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Financial Market Segmentation: An Application on Islamic Financial Markets

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Abstract

Muslim world comprises of a considerable part of the earth's population and there are many Muslim states in the world. People who adopted the Islam religion have a distinctive understanding of life based on Al-Quran, Hadith and Sharia. Therefore, all the deeds of Muslims must be in accordance with the way of Islam and Sharia. Finance is an issue in which Sharia prevails. According to the principles of Sharia, conventional financial applications are not proper for Muslims. Therefore, certain financial instruments and regulations are implemented to comply with the rulings of Islam and Sharia. Moreover, the aim of this study is to analyze the financial markets in Muslim countries resting on dependable international resources such as macro economical and financial indicators, and segmenting them by using statistical methods as Cluster and Discriminant analysis. As a result, it is concluded that financial markets in Muslim countries can be segmented by using certain financial indicators. Yet, financial markets in Muslim countries cannot be segmented by using certain economic indicators but, these indicators can be used to discriminate the financial market segments.

Key Words: Islamic Finance, Islamic Financial Markets, Finance, Economics, Segmentation, Sharia.

JEL Classification: E44, G10, G20, M30, O16, Z12.

1. Introduction

National economies rest on the production, trade and exchange of the goods and services in efficient financial markets. Without financial markets, it would be impossible to exchange the wealth and accumulate prosperity. Moreover, the stability of financial sectors is very important for the steadiness of an economy. A stable economy would be possible with efficient and effective currency creation mechanisms, payment means and the optimal utilization of these to finance economic growth along with fruitful investments. Moreover, the stability of the financial system must be supported with sound monetary policies applied by competent supervisory authorities (Hussein, 2010; Ameer, 2015).

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Furthermore, Islamic Finance (IF) is an important part of financial markets in the world. IF is a means to convert illiquid assets to liquidity in order to circulate in financial markets held by pious Muslims; yet, non-Muslims also make investments in Islamic Financial Institutions (IFIs) too. Muslim world is expanded to a wide geography from the European continent to the other edge of Asia and some parts of it bestowed with substantial amount of resources and strategic disposition. Muslim world holds about ¼ of the global geography and almost equal amount of population. However, the ratio of the gross domestic product (GDP) produced by Muslim countries correspond to no more than 15% of total global GDP. Most of the Muslim countries are highly indebted, but only the ones in the Gulf Region enjoy abundant resources of energy which makes them a popular destination of international investments and multinational corporations (MNCs). Therefore, it is obvious that there is a great disparity among the Muslim countries. The income per capita of Muslim countries is very low in most of them. The figure is mostly below 1000 USDs (United States Dollars). Among the Muslim countries, only the ones with abundant energy sources have considerable income per capita. These ones are situated in the Middle East and Central Asia. This also means that most of the Muslim countries face poverty. That's why, it is essential to achieve and preserve income allocation equally and social justice in Muslim countries (Siddiqui, 2012; Lai, 2014). One way recognized in this vain is to apply the Islamic Finance. Furthermore, these countries need to use some financial instruments and indicators to understand the nature of their economical potentials and how to use them to eradicate with poverty. Furthermore, the objective in this study is to segment the Islamic Financial Markets and propose the most convenient ways of segmenting financial markets in Muslim countries by resting on international publications and statistical methods; then to discover which economic indicators discriminate these segments perfectly.

2. The Fundamentals of Islamic Finance

The notion of IF refers to the utilization of society's resources, reserves and income according to the fundamentals and principles of Sharia. Sharia involves the principles of Al-Quran, Sunnah and Hadith. IF is one of the rapidly expanding sector in the global financial industry. Though it does not comprise of no more than 2-3% of the global financial market, its rate of growth is about 15% annually. Its rate of growth did not slow down even after the 2008 Global Financial Crisis (GFC) and its proponents allege that IF and its institutions are more dependable than conventional financial institutions, since it upholds the advantage of the society and it does not involve instruments and services of conventional financial system in its application, especially the interest. So, interest is at the center of this paradigm. Even though, interest is the most prevalent element of financial regimes in the globe, interest is not acceptable in IF. Though interest is not a proper mechanism for IFIs, there are numerous conventional financial institutions in the world such as HSBC, Citigroup and Societe Generale which also have branches that deal with IF (Lai, 2014; Zulfiquar et al., 2016; Hunter, 2014; Bin Mahfouz, Kabir, 2012; Siddiqui, 2012; Hearn et al., 2012; Saidi, 2009).

According to scholars of Islam, IF is compelled to have peculiar traits as a part of its regime which stems from ethical practices in all walks of life. These traits are; being exempt of interest (*riba*, excessive earnings); having real acquaintance with life, that is to be far from uncertainty (*gharar*); being free of speculation (no tendency for risk-taking, *maisir*); and avoiding issues which are not permissible (*haram*) in the Islam religion such as alcohol, pork and illicit sources of income. The governing tenets of IF originate from the divine text Al-Quran revealed by Allah (SWT), the Almighty; the Hadith which involves the statements and expressions of the Messenger Mohammed (may the peace upon him); and the Sunnah which is the wisdom, acts, deeds and ways of life of the Messenger Mohammed (may the peace upon him). Thus, the composition of these and the decrees (*fatwa*) propagated by Islamic scholars all

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constitute *Sharia* (Islamic Law) (Lai, 2014; Ariff, 2014; Zulfiquar et al., 2016; Hunter, 2014; Bin Mahfouz, Kabir, 2012; Smolo, Ismail, 2011; Hearn et al., 2012).

