ISLAMIC FINANCIAL INSTITUTIONS: PERFORMANCE COMPARISON WITH CANADIAN BANKS

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Abstract

The Canadian financial market is considered to be very conservative and has been using the same practices for a long time. The economies of some countries such as England have adopted a strategy of including Islamic finance in their market and this has produced very satisfactory results. Considering that Islamic finance has been growing in recent years, this type of practice could be relevant to the Canadian market. The objective of this article is to analyze whether the performance of Islamic financial institutions is comparable to traditional banks. A comparison of the efficiency of conventional and Islamic banks will be important to determine because they do not operate in the same way and their primary source of income is different. The results revealed that Islamic banks tended to perform better than conventional banks. Performance ratios were in most cases higher for Islamic banks. This observation was confirmed with the use of the data envelopment analysis (DEA) model, which measures efficiency and effectiveness at the bank level. The results show that although some Islamic banks had significantly fewer assets than conventional banks, they were still able to use resources more efficiently. This confirmed that Islamic finance is an option for Canada and that with government support it will be possible to have a stronger economy overall.

Keywords: Islamic Finance, Traditional Banks, Performance, Risk, Regulation, Islamic Banks

1. INTRODUCTION

The North American financial system is one of the only alternatives available to individuals and businesses to be able to deal with all matters relating to savings and investment. By analyzing the two economic crises (1929 & 2008), it's possible to see how fragile the financial system can be at times. In the 1920s, individuals increasingly bought shares using debt (Marks, 2018). Indeed, it was possible to be able to buy shares by putting up only 10% of the total value and using debt to finance the remaining 90% (Marks, 2018). Economists are unable to attribute a specific cause to this crisis, but

the bank loans that were the basis of debts (of individuals and companies) clearly contributed to the fall of the stock market. Investors started selling their shares when they learned how much corporate shares were financed by borrowing at the margin. As investors sold some of their shares because of this news, the Dow Jones had fallen by about 13% on October 28, 1929 (Amadeo, 2020). This decline caused other investors to panic and sell their shares for fear of the Dow Jones' decline. All these problems brought a loss in value of about 30 billion in 1929, which is equivalent to a loss of about 400 billion if we discount the value of the currency (Amadeo, 2020).

With regard to the second economic crisis (2008), it demonstrated that the market is not immune to a collapse, particularly due to the bad decisions of the country's major banks. During this crisis, loans had been made to individuals who were not necessarily able to repay the loans in question. These loans were subsequently sold to other banks, creating a domino effect on the entire U.S. market that ended in a global economic crisis. Bank managers made loans to individuals who could not afford to repay the amounts (Vitez, 2017). This kind of dysfunctional behaviour changed the way individuals handled their money. A study that was done in 2011 analyzing the change in consumer behavior during the economic crisis showed a radical change in the habits of individuals since that event. The conclusion of this research proved that consumers were simpler in their consumption and that even the richest individuals tend to spend less even if they do not need to (Voinea & Filip, 2011). Despite the fact that the crisis has been over for several years, collateral damage to individual behavior is still being felt.

All these events have made consumers more conscientious about managing their money and consumption. Many individuals see traditional finance as the only way to properly secure their future savings. Islamic finance has been growing rapidly in recent years. The sector has grown by about 8.3% since last year and has a total value of 1.7 trillion (Research and Market, 2019). This increase in popularity is mainly due to the fact that, in some countries, Islamic finance is the only option available. It is noticeable that popularity has not only increased in Islamic countries but in others as well. Currently, there are more than 300 Islamic institutions in the world including countries such as the United States and France (Tarver, 2021). There is a growing number of countries adopting Islamic finance, but the concept remains almost unknown in Canada and other developed countries. In most countries, Islamic finance coexists with conventional banking systems; this is noticeable in countries such as Indonesia, Malaysia, Pakistan, and the United Arab Emirates (El Qorchi, 2005).

