

In order to assess the fulfillment of the *Establishing Justice* objective, we propose two measures: *Directors - Employees welfare ratio (DEWR)* and *Profit sharing ratio (PSR).* The first ratio, which is equal to the average directors' remuneration to average employees' welfare, is proposed by Hameed et al (2004) and it allows us to identify how much money has been spent for directors' remuneration as compared to the

money spent towards employees' welfare. If the ratio is higher than 10, it can be considered that directors have been overpaid as compared to the work they have done. Hence, there is unfair distribution of wages.

As we have seen, Islamic banking activities through PLS contracts (Mudharaba and Musharaka contracts) can contribute to achieve justice, fairness and balanced society as envisioned by Islamic economics. Hence, it is important to introduce a measure which assesses Islamic banking performance in allocating their activities for justice reason. The profit sharing ratio (*Mudharabah and Musharakah Modes/total investment modes*) allows us to show how far the Islamic banks have successfully achieved the objective of their existence (Hameed et al (2004) and Antonio et al (2012)). The higher the percentage of Profit and Loss sharing financing is, the better achieving the goal of establishing justice is.

3.1.7.2 Promoting Welfare (PW)

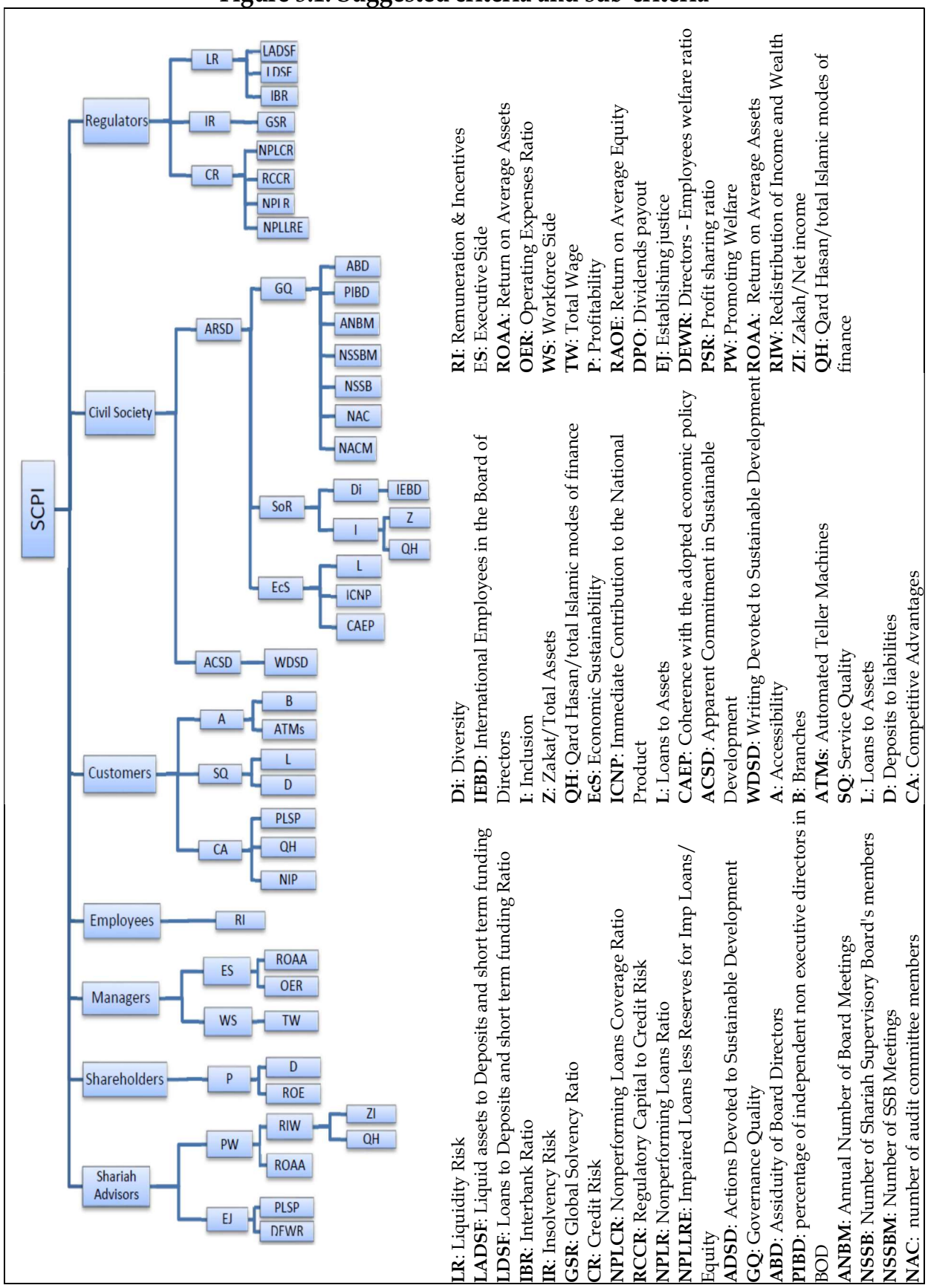
Islamic Banks can achieve the *Promoting welfare* (Al-Maslahah) objective by ensuring a good profitability, the redistribution of income and wealth and the investment in a vital real sector (Mohamed et al. (2008), Mohamed and Mohd Taib (2010) and Antonio et al (2012)). So, to measure these indicators we will refer to Mohamed et al. (2008) 's study. Indeed, we propose three sub-criteria. The first one is profitability which is assessed by Return on Average Assets (ROAA). Thus, the higher the profitability is, the higher financial Maslahah is enjoyed by the bank.

The second sub-criteria is assessed by two ratios: *Zakah/Net Income (ZI)* and *Qard Hasan/total Islamic modes of finance (QH)*. If these ratios are high, the transfer of income and wealth to the poor and the needy is fulfilled. The last sub-criteria which is "investing in the vital real sector" is measured by the investment deposit to total deposit ratio(IRS). It indicates that the bank is directly investing considerably in the real sectors of the economy such as agriculture, mining, fisheries, construction, manufacturing and small and medium scale businesses, etc (Mohamed et al. (2008)).

This investment may affect the living standard of the wider population, the long-term capital formation of a country and hence improve regional development.

Figure 5.1 below summarizes the proposed criteria and sub-criteria according to each suggested stakeholder.

Figure 5.1: Suggested criteria and sub-criteria



3.3. Multi-Attribute Utility Theory

The origin of utility theory and its fundamental quantitative axioms were initially founded by von Neumann and Morgenstern (1947). Keeney and Raiffa (1976) refine the utility assessments by developing the specific evaluation techniques and procedures of extraction. The authors employ the utility concept in more complex decision problems and a more rigorous methodology by incorporating uncertainty, risk preferences and multiple conflicting objectives into multi-criteria decision-making methods (Loken (2007)). They provide also a methodical approach of multiple attributes utility analysis which is used in solving problems related to tradeoffs among these criteria and in assessing the decision maker's preference structure which will be modeled by the multiple attributes utility function (MAUF) (for more technical details, see Keeney and Raiffa (1976)). The latter is a mechanism which assesses the decision maker's preferences by attributing to different levels of satisfaction of each criterion (Stewart and Mohamed (2002)). Therefore, by using this utility function, the decision maker will be able to reach an optimal decision (Sanayei et al (2008)). Furthermore, the tradeoffs between all attributes are made explicitly via the scaling constants. Thus, the global utility attains 1 while all the attributes are respectively at their best levels. When these attributes are at their worst levels, the global utility will be equal to 0 (Rebai (2014)). In this study, the derived MAUF is used in order to calculate the final utility score for each stakeholder.

To simplify the appraisement of the utility functions, we need to make hypotheses concerning the mutual utility independence (MUI). In fact, Keeney and Raiffa (1976) argues that the attribute X is utility independent of attribute Y if and only if the conditional preferences for lotteries on attribute X given the attribute Y is independent from the particular level of attribute Y. When the latter is also utility independent of attribute X, then X and Y are MUI.

Let $U(X)$ be a n multi-attribute utility function (MAUF), where X is a vector of the n attributes (X_1, X_2,…, X_n). According to Keeney and Raiffa (1976), the multi-attribute

utility function is expressed in the following multiplicative form if and only if the mutually utility independence condition is satisfied:

$$kU(X_1, \dots, X_n) + 1 = \prod_{i=1}^{n}(kk_iU_i(X_i) + 1) \qquad \text{with } k \neq 0 \qquad (1)$$

such that,

U_i is a marginal single utility function (SAUF) for the attribute i, scaled from 0 to 1.

k and k_i are scaling constants, where k belongs to [-1, 1] and k_i belongs to [0, 1] for $i = 1, \dots, n$.

When $\sum_{i=1}^{n} k_i = 1$, k will be equal to *0 (*k = 0) and the multi-attribute utility function reduces to the additive form:

$$U(X_1, \dots, X_n) = \sum_{i=1}^{n} k_iU_i(X_i) \qquad (2)$$

Though, if $\sum_{i=1}^{n} k_i < 1$ then k > 0 and when $\sum_{i=1}^{n} k_i > 1$ then -1< k < 0.

This utility function will be assessed in four steps. First of all, we began by identifying the attributes X_i. Then, we assess for each criterion the SAUF (U_i) by applying the five point assessment method proposed by Keeney and Raiffa (1976) . After that, we evaluate the weights that will be used to aggregate these SAUF. Finally, we compute the n MAUF (U). To validate each MUI of the suggested criteria, a number of tests are performed with some experts.

In what follows, we will introduce these notations:

x_{Kij} is the j^{th} sub-attribute of the i^{th} attribute for the stakeholder K.

u_{Kij} is the SAUF of the j^{th} sub-attribute of the i^{th} attribute for the stakeholder K.

x_{Ki} is the i^{th} attribute for the stakeholder K.

U_{Ki} is the MAUF of the ith attribute for the stakeholder K.

U_K is the MAUF of the stakeholder K.

U is the overall performance function.

$x_{Kij,q}$ is the sub-attribute measure value such that $u_{Kij}(x_{Kij,q}) = q$.

k_{Kij} and k_{Si} are scaling constants used in the assessment of the MAUF U_{Ki} for each stakeholder and each relevant attribute i and sub-attribute j.

4. Case Study

The model is applied to the following famous seven banking groups: Al Rajhi Bank (Saudi Arabia), Albaraka Banking Group B,S,C, (Bahrain), Qatar Islamic Bank SAQ (Qatar), Maybank Islamic Berhad (Malaysia), Bank Asya (Turkey), Bank Syariah Mandiri (Indonesia), Kuwait Finance House (Kuwait). Our data are collected from BankScope, IBIS, and from the published individual annual reports of these Islamic banking groups. The period of our study is from 2005 to 2012.

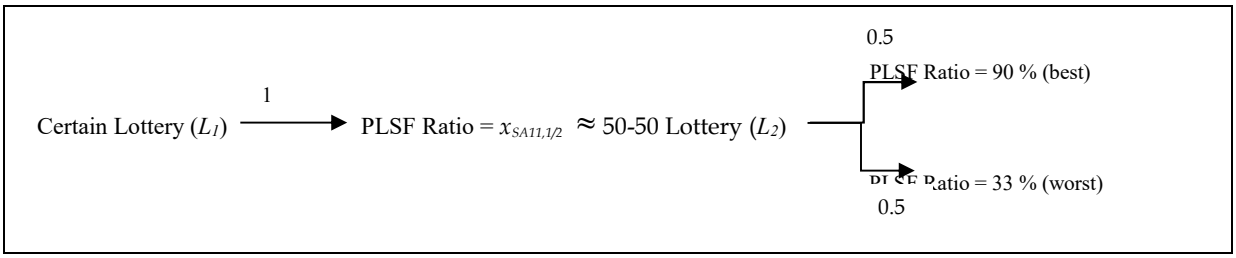
4.1 Evaluation of the Multi-Attribute Utility Functions: Example of Shariah advisers

Due to the similarity in the evaluation procedure, we take only, in this section, the case of the Shariah advisers to give an idea about the procedure of MAUF assessment. As we have seen, we propose two attributes Establishing Justice (EJ) and Promoting Welfare (PW) to assess the Shariah advisers' utility function. The first attribute has two sub-attributes (DEWR and PLSF). The last one has two sub-criteria, ROAA and RIW, such as the latter is divided into two sub-attributes that are ZI and QH. Each of these variables is evaluated by a SAUF. To achieve Maqasid Al-Shariah, the Islamic Bank should seek high ROAA ratio and PLSF ratio. It should also pay Zakat and Qard Hasan in order to alleviate poverty. However, this bank should look for a low DEWR ratio in order to ensure justice between managers and employees.

The data show that the worst PLSF ratio is 0% while the best one is 42.68%. After referring to an expert on Fiqh al-Muamalat and an expert on IF, we suggest that the PLSF ratios are fluctuating between 33% and 90%. So that, we give a utility equals to

0 to the lowest ratio (33%) and a utility equals to 1 to the highest ratio (90%). After that, a number of 50-50 lotteries series are presented to the expert in order to appraise, through the certainty equivalence method, $x_{SA11,1/2}$, $x_{SA11,1/4}$, $x_{SA11,3/4}$. In particular, Figure 5.2 shows an example of lottery to evaluate $x_{SA11,1/2}$. The expert has to choose between a given sure lottery including a certain PLSF ratio and a 50-50 lottery which involves the best and the worst PLSF ratios. Then, we propose to the expert many values of the certain PLSF ratio until he becomes indifferent between both certain and risky lotteries. In this case, the expected utilities of the two lotteries are equivalent. Therefore, at the value of 75%, the expert is indifferent between both lotteries. This value is the certainty-equivalent of the risky lottery (that is $u_{SA11}(75\%) = 0.5u_{SA11}(33\%)+0.5u_{SA11}(90\%)=0.5$). Moreover, the value 65% is certainty-equivalent of the 50-50 lottery yielding either 33% and 75%. The expert is also indifferent between 86% and the risky lottery yielding either 75% or 90%. We obtain hence the following results: $u_{SA11}(65\%)=0.25$ and $u_{SA11}(86\%)=0.75$. Finally, by using these five assessed points ($u_{SA11}(33\%)=0$, $u_{SA11}(65\%)=0.25$, $u_{SA11}(75\%)=0.5$, $u_{SA11}(86\%)=0.75$ and $u_{SA11}(90\%)=1$), we obtain a concave SAUF curve which illustrates the Shariah advisers' risk-averse attitude (see Figure V.1 in Appendix 1 of this chapter).

Figure 5.1: Schematic of a lottery question for SAUF evaluation



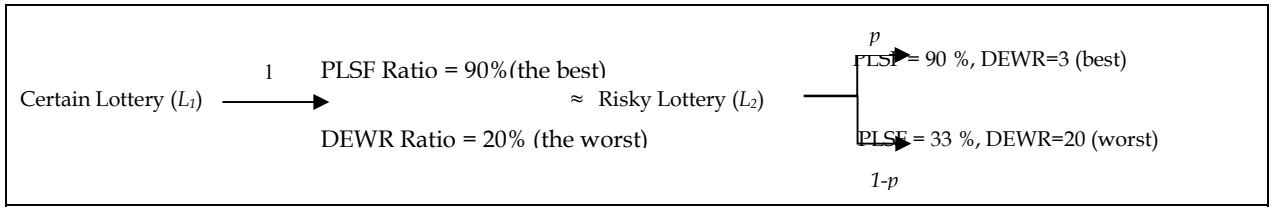
To assess the MAUF of the attribute EJ, we should evaluate the SAUFs of both PLSF and DEWR. To appraise the SAUF of the last sub-attribute, we should use the same previous process. For the variable DEWR, the utility function equals to 0 if the value of Directors - Employees welfare ratio is higher than 20 and 1 if this value is lower than 3. Accordingly, Table 5.1 summarizes the assessed SAUF of the different sub-attributes.

Table 5.1: The assessed Single Attribute Utility Functions: case of Shariah Advisers

Stakeholders	Attributes	Sub-attributes(j)		SAUF
Shariah advisers	Establishing Justice (EJ)	DEWR		U(DEWR)=-0,076268+1,6472*EXP(-0,15361*DEWR)
		PLSF		U(PLSF)=-0,085851+0,020099*EXP(0,044038*PLSF)
	Promoting Welfare (PW)	ROAA		U(ROAA)=0,1*ROAA
		RIW	ZI	U(ZI)=1,11978*(1-EXP(-0,111892*ZI))
			QH	U(QH)=-0,19205+0,19145*EXP(0,60081*QH)

Next, we have to appraise the scaling constants (k_{SA1j}) by using the same approach explained previously. That is, the expert has to choose between two lotteries L1 and L2. The first lottery (L_1) which is the certain one includes the best level for the sub-attribute *DEWR* and the worst level of *PLSF*. The uncertain lottery (L_2) provides the two sub-attributes at their best levels with probability *p* and at their worst levels with probability *1-p* (see Figure 3.3). We do the same process as before by proposing to the expert different values of *p* until he becomes indifferent between the two lotteries. The value obtained of *p* represents the scaling constant k_{SAi} of the attribute EJ.

Figure 5.2: Schematic of a lottery question for MAUF evaluation



We obtain then the following two scaling constants: k_{SA11}=0.8 and k_{SA12}=0.3 such that the condition $\sum_{i=1}^{2} k_{SA2j}$ is verified. So, to assess k_{SA2}, we can solve the following equation:

$$k_{SA1} + 1 = (k_{SA11}k_{SA} + 1) \times (k_{SA12}k_{SA1} + 1)$$

We find that $k_{EJ} = k_{SA}$ = -0.416667. We obtain then the following utility function of EJ:

$$U_{SA1}(x_{SA11}, x_{SA12}) = \frac{\left[\left((-0.33333336)U_{SA11}(x_{SA11}) + 1\right)\left((-0.125)U_{SA12}(x_{SA12}) + 1\right) - 1\right]}{-0.416667}$$

Thereafter, we follow the same process in order to evaluate U_{SA}. So that, the expert is indifferent since $k_{SA1} = 0.3$ and $k_{SA2} = 0.2$. We obtain then a constant scaling for the shariah-advisers (k_{SA}) which equals to 8.33. When we substitute the scaling constants by their respective values, we obtain the following MAUF of Shariah-advisers:

$$U_{SA}(x_{SA1}, x_{SA2}) = [(2.5U_{SA1}(x_{SA1}) + 1)(1.666666U_{SA2}(x_{SA2}) + 1) - 1]/8.33333$$

4.2 Assessment of Islamic Banking Sustainable Performance Index

To assess the utility functions of the remaining stakeholders, similar assessments are developed by using the corresponding attributes and sub-attributes. Table 5.2 summarizes the MAUFs and the values of Scaling constants of different stakeholders:

Table 5.2: The assessed Multi-Attribute Utility Functions of all stakeholders

Stakeholders	Attributes		Scaling constants	MAUF
Regulators	**IR**		k_R=6.50721	U(R)=[(0.1*k_R*U(IR)+1)(0.15*k_R*U(CR)+1)(0.2*k_R*U(LR)+1)-1]/k_R
	CR			
	LR			
Civil Society	**ACSD**	**WDSD**	k_{CS}=1.25	U(CS)=[(0.1*k_{CS}*U(ACSD)+1)(0.8*k_{CS}*U(ARSD)+1)-1]/k_{CS}
	ARSD	**EcS**		
		GQ		
		SoR		
Customers	**A**		k_C=-0.772429	U(C)=[(0.6*k_C*U(A)+1)(0.5*k_C*U(SQ)+1)(0.4*k_C*U(CA)+1)-1]/k_C
	SQ			
	CA			
Employees	**BF**			U(E)=U(RI)=3.8223-3.9238*EXP(-0.0022329*RI)
Managers	**ES**		k_M=20	U(M)=[(0.3*k_M*U(ES)+1)(0.1*k_M*U(TW)+1)-1]/k_M
	RB			
Shareholders	**P**		k_P=-0.816327	U(S)=U(P)=[(0.7*k_P*U(DPO)+1)(0.7*k_P*U(ROAE)+1)-1]/k_P
Shariah advisers	**EJ**		k_{SA}=8.33333	U(SA)=[(0.3*k_{SA}*U(EJ)+1)(0.2*k_{SA}*U(PW)+1)-1]/k_{SA}
	PW			

In other words, U_R, U_{CS}, U_C, U_E, U_M, U_S and U_{SA} represent the MAUF and *R*, *CS*, *C*, *E*, *M*, *S* and *SA* the vectors of respectively the Regulators', Civil Society's, Customers', Employees', Managers', Shareholders', and Shariah-Advisers' attributes.

After assessing the score of each stakeholder, we should aggregate all scores into one which reflects the performance of each bank in achieving Maqasid Al-Shariah. As we have noted before, this index named *Shariah-Compliant Performance Index* (SCPI).