The Islamic Law, Sharia dictates the way of life, investments, financial and economic issues of pious Muslim people. In the way of life of pious Muslims, it is strictly forbidden to receive and give interest in any sort of business transactions or any kind of payment. The payment or obtainment of interest is against the Sharia's notion of riba. In essence, riba refers to extreme earnings or benefit which can be also related to usury. The usual deposit and loan agreements and financial dealings of conventional Western style financial services which run through the acquisition and payment of interest cannot be applicable in IFIs. Conventional investment instruments such as mutual funds, stocks, loan contracts and bonds are not proper under the rulings of Sharia since they pose uncertainty, involve interest and not in the best interest of all the society. Moreover, acquiring interest oriented earnings indirectly from any source of investment is also not permissible for pious Muslims (Zinser, 2014; Lai, 2014; Ariff, 2014; Zulfiquar et al., 2016; Mansour et al., 2015; Bin Mahfouz, Kabir, 2012; Hearn et al., 2012).

It is therefore indispensable to offer Sharia compliant IF instruments in the Islam geography. The Islamic world initiated IF in 1960s. The emergence of sovereign Muslim nations and especially the accumulation of wealth in the energy rich Muslim countries in the Middle East brought about the utilization of financial and commercial tools and services in the Islamic sense. Currently, the growing Muslim population and accumulation of their wealth create more demand for Sharia compliant financial instruments such as accords in the form of Islamic rules as well as financing contracts on consumer durables and household appliances, home furnishings, housing loans and mutual funds for individual investments. Furthermore, for the usage of a financial instrument within the framework of IF, it has got to be approved by a competent council of Islamic scholars. This council is called "Sharia board". The constitution and operation of Sharia boards vary according to the applications and conditions in every Muslim country. In some instances, there could be a Sharia board which has supervision authority in an entire country and in other ones, a Shari board may supervise only one IFI. These Sharia boards issue religious decrees, fatwas, determining the rules on the composition and application of financial instruments and services. IFIs must act in accordance with religious decrees. Acting out of the framework of these decrees is out of question for IFIs and considered as haram. Also, the managing board and executives of IFIs must be entrusted to pious Muslim managers who are completely dedicated to Al-Quran and the wisdom of the Messenger Mohammed (may the peace upon him). These devout executives and other managers of the IFIs are liable to preserve and protect the deposits and investments of clients against corruption, negligence and illicit issues. Nonetheless, IFIs which must comply with Sharia rulings must also run their practices in accordance with the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) which was established in 1991 and located in Bahrain. Also, if an IFI operates in a non-Muslim country, it must comply with laws and regulations pertaining to conventional financial code too (Zinser, 2014; Lai, 2014; Marimuthu et al., 2017; Ariff, 2014; Zulfiquar et al., 2016; Quttainah et al., 2013; Hearn et al., 2012; Bin Mahfouz, Kabir, 2012; Ali et al., 2012).

Almost all of the Muslim states adopted economic and financial regimes which uphold the principles of Islam and enhance it. The ideology of Islam favors the benefit of the society for all. Therefore, the wealth shall be allocated as equally as possible. So, the prevalent tenets and polices regarding IF and economy are as follows (Hunter, 2014; Zulfiqar et al., 2016;

Marimuthu et al., 2017; Mansour et al., 2015; Siddiqi, 2012; Widana et al., 2015; Quttainah et al., 2013);

- Islam religion favors a supportive merit in its regime. The achievement should be financial and economic, as well as spiritual,
- Individuals must act in legal limits while doing business. So, the source of wealth must be legitimate,
- Prices shall not be exaggerated. Income should be equal. If the equality is violated then one should step in to fix it,
- The needy ones in poverty ought to be supported with **zakat** (payment as a kind of property under the Islamic law for charitable purposes),
- Land and capital can only be utilized in combination with laborship to conserve equality and justice,
- Individuals are the trustees of God and own the assets temporarily. They must conserve them intact to pass over to the next generation,
- Assets enjoyed by individuals shall be used for the best interest of the whole society. Hoarding, monopoly and conscious market distortions are not permitted,
- Transactions are free of interest (*riba*) as well as rest on profit and loss sharing (PLS). The amount of the return cannot be fixed,
- Investments and business operations must involve permissible activities (*halal*),
- Transactions must be immune of irrational uncertainty,
- Financial applications must be implemented within the framework of Sharia and supervised by a Sharia board,
- Economic and financial processes must contribute to the wellbeing of society and intended to eliminate injustice.

IF is rested on Sharia which encompasses all walks of life of the Muslim community involving finance, economics, politics, law, and governance. It is aimed at ensuring social equality and justice. In order to avoid poverty, it is believed that the capital, assets and wealth belong to God. That’s why, any individual who owns an asset or capital must preserve it with outmost care, since nobody will pose it eternally. Moreover, assets and capital possessed by Muslims must have been acquired by legitimate means in an ethical sense within the framework of Sharia. The fundamentals of Sharia are a set of rules binding all the Muslims with respect to financial, economic, social and ethical respects. Sharia dictate the way of living of individuals and regulate the behavior of people as it is indicated in the holly text Al-Quran (Marimuthu et al., 2017; Hearn et al., 2012; Zinser, 2014; Zulfiqar et a., 2016).

As one can consider, IF system is too different than conventional financial system which especially matters in the issue of interest payment and receipt in business transactions. That’s why, IFIs possess different processes, rules and procedures which do not resemble to conventional financial institutions that can make different reflections on liquidity, money and capital markets as well as consumer confidence and behavior (Hussein, 2010; Ameer, 2015). These differences are presented in Table 1.