In addition to its growing popularity, it has a growing number of Muslim and non-Muslim investors investing in Islamic finance. The fundamentals of Islamic finance in terms of risk management and general principles are making more and more people interested in investing in this sector. According to an analysis of Islamic financial markets, their popularity has increased because of the potential for growth and profitability (Hassan & Girard, 2011). There are several financial indexes that include companies that comply with Islamic guidelines. Companies that are listed on the stock exchange in America must comply with International Financial Reporting Standards (IFRS) which are regulated by the International Accounting Standards Board (IASB). The equivalent is present for Islamic finance. Indeed, in addition to having accounting guidelines to be respected such as IFRS, companies must ensure that they comply with the rules that are set up by the Sharia. In this sense, the Sharia Board is in charge of the supervision and certification of certain products regarding the respect of Sharia rules (Trustnet, 2020). The management of companies then becomes more complex, because it is often necessary to make changes in policies to be able to comply with the rules. Despite this, investments are considered less risky for investors because there are many more laws that must be respected. Islamic finance could be an alternative during economic crises. Research by Badreldin and Mahmoud (2016) explains why Islamic finance should be considered during economic crises. The conclusion of this research revolved around the fact that Islamic finance is less risky compared to its counterpart.

The aspect of risk and interest rates are always important to investors and individuals when making financial decisions. Interest rates cause consumers to change their consumption habits (Maverick, 2020). In fact, one of the fundamental differences between these two types of systems is the use of interest. In the Islamic finance system, making interest available to individuals or using interest is not present in Islamic banks (Chong & Liu, 2009). Other alternatives are then made available in order to be able to create value in these banks.

Despite the fact that the trend of Islamic banking is increasing, it is noticeable that it is absent in several countries of the world. Several reasons can explain this lack of presence in the world. The lack of standardization and the complexity of operations are challenges that Islamic finance must be able to meet in the coming years (Dewar & Hussain, 2017). In addition, some financial instruments are perceived as having greater risk than in conventional finance (Dewar & Hussain, 2017). Setting aside all these challenges, if the return on investment is more profitable than in conventional banks, investors should not be reluctant to choose Islamic banks considering that they have a lower risk than in conventional banks. However, this is not the case, so the question is *whether the performance of Islamic banks is comparable to that of conventional banks.* By answering this question, it will be possible to have more indications as to why Islamic banks are not used more in the world.

The primary objective of this research is to see the various future possibilities for Islamic finance in Canada and analyze whether it would be a reasonable alternative to conventional banks. The demand for this type of bank is becoming increasingly important in Canada. According to some surveys conducted in 2014, nearly 1 million people are Muslim and the sector has grown by about 8.3% in 2020 and has a total value of 1.7 trillion (Research and Market, 2019). As a result, the demand for Islamic banking is expected to increase more and more in the coming years. The integration of Islamic finance could result in

Canada following the example of several other countries such as Great Britain and Malaysia. Despite the fact that some Islamic banks are present in Canada, they are not as well established as the other major banks (TD, Royal Bank, etc.). Indeed, it is very difficult for the latter to operate at their full potential in Canada without the support of the Canadian Central Bank.

In addition to the primary objective, secondary objectives will be used to bring more depth to the research. First, the *comparison of the efficiency of conventional and Islamic banks* will be important to determine because they do not operate in the same way and their primary source of income is different. This difference in operation can often create performance gaps. Therefore, it will be imperative to *analyze the causes that are related to the performance gaps in these banking systems*. One of the arguments in favor of Islamic finance is that it is less risky than traditional finance. It will therefore be necessary to understand the elements that differ at the level of risk in order to then be able to *determine whether Islamic banks are really less risky than their counterparts*. One of the important elements that have an effect on the management of banks is their size, which can have an impact on the decisions that will be taken at the level of investment and expansion. As Islamic banks are often smaller than traditional banks, it will be important to see whether *the size of a bank has any relationship with its performance*. In addition to differences in management, there are several important differences in the financial instruments of Islamic finance. These differences could lead to inefficiencies in some markets. Therefore, *determining whether the principles of Islamic finance represent a viable alternative* will also be important to consider.

With research that has already been done on a similar topic, the research methodology will use 3 important tools. Using descriptive statistics, a comparative analysis of ratios will be used to understand performance gaps and determine which types of banks are considered to be better performers. To gain more depth in this research, the use of the data envelopment analysis (DEA) model will be able to give an efficiency score to the banks to get a better idea of performance. Bivariate analyses were also used to get an idea of the correlation between the different variables that affect performance ratios (return on assets (ROA) & return on equity (ROE)). In addition to quantitative analyses, descriptive explanations will support the results obtained in these analyses.