To appraise this SCPI, each stakeholder should be considered as an attribute and the assessed utility is the marginal utility function of all stakeholders' MAUFs. Thus, we obtain the following expression of SCPI:

$$SCPI = f\big(U_R(R), U_{CS}(CS), U_C(C), U_E(E), U_M(M), U_S(S), U_{SA}(SA)\big) \qquad (3)$$

After conducting a number of tests to verify the MUI, we obtain the following expression of the multiplicative MAUF for SCPI:

$$k_{SCPI}(SCPI) + 1 = (kk_R U_R(R) + 1)(kk_{CS} U_R(CS) + 1)(kk_C U_C(C) + 1)(kk_E U_E(E) + 1)(kk_M U_M(M) + 1)(kk_S U_S(S) + 1)(kk_{SA} U_{SA}(SA) + 1)$$

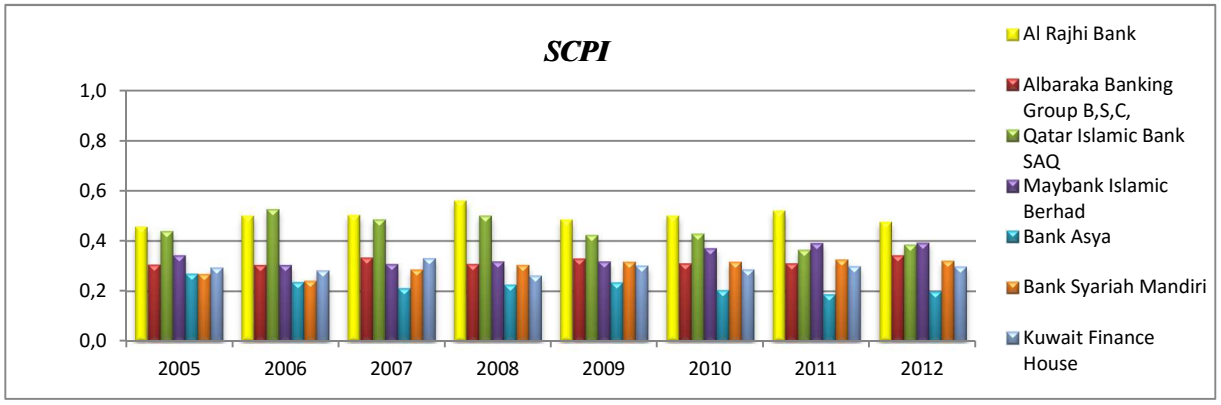
Therefore, the MAUF of SCPI is as follows:

$$SCPI = [(0.01906 * U_R\,(R) + 1)(0.01906 * U_{CS}\,(CS) + 1)(0.01906 * U_C(C) + 1)(0{,}006355 * U_E(E) + 1)(0.01906 * U_M(M) + 1)(0.01906 * U_S(S) + 1)(0.01906 * U_{SA}(SA) + 1) - 1]/(0.01906) \qquad (4)$$

4.3 Results and Discussion

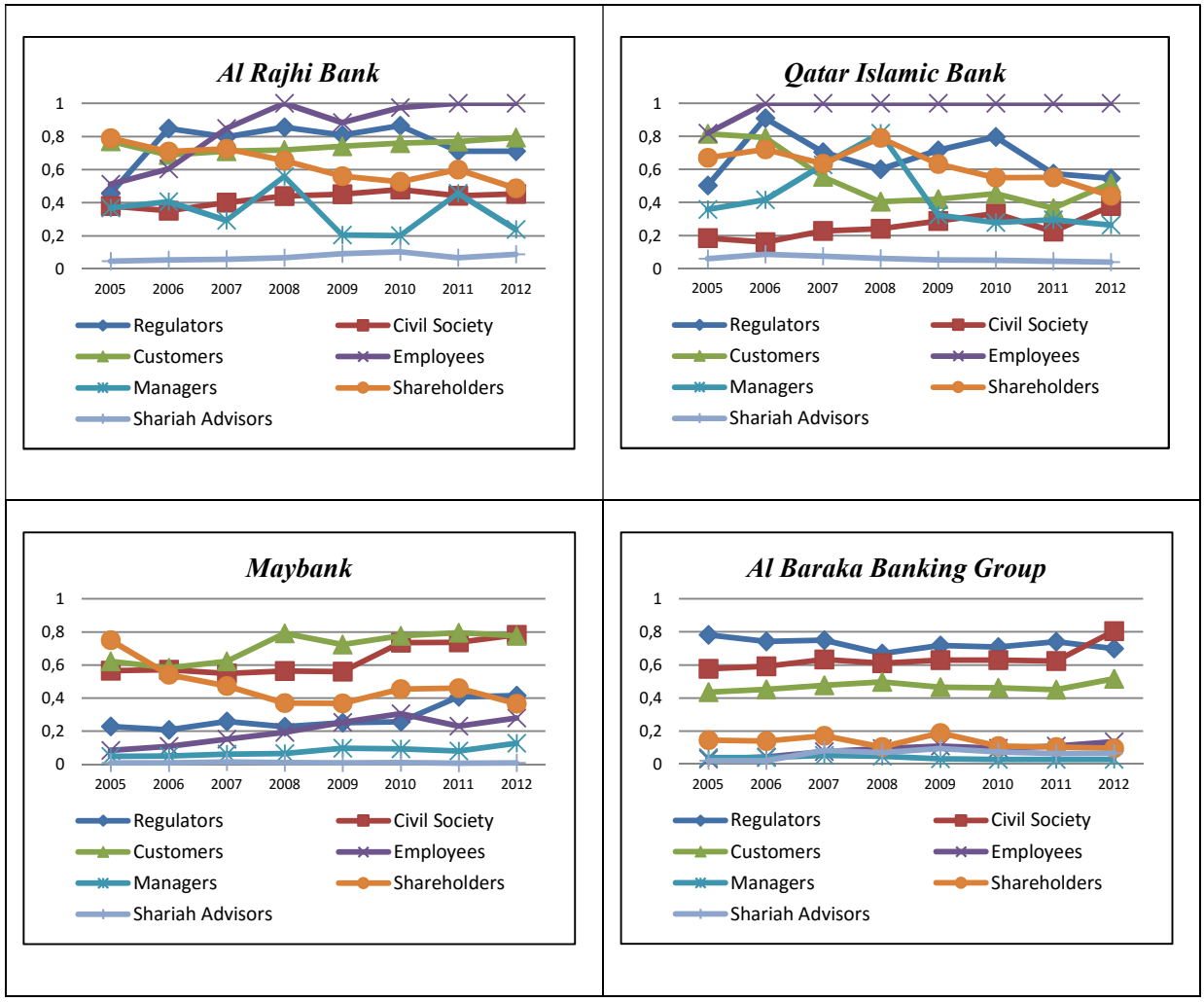
Figure 5.4 below shows the evolution of *SCPI* for each Islamic banking group over the period 2005-2012. Accordingly, none of these *IBs* achieves a 100% *SCPI* level. Specifically, the scores vary from the lowest level 18.78% to the highest one 56.02%.

Figure 5.4: SCPI assessments for each Islamic Banking group over the period 2005-2012



In addition, it appears that the best bank is Al Rajhi Bank group which is constantly keeping relatively a score about 50.08% attaining the highest score in 2008 with 56.02%. In the second place, we find at the beginning Qatar Islamic Bank (QIB) over the period 2005-2010 and then Maybank in 2011and 2012. However, Q*IB*, which was providing the highest score in 2006 with 52.65% and relatively comparable scores to those of Al Rajhi Bank, has considerably degraded after 2008 until reaching 38.39% in 2012. Similarly to Al Rajhi Bank, Al Baraka Banking Group displays a somewhat constant trend but with a much lower average score just about 31.86%. For its part, Kuwait Finance House (KFH) mirrors the same trend as Al Baraka with an average score about 29.47%. Both Maybank and Bank Syariah Mandiri (BSM) provide approximately about an average score of 29.76% and 34.35% while fulfilling an upward trend. Finally, Bank Asya brings about an average score of 22.15% over all the period but accompanied with a downward trend. Finally, Figure 5.4 shows that all studied Islamic banking groups excluding Al Rajhi Bank have average scores lower than 50%. Thus, these banks have to exert more efforts to achieve Maqasid Al Shariah and to ensure sustainability.

Figure 5.5: The four best Islamic banking groups performance scores over time according to each stakeholder



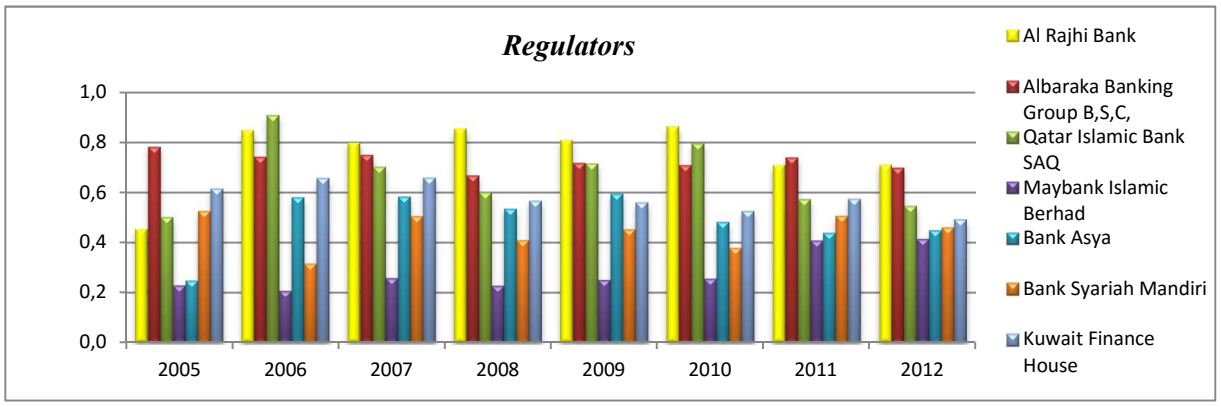
Moreover, our suggested model offers also the ability to conduct deeper analysis for each bank. That is, from Figure 5.5, we can explain the reasons of increasing or deterioration of the four best Islamic banking groups' SCPI levels. Accordingly, the scores of employees are very high for Al Rajhi Bank and for QIB since 2008. However, the performance of both banks according to managers and shareholders follows a decreasing trend. Indeed, from shareholders' point of view, the Q*IB* starts deteriorating from 0.79 in 2008 to only 0.44 in 2012. Moreover, from managers' perspective, the bank's scores decrease from 0.82 in 2008 to 0.26 in 2012. The customers' scores of this bank diminishes also after 2007 by reaching 0.37 in 2011. We can explain the deterioration in customers' scores by the introduction of QIB in other

countries besides Qatar without improving its network. The degradation in these scores affected negatively the *SCPI* variation (see Figure 5.4). However, Maybank records growth among all stakeholders' scores exluding Shariah advisers and shareholders. Finally, from all stakeholders' viewpoint excluding Civil society, Al Baraka Banking Group displays a somewhat constant trend. According to Civil Society, this bank records an increasing of its performance scores in 2012 by attaining 80.44%.Therefore, to understand in depth the reasons leading to these *SCPI* levels, an exploration through stakeholders' scores can be carried out.

4.3.1. Regulators' perspective

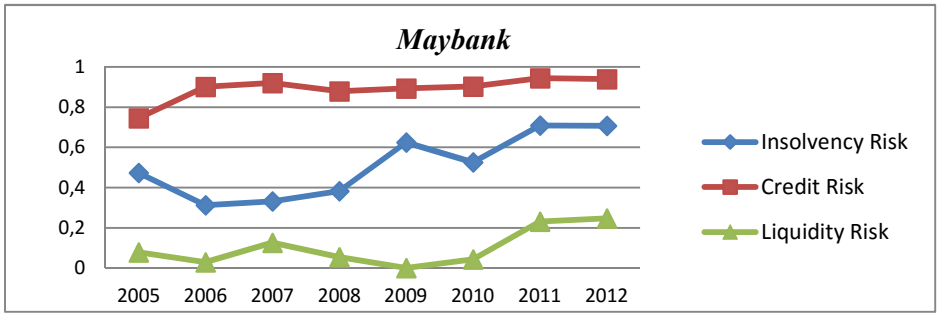
Figure 5.6 gives an idea about the IBs' performance from the Regulators' viewpoint over the period 2005-2012. During this period, most of scores are in average higher than 0.4 . Al Rajhi Bank, has the highest average score (0.757). Conversely, Maybank is still the latest bank by providing the lowest average scores according to Regulators (0.282) .

Figure 5.6: Islamic Banking Groups performance evolution over time according to Regulators



The main cause of this weakness is the very low value of liquidity risk score (see Figure 5.7). This is due to the feeble percentages of Interbank Ratio (IBR) and Liquid assets to Deposits and short term funding Ratio (LADSF) and to the high value of Loans to Deposits and short term funding Ratio (LDSF).

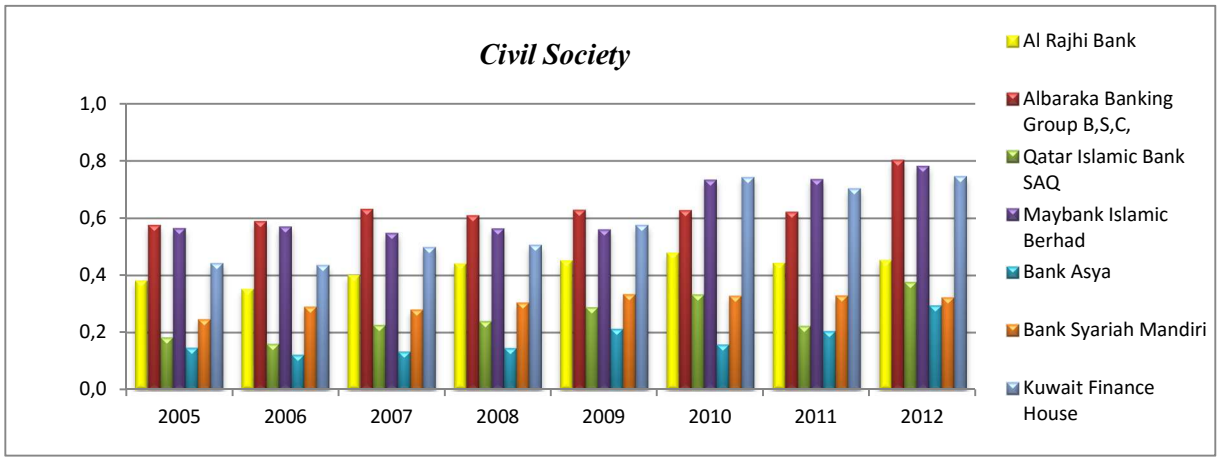
Figure 5.7: The evolution of Risk over the period 2005-2012 in Maybank according to Regulators



4.3.2. Civil Society's perspective

It is clear from the Figure 3.8, that, according to Civil Society, only three Islamic Banking groups namely Al Baraka, Maybank and KFH whose average scores exceed 0.5. In the last 3 years of the studied period, these banks enhance their performance by writing a report devoted to sustainable development. Furthermore, Al Baraka, Maybank, and KFH display an upward trend such that their average scores equal respectively to 0.637, 0.633 and 0.582. Thus, Al Baraka has the best place and attains the best score (0.8) in 2012.

Figure 5.8: Islamic Banks performance during the period 2005-2012 according to Civil Society

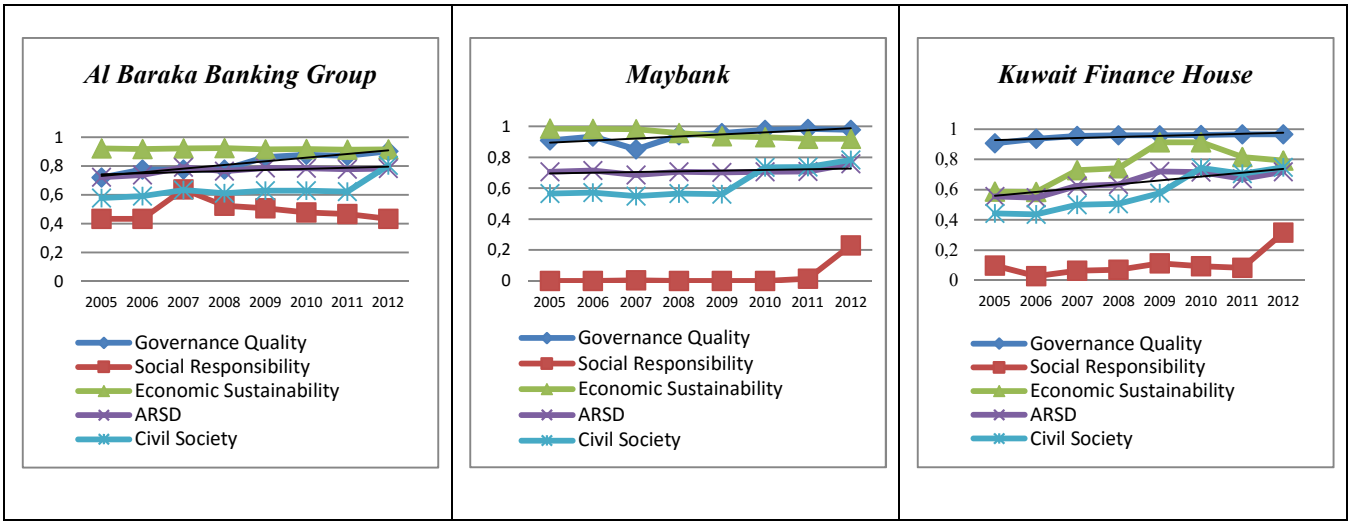


Although Civil Society's scores are somewhat high, a focus on the *Actions Related to the Sustainable Development* (ARSD) shows very feeble scores of *Social Responsibility*

with a slight increase in 2012, mainly for both Maybank and KFH (see Figure 5.9). These scores are also low for other Islamic Banks and vary from the lowest level 0 to the highest one 63.89%. This may be explained by the fact that all studied IBs give insufficient attention to *Inclusion*, namely Islamic Microfinance financing. In fact, the *Inclusion* average scores range from 0 for Bank Asya to 43.15% for Al Rajhi Bank. This is a consequence of the low level of provision or the non-provision of QH for almost IBs. Moreover, except Al Rajhi Bank and Al Baraka, all IBs scores of Zakat to total assets are lower than 0.14. Diversity is also not taken into consideration for all studied IBs, except Al Baraka bank. Indeed, almost all these banks do not sufficiently open on the international skills; that is why they do not employ foreigners in their BOD. Thus, according to Civil Society, the studied IBs should be more open to international skills and should provide Islamic Microfinance products such as Z and QH in order to alleviate poverty.

In terms of Governance Quality, Figure 5.9 depicts an increasing trend for Al Baraka, Maybank and KFH with average scores respectively about 0.82, 0.94 and 0.95. Al Rajhi Bank mirrors also the same trend as these banks with a high average score (0.91). Conversely, although both QIB and Bank Asya have also an upward trend, they register the lowest levels of *Governance Quality* which equals respectively in average 58.16% and 43.54%. According to Civil Society, the absence of the Shariah Supervisory Board (SSB) is translated by having the lowest average *Governance Quality* score in Bank Asya. Moreover, the limited number of SSB's meetings has a negative impact on the quality of governance in QIB.

Figure 5.9: Contribution in Actions related to Sustainable development by the three best IBs according to Civil Society over the period 2005-2012



Moreover, by using the assessed utilities for *Economic Sustainability* attribute, we can explore the involvement of an *IB* in the development of the economy. As discussed previously, an *IB* can support *Economic Sustainability* through funding adequate businesses as well as encouraging technological innovations. Such investigation reveals that almost all banks fail in this context and need some corrective actions with respect to their adopted financing policies in order to better contribute to economic prosperity. Actually, Table 5.3 below gives the distribution of the *GDP* of each considered *IB* group of countries among the different economic sectors in 2012.

Table 5.3: Distribution of average GDP among various sectors for all host countries in 2012[47]

Banks	Services (% of GDP)	Industry (% of GDP)	Agriculture (% of GDP)
Al Rajhi Bank	37.90	60.12	2.07
Al Baraka Bank	60.57	34.82	8.50
Qatar Islamic Bank	29.24	70.17	0.60
Maybank Islamic Berhad	66.48	30.65	2.86
Bank Asya	63.86	27.14	9.00
Bank Syariah Mandiri	38.72	46.78	14.50
Kuwait Finance House	33.31	64.62	2.07

On one hand, it appears that the countries where Al Rajhi Bank (namely Saudi Arabia and Malaysia), QIB (Lebanon, Malaysia, UK and Qatar) and KFH (Bahrain, Turkey, Malaysia and Kuwait) are located adopt primarily, in average, economic orientations primary based on both industry and services sectors. Since the proportion "assets to total assets" is very high in Saudi Arabia for Al Rajhi Bank, in Qatar for QIB, and in Kuwait for KFH, all these three banks should adopt the economic orientations of their home countries. Thus, since these countries have oil-based economies, Al Rajhi Bank, QIB and KFH should focus more on industry sectors. Whereas Maybank should have given roughly the same importance to the mentioned sectors over the period 2005-2011 (see Table 5.4).

[47] to compute the average GDP among services, industry and agriculture sectors for each bank, we refer to World Bank's data and we multiply each percentage by assets in the country to total assets. For example, the average value added of services (S) to GDP for Al Rajhi bank= $S_{\text{Saudi Arabia}} * \frac{\text{assets in Saudi Arabia}}{\text{Total assets}} + S_{\text{Malaysia}} * \frac{\text{assets in Malaysia}}{\text{Total assets}}$.

Table 5.4: Economic orientations of each Islamic Banking group countries

Banks	Economic orientation
Al Rajhi Bank **QIB** **KFH**	industry>services
Maybank en 2012 **Al Baraka Bank** **Bank Asya**	services >> industry+agriculture
BSM	agriculture + industry>> services
Maybank (2005-2011)	agriculture + industry= services

On the other hand, the countries where Al Baraka Bank, BSM and Bank Asya are opened their branches give more attention to agriculture than the other countries. Though, BSM accords more consideration to industry and agriculture, Maybank (only in 2012), Al Baraka Bank and Bank Asyahave to give more importance to the services. Table 5.5 exhibits for each considered bank the distribution of its financing activities in 2012. A simple glance at this table shows that *Murabaha* is the most utilized common financing mode by banks. Only Maybank followed by BSM provide a certain importance to *PLSF* modes. To evaluate to the extent that a bank or another is successful in its chosen financing policies, it is imperative to appraise the level of consistency with the economic policy adopted by their relative host countries.

Table 5.5: Distribution of funding activities among various modes of financing in 2012

Islamic Banking Group	Murabaha & Deferred Sales	Ijara	Istisna	Mudarabah	Musharakah	Other
Al Rajhi Bank	97.02	0.00	0.32	0.00	0.00	2.66
Albaraka Banking Group	70.45	15.06	0.63	4.64	9.23	0.00
Qatar Islamic Bank (Q*IB*)	73.04	20.04	5.58	0.70	0.00	0.64
Maybank Islamic Berhad	47.15	20.14	0.00	27.41	4.99	0.36
Bank Asya	94.44	1.69	0.00	0.00	0.00	3.88
Bank Syariah Mandiri (BSM)	65.76	0.32	0.17	10.20	8.75	0.00
Kuwait Finance House (KFH)	94.58	1.60	0.00	0.00	2.61	0.00

Source: IRTI database, IBIS portal (2012).

It is well recognized that funding various economic sectors fits better with some financing modes than others. That is; it would be better to fund agriculture and Industry through *PLSF* (*Musharakah & Mudharabah*) as well as other products (such as *Muzaraa*, *Salam*, *al-Musaqat*, *al-Mugharassa*). In addition, *Ijara* would also fund the agricultural sector and *Istisnaa* would finance the industrial sector (see more details in IIRF (1996)).

Figure 5.10 displays the contribution degree of each bank to *Economic Sustainability* over the period 2005-2012. Accordingly, Maybank occupies the first place with a downward trend and an average score about 0.95. Thereafter, Al Baraka Banking Group is placed second with a constant trend and an average score equals to 0.92.

Figure 5.10: Economic sustainability contribution of each Islamic Banking group over the period 2005-2012

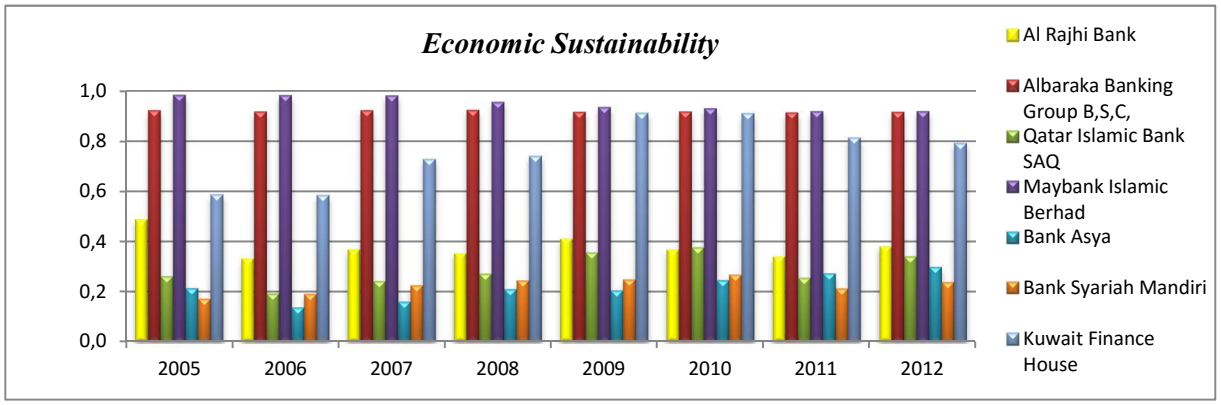


Figure 5.11 gives a clearer picture about the coherence of each bank with the adopted Economic Policy. At the beginning of the period, Maybank was that which contributed the most consistent with the economic policy of the countries group. However, since 2008, Maybank has shown a downward trend until becoming almost absent the last few years. Furthermore, almost studied banks, precisely Al Rajhi Bank, QIB and KFH, seem to be completely non-coherent with their group of countries' adopted policy. Finally, Asya Bank looks as if it has recently found the right financing policy to be more in consistency with its relative country economic orientation.