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Table 1: Differences Between IFIs & Conventional Financial Institutions

IFIs	*Conventional Financial Institutions*
Rests on the notion of Islamic Law	Rests on human originated principles
Interest is prohibited according to Sharia	Interest is predetermined
Involve restrictions on profit maximization	Profit is unlimited
Zakat (Islamic charity) is obligatory	Charity is on individual's discretion
Partnership in a business is essential	Money can be lent, and interest can be received without participation in a business
No obligation or provision relevant to indebted and liable parties	Sanctions and compound interest are applied to defaulters
Public interest is primary with equity in growth	No compulsion to be equitable in public interest and equity
No possibility of barrowing from the market unless Sharia permits	Borrowing from the money or capital markets is permitted
Based on profit and loss sharing	Based on fixed yields
Highlights the importance of institutions compliant with Islamic law	Solvency and affluence of clients are essential
Parties to transaction are investors – partners and buyer – sellers	Parties to transactions are creditors and debtors

Source: Widana et al., 2015; Hussein, 2010; Saidi, 2009.

Conventional financial institutions are the forerunners of local and global financial organizations. Yet, the importance of IFIs is improving constantly. Islamic financial market is the one that presents investors and depositors convenient earnings within the framework of Sharia. Resulting from this, instruments and services offered by the IFIs are different than the ones offered by conventional financial institutions. Instruments and services offered by IFIs are defined in the next section of the paper.

3. Instruments and Services in Islamic Finance

Islamic financial system is a practice which has been enhancing in the world for more than half a century. It emerged in 1960s, began to improve in 1980s and evolved to be a fully flagged industry in 1990s. Currently, IFIs present a quick development both in terms of business volume and the instruments they have. One important issue of IF is that it does not only derive the attention of Muslim originated financial institutions, but also, some of the renowned conventional financial institutions are interested in IF and make deals with their Islamic branches too. Moreover, in some Muslim countries, there is a hybrid system of both IF and conventional finance at the same serve clients. Also, IF is beneficial for devout Muslims who have concerns to make investments in interest bearing financial tools. Since, the liquid assets of such individuals are idle, IF is a good means to channel these idle funds into capital markets (Ada, Dalkılıç, 2014; Quttainah et al., 2013; Akhtar, Ahmad, 2016; Dsuki, 2010).

Islamic ideology supports institutions which operate in favor of the community and any organization that targets a community must abide by its demands. So, financial institutions in Muslim countries are supposed to consider the expectations of Islam community as well as generate and offer instruments upholding the tenets of Islam. The notion rests on the premise that individual gains shall reinforce community-wide gains and equality. Therefore, IFIs refer to not only individual or organizational investors, but also to traders, local businessmen and entrepreneurs, farmers, sole proprietors and etc. The sloe aim of IFI is not only to offer financial gain to parties involved, but also to assist medical, educational, cultural and sports institutions (Khan, 2013; Ada, Dalkılıç, 2014; Akhtar, Ahmad, 2016). Islamic finance is a comprehensive and significant issue which develops constantly on a global scale for the benefit of all. Islam acknowledges that everyone shall make sure that their very basic needs are met and on the other hand everyone shall make contribution to the overall benefit of a society. Therefore, in order to achieve these goals, IFIs stick to Sharia to have a clear path of improvement. This clear path resulting from orders of Allah (SWT), Al-Quran and teachings of Mohammed (may the peace upon him) would facilitate and provide the Muslim community with modest and proper lives. Therefore, IFIs devised and offer certain financial instruments which defined as follows (Smolo, Ismail, 2011; Dsuki, 2010; Mansour et al., 2015; Quttainah et al., 2013;):

- **Mudharaba** (profit & loss sharing, PLS); can be considered as a partnership or a venture between two parties. One part is the holder of the capital and the other one is the holder of the managerial position. Any profit stemming from this partnership is shared according to an agreed upon ratio.
- **Ijarah** (Leasing); is an accord according to which an IFI purchases and leases a real asset such as a building, vehicle, equipment or a facility on behalf of a client. During the period of leasing the possession of the asset belongs to the lessor, but the right of utilization is lessee's.
- **Musharaka** (partnership); is a partnership accord whereby at least two parties contribute capital to achieve a project. Entire partners are designated to share the profit of the project according to a reciprocally determined ratio.
- **Sukuk** (debt finance); is an IF instrument similar to a bond in conventional Western style finance. Since the principle plus interest notion is not permissible in IF, the issuer of *sukuk* sells a certificate to an investor and acquires an asset in which the investor has partial possession. The issuer is sopped make a promise of buying back the *sukuk* certificate at par value at a future data.
- **Ijara wa iqtina** (lease to purchase); is an accord similar to ijara. Yet, in ijara wa iqtina, the client is dedicated to by the asset at the end of the lease period. The passion is transferred to the lessee eventually.
- **Murabadah** (cost-plus financing); this application is also known as *bay' bithamam ajil*. It could be referred as deferred payment of sale in English. *Murabadah* is a popular financial tool in IF. It could be considered as a sale on profit. It encompasses the purchase of an asset by an IFI as desired by its client. Eventually, the asset in question is sold to the client "cost plus profit" and the payments are arranged in installments.
- **Qard al-hasam** (benevolent loan): is an interest-free loan bestowed for either charitable goals or to achieve short-term funding necessities. According to this case, the borrower is required to complete refund the principal excluding any additional amount.
- **Bay' al-istisna** (progressive financing); is an accord of acquisition of assets by a specification. In this instance, the price is supposed to be paid in advance. Yet, the asset is produced and conveyed at a further date.
- **Bay' al-salam** (pre-paid purchase); is an accord of sales in which the buyer pays in advance for the assets it intends to have. Yet, ownership is transferred in a future date.
- **Musharaka mutunaqiash** (diminishing partnership); is a hybrid tool which combines *mushakara*, *ijara* and sale. Parties to this accord jointly purchase of finance a project and share the profit according to a pre-determined rate. Yet, during the partnership period, one partner would be willing to buy the shares of another partner. So, in this case the ownership stake of one party always increases and other's ownership always decreases.