In analyzing the results, several important elements should be kept in mind. In terms of ratio analysis, Islamic banks perform better in terms of ROA compared to traditional banks. Islamic banks also make better use of available deposits, which results in a higher ratio. This is confirmed in the DEA model where we note that Islamic banks are more efficient. For the bivariate analyses, it was possible to notice that Islamic banks have results that are less correlated with each other; this is mainly because banks have a different way of administration and are located in different countries. As far as Habib Bank of Canada is concerned, despite the fact that it performs less well than other banks, it has been proven through

the DEA model that it makes very good use of its internal resources.

This article is organized as follows. Section 2 presents the literature review of our research and the hypotheses to be tested. Methodological aspects are the topic of Section 3, while Section 4 is devoted to the presentation and analysis of results and discussion. In the final Section 5, we review the main results and contributions of this study.

2. LITERATURE REVIEW AND HYPOTHESES

Considering that this paper attempts to compare the performance of Islamic and traditional banks, it is important to understand the *important characteristics that affect Islamic financial institutions*. This will allow for a better *comparison and a more in-depth assessment of the performance gaps* that may exist.

2.1. Basic principles

The difference between the traditional American banking system and that of Islamic countries lies in the fact that all financial principles are based on the general principles of Sharia which differs from the laws in North American countries (Corporate Finance Institute, 2020). Tobacco, alcohol, pork, arms and gambling companies are examples of industries where Islamic Banks are not allowed to invest (Wealthsimple, n.d.). These limitations can often limit the performance of portfolios, as the companies that perform best are not necessarily those in the most "Halal" industries.

The main principles are:

• The creation of interests and the use of interests is prohibited according to the principles of Sharia. Creating money with money is considered immoral (El Qorchi, 2005). Interest rates are the cornerstone of the proper functioning of banks. Indeed, it is noted that the main source of banks' revenues comes from interest on loans and interest on investments ("Smart things to know", 2016). This can be a problem for Islamic banks that cannot use this kind of financing instrument.

• Islamic finance emphasizes risk-sharing among the various stakeholders, but in most situations, the bank assumes most of the risk. For example, in the purchase of a house, the bank retains ownership of the property until the individual has paid the full amount of the principal he or she has contracted on the house. Whereas in the traditional system, the individual owns the house and the debt at the same time.

• Uncertainty is the main element that led to the creation of "forward and future" contracts. The use of these contracts helps stabilize the company's revenues because a fixed price is agreed upon, thus reducing the company's risk. These notions of forward contracts are not accepted in Islamic finance. The problem with these contracts lies in the fact that individuals sell products without necessarily owning the commodity. One of the objections to this premise is that some intermediaries make money without necessarily adding value or utility to the elements of the contract (Injadat, 2014).

Considering the different principles that have been explained above, Islamic finance offers other

alternatives for making profits. Different financial instruments can be divided into several different categories with distinct functions.

In addition to the main principles, other principles consist of:

• *Murabaha* (debt instrument) is an alternative method to selling on credit, as sales, where interest is charged, are not accepted. Under *Murabaha*, the bank buys the asset for the individual in question and then sells it back to the individual including a different method of payment, i.e., cost of the asset plus a profit. The fixed cost is the element that replaces the interest rates seen in conventional contracts (Young, 2020). What is at stake with this debt instrument is that there are no negative consequences that encourage repayment of the loan on time such as additional charges for payments after the maturity date (Young, 2020).

• The *Ijarah* is an instrument that makes it possible to enter into a lease contract with or without a purchase option for a fixed term (El Qorchi, 2005). The bank is the owner of the asset, and therefore assumes all risks related to its operation. It is possible to structure the contract as a finance lease with a purchase option, allowing the individual to become the owner of the asset at the end of the contract. It is also possible to have an operating lease and sell the asset at the market price at the end of the contract. In this situation, the right of use will be remitted to the bank at the end of the contract. This financial instrument is mostly suitable for assets that have a value that is quite important (e.g., house), so the *Murabaha* instrument would not be well suited for this type of acquisition.

• As explained above, it is not accepted under Sharia rules to sell goods without having possession of them. The alternative to forward & futures is *Bai-Muajjal* which is the purchase and sale of a good for a fixed period of time. The client will then give the specifications of the goods that need to be purchased by the bank. It is important that the bank assumes the risk of the goods that will be purchased (Premier Bank, n.d.).