Figure 5.11: Coherence of each IB with the adopted Economic Policy over the studied period from Civil Society's viewpoint

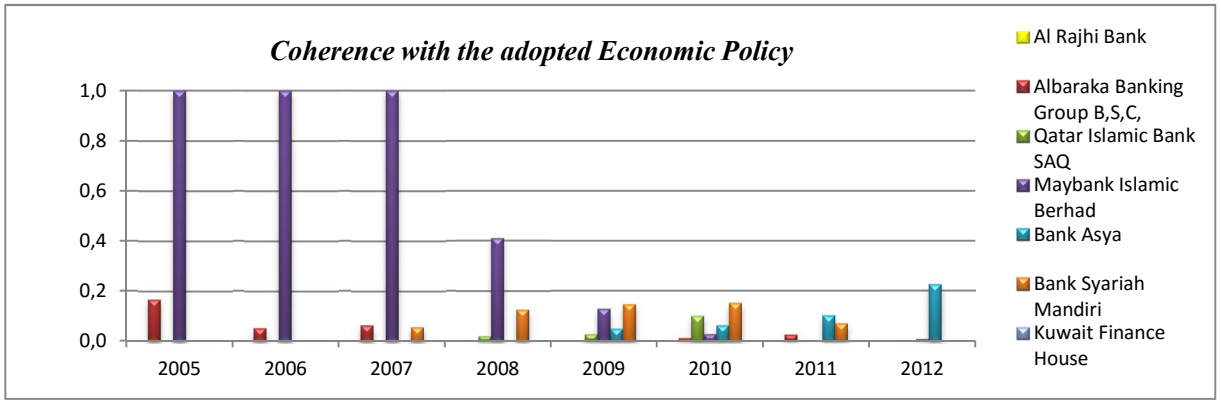
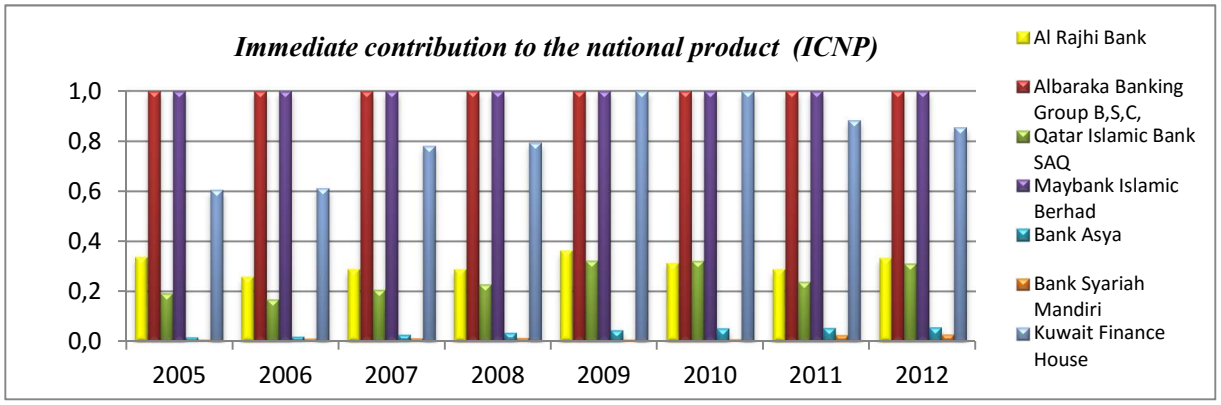


Figure 5.12 displays the contribution degree of each bank to the national product over the period 2005-2012. Accordingly, Maybank and Al Baraka bank have the first place by contributing the most to the economic prosperity of their countries over the studied period with an average score 1. Furthermore, KFH shows an increasing trend of its economic contribution until attaining 1 in 2009 and 2010. Though Q*IB* demonstrates also an upward trend, it continues to finance a little bit its country economy (31.12% in 2012). From Civil Society's perspective, the ICNP affects significantly *Economic Sustainability*.

Figure 5.12: Immediate contribution to the national product over the period 2005-2012 according to Civil Society



4.3.3. Customers' perspective

From customers' point of view, BSM is the most efficient bank with a constant trend and an average score equals to 0.826. In addition to have the same trend as BSM, Al Rajhi Bank is ranked second with an average score about 0.74. Then, Maybank is found with a significant upward trend and an average score about 0.71 (see Figure 5.13). However, although KFH displays an upward trend, it is the last bank with an average score about 0.31.

Figure 5.13: Islamic Banks performance during the period 2005-2012 according to Customers

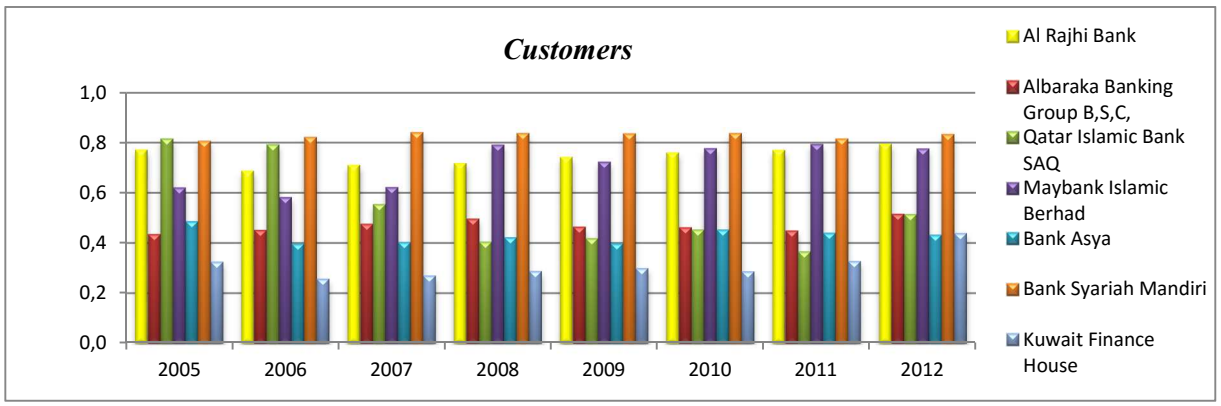
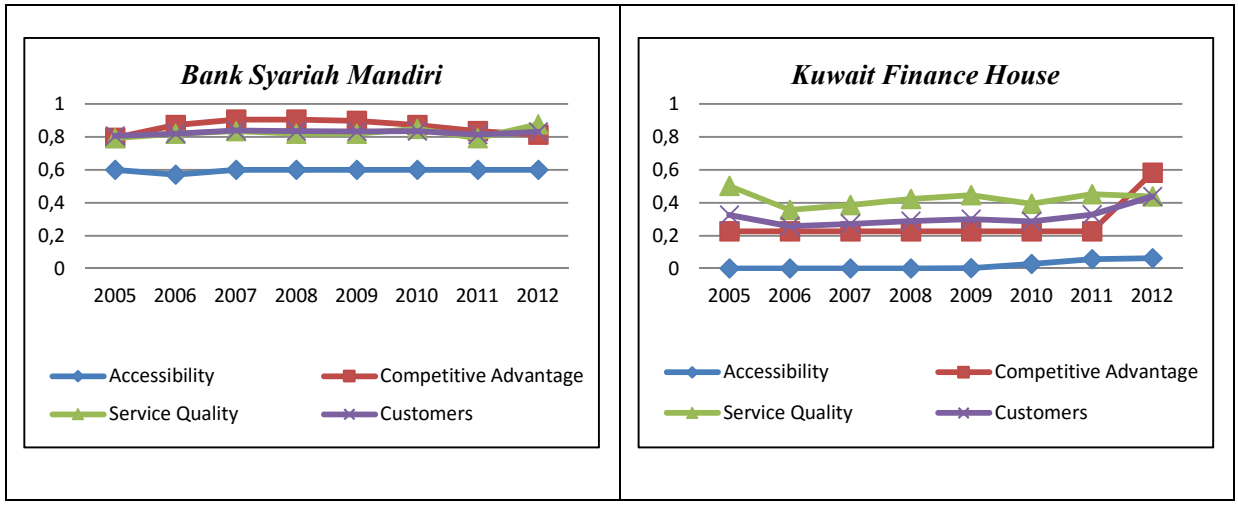


Figure 5.14 shows the customers' criteria variation along the studied period. Indeed, almost all BSM scores exceed 0.6, whereas, KFH records very feeble scores from customers' points of view.

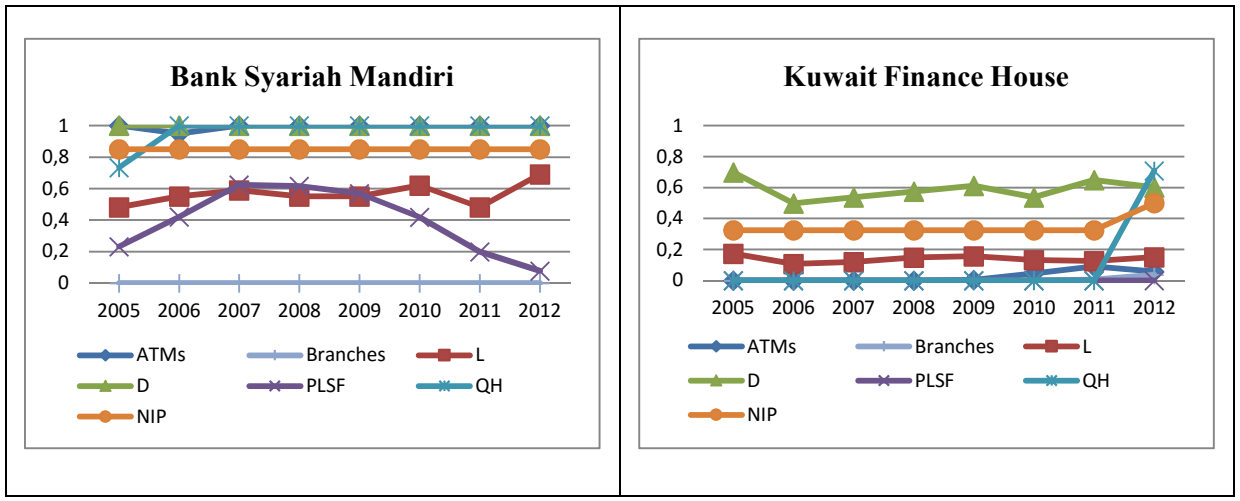
Figure 5.14: Evolution of different customers' criteria in BSM and KFH over the period 2005-2012



The reason of such difference in performance from customers' perspective is depicted in Figure 5.15. Although both banks have similar scores in branches, there is a great difference in terms of ATMs, Loans to Assets (L), Deposits to liabilities (D), Profit-Loss Sharing Financing (PLSF), Qard Hasan/total Islamic modes of finance (QH) and Number of Islamic Products (NIP). In fact, in terms of accessibility, the number of ATMs per 1,000 inhabitants in countries where BSM has branches is in average about 17. Whereas, the number of ATMs per 500 inhabitants in countries where KFH has branches is somewhat in average only 1. Regarding Service Quality, the BMS's average scores of L and D are very high comparing to those of KFH. Thus, the relationship between BSM and their customers is more important than that between KFH and their clients. Concerning Competitive Advantage, BSM provides more Islamic products (6) than KFH (3). Moreover, before 2012, unlike BSM, KFH does not supply profit and loss sharing products (Mudharaba and Musharaka) and Qard Hasan product. The provision of such products attracts customers and contributes to the economic development. For this reason, the introduction of this type of financing in KFH's banking system is translated by an increase of Competitive Advantages scores from only 0.227 in 2011 to 0.582 in 2012. This has a positive impact on the bank performance from customers' point of view (see Figure 5.13). Moreover, KFH makes an additional effort in order to get round this hard situation by increasing its capital

by 20% during 2013 as part of the bank's five-year strategic plan (2012-2016). In addition to improve its asset quality, KFH plans to reinforce its presence through new branches and ATMs and hence cement its market share (Oxford Business Group (2014)).

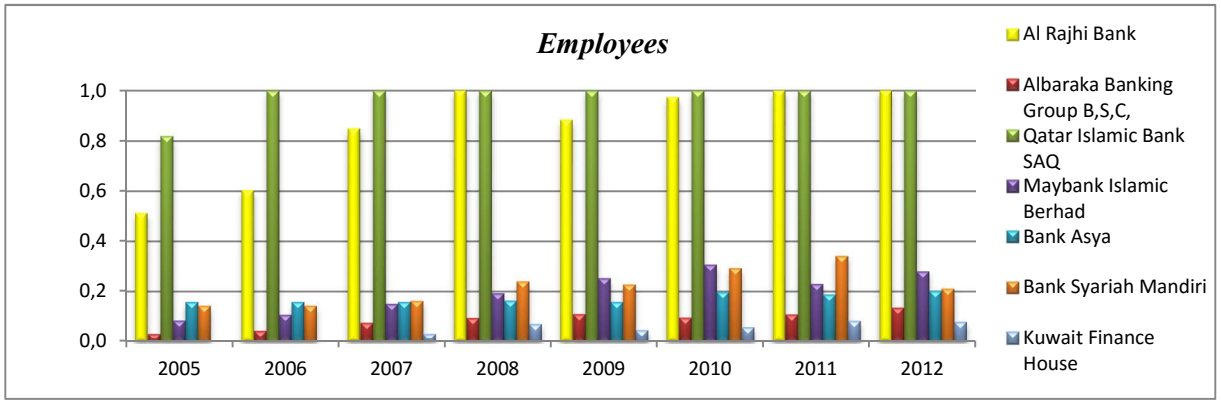
Figure 5.15: A detailed comparison between BSM and KFH performances according to customers over 2005-2012



4.3.4. Employees' perspective

As we have cited before, due to the lack of data, we use only " *Remuneration & Incentives* " to estimate Employees' MAUF. For this reason, we can explain the relatively high values of Al Rajhi Bank and Q*IB* shown in Figure 5.16 by the fact that most of these banks branches which are located in oil-rich countries (Saudi Arabia and Qatar) have provided high average salaries to their employees during the studied period. Contrarily, according to Figure 5.16, KFH and Albaraka Banking Group have provided very low average scores only about 0.046 and 0.087 respectively.

Figure 5.16: Islamic Banks performance during the period 2005-2012 according to Employees



Although the sub-criterion " *Remuneration & Incentives* " gives a picture about the satisfaction of IB employees, the introduction of other sub-criteria such as training would describe better these banks performance from employees' point of view.

4.3.5. Managers' perspective

Figure 5.17 gives a clear picture about the performance of each Islamic banking group over the studied period from Managers' viewpoint. Accordingly, each bank, except two banks, has an average score lower than 0.1. Nevertheless, the average values of Al Rajhi Bank and QIB which are very high comparatively to the other banks are still far from 0.5 with respectively an average of 0.34 and 0.42. Moreover, both banks display a slightly downward trend (see Figure 3.18). Although Maybank scores are very low with an average of 0.78, they display an increasing trend.

Figure 5.17: Islamic Banks performance during the period 2005-2012 according to Managers

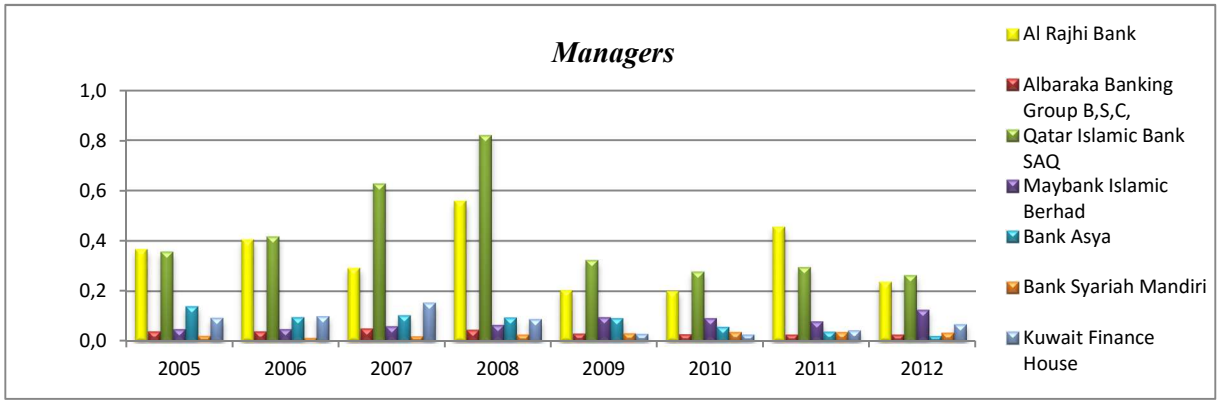
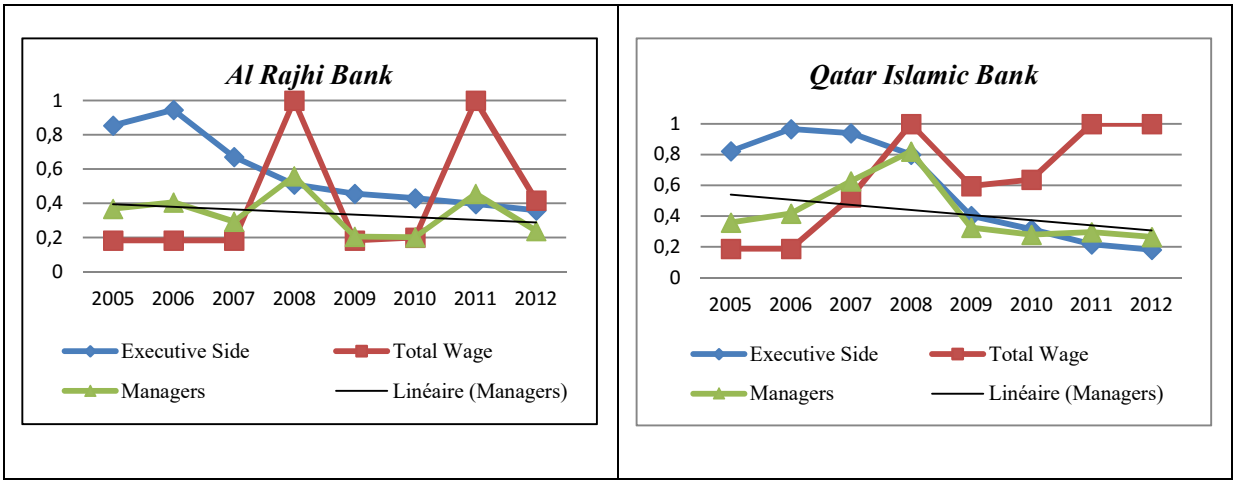


Figure 5.18 gives an idea about the main reason for this drop for both Al Rajhi Bank and QIB. Indeed, the Management efficiency scores have decreased significantly after 2006. This is explained by a depreciation of ROAA ratio and an increasing of OER. From Managers' perspective, these banks should therefore focus more strongly on enhancing Islamic banking efficiency. On the contrary, as regards workforce, Managers are increasingly more satisfied during the studied period. In fact, in the two cases, the curve representing *Total Wage* is sinusoidal with a considerable upward trend.

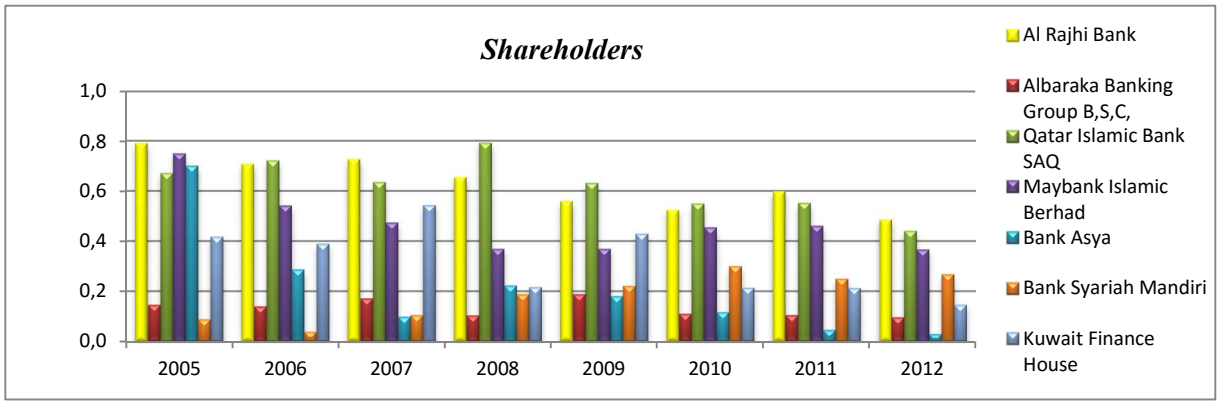
Figure 5.18: The evolution of Management efficiency and Total wage in Al Rajhi Bank and QIB over 2005-2012



4.3.6. Shareholders' perspective

Concerning shareholders, both Al Rajhi Bank and QIB have reached very high scores until 2008. Thereafter, Q*IB* scores have decreased from 79.18% in 2008 to 44% in 2012 and Al-Rajhi Bank from 72.16% in 2007 to 48.7% in 2012. This might be due to the decline of ROAE ratio as a result of the global crisis mainly for QIB whose ratio have decreased from 28.14% in 2008 to 8.69% in 2012. For its part, Maybank also displays also a downward trend with a score varying from 74.95 in 2005 to only 36.6%. This is a consequence of the deterioration of DPO scores from 100% to only 26.47%. Besides, although the very low level of profitability generated by Al Baraka Banking Group, the latter discloses an upward trend with an average score about only 13.27%. This is due to the feeble values of both ROAE and DPO. For its part, KFH exhibits a decreasing trend of profitability by attaining only 14.63% in 2012 because of the remarkable decline of DPO ratio from 79.25% in 2009 to 37.78% in 2012 and ROAE ratio from 27% in 2007 to 2.44% in 2011. Therefore, the bank has more room to rise its dividends in order to satisfy its shareholders. Similarly, Bank Asya shows a significant recession in its profitability scores decreasing from 70.1% in 2005 to only 2.9% in 2012 (see Figure 5.19).