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Islamic finance is a means to make investments and provide financial sources and advantages for the benefit of the society as a whole. Therefore, these instruments are supposed be Sharia compliant and also compatible with the fatwas of any Sharia board (Zinser, 2014; Lai, 2014; Ariff, 2014; Zulfiquar et al., 2016). Moreover, even the afore-mentioned financial instruments are utilized similarly in different Muslim countries, it could be beneficial to make a classification based on segmentation which is the subject of next part.

4. Islamic Financial Market Segmentation

The basic segmentation of markets in the world is aimed at dividing the markets into homogenous consumer and industrial markets. This segmentation could be further developed with dividing the markets into buyer category, gender, age, user intensity and etc. Yet, market segmentation could be defined as the entire effort to specify and classify different country groups and countries relative to common traits. Financial market segmentation could be defined as the method of specifying certain financial segments whether by individual or institutional consumer groups with regular characteristics who would respond the marketing mix of a financial product with the same manners. Market segmentation and financial market segmentation vary in terms of countries and nations as well as develop as a result of the increase in global population and the significant volume of increase in the Muslim population who opt to make investments in Sharia complaint financial assets and instruments. Market segmentation intensifies with the sophistication of the preferences of legal and natural entities as well as enable financial dealers to seek and do business in numerous markets in the world. Islamic market segmentation (IMS) rests on the reality that IFIs could endeavor to specify analogous Islamic financial instruments and services consumers (IFISCs) in different countries who have similar demands and needs within the framework of Sharia. IFIs are supposed to make sound decisions on whether to use standardized or adopted Islamic financial instruments and services (IFISs) to best cater to the needs and expectations of IFISCs. Therefore, by way of implementing financial market segmentation, executives of IFIs can specify the insight necessary to design the most appropriate approach for each financial market; because, even though the application of IF could be similar in Muslim countries, fatwas of the Sharia councils may vary. Additionally, an IFI could make an investment in a country where the rules on conventional finance are valid (Keegan, 2014: 218-219; Keegan, Green, 2013: 217; Kotler, Keller, 2016: 268). Therefore, Islamic financial markets shall be classified with respect to the above-mentioned condition. Further segmentation is as follows (Keegan, 2014: 220-226; Kotler, Keller, 2016: 268-282; Keegan, Green, 2013: 219-228;):

- Demographic segmentation; demographics is the study of population. Demographic segmentation is based on the variables as the population size, religion, customs, income per capita, income distribution, gender, age distribution, education, occupation and etc. Statistical data related to variables above could provide beneficial insight for financial institutions to scan national markets for profitable opportunities.
- Psychographic segmentation; is based on the division of financial markets on the attitudes, values, tenets and lifestyles of consumers. This related to separating national financial separation of markets regarding to activities, operation, interests and views of investors.
- Behavioral segmentation; is based on usage rates and user status of consumers. In other words, whether investors use financial instruments or services and/or how often they use.

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- Benefit segmentation; separates financial markets into segments relative to the benefits which consumers seek from a financial instrument or service and how much the benefit provided by a financial instrument or service would be advantageous for consumers.

Segmentation is the beginning of the process to divide markets into analogous or homogenous sections. Next step is selecting the target market. If an institution is to follow a financial opportunity in a market, there are three targeting strategies (Keegan, 2014: 228-229; Keegan, Green, 2013: 236-237; Kotler, Keller, 2016: 286-288):

- Standardized marketing; is similar to mass-marketing. It encapsulates to constitute the same marketing mix for every possible investor. Standardized marketing is likewise known as undifferentiated marketing. Adaptation is minimized. Its advantage is lower cost for every consumer.
- Concentrated marketing; is likewise known as niche marketing. It encompasses designing a marketing mix for a narrow market. Serving narrow markets compels considering global depth rather than national breadth, such as serving to only very wealthy investors.
- Differentiated marketing; is also referred as multi-segment marketing. This paradigm involves targeting many market segments with numerous marketing mix offerings.

Final stage in market segmentation is positioning. Positioning refers to differentiating a good, service or trademark within the mindsets of consumers in terms of characteristics and benefits provided by goods, services and trademarks of competitors. Positioning is analogous with filling a deficit. Positioning strategies involve specifying the attribute and/or benefit, quality and/or price, user and/or nonuser status as well as competitive status of a product (Keegan, 2014: 229-232; Keegan, Green, 2013: 237-240; Kotler, Keller, 2016: 297-298).

5. Empirical Research on Islamic Financial Market Segmentation

The framework related to IF, its differentiating characteristics and instruments used in IF are revised in previous section of this study. The goal of the next sections is to dwell on an empirical study on the segmentation of IFMs. Objectives of the study are as follows:

- Representing information (indicators) about the Islamic financial markets to apply market segmentations.
- How can financial and economic indicators be used to segment IFMs?
- Investigating the advantages and disadvantages of IFM segmentation.
- Exploring the standards and characteristics of IFMs.
- Finding the most convenient ways of serving IFMs.
- Understanding one of the fastest developing industries in the globe.
- Understanding the core elements on IFMs and emphasize the importance of the consolidation of these markets with that of the world.