• A *Bai Salam* is the equivalent of a futures contract. The objective is the sale of a product in a future period. The difference with other futures contracts is that the asset that is sold is not tangible. The rules are much stricter than in other contracts because the risk is higher when we talk about intangible assets. The particularity of this type of instrument is that the buyer has to make full payment at the beginning of the contract (Islamic Bankers Resource Centre, 2008).

• *Istisna'a* is recommended for manufacturing or construction operations because the buyer will apply to a builder who will manufacture or build the asset. This instrument is widely used because it is possible to make progressive financing according to the terms of the contract. Generally, three main players are involved in this type of transaction: the donor, the buyer and the bank. The bank will take care of the management to make sure that the whole transaction goes as planned.

2.2. Control body

The Canadian Real Estate Securities Authority is an important body because it puts in place the laws and regulations concerning the methods to be adopted at the level of the financial markets. Indeed, a comparable body exists for Islamic banks: the Gulf Cooperation Council (GCC). The GCC is a political and economic alliance between several Gulf countries ("What is the GCC?", 2017). This organization is also involved in guiding Islamic finance in the world and does a lot of asset management in several countries of the world. A multitude of Islamic financial institutions are present in several countries, but the problem is that their influence is limited.

In most cases, these institutions finance themselves, which causes a huge problem for their long-term development. Financial institutions can usually rely on a player like the central bank to be able to balance the books at the end of each day, but this is not the case for Islamic banks in many countries around the world. Islamic banks derive a plurality of their revenues from investment or debt instruments. The bank often owns the asset or financial instrument before transferring it to customers. This structure, therefore, requires a significant need for liquidity to acquire the assets in question in order to generate income. But an increase in the influence of the CCG around the world could result in more governments following the example of Britain and setting up Islamic banks in countries that do not necessarily follow Sharia rules.

The Islamic Financial Services Board (IFSB) annually publishes information about Islamic finance in the world. We note that the growth rate is around 7% for 2019 (IFSB, 2019). As a result, the total estimated value of Islamic finance assets is estimated at USD 2.19 trillion (IFSB, 2019). If we compare this amount to the 2015 figure of around USD 1.79 trillion, we can see that Islamic finance is becoming increasingly important in the world (IFSB, 2019). It is therefore very likely to see the emergence of this type of institution in several new countries as the popularity of Islamic finance is growing, particularly in Malaysia.

Islamic finance is also very important in the relations between the different countries of the Gulf and those of Europe. As explained in Koch and Stenberg's (2010) research, at the beginning of the 20th century, the financial structures and operations of the GCC countries were dictated by European banks. However, in the 21st century, this is no longer the case due to the increasing influence of all GCC countries, especially because of the dependence of all countries in the world on oil. Indeed, more than 45% of the world's oil reserves come from the countries that are members of the GCC (Gulf Petroleum, n.d.). Taking into consideration that the world's oil consumption is estimated at 99,558,000 barrels per day, it is obvious that the countries of the world will have to turn to the power that has the most reserves in the world (BP, 2018). The second reason for the change in financial structure is the increase in the Muslim population in European countries.

2.3. Islamic finance and performance

When we talk about performance indicators, we distinguish two important categories; financial and non-financial performance indicators. Financial

indicators such as the various performance ratios such as ROA or ROE give a good indication of the banks' performance. However, all non-financial aspects that contribute to performance should not be underestimated. According to *VisionEdge*, several non-financial performance indicators are important for corporations: company reputation, consumer influence, competitiveness and innovation ("Six non-financial metrics", n.d.).

The reputation of companies is often a factor that is considered important by customers. It is possible to gain a significant competitive advantage by working on reputation. Several studies such as Castilla-Polo, Gallardo-Vázquez, Sánchez-Hernández, and Ruiz-Rodríguez (2018), have studied the relationship between corporate reputation and performance. This study has shown that a company's reputation and its performance have a positive relationship and that clients are often the basis of non-financial performance indicators.

A relevant article to consider is that of Bashir (1999) who analyzes the effect of total assets on the level of performance of the bank. By analyzing the financial statements of some Islamic banks, it has been possible to see that assets are very important for Islamic banks because financial instruments are the ones that yield the most profits for this type of bank. Thus, analyzing the differences in performance compared to the total value of assets is a good way to know if the different banks are performing or not.