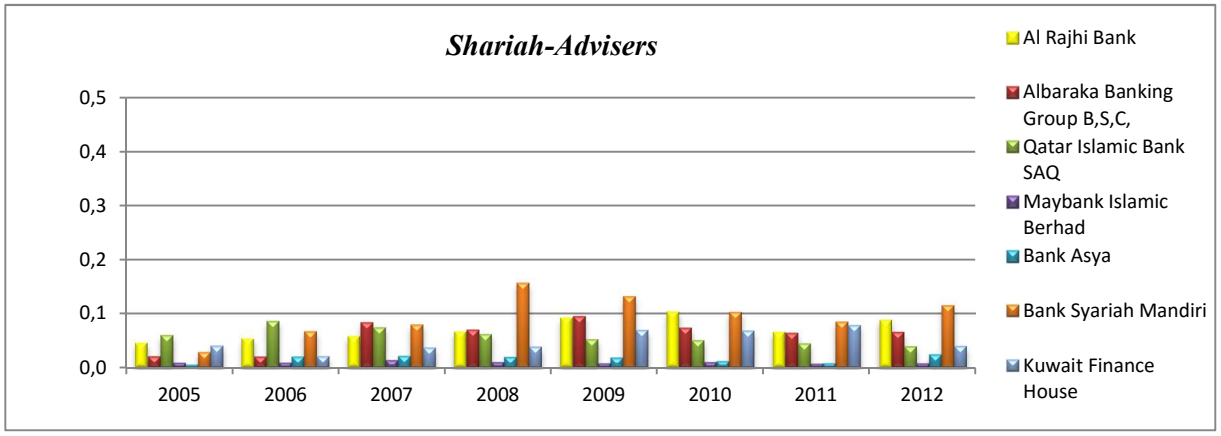
Figure 5.19: Islamic Banks performance during the period 2005-2012 according to Shareholders



4.3.7. Shariah advisers' perspective

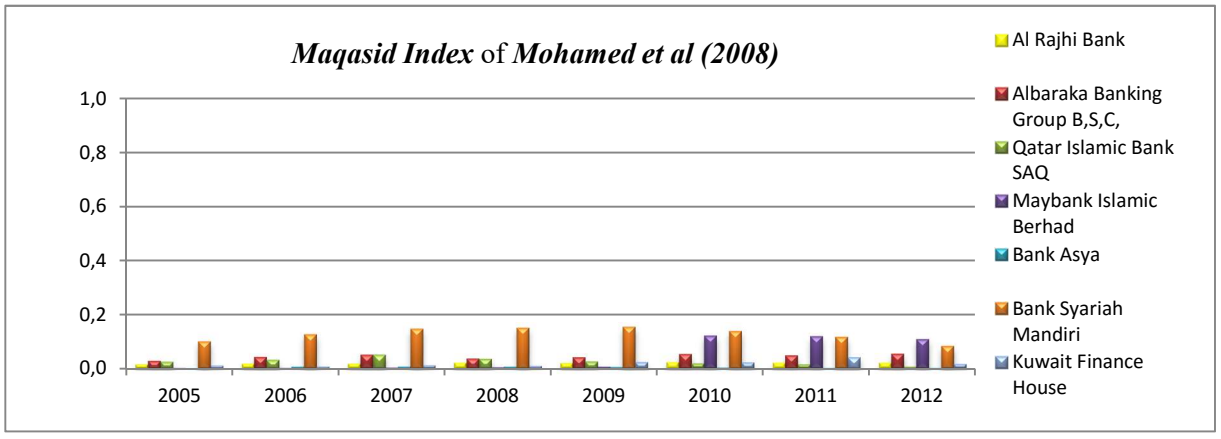
As regards to Shariah advisers, Figure 5.20 shows that all studied Islamic Banking groups do not perform well. In fact, the relative low values of banks Shariah advisers scores (from 1.12% to only 25.06%) might be due mainly to the adopted orientation by almost all banks. Thus, as we have seen before in Table 5.3, almost all these banks adopt Murabaha activities while they neglect PLSF activities. This confirms the view of many researchers who argue that Islamic banking, as it is practiced today, tends to deviate substantially from the Profit and Loss Sharing paradigm (Zahar and Hasan (2001), Chong and Liu (2009), Beck et al (2013)). Moreover, the Directors - Employees welfare ratio (DEWR) is very high for all banks varying from 5.9 (the highest value) to 92.53. This is translated by the injustice of these IBs in distributing salaries to employees and their directors. This affects negatively the *Establishing Justice* scores that may reflect the need to develop more adequate means in order to better fulfill one among the *Shariah* objectives (*Establishing Justice*). *Promoting Welfare* objective has been also fairly taken into account through ROAA and *Redistribution of income & wealth* (*RIW*) by all banks excluding Maybank and Bank Asya which respectively have an average score of 8.76% and 14.04% in 2012. Bank Asya limits its contribution to only *ROAA*. That is, it does not provide any amount for *Zakat* and *Qard Hasan*. For its part, Maybank displays very feeble scores for *ROAA* and *RIW*. Nevertheless, all IBs excepting BSM do not supply the Qard Hasan instrument of financing or allocate a very small proportion which is much lower (tends to 0%).

Figure 5.20: Islamic Banks performance during the period 2005-2012 according to Shariah Advisers



According to Figure 5.21, the results obtained by our model confirms somewhat those of Mohamed et al (2008)'s study. Indeed, all studied Islamic Banking groups do not achieve *Maqasid Al-Shariah*. In addition, BSM outperforms all the other banks with an average score of 12.66%. However, conversely to our figures, Maybank has depicted higher scores over the last three years.

Figure 5.21: evaluating Islamic Banks performance by using Mohamed et al (2008)'s index during the studied period



5. Conclusion

In this chapter, we proposed a tentative of a performance assessment system for Islamic banking which integrates Shariah objectives and stakeholders' points of views. By referring to Abu Zahrah's theory, we first identified the main Shariah

objectives and the relevant stakeholders of an Islamic Bank. Then, we suggested a list of indicators to assess the performance with respect to each stakeholder and to *Maqasid Al-Shariah* adopting a multi-attribute utility approach. After that, we developed an overall index, baptized Shariah-Compliant Performance Index (SCPI), by aggregating all appraised stakeholders' performance scores. Finally, this developed framework is applied over the period 2005-2012 to seven famous banking groups located in different countries. Our results show that all studied IBs do not perform well. Indeed, all these banks, excluding Al Rajhi bank which has an average score about 51.8%, do not exceed 0.5. Therefore, none of these studied Islamic Banking groups is sustainable and hence achieve *Maqasid Al-Shariah*.

To the best of our knowledge, the present chapter represents the first effort to develop a performance evaluation model for IBs taking into account the main banks' stakeholders while considering as well its compliance with *Maqasid Al-Shariah*. Furthermore, our model considers in this assessment the contribution degree of a given bank to the economic prosperity of its relative host countries. This proposed framework would be in particular used to guide banks in choosing adequate financing strategies that might help to reach at least two of the *Shariah* objectives; namely, *Establishing Justice* and *Promoting Welfare*. However, the study suffers from a few restrictions. Indeed, the lack of data for almost IBs prevents the inclusion of other criteria or sub-criteria in our system.

General Conclusion

As we have seen, after showing the utility of including such a system in a market in crisis and where Islamic Finance is underdeveloped, the purpose of this thesis is to study empirically the sustainability of IBs at the macroeconomic and the microeconomic levels.

Concerning the inclusion of this system in a market in crisis where Islamic Finance is underdeveloped, the implementation of a sustainable Islamic banking system and the targeting of a growing potential demand of this banking system necessitate to observe the following prerequisites: *fill the legal vacuum and loopholes particularly vis-à-vis of customers, Strengthen financial depth of an embryonic financial industry, improve Human Capital, Encourage academic research which remains embryonic and disorganized, ensure a good governance* and *be sure that the banks earnings are growing well.* Indeed, to overcome the financial crisis in a market, such the Tunisian one, all involved parties (Regulators, Civil Society, Customers, Shareholders, Employees, Managers and Shariah Advisers) should collaborate in order to establish a sustainable Islamic banking system which really realizes *Maqasid Al Shariah* and satisfy all stakeholders even poor customers. In Tunisia, the positive potential demand of Islamic Products and Services encourage this implementation. However, authorities and managers should do more in order to enlarge existing customer base. For instance, as we have cited before, the Tunisian regulator has to set up legislative, fiscal and accounting structure that fosters social wellbeing. In addition, Managers have to try to attract all customers' categories by taking into account the level of Islamic Finance knowledge and socio-demographic characteristics. Indeed, by providing Islamic microfinance products, IBs may help poorer to raise their standard of living. This provision then contributes significantly to the social welfare amelioration by reducing poverty and unemployment. Moreover, the attraction of clients such companies would have a positive effect on innovation and investment even in the disadvantaged areas and it would therefore strengthen decentralization as well as boost regional development and economic growth in Tunisia.

As in the literature, our findings support the idea that IBs could not be considered as sustainable. Indeed, today, the inefficient practice of Islamic finance by the actual Islamic banking system prevent the realization of *Maqasid Al Shariah*. At the macroeconomic level, although Islamic financing and Investment have a positive impact on long-term macroeconomic growth of our 15 studied countries, this effect is still limited. This would be a consequence of the non-maturity of Islamic financing system. Moreover, Conventional Banks, whose size is much more larger than that of IBs, paralyze the role of the latter subsector on growth. Furthermore, Islamic Finance depth has a negative impact on macroeconomic growth. This reflects the inefficiency of financial deepening which is evaluated by a rise of money supply in the presence of unfavorable environment.

On the other hand, by realizing *Maqasid Al Shariah*, IBs satisfy all stakeholders and then assure the whole mankind's welfare. However, the seven famous studied Islamic banking groups, in the chapter V, do not satisfy at least one stakeholder. Particularly, all banks display very low Shariah Advisers' scores. This does not confirm the assumption that IBs realize *Maqasid Al Shariah* and hence are sustainable at the microeconomic level. Moreover, these results incite to ask questions about the Islamicity of the practiced banking system. Therefore, the practice of IBs should be revised. These banks should also seek to disclose more information in their annual reports namely relating to sustainable development. Thus, the improvement of Islamic banking practices would play a positive role on economic growth.As we know, our work is the first to study the sustainability in Islamic Finance by taking as example Islamic banking system. Moreover, at methodological and economic levels, this study has many contributions. In fact, methodologically, in the macroeconomic field, our study is the first to use a panel of 15 countries. As we know, all the other works evaluate the impact of Islamic finance on growth by taking as example only one country or a region. In the microeconomic field, our study represents the first tentative to evaluate performance of Islamic banking system based on multi-stakeholder approach and taking into consideration the achievement of *Maqasid Al*

Shariah. Therefore, a detailed analysis from each stakeholder's perspective could be realized. Another interesting contribution in this thesis consists on studying the social utility of this banking system by taking into account the standpoints of all Tunisians, including the inland areas inhabitants. Moreover, the socio-demographic factors, that are not introduced in the previous works about potential demand of Islamic Products and services in Tunisia, are involved in our analysis. We are also the first to add the factor *governorate* in the study of the potential demand of these products and services in a market where Islamic Finance is underdeveloped. Furthermore, in this work, there is a first tentative to study the potential demand of IFPSs among northwest companies.

Economically, our contribution consists also in appraising through the model of the chapter IV the participation degree of each Islamic banking group to the economic prosperity of their relative host countries. This would help banks to choose adequate financing strategies in order to satisfy their stakeholders and to realize at least two of *Maqasid Al Shariah*; specifically, *Establishing Justice* and *Promoting Welfare*.

Thanks to the second chapter of this thesis, Tunisian Islamic banks and Tunisian authorities would have a clearer picture about the potential demand of Islamic Products and Services among private agents in different tunisian governorates and firms of the northwest region. This would help them to choose the adequate products that should be provided in each governorate. It would eventually encourage them to supply new Islamic products such as Islamic Microfinance ones. Furthermore, the inclusion of the inland areas inhabitants in our sample would give a clearer picture about the behavior and the needs of these persons even the poorer customers. This would respond to the issue of how to resolve the problems of decentralization, inequalities of income and then regional development. Thus, the implementation of adequate sustainable system would play a significant and positive role on Tunisia's economic growth.

Although this research provide many contributions, it still has the following weaknesses. In the second chapter, the financial constraints prevent us to focus on the rural and urban zones of each governorate. In addition, due to the same constraints, the stratification of our large dataset is limited to only two factors, namely "governorate" and "gender". The stratification with the rest of demographic characteristics such as level of education, annual income, age and the focusing on the rural and urban areas would ameliorate the quality of our data and then enrich our analysis. Another limitation in this chapter consists in studying the potential demand of only 30 Tunisian Northwest region companies that is 10% of the global number. This has a bad effect on the quality of our analysis.

In the fifth chapter, the absence of data prevents us to include many criteria and sub-criteria. For instance, from Civil Society's perspective, the Environmental sustainability is not evaluated. In addition, the strategic factors to improve and strengthen the loyalty of IBs employees as well as the societal factors to assess these employees' feeling of security are not introduced in our model (for more details about these criteria see Rebai (2014). Moreover, from Shariah Advisers point of view, due to the lack of data, the model includes only two objectives, namely *Establishing Justice* and *Promoting Welfare*. The inclusion of the other Maqsid, *Educating the individual,* would give a better evaluation of performance according to Shariah Advisers. Our research will be also more interesting if we contact experts from the home countries of the studied Islamic banking groups.

Additionally, more research is needed in order to improve this study. Indeed, to better evaluate the impact of the global Islamic finance development on long-term macroeconomic growth, the sample should be expanded by introducing more countries and by extending the period of the study. Moreover, in the model of the chapter IV, other measures, such as those of an impulse monetary policy through a common action of Islamic countries' Central banks, may be added in order to ameliorate the assessment of Islamic finance driver role and its real effect on

macroeconomic growth. Furthermore, Islamic Financial Institutions and researchers must collaborate by developing a consistent database that includes all necessary information and respond to the needs of our model so as to reach more efficient results and hence make deeper analysis.

Concerning the study of the Tunisian case, further research is needed to evaluate the impact of individuals' and entrepreneurs' potential demand of Islamic Products and Services on poverty alleviation, on reducing income inequalities, on ameliorating regional development, and then on boosting Tunisia's economic growth.

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Appendices

Appendices of Chapter II

Appendix 1: Questionnaire and Sample distribution:

Questionnaire for Private agents (Frensh version)

1. **Connaissez-vous la Finance Islamique ?**

☐ Non ☐ Oui

2. **Si oui, quels sont les produits financiers islamiques que vous connaissez le mieux?**

……...

3. **Quelles sont les banques islamiques tunisiennes que vous connaissez ?**

……...…

4. **Avez-vous eu recours à des produits financiers islamiques ?**

☐ Non ☐ Oui

5. **Si non, seriez-vous intéressés par les produits financiers islamiques ?**

☐ Non ☐ Oui

➔ ***Si non, passer directement à la 11éme question.***

6. **Par quel type de produits êtes –vous intéressés ?**

☐ L'ouverture de compte et l'utilisation des moyens de paiement

☐ Les produits de placement

☐ Le financement d'achats de véhicules

☐ Le financement d'achats immobiliers

☐ Le financement de projet de création ou de développement d'entreprises

☐ Le financement de biens de consommation

☐ Le financement des études

☐ Autres : ……..……

7. **Pour quelles raisons vous ferez recours aux produits financiers islamiques ?**

☐ La conviction religieuse

☐ Le coût

☐ La diversification (travailler avec plusieurs banques)

☐ Un produit innovant

☐ Autre : ……..……

8. Qu'attendez-vous de la Banque Islamique ?

☐ Effectuer des opérations financières dans un cadre licite (Conforme aux principes de la Charia)

☐ Un soutien fort dans le financement de projets

☐ Effectuer des opérations financières à moindre coût (Par rapport aux banques classiques)

☐ Autre (à préciser) : ……

9. Si vous placez votre argent au sein d'une banque islamique, accepteriez-vous le principe du partage des pertes et des profits ?

☐ Non ☐ Oui

10. Si les services financiers des Banques Islamiques sont plus chers que ceux des banques classiques, que comptez-vous faire ?

☐ Travailler avec les banques islamiques quelqu'en soit le coût

☐ Travailler uniquement avec des banques classiques

☐ Travailler avec les deux types de banques classiques)

11. Qu'est ce qui pourrait constituer pour vous un frein au recours à ces produits islamiques ?

☐ Méconnaissance de produits

☐ Rendements faibles

☐ Absence de produits islamiques dans ma zone de résidence

☐ Coûts élevés

☐ Autre : ……..……

12. Quels sont selon vous les atouts essentiels des Banques Islamiques ?

☐ Un bon rapport qualité / prix des services et produits

☐ Leur conformité aux principes de la Charia

☐ L'absence d'intérêt (Riba)

☐ L'absence de spéculation (Gharar)

☐ Le principe du partage de pertes et de profits

☐ Autre : ……..……

13. Pensez-vous que les banques et les institutions islamiques pourraient être considérées comme des systèmes alternatifs (complémentaires aux banques conventionnelles) ?

☐ Non ☐ Oui

14. Avez vous un compte chez :

☐ Une banque islamique ☐ Une banque conventionnelle

☐ La Poste ☐ Je n'ai pas de compte

15. Si vous n'avez ni de compte chèque, ni de compte d'épargne, ceci est du au fait que:

☐ Vous n'avez pas assez de moyens pour ouvrir un compte ☐ On vous a refusé l'ouverture d'un compte chèque

☐ Vous n'avez pas confiance dans les banques ☐ Les commissions et les frais de gestion sont élevés

☐ Je n'en vois pas l'utilité ☐ Autre : ……..……

16. De quel gouvernorat êtes-vous ?

……

17. Age

☐ Moins de 25 ans ☐ Entre 25 et 39 ans ☐ Entre 40 et 60 ans ☐ Plus de 60 ans

18. Genre

☐ Féminin ☐ Masculin

19. Niveau d'études

☐ Illettré ☐ Primaire ☐ Secondaire ☐ Supérieur

20. Type de votre employeur

☐ En chômage ☐ Privé ☐ Etatique ☐ Lui-même

☐ Retraité ☐ Etudiant ☐ Autre

21. Etat matrimonial

☐ Marié(e) ☐ Célibataire ☐ Divorcé(e) ☐ Veuf (ve)

22. Vos revenus annuels sont:

☐ Inférieurs à 3 500 ☐ Entre 3 500 D et 10 000 D

☐ Entre 10 000 D et 25 000 D ☐ Supérieur à 25 000 D

Table II.1: Respondents' profile by governorate and gender

Frequency		Gender		Total
		Male	Female	
Governorate	Ariana	40	38	78
	Beja	22	22	44
	Ben Arous	46	44	90
	Bizerte	42	41	83
	Gabes	27	28	55
	Gafsa	25	26	51
	Jendouba	31	32	63
	Kairouan	43	42	85
	Kasserine	33	33	66
	Kebili	11	11	22
	Kef	19	19	38
	Mahdia	29	30	59
	Manouba	29	27	56
	Medenine	34	35	69
	Monastir	40	40	80
	Nabeul	57	55	112
	Sfax	70	72	142
	Sidi Bouzid	30	32	62
	Siliana	18	18	36
	Sousse	49	47	96
	Tataouine	11	11	22
	Tozeur	8	8	16
	Tunis	75	74	149
	Zaghouane	13	13	26
Total		802	798	1600

Appendix 2: The Relationship between The most interesting products and Socio-demographic Factors

Table II.2: The Relationship between the most interesting products and Governorate

interesting products	opening an account and using different means of payment		investment products		financing of vehicles		housing financing		business financing		consumption financing		financing studies		Total
Governorate ↓	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Ariana	20	47.6%	15	35.7%	22	**52.4%**	**26**	**61.9%**	19	45.2%	9	21.4%	7	16.7%	42
Béja	10	38.5%	6	23.1%	2	7.7%	**12**	**46.2%**	11	42.3%	2	7.7%	4	15.4%	26
Ben arous	26	49.1%	10	18.9%	21	39.6%	**30**	**56.6%**	19	35.8%	16	30.2%	13	24.5%	53
Bizerte	20	32.8%	3	4.9%	19	31.1%	**22**	**36.1%**	17	27.9%	7	11.5%	7	11.5%	61
Gabès	25	**59.5%**	3	7.1%	24	**57.1%**	22	52.4%	22	52.4%	4	9.5%	15	35.7%	42
Gafsa	32	**72.7%**	2	4.5%	18	40.9%	19	**43.2%**	16	36.4%	5	11.4%	10	22.7%	44
Jendouba	6	18.8%	8	25.0%	5	15.6%	15	**46.9%**	15	**46.9%**	4	12.5%	5	15.6%	32
Kairouan	17	33.3%	8	15.7%	15	29.4%	23	45.1%	27	**52.9%**	5	9.8%	8	15.7%	51
Kasserine	3	6.0%	3	6.0%	7	14.0%	14	28.0%	31	**62.0%**	5	10.0%	4	8.0%	50
Kébili	7	46.7%	3	20.0%	4	26.7%	6	40.0%	10	**66.7%**	3	20.0%	1	6.7%	15
Kef	2	9.5%	1	4.8%	2	9.5%	10	**47.6%**	2	9.5%	0	0.0%	4	19.0%	21
Mahdia	17	45.9%	13	35.1%	16	43.2%	16	43.2%	21	**56.8%**	6	16.2%	11	29.7%	37
Manouba	11	32.4%	1	2.9%	9	26.5%	19	**55.9%**	18	52.9%	3	8.8%	5	14.7%	34
Médenine	36	62.1%	10	17.2%	23	39.7%	21	36.2%	29	**50.0%**	10	17.2%	13	22.4%	58
Monastir	28	52.8%	10	18.9%	25	47.2%	21	39.6%	28	**52.8%**	13	24.5%	14	26.4%	53
Nabeul	15	30.6%	5	10.2%	12	24.5%	18	**36.7%**	16	32.7%	11	22.4%	8	16.3%	49
Sfax	43	43.9%	6	6.1%	29	29.6%	51	**52.0%**	38	38.8%	18	18.4%	28	28.6%	98
Sidi bouzid	28	52.8%	10	18.9%	22	41.5%	22	41.5%	23	**43.4%**	15	28.3%	15	28.3%	53
Siliana	3	25.0%	2	16.7%	5	41.7%	7	**58.3%**	6	**50.0%**	3	25.0%	2	16.7%	12
Sousse	32	51.6%	14	22.6%	30	48.4%	34	**54.8%**	29	46.8%	15	24.2%	22	35.5%	62
Tataouine	12	63.2%	2	10.5%	11	**57.9%**	12	**63.2%**	12	**63.2%**	3	15.8%	8	42.1%	19
Tozeur	1	8.3%	2	16.7%	2	16.7%	7	58.3%	8	**66.7%**	1	8.3%	2	16.7%	12
Tunis	39	41.5%	32	34.0%	44	46.8%	59	**62.8%**	54	**57.4%**	21	22.3%	24	25.5%	94
Zaghouane	6	40.0%	4	26.7%	2	13.3%	3	20.0%	7	**46.7%**	3	20.0%	3	20.0%	15
Total	439		193		369		489		458		182		233		1033