5.1. Methodology of the Study

The methodology of the research depends on the analysis of the motivations of consumer groups which are available in the World Bank Islamic State Annual Financial Report. This report is comprised of 32 Muslim countries and the data ranges from 2011 to 2016. The reasoning of the usage of the data in this report are as flows:

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- The purpose of this study is to use the above-mentioned data to research the basic motivations of functioning of Islamic markets, how these markets can be segmented with the limited data available and how they are supervised as well as to analyze the operational efficiency of Islamic Financial Markets (IFMs) with respect to conventional financial markets. Also, it is aimed at investigating the important differences between the conventional financial markets and IFMs in terms of their structures, instruments used, and services rendered. This would provide the basics of segmenting and presenting the differences for both markets.
- The segmentation and classification of IFMs is a relatively new subject and the scientific research on this issue is rare. Sine the scientific research on the segmentation of IFMs is not abundant and the awareness of the importance of IF is far from being sufficient, this study is aimed at raising the necessary consciousness of related parties and make a significant contribution to the current literature.

5.2. The Method to Analyze the Data

Cluster Analysis and Discriminant Analysis are used to make the research on IFM segmentation. The utilization of the Cluster Analysis is aimed at constituting a set of similar variables which derived from factor analysis. Variables can be grouped in various means. Yet, the selection of the method is based on the size of the data and intent. If there were small data sets for thousands of data files, then the usual methodology would be impractical. That's why, it is necessary to cluster the available data with SPSS. SPSS has three different processes to cluster the relevant data: Hierarchical, k-Means and Two-Step clustering. If you have a quite wide data file (1000 cases are large-enough) or a compound of continues and categorical variables, it is adequate to use SPSS with Two-Step clustering. If the data set is small you may need to use hierarchical clustering. If the data set has a medium range, then k-Means clustering can be used (Babin, Zikmund, 2010: 481). In this case cluster analysis is used to combine the market of Islamic countries by some financial indicators into at least two different segments. Each segment is mutually exclusive with the other segment(s), but homogenous by itself.

Discriminant Analysis is a powerful tool which is characterized by a different set of features (called descriptive discriminant analysis) and the variables related to it are classified as pre-existing groups with have similarities among each other. The objective is to weight the different groups of variables (Hair et al., 2010: 236). In this study discriminant analysis is used to discover which economic indicators could discriminate or divide the segments into at least two different groups.

5.3. Variables Used in the Study

Market segmentation measures are the dependent variables in this study and these variables are defined as follows:

- **Capital assets of banks:** Bank capital assets refers to the net value of the assets of a bank.
- **Inflation rate:** Inflation is designated as a continuous increase in price levels. It is defined as the percentage variation in the value of goods and service. The purchasing power of a currency and the value of the total wealth vary according to the changes in inflation.
- **Interest rate (Borrowing**): A fee by a lender charged to a borrower as a percentage of the principal. Interest rates are designated on annual basis.
- **Broad money growth:** Broad money growth is used to evaluate the total money supply of a country. It is a combination of the liquidity held by individuals, households and organizations.

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- **Domestic credit volume for the private sector:** Is the amount of loanable assets to the private sector by financial institutions.
- **Lending interest rate**: The fee paid for the amount of loan received plus its interest for commercial credits.
- **Deposit interest rate:** Is the amount of fee paid for holders of deposits in financial institutions.

5.4. Hypothesis and the Model of the Study

H_1: Financial markets in Muslim countries cannot be segmented according to economic indicators (GDP per capita, GDP growth rate, tax revenue, volume of exported goods and services and volume of imported goods and services), because economic indicators are not specific and related to finance to be used as variable for segmentation.

H_2: Financial markets in Muslim countries can be segmented according certain financial indicators (bank capital assets, inflation rate, interest rate borrowing, broad money growth, deposit interest rate, lending interest rate and domestic credit private sector).

H_3: Economic indicators can discriminate the segments of financial markets in Muslim countries (GDP per capita, growth rate, tax revenue, volume of exported goods and services and volume of imported goods and services).

Combining these three hypotheses in a single model can be illustrated in Figure 1.

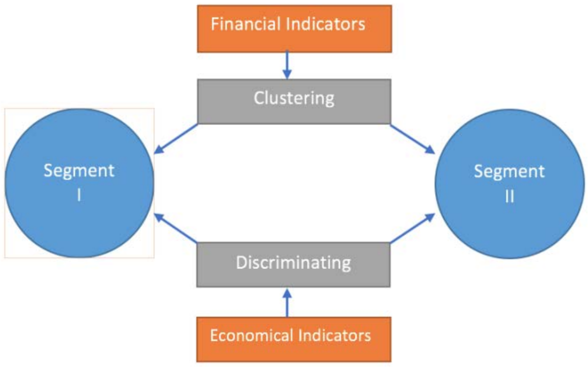

Figure 1: The Model of the Study

5.5. Findings

In this part of the study, it is aimed at investigating how to segment the financial markets in Muslim countries. Statistical methods are applied, and findings are presented to unveil the realities on the segmentation of Islamic financial markets.

5.5.1. Segmenting the Islamic Countries According to Financial Indictors

One can recall some financial indicators as variables to segment IFMs. Yet, some of these variables are fully available and some are not. Moreover, it is possible to obtain the necessary data from the World Bank database. The Muslim countries were classified with the analysis of the selected indicators obtained from the World Bank database by the SPSS program. Variables used in the analysis process are derived from different sources. These variables are; exchange rate, stock trading volume, bank capital and asset ratio, inflation rate,

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interest rate borrowing, broad money growth rate, deposit interest rate, loan interest rate and domestic credit volume. This classification help segment IFMs.

The first step of the analysis involves the selection of four different indictors among the 32 Muslim countries to use as inputs for segmentation. Then, k-means clustering analysis is used to test the difference between the two methods of segmentation. Preliminary results indicate that it is not possible to segment the market with exchange rates and stock trading. therefore, these two variables were removed from the study. Yet, the other variables are still valid for analysis.