The research focuses mainly on two Islamic banks located in Sudan. The first is the Faisal Islamic Bank of Sudan (FIBS), a former bank that dominates the market while the second is the Tadamon Islamic bank (TIBS) which is relatively new and much smaller compared to the other. Thus, it is possible to note a significant contrast between these two institutions, particularly in terms of their size (total assets), as this factor can have a significant impact on performance. The author begins by making a comparison between these two banks over an interval of several years. The comparison tools for the two banks that were used are as follows:

- the size of the bank (total assets);
- the equity to capital ratio;
- return on assets (ROA);
- return on equity (ROE);
- interest on deposits.

The investigation of risk and profitability should indicate how depositor and shareholder funds are used (Bashir, 1999). Since Islamic banks do not use interest rates, they have to find alternatives to be able to create value. Despite the fact that the value of deposits is very different because of the size of the banks, the return on investment of deposits is a direct formula of performance and how managers use money. The size of banks can also have a significant impact on risk. The risk that banks take can have a direct impact on total performance. One of the measures that is used to quantify the risk of banks is the risk index (RI). This tool takes into account other important ratios such as ROA, which illustrates the profitability of the company's assets. It is known that Islamic banks are mostly composed of complex financial instruments that yield the bulk of profits. ROA alone is not large enough to be able to assess a bank's

total risk. The authors, therefore, decided to include another important variable, the equity to capital ratio (ROE). Since shareholders have a right to the assets of the firm, it is important to include them in the risk index formula. The standard deviation of the ROE combined with the equity and asset ratio, therefore, gives the index ratio. Bashir's (1999) research has led to several conclusions that are relevant at the level of Islamic banks. Indeed, the larger the banks are, the lower the operational risk. Regarding performance, both banks have shown an increase in volatility.

Also, Al-Tamimi (2010) has conducted research that analyzes factors affecting the performance of Islamic and traditional banks. Again, ROA and ROE are the main indicators to be able to determine the performance of individual banks. The difference is that several other independent variables have been used to have a more accurate measure of performance such as economic conditions. Indeed, shareholders tend to sell their shares and bonds when economic conditions are not ideal, thus reducing the value of the banks' assets. The size of an economy is also important, as it determines what proportion of customers can do business with these different banks. Another important variable is the size of banks as measured by total assets. Indeed, according to Berger and Humphrey (1997) and Shaffer (1985), it is predictable that there is a positive correlation between bank size and performance because by increasing bank size, it is possible to reduce costs and thereby increase performance. Costs are also another variable to consider since the higher the costs, the less efficient the banks will be. Of all the independent variables used in the research, only five had a positive impact on bank performance (ROA and ROE): bank cost, a number of branches, bank liquidity, financial development (total assets/GDP) and the percentage of total bank assets out of the total of all banks in the member countries of the research.

2.4. Benchmarking

This comparative analysis will be divided into three different parts to see the similarities and trends in Islamic finance. For comparison purposes, the trend analysis will be done in countries that have certain commonalities and will be compared with Canada: England and Saudi Arabia.

Among the various studies that have been made on Islamic finance, we note that the social context is an element that is extremely important. We have seen the emergence of several Islamic institutions in countries that had only conventional finance. For example, the Al-Rayan Bank which expanded to come to England in 2004. In the beginning, it had only 13 million pounds sterling as capital. According to the bank's financial statements, by 2017 it had more than £33.66 million in revenues from all financial activities (Al Rayan Bank, 2018). With the support of the government of England, the bank continues to grow in a society where Islamic finance is becoming increasingly important. Currently, there are six Islamic banks and 20 other companies offering similar services throughout Britain (Kunova, 2017). It is noticeable that the explanation behind the strong offer of

Islamic finance stems from three different elements. The first is the fact that the legal system in England and the Sharia work well together (Kunova, 2017). The entire territory of Great Britain uses the Common Law as its legal system (University of Oxford, n.d.). Looking at the legal system in Canada, all provinces use the Common Law except Quebec which has the Civil Law. Omar (2015) explains in his article that there are some important similarities between Sharia and Common Law. First, not all laws have been codified. In both systems, court decisions are used to create codes of law. In the situation where there have been no previous judgments, legal doctrines are used to reach a verdict. The reason is also a tool that is used in both legal systems to render a judgment. The second element that explains the high supply of Islamic finance in England is the fact that several tariff barriers have been dropped since 2003 (Kunova, 2017). All this has led to the legalization of the first Islamic institution: Islamic Bank of Great Britain (Ainley, Mashayekhi, Hicks, Rahman, & Ravalia, 2017). Indeed, England has recognized the important growth of Islamic finance and has put in place measures to ensure that it integrates well into the local market. By easing certain regulations, England has given Islamic banks the opportunity to set up and expand. One of the major challenges for Islamic institutions is often having to compete with the performance of interests. Thus, if regulations further diminish the performance of banks, it will be difficult to compete with traditional banks. As a result of the relationships that have developed, it is noticeable that there are even banks from England that have moved to countries like Saudi Arabia. The HSBC Bank has made an investment to be able to break into the Middle East market. After several investments and an important acquisition of another bank in 2017 (Alawwal Bank), the Saudi Brith Bank is now earning $1.88 billion annually (Dun & Bradstreet, 2017). The example of HSBC Bank is one of the good results of the socio-economic relationship that has developed between these two countries.