Table II.3: The Relationship between the The most interesting products and Socio-demographic factors

	opening an account and using different means of payment		investment products		financing of vehicles		housing financing		business financing		consumption financing		financing studies		Total
Gender															
Male	223	44.00%	103	20.30%	200	39.40%	249	49.10%	224	44.20%	87	17.20%	107	21.10%	**507**
Female	216	41.10%	70	13.30%	169	32.10%	240	45.60%	254	48.30%	95	18.10%	126	24.00%	**526**
Age															
Lower than 25	62	34.80%	19	10.70%	65	36.50%	62	34.80%	98	55.10%	29	16.30%	54	30.30%	**178**
between 26 and 40	217	44.80%	94	19.40%	201	41.50%	264	54.50%	238	49.20%	96	19.80%	112	23.10%	**484**
between 41 and 60	137	43.70%	50	16.10%	90	28.90%	142	45.70%	118	37.90%	50	16.10%	57	18.30%	**311**
more than 60	24	40.00%	10	16.70%	13	21.70%	21	35.00%	24	40.00%	7	11.70%	10	16.70%	**60**
Level of Education															
Illiterate	11	26.20%	4	9.50%	5	11.90%	13	31.0%	22	52.4%	9	21.40%	6	14.30%	42
Primary	44	32.60%	14	10.40%	27	20.00%	56	41.50%	55	40.70%	17	12.60%	17	12.60%	135
Secondary	122	35.90%	33	9.70%	93	27.40%	132	38.80%	127	37.40%	41	12.10%	50	14.70%	340
Higher	262	50.80%	122	23.60%	244	47.30%	288	55.80%	274	53.10%	115	22.30%	160	31.00%	516
Type of Employers															
Private	137	41.90%	45	13.80%	112	34.30%	162	49.50%	147	45.00%	62	19.00%	58	17.70%	327
State	143	52.80%	58	21.40%	129	47.60%	161	59.40%	103	38.00%	50	18.50%	74	27.30%	271
Self-employed	39	34.80%	23	20.50%	36	32.10%	45	40.20%	68	60.70%	13	11.60%	11	9.80%	112
Unemployed	47	42.00%	14	12.50%	31	27.70%	42	37.50%	54	48.20%	20	17.90%	34	30.40%	112
Student	36	37.50%	17	17.70%	41	42.70%	41	42.70%	54	56.30%	20	20.80%	34	35.40%	96
Retired	17	39.50%	8	18.60%	11	25.60%	17	39.50%	18	41.90%	6	14.00%	8	18.60%	43
Other	20	27.80%	8	11.10%	9	12.50%	21	29.20%	34	47.20%	11	15.30%	14	19.40%	72
Annual Income															
< 3.500	149	36.50%	65	15.90%	122	29.90%	161	39.50%	208	51.00%	81	19.90%	109	26.70%	407
3.500 ≤S≤ 10.000	154	42.90%	47	13.10%	139	38.70%	182	50.70%	151	42.10%	46	12.80%	65	18.10%	359
10.000 ≤S≤ 25.000	109	49.50%	44	20.00%	91	41.40%	128	58.20%	91	41.40%	41	18.60%	46	20.90%	220
> 25.000	27	58.70%	17	37.00%	17	37.00%	18	39.10%	28	60.90%	14	30.40%	13	28.30%	47
Total	**439**		**173**		**369**		**489**		**478**		**182**		**233**		**1033**

Appendix 3:

Table II.4: The Relationship between the Reasons to recourse to IFPs and Governorate

Reasons → / Governorate ↓	Religious conviction		Cost		Diversification		Innovation		Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Ariana	31	73.8%	16	38.1%	1	2.4%	**10**	23.8%	**42**
Béja	18	69.2%	10	38.5%	3	11.5%	5	19.2%	**26**
Ben arous	41	78.8%	16	30.8%	6	11.5%	10	19.2%	**53**
Bizerte	34	56.7%	19	31.7%	4	6.7%	12	20.0%	**61**
Gabès	37	88.1%	22	**52.4%**	3	7.1%	3	7.1%	**42**
Gafsa	38	88.4%	9	20.9%	2	4.7%	7	16.3%	**44**
Jendouba	24	77.4%	9	29.0%	6	19.4%	2	6.5%	**32**
Kairouan	37	74.0%	12	24.0%	5	10.0%	11	22.0%	**51**
Kasserine	26	54.2%	10	20.8%	16	33.3%	2	4.2%	**50**
Kébili	11	73.3%	7	**46.7%**	5	33.3%	4	26.7%	**15**
Kef	15	71.4%	1	4.8%	5	23.8%	0	0.0%	**21**
Mahdia	35	**97.2%**	12	**33.3%**	0	0.0%	6	16.7%	**37**
Manouba	22	64.7%	12	**35.3%**	0	0.0%	6	17.6%	**34**
Médenine	56	**96.6%**	10	17.2%	3	5.2%	8	13.8%	**58**
Monastir	32	62.7%	28	**54.9%**	5	9.8%	9	17.6%	**53**
Nabeul	33	67.3%	12	24.5%	6	12.2%	8	16.3%	**49**
Sfax	87	**90.6%**	14	14.6%	8	8.3%	14	14.6%	**98**
Sidi bouzid	48	**90.6%**	17	**32.1%**	4	7.5%	16	30.2%	**53**
Siliana	6	50.0%	4	**33.3%**	3	25.0%	3	25.0%	**12**
Sousse	47	74.6%	24	**38.1%**	10	15.9%	22	34.9%	**62**
Tataouine	14	73.7%	8	**42.1%**	8	42.1%	5	26.3%	**19**
Tozeur	7	53.8%	8	**61.5%**	0	0.0%	1	7.7%	**12**
Tunis	58	62.4%	34	**36.6%**	15	16.1%	30	32.3%	**94**
Zaghouane	10	76.9%	2	15.4%	3	23.1%	2	15.4%	**15**
Total	**767**		**316**		**121**		**196**		**1020**

Appendix 4: Potential customers expectations

Table II.5: Relationship between the Expectations and Governorate

Expectations → / Governorate ↓	transactions in a legal framework		Strong support for projects financing		transactions at lower costs		Total
	Freq	%	Freq	%	Freq	%	
Ariana	27	65.9%	20	48.8%	22	53.7%	**41**
Béja	11	42.3%	14	53.8%	12	46.2%	**26**
Ben arous	38	73.1%	24	46.2%	19	36.5%	**52**
Bizerte	33	55.0%	13	21.7%	26	43.3%	**60**
Gabès	36	85.7%	21	50.0%	29	69.0%	**42**
Gafsa	38	86.4%	14	31.8%	19	43.2%	**44**
Jendouba	9	29.0%	23	74.2%	13	41.9%	**31**
Kairouan	35	67.3%	23	44.2%	28	53.8%	**52**
Kasserine	15	31.9%	28	59.6%	10	21.3%	**47**
Kébili	9	60.0%	8	53.3%	10	66.7%	**15**
Kef	8	38.1%	7	33.3%	7	33.3%	**21**
Mahdia	31	83.8%	15	40.5%	25	67.6%	**37**
Manouba	18	52.9%	17	50.0%	17	50.0%	**34**
Médenine	52	88.1%	17	28.8%	22	37.3%	**59**
Monastir	33	62.3%	24	45.3%	30	56.6%	**53**
Nabeul	27	57.4%	20	42.6%	15	31.9%	**47**
Sfax	77	78.6%	27	27.6%	45	45.9%	**98**
Sidi bouzid	46	88.5%	23	44.2%	20	38.5%	**52**
Siliana	5	41.7%	3	25.0%	6	50.0%	**12**
Sousse	44	69.8%	27	42.9%	36	57.1%	**63**
Tataouine	13	68.4%	11	57.9%	9	47.4%	**19**
Tozeur	7	53.8%	8	61.5%	9	69.2%	**13**
Tunis	58	62.4%	44	47.3%	55	59.1%	**93**
Zaghouane	6	40.0%	9	60.0%	4	26.7%	**15**
Total	**676**		**440**		**488**		**1026**

Table II.6: Relationship between the Expectations and Socio-demographic factors

Expectations →	transactions in a legal framework		Strong support for projects financing		transactions at lower costs		Total
Gender							
Male	315	63.00%	235	47.00%	256	51.20%	**500**
Female	361	68.60%	205	39.00%	232	44.10%	**526**
Age							
Lower than 25	100	56.20%	79	44.40%	89	50.00%	**178**
between 26 and 40	347	72.30%	217	45.20%	227	47.30%	**480**
between 41 and 60	191	61.80%	123	39.80%	132	42.70%	**309**
more than 60	38	64.40%	21	35.60%	40	67.80%	**59**
Level of Education							
Illiterate	25	61.00%	17	41.50%	17	41.50%	**41**
Primary	67	50.40%	59	44.40%	66	49.60%	**133**
Secondary	215	63.40%	115	33.90%	140	41.30%	**339**
Higher	369	71.90%	249	48.50%	265	51.70%	**513**
Type of Employers							
Private	245	75.60%	91	28.10%	29	9.00%	**324**
State	215	80.20%	85	31.70%	32	11.90%	**268**
Self-employed	78	73.60%	44	41.50%	10	9.40%	**106**
Unemployed	89	79.50%	25	22.30%	14	12.50%	**112**
Student	66	68.80%	40	41.70%	17	17.70%	**96**
Retired	30	73.20%	12	29.30%	6	14.60%	**41**
Other	44	60.30%	19	26.00%	13	17.80%	**73**
Annual Income							
< 3.500	249	60.90%	188	46.00%	190	46.50%	**409**
3.500 ≤S≤ 10.000	237	67.10%	132	37.40%	168	47.60%	**353**
10.000 ≤S≤ 25.000	161	73.50%	94	42.90%	109	49.80%	**219**
> 25.000	29	64.40%	26	57.80%	21	46.70%	**45**
Total	**676**		**440**		**488**		**1026**

Appendix 5: the Obstacles to use Islamic Financial Products

A. Relationship between the Obstacles to use IFPs and All Demographic Factors

Table II.7: Obstacles vs Demographic Factors: Chi-square tests

	Governorate		Age		Gender		Level of Education		Type of employers		Annual Income		Civil Status	
Obstacles	X^2	Sign.	X^2	Sign.	X^2	Sign.	X^2	Sign.	X^2	Sign.	X^2	Sign.	X^2	Sign.
Lack of knowledge	108.041	.000*	10.431	.015*	0.021	0.884	10.946	.012*	0.785	0.992	3.948	0.267	4.622	0.202
Poor performance	67.322	.000*	27.201	.000*	0.589	0.443	46.053	.000*	25.048	.000*	5.082	0.166	13.604	.003*
Absence of Islamic products in their area of residence	137.611	.000*	32.721	.000*	1.718	0.19	21.04	.000*	13.826	.032*	0.274	0.965	19.208	.000*
High cost	76.263	.000*	13.576	.004*	1.822	0.177	47.851	.000*	19.811	.003*	22.519	.000*	8.488	.037*
Lack of confidence	38.454	.011*,a	6.424	0.093	0.002	0.962	19.006	.000*	12.973	.043*	10.96	.012*	2.076	.557a

Table II.8: Relationship between the Obstacles and Governorate

Obstacles →	Lack of knowledge		Poor performance		Absence of Islamic products in their area of residence		High cost		Lack of confidence		Total
Governorate ↓	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Ariana	37	50.7%	14	19.2%	17	23.3%	27	**37.0%**	6	13.0%	**73**
Béja	9	22.5%	13	32.5%	19	47.5%	7	17.5%	5	13.9%	**40**
Ben arous	44	51.8%	19	22.4%	27	31.8%	19	22.4%	7	9.9%	**85**
Bizerte	36	43.9%	8	9.8%	24	29.3%	18	22.0%	11	13.8%	**82**
Gabes	38	70.4%	17	31.5%	35	**64.8%**	13	24.1%	4	8.2%	**54**
Gafsa	25	**50.0%**	7	14.0%	35	70.0%	10	20.0%	3	6.5%	**50**
Jendouba	33	53.2%	14	22.6%	28	45.2%	9	14.5%	3	4.8%	**62**
Kairouan	46	59.7%	4	5.2%	28	36.4%	17	22.1%	6	9.2%	**77**
Kasserine	12	18.5%	11	16.9%	37	56.9%	9	13.8%	0	.0%	**50**
Kébili	13	59.1%	5	22.7%	9	40.9%	4	18.2%	0	.0%	**22**
Kef	7	19.4%	6	16.7%	21	58.3%	1	2.8%	2	5.7%	**36**
Mahdia	26	53.1%	7	14.3%	25	**51.0%**	12	24.5%	0	.0%	**49**
Manouba	20	40.8%	5	10.2%	20	**40.8%**	11	22.4%	5	10.6%	**49**
Médenine	19	29.2%	4	6.2%	53	81.5%	9	13.8%	2	3.4%	**65**
Monastir	33	42.9%	13	16.9%	27	35.1%	28	**36.4%**	6	12.8%	**77**
Nabeul	46	43.0%	12	11.2%	41	38.3%	20	18.7%	17	17.8%	**107**
Sfax	84	62.7%	19	14.2%	48	35.8%	22	16.4%	15	12.5%	**134**
Sidi bouzid	28	45.2%	13	21.0%	44	71.0%	7	11.3%	2	3.6%	**62**
Siliana	21	58.3%	3	8.3%	11	30.6%	8	22.2%	0	.0%	**36**
Sousse	57	62.6%	16	17.6%	32	35.2%	23	25.3%	0	.0%	**91**

Tataouine	14	66.7%	6	28.6%	10	47.6%	6	28.6%	0	.0%	**21**
Tozeur	13	81.3%	3	18.8%	8	50.0%	3	18.8%	1	9.1%	**16**
Tunis	65	47.1%	46	33.3%	47	34.1%	62	44.9%	10	16.1%	**138**
Zaghouane	8	34.8%	5	21.7%	9	39.1%	6	26.1%	0	.0%	**23**
Total	**734**		**270**		**655**		**351**		**105**		**1514**

Table II.9: Relationship between the Obstacles and Socio-demographic factors

Obstacles	Lack of knowledge		Poor performance		Absence of Islamic products in their area of residence		High cost		Lack of confidence		Total
gender											
Male	366	48.10%	141	18.50%	341	44.80%	187	24.60%	53	9.30%	**761**
Female	368	48.90%	129	17.10%	314	41.70%	164	21.80%	52	9.20%	**753**
Age											
Lower than 25	99	41.90%	61	25.80%	106	44.90%	64	27.10%	15	8.50%	**236**
between 26 and 40	314	48.30%	125	19.20%	319	49.10%	170	26.20%	46	10.20%	**650**
between 41 and 60	226	47.90%	74	15.70%	190	40.30%	83	17.60%	40	10.50%	**472**
more than 60	95	60.90%	10	6.40%	40	25.60%	34	21.80%	4	3.30%	**156**
level of education											
Illiterate	76	61.30%	4	3.20%	39	31.50%	22	17.70%	5	5.20%	**124**
Primary	101	49.30%	23	11.20%	79	38.50%	37	18.00%	6	3.50%	**205**
Secondary	233	45.20%	79	15.30%	205	39.80%	80	15.50%	38	8.30%	**515**
Higher	324	48.40%	164	24.50%	332	49.60%	212	31.60%	56	13.80%	**670**
Type of Employers											
Private	212	48.70%	66	15.20%	186	42.80%	88	20.20%	25	7.50%	**435**
State	188	47.50%	77	19.40%	187	47.20%	109	27.50%	36	13.40%	**396**
Self-employed	76	51.40%	27	18.20%	61	41.20%	30	20.30%	17	13.40%	**148**
Unemployed	94	47.00%	35	17.50%	88	44.00%	41	20.50%	11	6.90%	**200**
Student	57	49.60%	38	33.00%	56	48.70%	41	35.70%	6	9.70%	**115**
Retired	41	47.70%	11	12.80%	27	31.40%	16	18.60%	5	6.90%	**86**
Other	66	49.30%	16	11.90%	50	37.30%	26	19.40%	5	4.80%	**134**
Annual Income											
< 3.500	322	50.80%	115	18.10%	270	42.60%	154	24.30%	29	6.40%	**634**
3.500 ≤S≤ 10.000	239	47.20%	77	15.20%	223	44.10%	84	16.60%	42	9.90%	**506**
10.000 ≤S≤ 25.000	146	47.40%	67	21.80%	133	43.20%	96	31.20%	27	12.70%	**308**
> 25.000	27	40.90%	11	16.70%	29	43.90%	17	25.80%	7	17.90%	**66**
Total	**734**		**270**		**655**		**351**		**105**		**1514**

B. Results of the Multiple Correspondence Analysis (MCA)

Table II.10: Active modalities (for Obstacles)

	Dim.1	Contrib	Cos²	Dim.2	Contrib	Cos²	Dim.3	Contrib	Cos²
obstc_unknown_non	-0.082	0.287	0.008	0.763	27.898	0.683	-0.360	8.240	0.152
obstc_unknown_oui	0.096	0.337	0.008	**-0.895**	32.750	0.683	0.422	9.673	0.152
obstc_poorperform_non	-0.270	4.767	0.358	-0.172	2.173	0.144	-0.311	9.482	0.475
obstc_poorperform_oui	1.324	23.378	0.358	0.842	10.655	0.144	1.526	46.499	0.475
obstc_absen_p_non	0.512	12.165	0.377	-0.419	9.215	0.253	-0.234	3.795	0.079
obstc_absen_p_oui	**-0.737**	17.506	0.377	0.604	13.261	0.253	0.336	5.461	0.079
obstc_cost_non	-0.386	9.143	0.528	-0.113	0.891	0.046	0.201	3.707	0.143
obstc_cost_oui	1.368	32.416	0.528	0.402	3.158	0.046	-0.712	13.143	0.143

Table II.11: Illustrative Modalities (for Obstacles)

	coord1	cos2	v.test	coord2	cos2	v.test
interet_pf_non	0.1105	0.0066	**3.2474**	-0.0809	0.0035	-2.3769
interet_pf_oui	-0.0597	0.0066	-3.2474	0.0437	0.0035	2.3769
ariana	0.3776	0.0073	**3.4178**	-0.1287	8,00E-04	-1.1654
béja	0.0168	0	0.1128	0.4815	0.0066	3.2378
ben arous	0.1522	0.0014	1.4861	-0.109	7,00E-04	-1.0638
bizerte	0.0191	0	0.1789	-0.1382	0.001	-1.2926
gabès	0.0079	0	0.06	-0.0012	0	-0.0089
gafsa	-0.3405	0.0038	**-2.4707**	0.1666	9,00E-04	1.209
jendouba	-0.0651	2,00E-04	-0.5267	-0.0504	1,00E-04	-0.4083
kairouan	-0.0905	5,00E-04	-0.8572	-0.3119	0.0055	-2.9546
kasserine	-0.3059	0.004	-2.5375	0.5057	0.011	**4.1942**
kébili	0.0392	0	0.1852	-0.159	4,00E-04	-0.7505
kef	-0.4607	0.0052	**-2.8733**	0.4366	0.0046	**2.7233**
mahdia	-0.1028	4,00E-04	-0.8043	-0.0123	0	-0.0965
manouba	-0.0956	3,00E-04	-0.7277	0.0206	0	0.1568
médenine	-0.6412	0.0185	**-5.4434**	0.4559	0.0094	**3.8702**
monastir	0.2354	0.0029	2.1595	0.0574	2,00E-04	0.5266
nabeul	-0.099	7,00E-04	-1.0866	-0.0423	1,00E-04	-0.464
sfax	-0.0326	1,00E-04	-0.4073	-0.3153	0.0097	-3.9344

sidi bouzid	-0.3906	0.0062	**-3.1362**	0.248	0.0025	1.9914
siliana	0.0151	0	0.0913	-0.3529	0.0029	-2.1408
sousse	0.1178	9,00E-04	1.1897	-0.26	0.0043	-2.6271
tataouine	0.1835	5,00E-04	0.8664	-0.1021	1,00E-04	-0.482
tozeur	-0.061	0	-0.2452	-0.4358	0.0019	-1.7516
tunis	0.5352	0.0294	**6.8574**	0.1642	0.0028	2.1046
zaghouane	0.085	1,00E-04	0.4367	0.1918	6,00E-04	0.9859
moins de 25 ans	0.1206	0.0027	2.075	0.1906	0.0067	3.2794
entre 26 et 40 ans	0.0035	0	0.1205	0.0767	0.0044	2.6499
entre 40 et 60 ans	-0.072	0.0023	-1.9259	-0.0605	0.0016	-1.6204
plus de 60 ans	0.0181	0	0.2498	-0.4101	0.0201	**-5.6728**
illettré	-0.1175	0.0012	-1.3853	-0.4389	0.0168	**-5.1754**
primaire	-0.1037	0.0018	-1.6732	-0.1303	0.0028	-2.1028
secondaire	-0.099	0.005	-2.8256	-0.0378	7,00E-04	-1.0783
supérieur	0.1296	0.0133	**4.6156**	0.1494	0.0177	**5.3225**
privé	-0.061	0.0015	-1.5355	-0.0424	7,00E-04	-1.066
etatique	0.0381	5,00E-04	0.9033	0.0776	0.0021	1.84
lui-même	-0.0183	0	-0.2464	-0.0615	4,00E-04	-0.8285
en chômage	-0.045	3,00E-04	-0.6905	0.0117	0	0.1797
étudiant	0.2876	0.0069	**3.3184**	0.2136	0.0038	2.4644
retraité	-0.0221	0	-0.2248	-0.1402	0.0013	-1.4241
autre	-0.0645	4,00E-04	-0.8054	-0.1275	0.0016	-1.5916
marié	-0.0222	7,00E-04	-1.0542	-0.0959	0.013	-4.5534
célibataire	0.0357	7,00E-04	1.0684	0.1691	0.016	**5.0653**
divorcé	-0.0577	1,00E-04	-0.3968	-0.0659	1,00E-04	-0.4532
veuf	0.068	1,00E-04	0.4521	-0.1034	3,00E-04	-0.6871
inf. à 3500 D	0.0284	6,00E-04	0.9549	-0.031	7,00E-04	-1.0432
entre 3500 et 10000 D	-0.1272	0.0081	**-3.6051**	-0.0287	4,00E-04	-0.8148
entre 10000 et 25000 D	0.147	0.0057	**3.0131**	0.0844	0.0019	1.7301
sup à 25000 D	0.0042	0	0.0353	0.1136	6,00E-04	0.9645

C. Results for the Hierarchical Clustering on Principal Components: description of the clusters by categories (from R)

Table II.12: category`1` (for Obstacles)

	Cla/Mod	Mod/Cla	Global	p.value	v.test
obstc_poorperform=obstc_poorperform_oui	100.000000	100.000000	16.9375	3.039628e-315	37.956281
obstc_cost=obstc_cost_oui	29.261364	38.007380	22.0000	3.467772e-11	6.625200
study_lev=supérieur	23.163842	60.516605	44.2500	3.907058e-09	5.888081
governorate=tunis	30.872483	16.974170	9.3125	9.965312e-06	4.417925
type_employer=etudiant	30.894309	14.022140	7.6875	6.969286e-05	3.977332
civil_status=célibataire	21.391304	45.387454	35.9375	4.485019e-04	3.509766
age=moins de 25 ans	24.400000	22.509225	15.6250	9.993536e-04	3.290709
obstc_absen_p=obstc_absen_p_non	18.961864	66.051661	59.0000	9.249017e-03	2.602710
governorate=gabes	30.909091	6.273063	3.4375	9.514607e-03	2.592988
governorate=béja	29.545455	4.797048	2.7500	3.568085e-02	2.100546
obstc_unknown=obstc_unknown_non	18.750000	59.778598	54.0000	3.616189e-02	2.095102
obstc_unknown=obstc_unknown_oui	14.809783	40.221402	46.0000	3.616189e-02	-2.095102
obstc_absen_p=obstc_absen_p_oui	14.024390	33.948339	41.0000	9.249017e-03	-2.602710
governorate=medenine	5.797101	1.476015	4.3125	6.191478e-03	-2.737465
study_lev=primaire	10.267857	8.487085	14.0000	2.772655e-03	-2.991880
civi_status=marié	14.209402	49.077491	58.5000	6.095429e-04	-3.427332
governorate=kairouan	4.705882	1.476015	5.3125	5.983448e-04	-3.432364
age=plus de 60 ans	5.847953	3.690037	10.6875	6.809767e-06	-4.499549
study_lev=illettré	3.125000	1.476015	8.0000	5.689370e-07	-5.001474
obstc_cost=obstc_cost_non	13.461538	61.992620	78.0000	3.467772e-11	-6.625200
obstc_poorperform=obstc_poorperform_non	0.000000	0.000000	83.0625	3.039628e-315	-37.956281