As one can infer pertaining to different iterations, to categories are utilized to cluster the 32 Muslim countries in the best sense. Besides, a hierarchical clustering aggregation scheme, a single solution with two clusters and vertical directions are applied as the categorization method. Furthermore, the variables are estimated with different scales. Therefore, the absolute value was determined as a transferor. Also, ten iterations are preferred, and two clusters hitch deemed convenient were chosen. The first output of the cluster analysis is related to the initial clustering center, whose value is based on the vector of the seven financial variables (see Table 2).

Table 2: Initial Cluster Centers

Variable	*Cluster*	
	1	2
Bank capital assets	12.20	8.90
Inflation rate	16.60	5.40
Interest rate	.00	-.50
Broad money growth	.00	14.60
Deposit interest rate	.00	2.90
Lending interest rate	.00	4.90
Domestic credit private sector	.00	108.40

This cluster centers indicate that bank capital assets and inflation are two important variables which format two clusters. Yet, other variables such as interest rate, broad money growth rate, deposit rate, loan interest rate and domestic credit are involved in the second cluster. The reasoning of this is due to the idiosyncrasies related to the volume of the transactions of stocks, to changes in certain financial variables and to market value of assets defined a positive or negative impact. Such issues designate the performance of the market in question and operating performances. In addition, this also involves the general situation in an IFM and related other factors. These can include financial market conditions, as well as the state of the economy indicating economic growth, inflation and interest rates. In order to scrutinize the situation, it is beneficial to consider the iterative history of the analysis. The two-step iteration history is defined in Table 3.

Table 3: Two Step Iteration History

Iteration	*Change in Cluster Centers*	
	1	2
1	25.811	31.727
2	1.020	5.565

It is indicated in Table 3 that the two iterations are sufficient-enough to form the cluster. The second iteration is less influential than the first iteration. Therefore, there is no need to run the analysis for the third time. With regards to these two iterations, 32 Muslim countries were categorized. The first group of clusters is consisted of 22 countries and the second group of clusters is consisted of 10 countries.

Table 4: Number of Cases in Each Cluster

	Number of Cases in each Cluster	
Cluster	1	22
	2	10
Valid		32
Missing		.000

The table defining the membership of countries is Table 5. This table lists the designation of two clusters for two country groups. After reorganizing variables, the data is represented in Table 5.

Table 5: Cluster Membership of the Countries

Cluster 1	*Distance*	*Cluster 2*	*Distance*
Afghanistan	19.785	Bahrain	08.386
Algeria	11.841	Iran	32.423
Azerbaijan	25.803	Jordan	09.729
Cameron	14.661	Kuwait	16.717
Egypt	15.522	Lebanon	19.862
Ghana	22.845	Malaysia	36.645
Indonesia	16.358	Morocco	11.870
Iraq	22.789	Tunisia	09.333
Kazakhstan	19.920	Turkey	23.154
Libya	15.800	Emirates	14.775
Mali	08.525		
Nigeria	15.276		
Oman	24.293		
Pakistan	10.231		
Philippines	19.170		
Qatar	24.437		
Saudi	18.219		
Senegal	16.418		
Somalia	29.322		
Sudan	15.508		
Turkmenistan	25.350		
Uzbekistan	25.516		

When Table 5 is regarded, one can easily deduce that countries in the second category are all from the Middle East, except Malaysia. Therefore, this category is focused on the Middle East and bear its traits. Cluster 2 is a combination of countries from the Middle East, Africa, Asia and Central Asia. So, one can infer that while the first cluster is heterogenous, the second cluster is almost homogenous geographically. Even though Malaysia is not a Middle Eastern country, it ranks first in the second cluster category. Malaysia is the leading state in the second country group and possesses the points equal to at least to the total of Bahrain, Jordan and Tunisia.

This research specifies that the objective of countries, especially the small and developing ones shall be to prevent the intervention of intermediaries as much as possible to avoid the increase in costs. Particularly, if there is a disagreement between the traditional distribution channels and developed intermediaries, then it becomes possible business issues.

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The hierarchical clustering is denoted in Figure 1 with a dendrogram. The dendrogram points out that the first cluster has more member countries than the second cluster and is more heterogeneous; because, it has many clusters within. These subgroups consist of a number of non-adjacent countries as follows:

- Philippines, Egypt and Senegal.
- Kazakhstan, Saudi Arabia, Oman and Qatar
- Algeria, Libya and Iraq
- Cameron, Mali, Pakistan and Sudan

With respect to the categorization of subsets above, one can conclude that at least one country in each subset is from a different geography and this is a differentiating trait in clustering methodology. This could be explained with the notion that a group of countries with a single or integrated economic or any pertinent correlation can be benchmarked or compared with another group of countries which possess similar economic structures and association.