From another point of view, we notice a particular evolution in countries that are Islamic. There are two types of banks in these countries: pure Islamic banks and other banks. A study by Bintawim (2011) showed that only four out of all banks in Saudi Arabia were considered pure Islamic banks. As time goes by, we see that banks offer services that are more and more diversified. Thus, in order to be able to satisfy customers, there are more and more services that do not comply with the rules of Islamic finance. It is important to note that the concept of pure Islamic banking is not officially recognized in all countries. Saudi Arabia only differentiates between Islamic and non-Islamic banks. As a result, there is a greater emergence of Islamic banks that are considered to be mixed. This type of bank has had a growth in popularity in the Middle East mainly because of the multitude of transactions they do with countries such as the United States. As explained above, it is important that countries like Saudi Arabia be a pillar in the expansion of Islamic finance. Recent trends show a total profit of $37 trillion in 2013 which represents a growth of 7.18% compared to

the previous year (Lone & Alshehri, 2015). This growth is mainly attributed to the growing popularity of this type of finance, but also to foreign investment. For example, Al Rayan Bank is owned by a parent bank in Qatar. For several years, this bank has been operating in England and is greatly increasing the popularity of this type of finance. This type of investment made by these organizations is the key to the constant growth of Islamic finance.

As far as Canada is concerned, the financial sector is considered to be very conservative. Indeed, not just any bank can come into the country and start operating. Apart from the big five banks, RBC, TD, Scotiabank, BMO, CIBC, the other banks are almost non-existent. In recent years, the influence of Islamic banks around the world has begun to reach Canada. Several articles and professors are trying to encourage Canada to enter the Islamic finance market. The Globe and Mail explains that growing Islamic finance is an opportunity for Canada to offer different financial products to satisfy more people (Hejazi & Sawwaf, 2020). There are two reasons why Islamic finance is not yet really present in Canada. First, there are rules and regulations at the level of banks and financial institutions. All banks and financial institutions must comply with the Bank Act, which sets out all the regulations that must be followed to operate in Canada. This Act contains over 1,000 different sections giving guidelines to be followed in many situations. The problem with this act is that new financial institutions have problems being able to operate properly with all the regulations that must be followed from the beginning. For example, one of the regulations prevents a shareholder from owning the majority of the shares that are in the institution. Thus, a new bank has to find investors to dilute the value of the bank so that the owner does not have a majority of the shares. There are many small details that make the banking market in Canada very closed and extremely controlled by the central bank. The second reason that Islamic finance is not present in Canada is the lack of popularity. Indeed, the Muslim community represents only 3.2% of the entire Canadian population (Statistics Canada, 2015). Despite the fact that Islamic finance is well known in some countries, in Canada, its functioning remains very ambiguous for many people.

2.5. Research hypotheses

Risk is the most important element for banks and is always taken into consideration for all decisions. Several analyses have shown that Islamic banks are less risky than traditional banks. By analyzing in detail, the composition of the financial statements and the source of income, it will be possible to have a better indication of the performance and risk of these banks. Dubai Islamic Bank (DIB) and CIBC of Canada will be analyzed to see the significant differences in the composition of their financial statements and revenues.