Table II.13: category'2' (for Obstacles)

	Cla/Mod	Mod/Cla	Global	p.value	v.test
obstc_absen_p=obstc_absen_p_oui	80.03049	100.000000	41.0000	9.157063e-298	36.881475
obstc_cost=obstc_cost_non	42.06731	100.000000	78.0000	1.327739e-71	17.893392
obstc_poorperform=obstc_poorperform_non	39.50339	100.000000	83.0625	3.417710e-53	15.352315
	43.28704	71.238095	54.0000	1.372719e-22	9.779955
obstc_unknown=obstc_unknown_non	38.20982	75.619048	64.9375	2.153328e-10	6.349987
interet_pf=interet_pf_oui	69.56522	9.142857	4.3125	2.186590e-10	6.347629
governorate=medenine	54.83871	6.476190	3.8750	2.978466e-04	3.617166
governorate=sidi_bouzid	53.03030	6.666667	4.1250	5.864111e-04	3.437823
governorate=kasserine	54.90196	5.333333	3.1875	1.061609e-03	3.273669
governorate=gafsa	52.63158	3.809524	2.3750	1.155490e-02	2.525454
governorate=kef	35.67251	46.476190	42.7500	3.573110e-02	2.099974
age=entre 26 et 40 ans	22.22222	3.809524	5.6250	2.484849e-02	-2.243750
governorate=ben arous	21.63743	7.047619	10.6875	7.296969e-04	-3.378171
age=plus de 60 ans	15.38462	2.285714	4.8750	4.198715e-04	-3.527268
governorate=ariana	16.77852	4.761905	9.3125	4.625323e-06	-4.581102
governorate=tunis	22.81640	24.380952	35.0625	2.153328e-10	-6.349987
interet_pf=interet_pf_non	20.51630	28.761905	46.0000	1.372719e-22	-9.779955
obstc_unknown=obstc_unknown_oui	0.00000	0.000000	16.9375	3.417710e-53	-15.352315
obstc_unknown=obstc_unknown_oui	0.00000	0.000000	22.0000	1.327739e-71	-17.893392
obstc_cost=obstc_cost_oui	0.00000	0.000000	59.0000	9.157063e-298	-36.881475
obstc_absen_p=obstc_absen_p_non					

Table II.14: Category`3` (for Obstacles)

	Cla/Mod	Mod/Cla	Global	p.value	v.test
obstc_absen_p=obstc_absen_p_non	81.038136	96.347607	59.0000	1.526870e-232	32.559690
obstc_poorperform=obstc_poorperform	59.744169	100.000000	83.0625	2.871923e-93	20.485972
_non	64.673913	59.949622	46.0000	5.614767e-29	11.171620
obstc_unknown=obstc_unknown_oui	67.897727	30.100756	22.0000	5.491973e-15	7.815099
obstc_cost=obstc_cost_oui	60.784314	42.947103	35.0625	5.039360e-11	6.569768
interet_pf=interet_pf_non	72.514620	15.617128	10.6875	1.452047e-10	6.410330
age=plus de 60 ans	66.406250	10.705290	8.0000	7.126752e-05	3.972014
study_lev=illettré	68.235294	7.304786	5.3125	4.029564e-04	3.538140
governorate=kairouan	53.098291	62.594458	58.5000	9.772643e-04	3.296992
civi_status=marié	65.384615	6.423174	4.8750	4.330634e-03	2.853017
governorate=ariana	62.886598	7.682620	6.0625	7.104201e-03	2.691920
type_employer=retraité	57.589286	16.246851	14.0000	1.024734e-02	2.567369
study_lev=primaire	62.650602	6.549118	5.1875	1.502922e-02	2.431674
governorate=bizerte	57.746479	10.327456	8.8750	4.313697e-02	2.022381
type_employer=other	40.650407	6.297229	7.6875	3.869473e-02	-2.067419
type_employer=etudiant	34.090909	1.889169	2.7500	3.760120e-02	-2.079176
governorate=beja	31.578947	1.511335	2.3750	2.494698e-02	-2.242223
governorate=kef	29.090909	2.015113	3.4375	1.859246e-03	-3.111841
governorate=gabes	45.029240	38.790932	42.7500	1.498780e-03	-3.174920
age=entre 26 et 40 ans	30.303030	2.518892	4.1250	1.285570e-03	-3.219182
governorate=kasserine	27.450980	1.763224	3.1875	1.206957e-03	-3.237231
governorate=gafsa	43.13043	31.234257	35.9375	9.996358e-05	-3.890680
civi_status=célibataire	24.193548	1.889169	3.8750	3.461768e-05	-4.140747
governorate=sidi bouzid	43.644068	38.916877	44.2500	2.027903e-05	-4.261796
study_lev=supérieur	24.637681	2.141058	4.3125	1.691854e-05	-4.302102
governorate=medenine	43.599615	57.052897	64.9375	5.039360e-11	-6.569768
interet_pf=interet_pf_oui	44.471154	69.899244	78.0000	5.491973e-15	-7.815099
obstc_cost=obstc_cost_non	36.805556	40.050378	54.0000	5.614767e-29	-11.171620
obstc_unknown=obstc_unknown_non	0.000000	0.0000000	16.9375	2.871923e-93	-20.485972
obstc_poorperform=obstc_poorperform	4.420732	3.652393	41.0000	1.526870e-232	-32.559690
_oui obstc_absen_p=obstc_absen_p_oui					

Appendix 6: The competitive advantages of Islamic banks

A. Results of the Multiple Correspondence Analysis (MCA)

Table II.15: Active modalities (for Competitive Advantages)

	Dim.1	Contrib	Cos²	Dim.2	Contrib	Cos²	Dim.3	Contrib	Cos²
adv_ratio_q_p_no	-0.081	0.270	0.016	-0.541	17.298	0.689	0.196	3.578	0.090
adv_ratio_q_p_yes	0.192	0.636	0.016	1.273	**40.724**	0.689	-0.461	8.423	0.090
advtg_sharia_no	-0.669	12.262	0.401	0.279	3.099	0.070	0.710	31.569	0.451
advtg_sharia_yes	0.599	10.984	0.401	-0.249	2.776	0.070	-0.636	28.277	0.451
advtg_no_riba_no	-0.742	10.931	0.287	0.756	16.507	0.298	-0.201	1.842	0.021
advtg_no_riba_yes	0.386	5.694	0.287	-0.394	8.598	0.298	0.104	0.960	0.021
advtg_no_spec_no	-0.429	8.039	0.564	-0.118	0.888	0.043	-0.080	0.638	0.019
advtg_no_spec_yes	1.316	**24.691**	0.564	0.363	2.727	0.043	0.245	1.959	0.019
advtg_sharing_no	-0.342	5.414	0.457	-0.150	1.509	0.088	-0.210	4.650	0.171
advtg_sharing_yes	1.333	**21.077**	0.457	0.584	5.874	0.088	0.817	18.103	0.171

Table II.16: illustrative modalities (for Competitive Advantages)

	coord1	cos2	v.test	coord2	cos2	v.test
interet_pf_no	-0.409759236	9.065772e-02	-12.0400	0.048877229	1.289913e-03	1.4362
interet_pf_yes	0.221246325	9.065772e-02	**12.0400**	-0.026390881	1.289913e-03	-1.4362
ariana	-0.106810547	5.846665e-04	-0.9669	0.489218229	1.226550e-02	4.4286
beja	-0.092368380	2.412625e-04	-0.6211	0.111015192	3.485041e-04	0.7465
ben arous	0.040577675	9.813861e-05	0.3961	-0.220718624	2.903645e-03	-2.1547
bizerte	-0.512267770	1.435776e-02	-4.7915	0.193721967	2.053290e-03	1.8120
gabes	0.268216167	2.560968e-03	2.0236	-0.0146	7.601506e-06	-0.1102
gafsa	0.2904	2.776619e-03	2.1071	-0.6452	1.370813e-02	-4.6818
jendouba	-0.2949	3.564949e-03	-2.3875	0.0496	1.007069e-04	0.4013
kairouan	0.0069	2.686767e-06	0.0655	0.1828	1.874782e-03	1.7314
kasserine	-0.0075	2.418882e-06	-0.0622	-0.4610	9.143712e-03	**-3.8237**
kebili	-0.0479	3.203312e-05	-0.2263	0.8082	9.106004e-03	3.8158
kef	-0.5763	8.080710e-03	**-3.5946**	-0.1323	4.259024e-04	-0.8252
mahdia	0.6174	1.459294e-02	4.8305	-0.0483	8.917309e-05	-0.3776
manouba	-0.1431	7.426520e-04	-1.0897	-0.0376	5.141583e-05	-0.2867
medenine	0.2426	2.653160e-03	2.0597	0.4559	8.705338e-03	**-3.7309**

monastir	0.2354	3.782658e-04	0.7777	-0.4395	3.887591e-03	2.4932
nabeul	-0.5117	1.971108e-02	-5.6141	0.2106	3.339596e-03	2.3108
sfax	0.2598	6.572593e-03	3.2418	-0.2078	4.207420e-03	-2.5938
sidi bouzid	0.2776	3.106999e-03	2.2289	-0.1562	9.839286e-04	-1.2543
siliana	-0.3267	2.457129e-03	-1.9821	-0.0564	7.316855e-05	-0.3420
sousse	0.2442	3.807020e-03	2.4673	-0.1153	8.488701e-04	-1.1650
tataouine	0.3778	1.989955e-03	1.7838	-0.0378	1.989899e-05	-0.1784
tozeur	-0.1145	1.325178e-04	-0.4603	0.2154	4.685570e-04	0.8656
tunis	0.0039	1.548607e-06	0.0498	0.2584	6.856391e-03	3.3111
zaghouane	-0.1662	4.563743e-04	-0.8542	-0.2077	7.127641e-04	-1.0676
less than 25 years	-0.0558	5.760944e-04	-0.9598	-0.0529	5.178335e-04	-0.9099
26-40 years	0.1598	1.908036e-02	5.5235	-0.0419	1.309624e-03	-1.4471
40-60 years	-0.1108	5.504454e-03	-2.9667	0.0514	1.186138e-03	1.3772
more than 60 years	-0.2370	6.720042e-03	-3.2780	0.0959	1.099832e-03	1.3261
male	0.0090	8.100744e-05	0.3599	0.0849	7.242727e-03	**3.4031**
female	-0.0090	8.100744e-05	-0.3599	-0.0853	7.242727e-03	**-3.4031**
illiterate	-0.3117	8.451301e-03	-3.6761	0.0507	2.232164e-04	0.5974
primary	-0.1803	5.292592e-03	-2.9091	0.0526	4.514126e-04	0.8496
secondary	-0.1565	1.247625e-02	-4.4665	-0.0996	5.059088e-03	-2.8442
higher	0.2328	4.300507e-02	**8.2925**	0.0502	1.999138e-03	1.7879
private	-0.0596	1.407024e-03	-1.4999	-0.0864	2.956906e-03	-2.1744
state	0.1359	6.485645e-03	3.2203	-0.0129	5.890757e-05	-0.3069
self-employed	0.1293	1.897298e-03	1.7418	0.2790	8.828029e-03	3.7571
unemployed	-0.1818	4.856988e-03	-2.7868	-0.1719	4.342723e-03	-2.6351
student	0.1704	2.418750e-03	1.9666	0.1804	2.710340e-03	2.0818
retired	-0.1084	7.587249e-04	-1.1014	0.2068	2.759801e-03	2.1007
other	-0.1670	2.717585e-03	-2.0846	-0.0554	2.992801e-04	-0.6918
married	0.0127	2.260532e-04	0.6012	-0.0176	4.350287e-04	-0.8340
single	0.0574	1.849514e-03	1.7197	0.0089	4.441798e-05	0.2665
divorced	-0.5033	7.498256e-03	-3.4626	0.1827	9.886152e-04	1.2573
Widowed	-0.5050	7.044506e-03	-3.3562	0.0679	1.273452e-04	0.4512
less than 3500 D	-0.1137	9.143357e-03	-3.8236	0.0060	2.588647e-05	0.2034
3500 - 10000 D	0.0361	6.567498e-04	1.0248	-0.0612	1.882452e-03	-1.7349
10000 - 25000 D	0.1329	4.640260e-03	2.7239	0.0242	1.542455e-04	0.4966
higher than 25000 D	0.1707	1.312644e-03	1.4488	0.2996	4.045568e-03	2.5434

B.Description of the clusters by categories (from R)

Table II.17: category`1`(for Competitive Advantages)

	Cla/Mod	Mod/Cla	Global	p.value	v.test
advtg_no_spec=advtg_no_spec_yes	79.389313	82.9787234	24.5625	4.794769e-185	29.010897
advtg_sharing=advtg_sharing_yes	75.229358	65.4255319	20.4375	7.014462e-119	23.181400
advtg_sharia=advtg_sharia_yes	41.587678	93.3510638	52.7500	4.931155e-84	19.423012
advtg_no_riba=advtg_no_riba_yes	34.885932	97.6063830	65.7500	5.381001e-65	17.024763
interet_pf=interet_pf_yes	30.510106	84.3085106	64.9375	4.503331e-21	9.420176
adv_ratio_q_p=adv_ratio_q_p_yes	36.268344	46.0106383	29.8125	2.081056e-14	7.645518
study_lev=higher	32.485876	61.1702128	44.2500	5.118745e-14	7.528854
murabaha=murabaha_yes	53.333333	17.0212766	7.5000	1.844838e-13	7.359584
mucharaka=mucharaka_yes	64.516129	10.6382979	3.8750	2.828678e-12	6.985983
knowledge_fi=knowledge_fi_yes	31.563845	58.5106383	43.5625	2.882098e-11	6.652472
mudharaba=mudharaba_yes	62.962963	9.0425532	3.3750	3.921697e-10	6.257113
ijara=ijara_yes	64.583333	8.2446809	3.0000	9.827248e-10	6.112191
bq_baraka=bq_baraka_yes	36.569579	30.0531915	19.3125	6.509958e-09	5.803101
recours_pf=recours_pf_yes	45.454545	10.6382979	5.5000	3.425203e-06	4.643522
governorate=mahdia	49.152542	7.7127660	3.6875	1.344849e-05	4.352678
age=26-40 years	28.362573	51.5957447	42.7500	8.053554e-05	3.942801
annual_income=10000 - 25000 D	29.429429	26.0638298	20.8125	4.893507e-03	2.813962
type_employer=state	28.365385	31.3829787	26.0000	7.297000e-03	2.682977
bq_zitouna=bq_zitouna_yes	25.493885	72.0744681	66.4375	7.670354e-03	2.666246
governorate=sousse	32.291667	8.2446809	6.0000	4.258459e-02	2.027762
age=less than 25 years	18.400000	12.2340426	15.6250	.572268e-02	-2.100070
age=more than 60 years	16.959064	7.7127660	10.6875	2.929987e-02	-2.179428
study_lev=primary	17.857143	10.6382979	14.0000	2.892470e-02	-2.184511
governorate=siliana	8.333333	0.7978723	2.2500	2.142722e-02	-2.300371
bq_zitouna=bq_zitouna_no	19.553073	27.9255319	33.5625	7.670354e-03	-2.666246
civi_status=Widowed	6.976744	0.7978723	2.6875	5.035097e-03	-2.804780
civi_status=divorced	6.521739	0.7978723	2.8750	2.645622e-03	-3.006169
governorate=jendouba	7.936508	1.3297872	3.9375	1.271994e-03	-3.222224
type_employer=unemployed	14.634146	7.9787234	12.8125	8.785046e-04	-3.326797
governorate=kef	2.631579	0.2659574	2.3750	4.642106e-04	-3.500601
annual_income=less than 3500 D	18.853695	33.2446809	41.4375	2.068632e-04	-3.710484

study_lev=illiterate	10.156250	3.4574468	8.0000	6.925465e-05	-3.978832
governorate=nabeul	8.928571	2.6595745	7.0000	4.426096e-05	-4.084032
study_lev=secondary	17.222222	24.7340426	33.7500	1.753244e-05	-4.294200
recours_pf=recours_pf_no	22.222222	89.3617021	94.5000	3.425203e-06	-4.643522
governorate=bizerte	4.819277	1.0638298	5.1875	3.177001e-06	-4.659032
bq_baraka=bq_baraka_no	20.371805	69.9468085	80.6875	6.509958e-09	-5.803101
ijara=ijara_no	22.229381	91.7553191	97.0000	9.827248e-10	-6.112191
mudharaba=mudharaba_no	22.121604	90.9574468	96.6250	3.921697e-10	-6.257113
knowledge_fi=knowledge_fi_no	17.275748	41.4893617	56.4375	2.882098e-11	-6.652472
mucharaka=mucharaka_no	21.846554	89.3617021	96.1250	2.828678e-12	-6.985983
murabaha=murabaha_no	21.081081	82.9787234	92.5000	1.844838e-13	-7.359584
adv_ratio_q_p=adv_ratio_q_p_no	18.076581	53.9893617	70.1875	2.081056e-14	-7.645518
interet_pf=interet_pf_no	10.516934	15.6914894	35.0625	4.503331e-21	-9.420176
advtg_no_riba=advtg_no_riba_no	1.642336	2.3936170	34.2500	5.381001e-65	-17.024763
advtg_sharia=advtg_sharia_no	3.306878	6.6489362	47.2500	4.931155e-84	-19.423012
advtg_sharing=advtg_sharing_no	10.212097	34.5744681	79.5625	7.014462e-119	-23.181400
advtg_no_spec=advtg_no_spec_no	5.302403	17.0212766	75.4375	4.794769e-185	-29.010897

Table II.18: category`2`(for Competitive Advantages)

	Cla/Mod	Mod/Cla	Global	p.value	v.test
advtg_no_riba=advtg_no_riba_yes	65.114068	100.0000000	65.7500	1.392258e-179	28.574544
advtg_no_spec=advtg_no_spec_no	54.681027	96.3503650	75.4375	1.088162e-74	18.285074
advtg_sharing=advtg_sharing_no	52.317361	97.2262774	79.5625	5.338287e-62	16.615994
adv_ratio_q_p=adv_ratio_q_p_no	52.626892	86.2773723	70.1875	4.803877e-36	12.534996
advtg_sharia=advtg_sharia_no	50.925926	56.2043796	47.2500	5.368812e-10	6.207927
age=less than 25 years	54.800000	20.0000000	15.6250	3.480299e-05	4.139522
mucharaka=mucharaka_no	43.758127	98.2481752	96.1250	8.383978e-05	3.933150
ijara=ijara_no	43.621134	98.8321168	97.0000	1.123128e-04	3.862326
bq_baraka=bq_baraka_no	44.848954	84.5255474	80.6875	7.134182e-04	3.384370
murabaha=murabaha_no	43.986486	95.0364964	92.5000	7.247276e-04	3.380050
mudharaba=mudharaba_no	43.531695	98.2481752	96.6250	1.469438e-03	3.180652
type_employer=unemployed	52.682927	15.7664234	12.8125	2.397798e-03	3.035949
study_lev=secondary	47.962963	37.8102190	33.7500	3.047117e-03	2.962944
governorate=sidi bouzid	61.290323	5.5474453	3.8750	3.094162e-03	2.958225
governorate=kasserine	59.090909	5.6934307	4.1250	7.079277e-03	2.693092

civi_status=single	47.130435	39.5620438	35.9375	9.112477e-03	2.607805
governorate=gabes	60.000000	4.8175182	3.4375	9.794309e-03	2.583008
governorate=sfax	52.112676	10.8029197	8.8750	1.997331e-02	2.326849
governorate=ben arous	54.444444	7.1532847	5.6250	2.316357e-02	2.270726
interet_pf=interet_pf_yes	44.754572	67.8832117	64.9375	3.260921e-02	2.136862
type_employer=self-employed	35.582822	8.4671533	10.1875	4.847938e-02	-1.973142
civi_status=married	40.598291	55.4744526	58.5000	3.388778e-02	-2.121404
interet_pf=interet_pf_no	39.215686	32.1167883	35.0625	3.260921e-02	-2.136862
governorate=kairouan	29.411765	3.6496350	5.3125	9.582176e-03	-2.590553
type_employer=retired	29.896907	4.2335766	6.0625	7.408311e-03	-2.677910
governorate=mahdia	25.423729	2.1897810	3.6875	5.243048e-03	-2.791709
governorate=tunis	30.872483	6.7153285	9.3125	1.783558e-03	-3.124090
mudharaba=mudharaba_yes	22.222222	1.7518248	3.3750	1.469438e-03	-3.180652
governorate=ariana	25.641026	2.9197080	4.8750	1.388204e-03	-3.197093
murabaha=murabaha_yes	28.333333	4.9635036	7.5000	7.247276e-04	-3.380050
bq_baraka=bq_baraka_yes	34.304207	15.4744526	19.3125	7.134182e-04	-3.384370
annual_income=higher than 25000 D	23.188406	2.3357664	4.3125	5.732541e-04	-3.443963
age=more than 60 years	29.824561	7.4452555	10.6875	2.358706e-04	-3.677132
ijara=ijara_yes	16.666667	1.1678832	3.0000	1.123128e-04	-3.862326
mucharaka=mucharaka_yes	19.354839	1.7518248	3.8750	8.383978e-05	-3.933150
advtg_sharia=advtg_sharia_yes	35.545024	43.7956204	52.7500	5.368812e-10	-6.207927
adv_ratio_q_p=adv_ratio_q_p_yes	19.706499	13.7226277	29.8125	4.803877e-36	-12.534996
advtg_sharing=advtg_sharing_yes	5.810398	2.7737226	20.4375	5.338287e-62	-16.615994
advtg_no_spec=advtg_no_spec_yes	6.361323	3.6496350	24.5625	1.088162e-74	-18.285074
advtg_no_riba=advtg_no_riba_no	0.000000	0.0000000	34.2500	1.392258e-179	-28.574544

Table II.19: Category`3` (for Competitive Advantages)