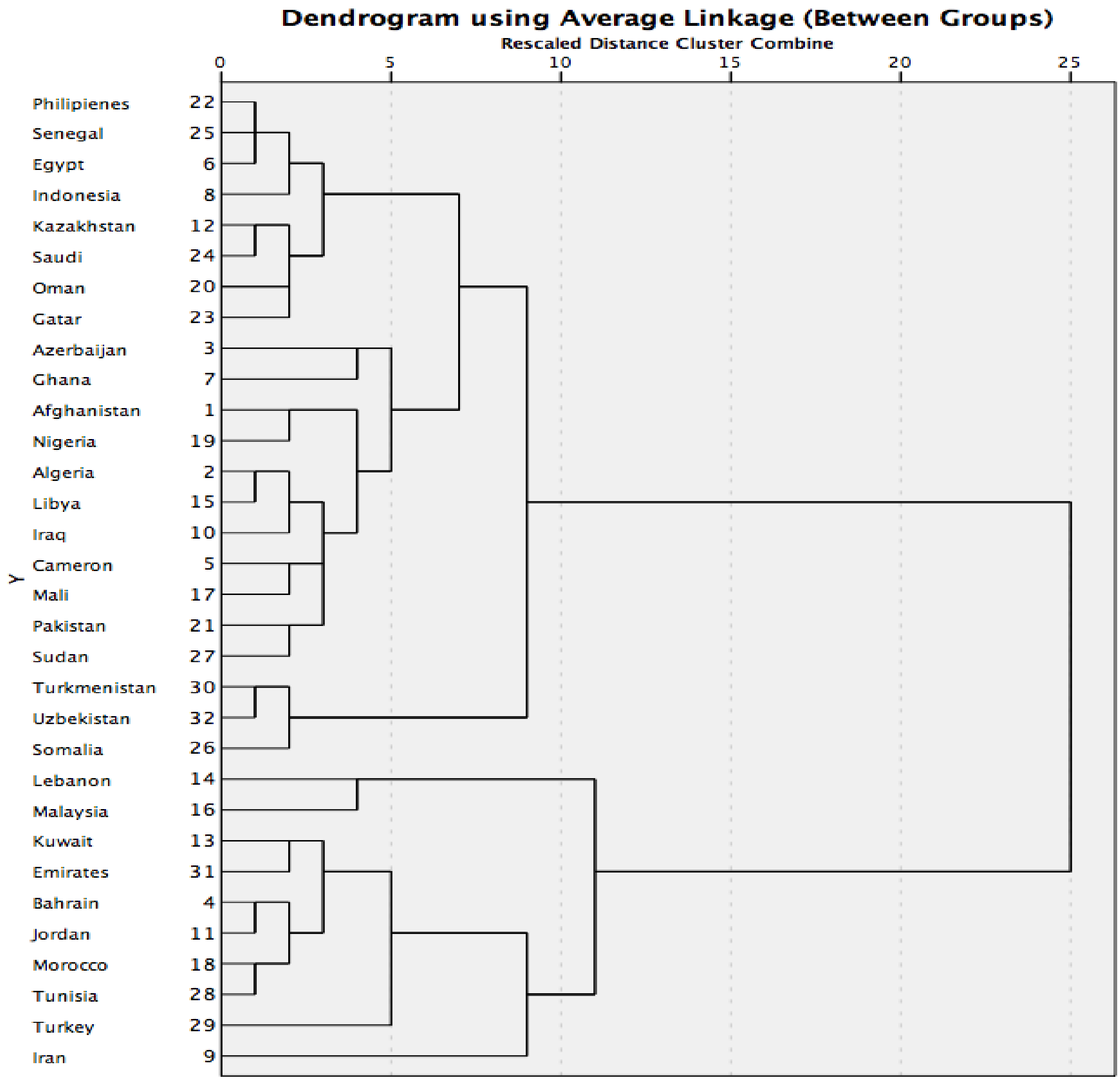

Figure 2: The Classification of the Islamic Countries in Two Categories

Moreover, country groupings shall be reduced to two cluster groups so as to make methodological application possible. This categorization is a result of grouping the countries as production cores. This signifies the reality that as the industrialization improves in a country, production intensifies at a center and this dictates how the distribution centers and other intermediaries are established and organized. Nonetheless, it is necessary to learn the characteristics of each variable in every cluster category to make scientific application in a methodology.

Table 6: Final Cluster Centers

Variable	*Cluster*	
	1	2
Bank capital assets	7.25	10.12
Inflation rate	13.71	9.64
Interest rate	-1.60	-1.94
Broad money growth	14.13	9.06
Deposit interest rate	3.56	4.46
Lending interest rate	6.12	4.41
Domestic credit private sector	19.11	72.00

Characteristics of each cluster are defined clearly in Table 6. The second cluster category scores higher bank capital assets, interest on deposits and domestic credit volume. Besides, the same cluster group (2nd) scores lower at inflation rate, interest rate, broad money growth and lending rate. One can infer from Table 6 that the volume of deposits has direct effect on the volume of credits (loanable assets); because, an increase or decrease in the level of deposits would define the volume of extendable credits. As the volume of credits increase, in other words as the supply of liquidity increases, loanable assets portfolio and investments would improve.

5.5.2. Economic Indicators which Discriminate the Segments

It is useful to categorize the Islamic countries in two different clusters based on financial indicators regarding this study. Also, it is essential to determine which economic indicators completely distinguish the two different cluster groupings. When these factors are considered, the main difference between the two cluster groups would be evident and the repetition of the same sequence along with a reasonable period shall indicate the trend of these segments. This is the reasoning of the application of discriminant analysis. Furthermore, it would be possible to comprehend the attribution of the correlation between the two country groupings. Yet, the first SPSS data output of the discriminant analysis defined in Table 7 signifies the composition of the uniformity of the analysis. This indicates the validity of the distinguishing character of each economic indicator.

Table 7: Tests of Equality of Group Means

Variable	*Wilks' Lambda*	*F*	*df2*	*Sig.*
GDP per capital	.966	1.055	30	.313
Exchange rate	.982	.539	30	.468
Stock traded	.900	3.346	30	.050
Growth rate	.994	.183	30	.672
Tax	.973	.825	30	.371
Export per capital	.871	4.435	30	.044
Import per capital	.688	13.618	30	.001
Broad money of GDP	.650	16.186	30	.000

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The result in Table 7 points out that the volume of stocks traded, export per capital, broad money of GDP is pertinent in discriminating the two segments. Results of the Table 7 are similar to variance analysis and express the possible differences between the two country groupings. It is also necessary to study the arithmetic means and compare them to each other as well as one should consider the statistical data in two categories to achieve this. Among this statistical data, prominent ones should be analyzed with outmost care.

Table 8: Group Statistics

Cluster		Mean	Std. Deviation
1	GDP per capital	8860.3682	18739.47784
	Exchange rate	542.0773	1858.75410
	Stock traded	4.4636	9.78476
	Growth rate	2.1636	15.10719
	Tax	7.9045	9.46122
	Export per capital	36.4682	21.30588
	Import per capital	30.0591	11.64514
	Broad money of GDP	38.4000	28.89236
2	GDP per capital	15868.0600	15722.60837
	Exchange rate	1214.3200	3337.21018
	Stock traded	13.2500	17.47559
	Growth rate	4.2500	3.38633
	Tax	11.2100	9.72242
	Export per capital	54.6100	25.33068
	Import per capital	50.8600	20.28996
	Broad money of GDP	100.0800	58.64056
Total	GDP per capital	11050.2719	17903.81838
	Exchange rate	752.1531	2382.01549
	Stock traded	7.2094	13.06298
	Growth rate	2.8156	12.60556
	Tax	8.9375	9.51341
	Export per capital	42.1375	23.80721
	Import per capital	36.5594	17.53117
	Broad money of GDP	57.6750	49.06677

When the stock trade, export per capital, import per capital and broad money of GDP considered, each score lower than the total average; but, as a whole they score higher than the total scores. This may result from the fact that states could mostly rely on the fiscal policy to preserve economic stability and especially a contractionary fiscal policy would lead to a decline in public expenses and volume of GDP. Another means to resolve this issue is to address distortions through the segments and involve nonbank financial institutions in the analysis too. Related scores are presented in Table 9.

Table 9: Wilks' Lambda

Test of Function(s)	*Wilks' Lambda*	*Chi-square*	*Df*	*Sig.*
1	.457	20.368	8	.009

Only one discriminant function is indicated in Table 9; because, there are only two segments in the analysis. Since the chi-square value is significant at the 0.009 level, the discriminant function is valid and can be used to distinguish segments. Additionally, eigen values score higher than one (1.189) and the canonical correlation is significant-enough scoring 73.7%. Nevertheless, coefficients for each country are denoted in Table 10 and it is to be classified or reclassified for each country according to the value of its indicator.

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Table 10: Canonical Discriminant Function Coefficients

Variable	*Function* 1
GDP per capital	.000
Exchange rate	.000
Stock traded	.019
Growth rate	.033
Tax	-.009
Export per capital	.009
Import per capital	.032
Broad money of GDP	.018
(Constant)	-2.880
Unstandardized coefficients	

When one considers Table 11, it is evident that which indicators discriminate segments and the impact of indicators too. İndicators scoring more than 30% are considered significant.

Table 11: Structure Matrix

Variable	*Function* 1
Broad money of GDP	.674
Import per capital	.618
Export per capital	.353
Stock traded	.306
GDP per capital	.172
Tax	.152
Exchange rate	.123
Growth rate	.072

Indicators which can firmly separate the two segments are broad money of GDP, import per capital, export per capital and stocks traded respectively. This indicates the distinctness of the general economic situation of countries in question. Furthermore, it is not easy to differentiate the economic situations of the countries in the study regarding to the level of employment, the rate of inflation and the interest rate which affect the sales and economic trend. Investors should be cautious when assessing overall retail sales figures. One criterion to make distinction is to examine annual sales volume. Once new investments are made in the retail market, the volume of the sales in the retail market is expected to increase. It would be also possible to compare the impact of new investments to the previous year. The last table related to the analysis is Table 12.

Table 12: Classification Results

		Cluster	*Predicted Group Membership* 1	2	*Total*
Original	Count	1	22	0	22
		2	3	7	10
	%	1	100.0	.0	100.0
		2	30.0	70.0	100.0

90.6% of original is grouped as cases correctly classified. The classification results indicate that the members of the Mixed Country Division are completely classified and 70% of Middle Eastern countries side on the right. The value of 90.6% is a verification of the significance of the results. The equation estimated is convenient to make two segments along with economic indicators.

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6. Conclusion

The framework of this study rests on making a comprehensive literature review on IF, IFMs, instruments used in IF, how to segment financial markets and eventually to offer an empirical study on IFMs segmentation. As a result of the empirical study one can conclude that it is not possible to segment the financial markets in Muslim countries with respect to economic indicators as GDP per capita, GDP growth rate, tax revenue, the volume of the exports of goods and services as well as the volume of imports of goods and services. Besides, financial markets in Muslim countries can be segmented through the utilization of certain financial indicators such as bank capital assets, inflation rate, interest rate borrowing, broad money growth, deposit interest rate, lending interest rate and domestic credit of private sector. Yet, eventually the economic indicators which can be used to discriminate the segments of financial markets in Muslim countries in the final instance are the GDP per capita, GDP growth rate, tax revenue, the volume of the exports of goods and services as well as the volume of imports of goods and services.

As to conclude, financial markets in Muslim countries can be segmented according to financial indicators. On the other hand, financial markets in Muslim countries cannot be segmented according to economic indicators. Also, economic indicators can discriminate the segments of the financial markets in Muslim countries in the final instance. Both methods can be relied upon (Cluster and Discriminate analysis) in financial market segmentation to get the best results. Eventually, the results of this study can be also utilized by entire financial institutions which would serve Muslims in the financial sector and best cater their needs and demands as well as it is necessary to segment the investors in Muslim countries using survey methods and collecting data from primary sources.

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