	Cla/Mod	Mod/Cla	Global	p.value	v.test
advtg_no_riba=advtg_no_riba_no	98.357664	100.0000000	34.2500	0.000000e+00	Inf
interet_pf=interet_pf_no	50.267380	52.3191095	35.0625	1.845319e-24	10.206973
advtg_no_spec=advtg_no_spec_no	40.016570	89.6103896	75.4375	5.643366e-23	9.869521
advtg_sharia=advtg_sharia_no	45.767196	64.1929499	47.2500	2.934769e-22	9.702751
advtg_sharing=advtg_sharing_no	37.470542	88.4972171	79.5625	6.206830e-11	6.538670
knowledge_fi=knowledge_fi_no	40.310078	67.5324675	56.4375	1.345003e-10	6.421994
adv_ratio_q_p=adv_ratio_q_p_yes	44.025157	38.9610390	29.8125	1.754970e-08	5.634569

age=more than 60 years	53.216374	16.8831169	10.6875	2.872621e-08	5.549028
governorate=bizerte	61.445783	9.4619666	5.1875	1.277709e-07	5.282015
study_lev=illiterate	54.687500	12.9870130	8.0000	3.947258e-07	5.071484
governorate=jendouba	58.730159	6.8645640	3.9375	3.753084e-05	4.122177
bq_zitouna=bq_zitouna_no	40.409683	40.2597403	33.5625	5.990247e-05	4.013195
murabaha=murabaha_no	34.932432	95.9183673	92.5000	1.198706e-04	3.846391
governorate=nabeul	50.000000	10.3896104	7.0000	2.340200e-04	3.679142
study_lev=primary	44.196429	18.3673469	14.0000	4.269211e-04	3.522857
civi_status=divorced	58.695652	5.0092764	2.8750	4.836345e-04	3.489660
mudharaba=mudharaba_no	34.346701	98.5157699	96.6250	1.758009e-03	3.128333
mucharaka=mucharaka_no	34.395319	98.1447124	96.1250	1.851947e-03	3.113002
recours_pf=recours_pf_no	34.457672	96.6604824	94.5000	5.492001e-03	2.776663
governorate=kef	55.263158	3.8961039	2.3750	6.286891e-03	2.732431
type_employer=retired	46.391753	8.3487941	6.0625	7.708742e-03	2.664567
governorate=ariana	47.435897	6.8645640	4.8750	1.036427e-02	2.563433
age=40-60 years	37.979798	34.8794063	30.9375	1.563901e-02	2.417233
governorate=kairouan	45.882353	7.2356215	5.3125	1.704577e-02	2.385719
civi_status=Widowed	51.162791	4.0816327	2.6875	1.770690e-02	2.371691
gender=male	36.408978	54.1743970	50.1250	2.107848e-02	2.306576
ijara=ijara_no	34.149485	98.3302412	97.0000	2.260090e-02	2.280115
annual_income=higher than 25000 D	46.376812	5.9369202	4.3125	2.631606e-02	2.221516
type_employer=other	41.549296	10.9461967	8.8750	4.085851e-02	2.044963
governorate=siliana	50.000000	3.3395176	2.2500	4.318418e-02	2.021924
annual_income=less than 3500 D	36.500754	44.8979592	41.4375	4.578429e-02	1.997377
governorate=tataouine	13.636364	0.5565863	1.3750	3.986036e-02	-2.055193
ijara=ijara_yes	18.750000	1.6697588	3.0000	2.260090e-02	-2.280115
gender=female	30.952381	45.8256030	49.8750	2.107848e-02	-2.306576
governorate=ben arous	22.222222	3.7105751	5.6250	1.561629e-02	-2.417762
age=less than 25 years	26.800000	12.4304267	15.6250	1.123921e-02	-2.535172
type_employer=state	28.365385	21.8923933	26.0000	7.209805e-03	-2.686995
recours_pf=recours_pf_yes	20.454545	3.3395176	5.5000	5.492001e-03	-2.776663
governorate=gabes	16.363636	1.6697588	3.4375	4.012597e-03	-2.877170
mucharaka=mucharaka_yes	16.129032	1.8552876	3.8750	1.851947e-03	-3.113002
mudharaba=mudharaba_yes	14.814815	1.4842301	3.3750	1.758009e-03	-3.128333
civi_status=single	28.695652	30.6122449	35.9375	1.485331e-03	-3.177534

governorate=sousse	17.708333	3.1539889	6.0000	3.762153e-04	-3.556230
murabaha=murabaha_yes	18.333333	4.0816327	7.5000	1.198706e-04	-3.846391
governorate=medenine	13.043478	1.6697588	4.3125	8.157718e-05	-3.939719
governorate=gafsa	9.803922	0.9276438	3.1875	7.626751e-05	-3.955836
bq_zitouna=bq_zitouna_yes	30.291627	59.7402597	66.4375	5.990247e-05	-4.013195
age=26-40 years	28.216374	35.8070501	42.7500	5.989866e-05	-4.013210
governorate=sidi bouzid	9.677419	1.1131725	3.8750	9.911914e-06	-4.419086
governorate=sfax	17.605634	4.6382189	8.8750	9.319989e-06	-4.432377
adv_ratio_q_p=adv_ratio_q_p_no	29.296527	61.0389610	70.1875	1.754970e-08	-5.634569
study_lev=higher	25.706215	33.7662338	44.2500	1.442427e-09	-6.050672
knowledge_fi=knowledge_fi_yes	25.107604	32.4675325	43.5625	1.345003e-10	-6.421994
advtg_sharing=advtg_sharing_yes	18.960245	11.5027829	20.4375	6.206830e-11	-6.538670
advtg_sharia=advtg_sharia_yes	22.867299	35.8070501	52.7500	2.934769e-22	-9.702751
advtg_no_spec=advtg_no_spec_yes	14.249364	10.3896104	24.5625	5.643366e-23	-9.869521
interet_pf=interet_pf_yes	24.735322	47.6808905	64.9375	1.845319e-24	-10.206973
advtg_no_riba=advtg_no_riba_yes	0.000000	0.0000000	65.7500	0.000000e+00	-Inf

Appendices of Chapter III

Appendix 1: Questionnaire for entrepreneurs in the Nothwest Region (Frensh version)

1. Connaissez-vous la Finance islamique ?

- ☐ Oui
- ☐ Non

2. Si oui, quels sont les produits financiers islamiques que vous connaissez le mieux ?

- .....
- .....
- .....
- .....
- .....

3. Quelles sont les banques islamiques tunisiennes que vous connaissez ?

- .....
- .....
- .....

4. Pensez-vous que les banques et les institutions financières islamiques :

	Absolument d'accord	D'accord	Neutre	Désaccord	Absolument désaccord
a) Travaillent selon les principes de la Charia	☐	☐	☐	☐	☐
b) Ne pratiquent pas des taux d'intérêt dans leurs produits (pas de Riba)	☐	☐	☐	☐	☐
c) N'investissent pas dans des projets spéculatifs (pas de Gharar)	☐	☐	☐	☐	☐
d) N'investissent pas dans des transactions illicites (comme les jeux de hasard, l'alcool, ...etc.)	☐	☐	☐	☐	☐
e) Partagent d'une manière équitable, les profits et les pertes avec leur clientèle	☐	☐	☐	☐	☐
f) N'investissent que dans des actifs tangibles (matériels)	☐	☐	☐	☐	☐

5. Pensez-vous que les banques et les institutions financières islamiques:

	Absolument d'accord	D'accord	Neutre	Désaccord	Absolument désaccord
a) Offrent une large gamme de produits	□	□	□	□	□
b) Pratiquent des tarifs compétitifs	□	□	□	□	□
c) Sont souples et flexibles en matière de financements	□	□	□	□	□
e) Sont transparentes dans ses relations avec leur clientèle	□	□	□	□	□
d) Offrent une bonne qualité de service	□	□	□	□	□

6. Pensez-vous que les banques et les institutions financières islamiques :

	Absolument d'accord	D'accord	Neutre	Désaccord	Absolument désaccord
a) Aident à lutter contre la pauvreté	□	□	□	□	□
b) Favorisent l'inclusion financière (accès aux services financiers)	□	□	□	□	□
c) Soutiennent les projets de développement durable (développement économique et social tout en préservant l'environnement)	□	□	□	□	□
d) Promeuvent fortement la création d'emplois à travers le financement des projets	□	□	□	□	□

7. Pensez-vous que les banques et les institutions islamiques servent comme un système bancaire alternatif (complémentaire aux banques conventionnelles) ?

□ Oui
□ Non

8. Avec quels types de banques traitez-vous?

- Banque islamique
- Banque conventionnelle
- Les deux

9. Si vous avez un compte chez une banque conventionnelle, souhaitez-vous traiter avec des structures islamiques?

- Oui, si ma banque ouvre des fenêtres islamiques
- Oui, même si je suis ramené à traiter avec une autre banque
- Non

Sinon,pourquoi ?……
……(Passer directement à la 12éme question)

10. Qu'attendez-vous de la Banque Islamique ?

- Effectuer nos opérations financières dans un cadre licite (Conforme aux principes de la Charia)
- Effectuer nos opérations financières à moindre coût (Par rapport aux banques classiques)
- Un soutien fort dans le financement de nos investissements
- Autre (à préciser) :……

11. Pour quels besoins seriez-vous disposés à faire recours aux services d'une banque islamique ?

- Opérations bancaires courantes
- Financement des investissements
- Financement des besoins d'exploitation
- Placements
- Autre : ……

12. Gouvernorat:

.....

13. L'effectif de votre entreprise est :

- inférieur à 10
- entre 10 et 49
- entre 50 et 199
- supérieur à 199

14. Votre chiffre d'affaires est :

- inférieur à 100.000 DT

- entre 100.000 DT et 1.000.000 DT
- entre 1.000.000 DT et 10.000.000 DT
- supérieur à 10.000.000 DT

15. Votre secteur d'activité est:

- Industriel
- Commerce
- Service
- Tourisme
- Agricole
- Autre (à préciser): ……

16. Votre position dans l'entreprise est:

Dirigeant	Directeur financier	Autre : ……

Appendix 2: Conformity to the Shariah principles

Table III.1 : Are Islamic Banking products and services conform to the Shariah principles (according to the entrepreneurs of the Tunisian Northwest region)

Entrepreneurs' views	Absolutely disagree		Disagree		Neutral		Agree		Absolutely agree	
	Eff	%	Eff	%	Eff	%	Eff	%	Eff	%
Work according to the Shariah principles	1	3.3	7	23.3	**9**	**30.0**	**11**	36.7	**2**	6.7
Do not practice Interest rate in their products	**2**	6.7	7	23.3	**5**	16.7	**12**	40	**4**	13.3
Do not invest in speculative projects	**1**	3.3	2	6.7	**14**	46.7	**9**	**30.0**	**4**	13.3
Do not invest in illicit transactions	1	3.3	0	0.0	**5**	16.7	**17**	56.7	**7**	23.3
Share equitably the profits and the losses	2	6.7	6	20.0	**8**	26.7	**12**	40	**2**	6.7
Invest only in tangible assets	0	0.0	**3**	10.0	**10**	33.3	**13**	43.3	**4**	13.3

Table III.2: Variables Contributions

	F1	F2	F3	F4	F5	F6
BI_Sharia	21.48%	-1.77%	17.84%	3.35%	-51.28%	-4.27%
BI_interest	41.67%	1.58%	0.04%	-52.19%	4.14%	0.38%
BI_gharar	14.26%	14.72%	9.38%	30.68%	14.24%	16.71%
BI_illicit	0.03%	37.91%	-0.29%	0.75%	1.22%	-59.80%
BI_sharing	20.43%	-3.31%	-64.75%	11.03%	-0.24%	-0.24%
BI_tangible	-2.13%	40.70%	-7.70%	-2.00%	-28.86%	18.60%

Table III.3: Classification detail resulting from the last 5 groupings

Classes Number	Discriminant power	Ward's standard	Stopping criterion	Klastorin index
1	0.00	42.09		
2	0.26	26.23	1.60	0.31
3	0.42	14.25	1.84	0.37
4	0.50	11.50	1.24	0.36
5	0.57	10.58	1.09	0.42

Appendix 3: Quality of Islamic products and services

Table III.4 :Entrepreneurs views about the quality of Islamic products and services

Entrepreneurs' views	Absolutely disagree		Disagree		Neutral		Agree		Absolutely agree	
	Eff	%	Eff	%	Eff	%	Eff	%	Eff	%
provide a vast range of products	0	0.0	7	23.3	**16**	**53.3**	**7**	23.3	**0**	0.0
have competitive tariffs	**4**	13.3	4	13.3	**15**	50.0	**7**	23.3	**0**	0.0
are soft and flexible in terms of financing	**3**	10.0	6	20.0	**15**	50.0	**5**	**16.7**	**1**	3.3
have transparent relationships with their clients	3	10	2	6.7	**13**	43.3	**9**	30	**3**	10
offer good quality service	1	3.3	2	6.7	**18**	60.0	**6**	20.0	**3**	10.0

Table III.5: Variables Contributions

	F1	F2	F3	F4	F5
BI_vastRproduct	3.09%	-20.62%	52.27%	-11.23%	-12.79%
BI_tarif	14.12%	-58.55%	-8.29%	14.10%	4.94%
BI_flexibility	26.10%	0.68%	-5.55%	-54.54%	13.12%
BI_transparency	38.57%	8.25%	-4.36%	4.00%	-44.81%
BI_quality	18.11%	11.90%	29.52%	16.13%	24.34%

Table III.6: Classification detail resulting from the last 5 groupings

Classes Number	Discriminant power	Ward's standard	Stopping criterion	Klastorin index
1	0.00	42.78		
2	0.35	15.89	2.69	0.47
3	0.48	11.83	1.34	0.47
4	0.58	10.55	1.12	0.51
5	0.67	8.42	1.25	0.58

Appendix 4: Contribution to Socio-economic development

Table III.7: Views of the Tunisian Northwest region entrepreneurs about the link between Islamic finance and socio-economic development

Entrepreneurs' point of view	Absolutely disagree		Disagree		Neutral		Agree		Absolutely agree	
	Eff	%	Eff	%	Eff	%	Eff	%	Eff	%
help to fight poverty	1	3.3	6	20.0	**7**	**23.3**	**13**	43.3	**3**	10.0
foster financial inclusion	**2**	6.7	2	6.7	**5**	16.7	**19**	63.3	**2**	6.7
support sustainable development projects	**3**	10.0	5	16.7	**11**	63.3	**10**	33.3	**1**	3.3
strongly promote employment creation through financing projects	3	10.0	2	6.7	**4**	6.7	**18**	3.3	**3**	10

Table III.8: Variables Contributions

	F1	F2	F3	F4
BI_poverty	22.64%	34.86%	-33.67%	8.83%
BI_inclusion	20.03%	12.14%	65.07%	2.76%
BI_support	21.83%	-49.76%	-0.40%	28.01%
BI employment	35.51%	-3.24%	-0.86%	-60.39%

Table III.9: Classification detail resulting from the last 5 groupings

Classes Number	Discriminant power	Ward's standard	Stopping criterion	Klastorin index
1	0.00	61.43		
2	0.49	17.63	3.49	0.69
3	0.63	11.90	1.48	0.58
4	0.73	5.27	2.26	0.64
5	0.77	4.95	1.06	0.66

Appendix of Chapter IV

Table IV.1: Build of variables

Variables	Label	Measure	Source
dependent Variable			
Log GDP per capita	Log GDP per capita	Log (GDP per capita)	World Bank
Independent Variables			
Depth	Depth of Islamic finance	M3 / GDP	IBIS
Invest/PIB	Islamic Investments	Investments / GDP	IBIS
Finis/PIB	Islamic Financing	Islamic Modes of Financing/ GDP	IBIS
initial GDP per capita	initial GDP per capita	GDP per capita $_{t-1}$	World Bank
Education	Education	logarithm of initial entry in secondary school	World Bank
Trade Openness	Trade Openness	(exportation + importation) / GDP	World Bank
Inflation	Inflation	Inflation	IMF
Government consumption	Government consumption	Government consumption/ GDP	IMF

Appendices of Chapter V

Figure V.1: Single Attribute Utility Functions

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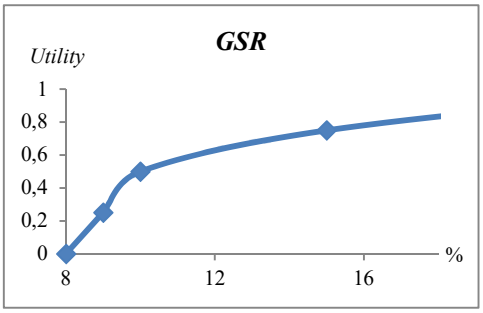
<tr><td>Insolvency Risk (IR)</td><td> 
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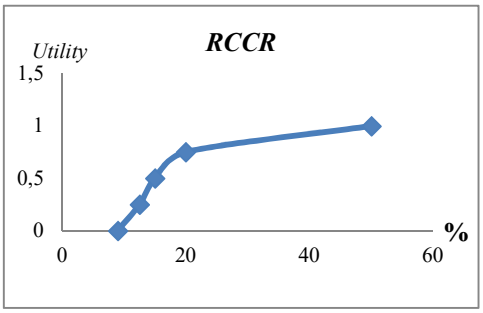
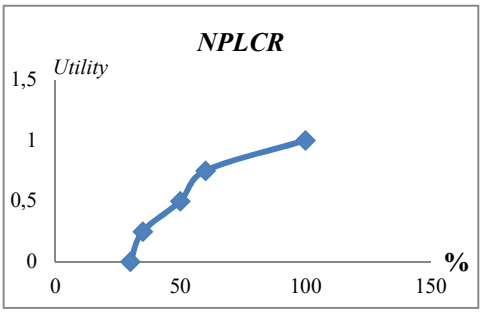
<tr><td rowspan="2">Credit Risk (CR)</td><td> 
</td><td> 
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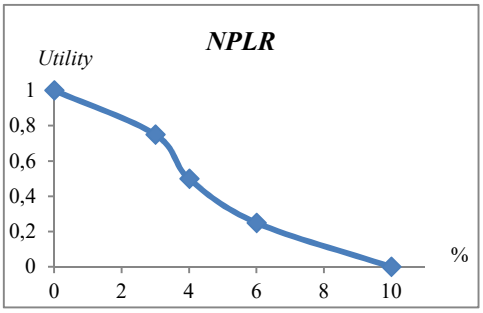
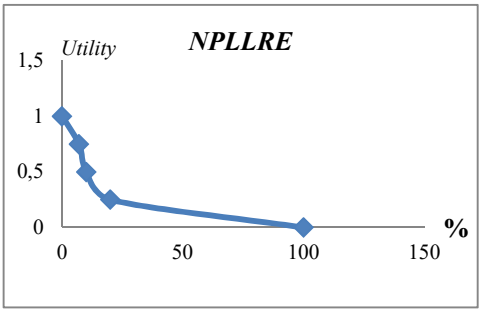
<tr><td> 
</td><td> 
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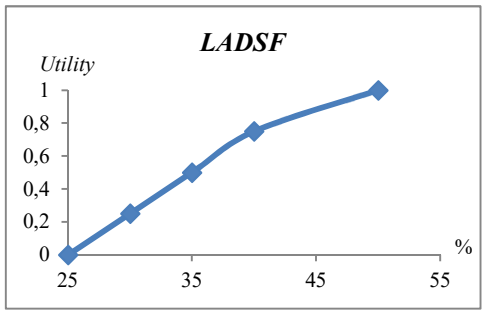
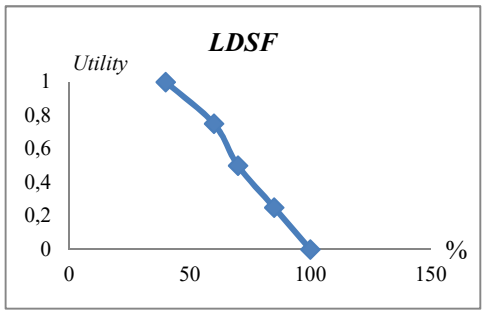
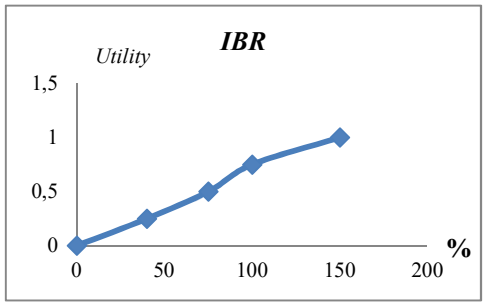
Liquidity Risk (LR)		
		

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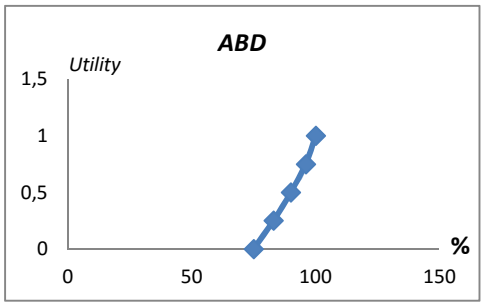
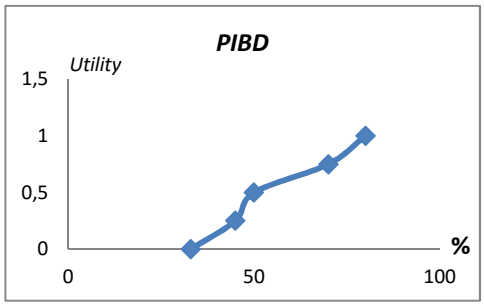
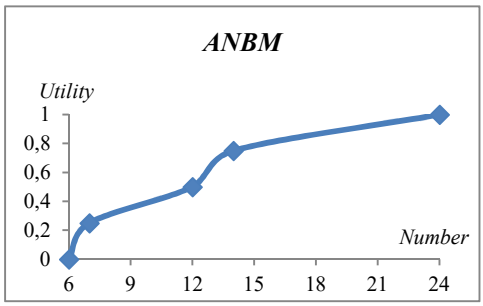
Governance Quality (GQ)		
		

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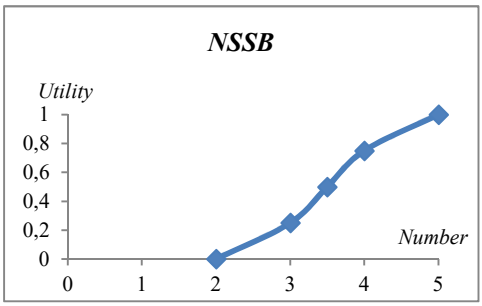
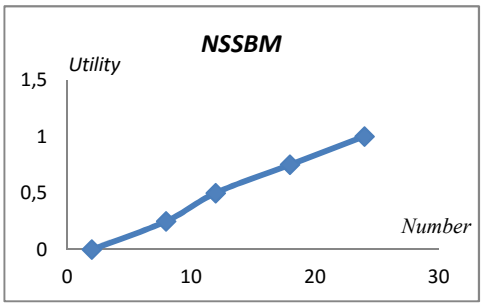
<tr><td rowspan="2"></td><td> 
</td><td> 
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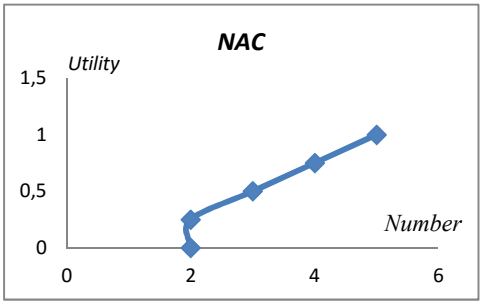
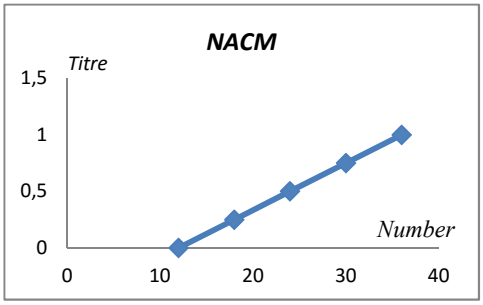
<tr><td> 
</td><td> 
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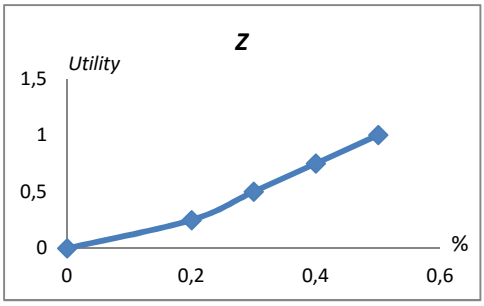
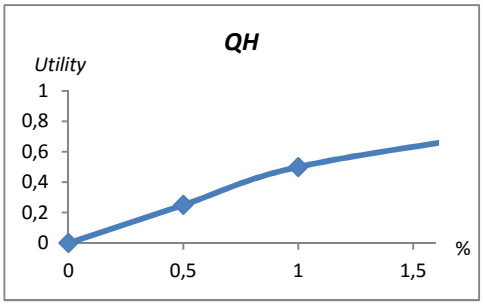
<tr><td rowspan="2">Social Responsibility (SoR)</td><td> 
</td><td> 
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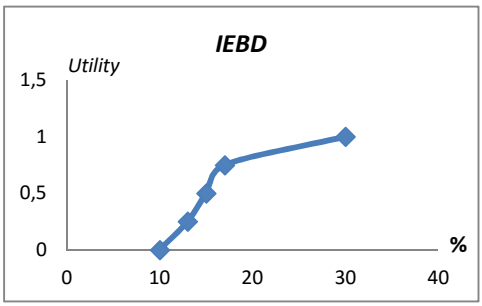
<tr><td> 
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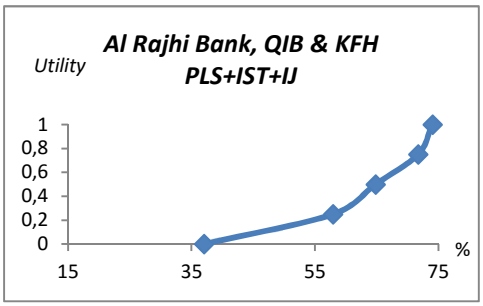
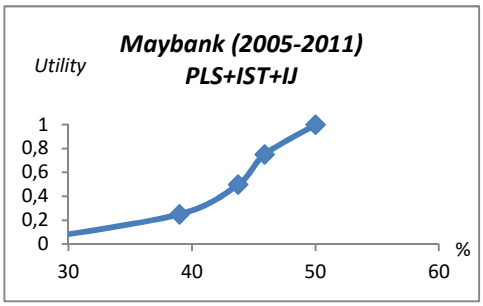
<tr><td rowspan="4">Economic Sustainability (EcS):</td><td rowspan="2">CAEP</td><td> 
</td><td> 
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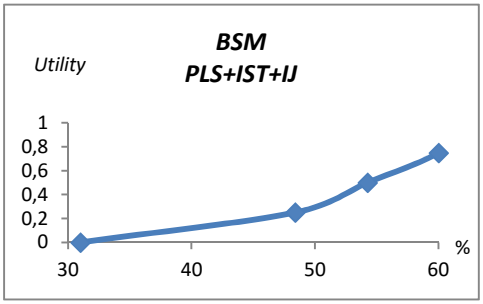
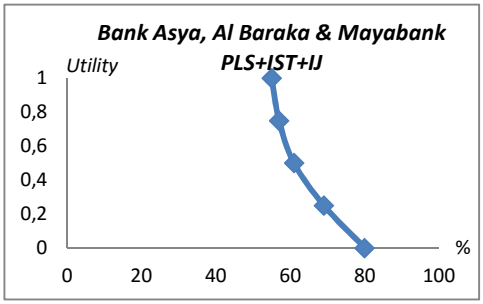
<tr><td> 
</td><td> 
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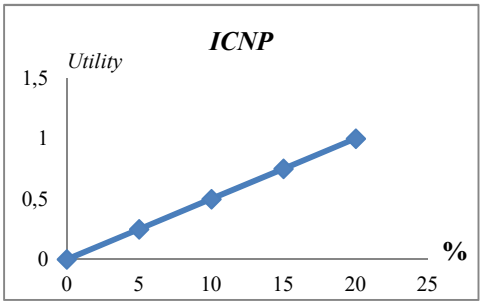
<tr><td>ICNP</td><td> 
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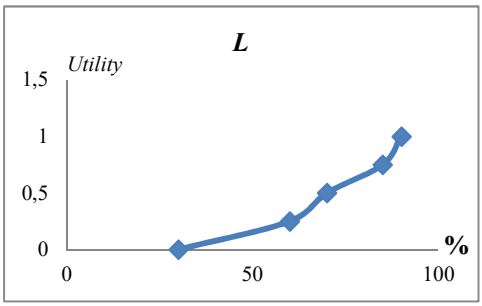
<tr><td>L</td><td> 
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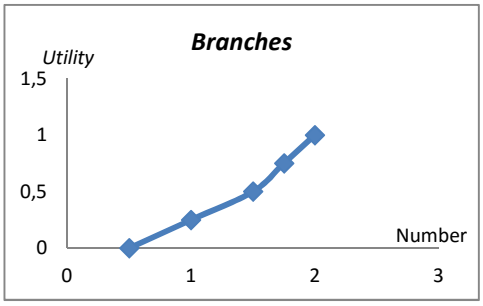
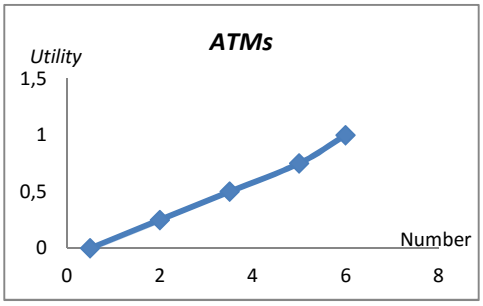
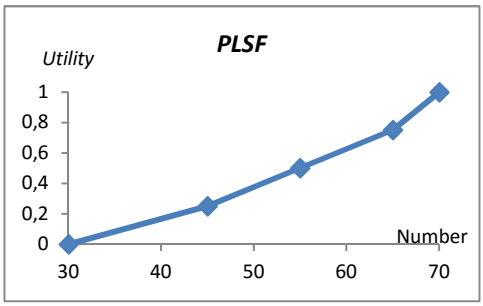
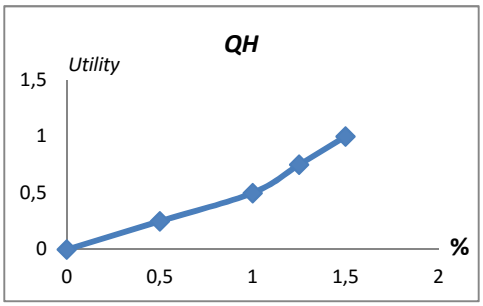
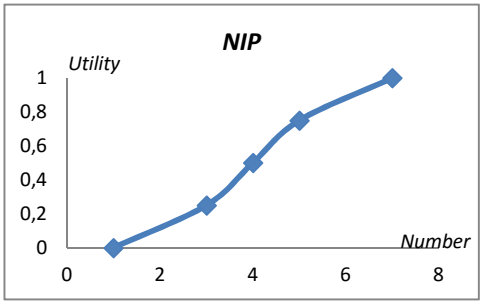
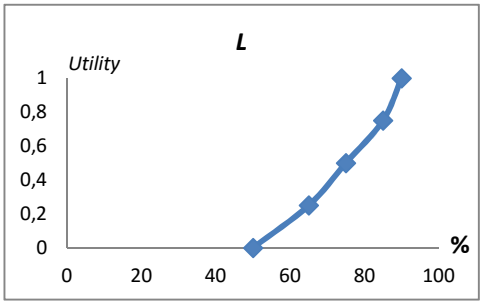
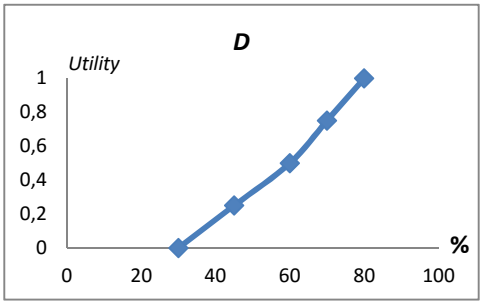
Accessibility (A)		
Competitive Advantage (CA)		
		
Service Quality (SQ)		

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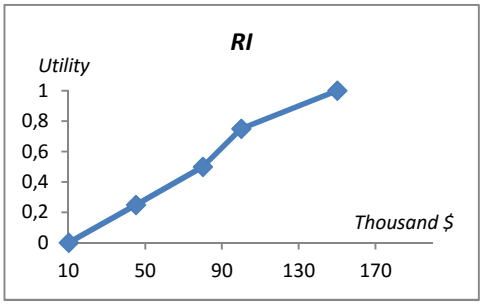
Remuneration & Incentives (RI)		

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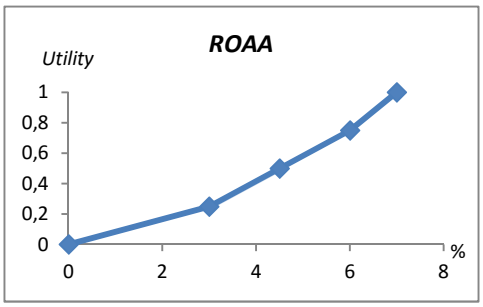
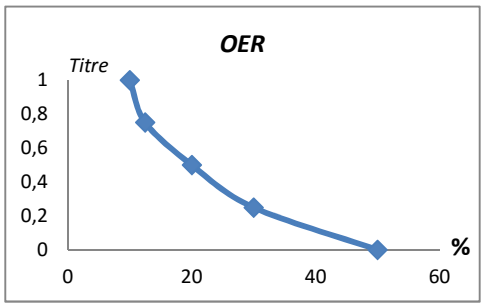
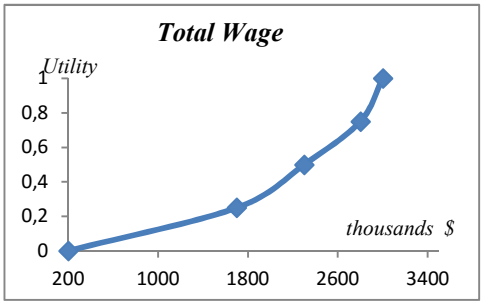
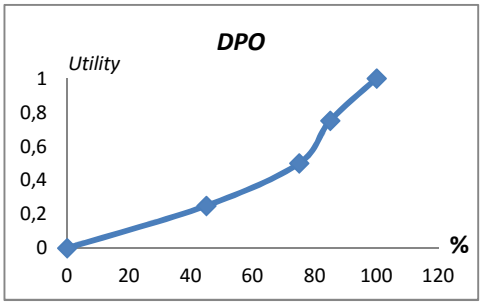
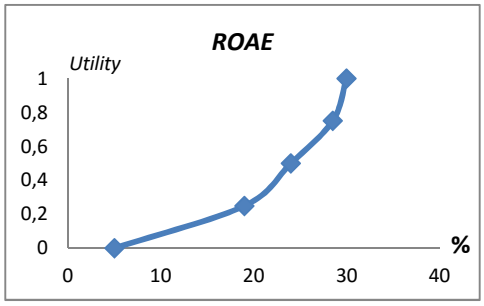
Executive Side (ES)		
Working Side (WS)		

Shareholders		
Profitability (P)		

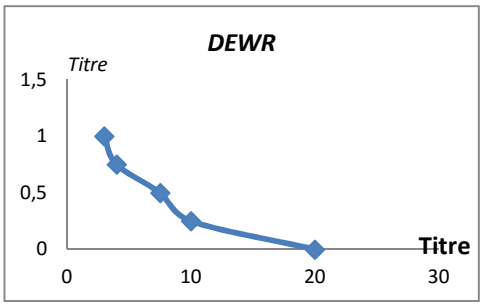
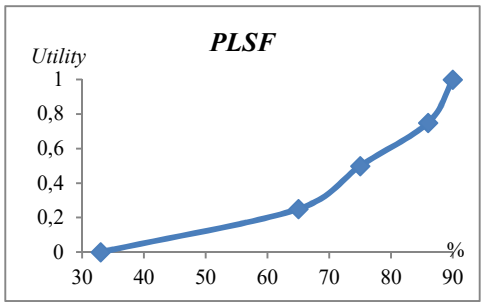
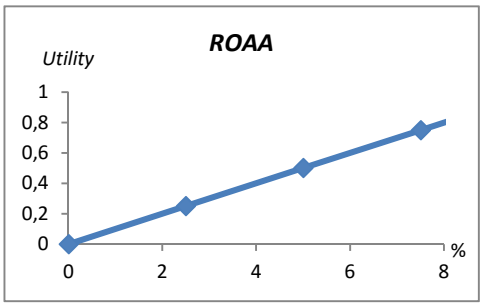
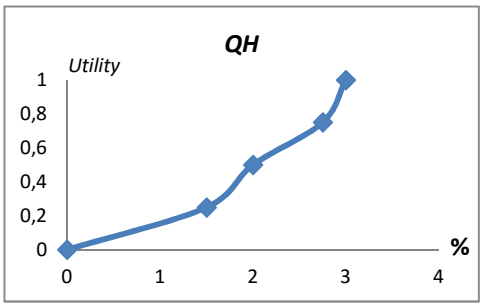
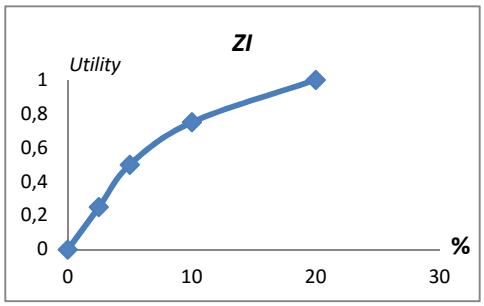
Shariah Advisers		
Establishing justice (EJ)		
Promoting Welfare (PW)	 	

Table V.1. Estimation of Multi-Attribute Utility Functions

Regulators	
Global Solvency Ratio (GSR)	U(GSR)= 0.96407-8.99*EXP(-0.28231*GSR)
Insolvency Risk (IR)	U(IR)= 0.96407-8.99*EXP(-0.28231*GSR)
Regulatory Capital to Credit Risk (RCC)	U(RCCR)=1.0217-2.8631*(EXP(-0.11174*RCCR))
Nonperforming Loans Coverage Ratio (NPLCR)	U(NPLCR)=1.1026-2.9722*EXP(-0.03393*NPLCR)
Nonperforming Loans Ratio (NPLR)	U(NPLR)=-1.3232+2.3502*EXP(-0.059264*NPLR)
Impaired Loans less Reserves for Imp Loans/ Equity (NPLLRE)	U(NPLLRE)=-0.012896+1.0403*EXP(-0.062763*NPLLRE)
Credit Risk (CR)	U(CR)=[(-0.9443*U(RCCR)+1)(-0.6958*U(NPLCR)+1)(-0.2982*U(NPLR)+1)(-0.497*U(NPLLRE)+1)-1]/-0.994
Liquid assets to Deposits and short term funding Ratio (LADSF)	U(LADSF)=1.6731-4.3073*EXP(-0.037504*LADSF)
Loans to Deposits and short term funding Ratio (LDSF)	U(LDSF)=4.9612-3.3831*EXP(0.0038465*LDSF)
Interbank Ratio (IBR)	U(IBR)=8.95059*(1-EXP(-0.000804646*IBR))
Liquidity Risk (LR)	U(LR)=[(-0.7398*U(LADSF)+1)(-0.4624*U(LDSF)+1)(-0.4624*U(IBR)+1)-1]/-0.9248
Regulators (R)	U(R)=[(0.6507*U(IR)+1)(0.9761*U(CR)+1)(1.3014*U(LR)+1)-1]/6.5072

Civil Society	
Assiduity of Board Directors (ABD)	U(ABD)=-0.74544+0.061497*EXP(0.03339*ABD)
Percentage of independent non executive directors in BOD (PIBD)	U(PIBD)=2.2495+-3.3411*EXP(-0.012004*PIBD)
Annual Number of Board Meetings (ANBM)	U(ANBM)=1.1649+-2.1088*EXP(-0.10699*ANBM)
Number of Shariah Supervisory Board's members (NSSB)	U(NSSB)=0.35*NSSB-0.725
Number of SSB Meetings (NSSBM)	U(NSSBM)=6.0541-6.1664*EXP(-0.008329*NSSBM)
Number of audit committee members (NAC)	U(NAC)=1.8541+-2.7462*EXP(-0.23194*NAC)
Number of audit committee meetings (NACM)	U(NACM)=0.0416667*NACM-0.5
Governance Quality (GQ)	U(GQ)=[(-0.7983*U(ABD)+1)(-0.5988*U(PIBD)+1)(-0.499*U(ANBM)+1)(-0.6986* U(NSSB)+1)(-0.5988*U(NSSBM)+1)(-0.3992*U(NAC)+1)(-0.2994*U(NACM)+1)-1]/-0.9979
International Employees in the Board of Directors (IEBD)	U(IEBD)=1.0966-4.3354*EXP(-0.13438*IEBD)
Diversity (Di)	U(Di)= 1.0966-4.3354*EXP(-0.13438*IEBD)
Zakat/Total Assets (Z)	U(Z)=-0.6702+0.65772*EXP(1.8798*Z)
Qard Hasan/total Islamic modes of finance (QH)	U(QH)=1.392*(1-EXP(-0.411812*QH))
Inclusion (I)	U(I)=[(-0. 9167*U(Z)+1)(-0. 5789*U(QH)+1)-1]/ -0.9649
Social Responsibility (SoR)	U(SoR)=[(-0. 3333*U(Di)+1)(-0.75*U(I)+1)-1]/-0.8333
Immediate Contribution to the National Product (ICNP)	U(ICNP)=0.05*ICNP
Loans to Assets (L)	U(L)=-0.20106+0.081856*EXP(0.029543*L)
Coherence with the adopted economic policy (CAEP)	U(CAEP)=U(PLSP1)=-0.072654+0.0053808*EXP(0.071107*PLSP1) U(CAEP)=U(PLSP2)=-0.1378+0.01288*EXP(0.090099*PLSP2) U(CAEP)=U(PLSP3)=-0.074518+0.005635*EXP(0.084187*PLSP3) U(CAEP)=U(MUR)=-0.07642+186.38*EXP(-0.094252*MUR)
Economic Sustainability (EcS)	U(EcS)=[(-0.8482*U(ICNP)+1)(-0.2827*U(L)+1)(-0.4712*U(CAEP)+1)-1]/- 0.9424
Actions Devoted to Sustainable Development	U(ARSD)=[(0.1487*U(EcS)+1)(0.1116*U(GQ)+1)(0.0744*U(SoR)+1)-1]/0.3718

(ADSD)	
Writing Devoted to Sustainable Development (WDSD)	U(WDSD)=0 if WDSD=0 and 1 if WDSD=1
Apparent Commitment in Sustainable Development (ACSD)	U(ACSD)=0 if WDSD=0 and 1 if WDSD=1
Civil Society (CS)	U(CS)=[(0.125*U(ACSD)+1)(U(ARSD)+1)-1]/1.25

Customers	
Branches (B)	U(B)=-0.40387+0.27737*EXP(0.8098*B)
Automated Teller Machines (ATMs)	U(ATMs)=-1.9538+1.8912*EXP(0.07349*ATMs)
Accessibility (A)	U(A)=[(-0.6667*U(B)+1)(-0.5*U(ATMs)+1)-1]/-0.8333
Loans to Assets (L)	U(L)=-0.44864+0.1078*EXP(0.028708*L)
Deposits to liabilities (D)	U(D)=-0.97211+0.6415*EXP(0.014041*D)
Service Quality (SQ)	U(SQ)=[(-0.5*U(L)+1)(-0.4286*U(D)+1)-1]/ -0.7143
Profit and Loss sharing Financing (PLSF)	U(PLSF)=-0.11451+0.065054*EXP(0.056934*PLSF)
Qard Hasan/total Islamic modes of finance (QH)	U(QH)=-0.40372+0.4157*EXP(0.80994*QH)
Number of Islamic Products (NIP)	U(NIP)=0.175*NIP-0.2
Competitive Advantages (CA)	U(CA)=((-0.7685*U(PLSF)+1)(-0.4803*U(QH)+1)(-0.6724* U(NIP)+1)-1)/-0.9606
Customers (C)	U(C)=[(-0.4635*U(A)+1)(-0.3862*U(SQ)+1)(-0. 309*U(CA)+1)-1]/-0.7724

Employees	
Remuneration & Incentives (RI)	U(RI)=3.8223-3.9238*EXP(-0.0022329*RI)
Employees (E)	U(E)=3.8223-3.9238*EXP(-0.0022329*RI)

Managers	
Return on Average Assets (ROAA)	U(ROAA)=-0.328307*(1-EXP(0.199554*ROAA))
Operating Expenses Ratio (OER)	U(OER)=-0.084267+1.894*EXP(-0.059801*OER)
Executive Side (ES)	U(ES)=[(-0.75*U(ROAA)+1)(-0.3333*U(OER)+1)-1]/-0.8333
Total Wage (TW)	U(TW)=-0.081049+0.071174*EXP(0.00089779*TW)
Workforce Side (WS)	U(WS)=-0.081049+0.071174*EXP(0.00089779*TW)
Managers (M)	U(M)=[(6*U(ES)+1)(2*U(TW)+1)-1]/20

Shareholders	
Return on Average Equity (ROAE)	U(ROAE)=-0.067426+0.041552*EXP(0.107*ROAE)
Dividends payout (DPO)	U(DPO)=-0.15361+0.15709*EXP(0.019999*DPO)
Profitability (P)	U(P)=[(-0.5714*U(DPO)+1)(-0.5714*U(ROAE)+1)-1]/-0.8163
Shareholders (S)	U(S)= [(-0.5714*U(DPO)+1)(-0.5714*U(ROAE)+1)-1]/-0.8163

Shariah Advisers	
Directors - Employees welfare ratio (DEWR)	U(DEWR)=-0.076268+1.6472*EXP(-0.15361*DEWR)
Profit and Loss sharing Financing (PLSF)	U(PLSF)=-0.085851+0.020099*EXP(0.044038*PLSF)
Establishing justice (EJ)	U(EJ)=[(-0.125*U(DEWR)+1)(-0.3333*U(PLSF)+1)-1]/-0.4167
Return on Average Assets (ROAA)	U(ROAA)=0.1*ROAA
Zakah/Net income (ZI)	U(ZI)=1.11978*(1-EXP(-0.111892*ZI))
Qard Hasan/total Islamic modes of finance (QH)	U(QH)=-0.19205+0.19145*EXP(0.60081*QH)
Redistribution of Income and Wealth (RIW)	U(RIW)=[(-0.8*U(ZI)+1)(-0.5333*U(QH)+1)-1]/-0.8889
Promoting Welfare (PW)	U(PW)=[(-0.5*U(ROAA)+1)(-0.6667*kPW*U(RIW)+1)-1]/-0.8333
Shariah Advisers(SA)	U(SA)=[(2.5*U(EJ)+1)(1.6667*U(PW)+1)-1]/8.3333