First of all, the source of income is really different if we compare the two banks. The conventional bank (CIBC) earns more than 50% with interest while the Islamic bank has more than 75% with financing activities. Indeed, more than 84%

is income from the DIB bank's assets and the rest is separated in other investments (Dubai Islamic Bank, 2018). It must always find a way to innovate and improve the efficiency of its various assets to be able to have a ROA that is getting better and better. In the annual report of 2018, it's possible to see CIBC's sources of revenue for the years 2018 and 2017. The Canadian Imperial Bank of Commerce has four main sources that make up its annual income: interest income, miscellaneous fees (credit card, advisor, etc.), insurance income and capital gains. As explained earlier, more than 55% of this bank's income comes from interest income. Therefore, the bank does not have full control over the interest income it will receive. Indeed, the central bank of Canada is the one that determines the key interest rate for each period. The central bank assumes this role in order to control the various economic events that take place in the country. This key rate has a big impact on the reaction of consumers, as it encourages them to either invest or spend (Rivas, 2016). Banks want their customers to consume more in order to be able to charge more interest on credit cards, mortgages, and other sources of income. However, they are not able to control the interest that is set by the central bank. Depending on the economic situation, interest income can vary by a significant percentage. Table A.2 in the Appendix shows interest income as a function of the year, the bank interest rate, and the total level of assets. The bank's interest income is then considered to be more volatile than that of Islamic banks.

Within banks, assets are extremely important to be able to earn income. Traditional banks need a significant level of assets to have interest income and miscellaneous fees such as credit card charges. While traditional banks earn most of their income from interest, Islamic banks need to have some variation in assets to be profitable. In the annual report of Dubai Islamic Bank, it's possible to see the different incomes per bank segments (Dubai Islamic Bank, 2018). Unlike CIBC, the bulk of income does not necessarily come from transactions with the bank's consumer customers. Indeed, the banks with the various corporations are much larger than all other segments. Islamic banks do a lot of partnering with corporations and often get some of the revenue depending on the investment that has been made. On the other hand, traditional banks such as CIBC will rather make loans to corporations and charge a certain interest rate to be able to make their investment profitable. In this sense, it can be said that Islamic banks are riskier because the bank's income will depend on the income of the corporation while the traditional bank will have a fixed rate that is predetermined. The annual report of CIBC gives an indication of the ROA according to the different segments of the DIB bank. In particular, Table A.3 shows how diversified the sources of income of Islamic banks are (CIBC, 2018). A segment analysis has been done in Table A.4 in the Appendix for comparison purposes. The first difference that is evident is that traditional banking is concentrated in the retail banking sector while Islamic banking is mainly in the corporate sector. The difference between the two is that the income of the traditional bank is derived from interest income or certain capital gains on the sale of shares or otherwise. By

analyzing the ROA of each segment, we notice that Islamic banking is much better performing than traditional banking despite having fewer total assets. This difference is due to the lack of performance attributable to the retail banking section of the CIBC. In addition to being the segment with the highest total revenue, it is also the segment with the lowest ROA. Assets in this segment may not be fully utilized.

As explained above, the objective of the research is to compare the efficiency and performance of Islamic banks to that of traditional banks and to see the different possibilities for this type of finance in Canada. Taking this into consideration, the following hypotheses will be tested:

H1: In terms of efficiency, Islamic banks are more efficient than traditional banks.

H2: Traditional banks are riskier than Islamic banks.

H3: The size of a bank is related to its performance.

3. RESEARCH METHODOLOGY

Research design can be concluded in a number of ways, including exploratory or conclusive (Business Research Methodology, n.d.). The major difference between these two methods is that the exploratory method is freer and vaguer. This approach is found especially when conducting research with non-quantitative data. As this research focuses mainly on the quantitative aspect of Islamic finance, the conclusive method will be favored.

3.1. Sample

For the sampling, a total of 15 banks located in 7 countries were selected and the empirical analysis focused on the years 2017 and 2018, mainly due to data limitations. The Islamic banking market in Canada is still growing and relatively new, so to get a better overall picture of the market, a comparison with more developed and established markets is essential. In order to ensure a representative and sufficient sample in terms of data analysis, the inclusion of Islamic banks not established in Canada was deemed necessary. Indeed, in addition to their different geographic locations, the Islamic banks used are likely to be of similar size. Information on the activities and objectives of each bank is presented to identify the main characteristics of these financial institutions and also for comparative analysis. Thus, of the 15 banks, 9 are Islamic banks located in several countries, including Canada. One reason that only two years were used for the research is that the article had more of an experimental focus. In future research, it would be interesting to take a larger sample of banks and also take several years to have more consistent results.

3.2. Measurements of variables

As seen in previous research, several variables have been used to be able to assess bank performance. But the most common measures were ROA and ROE. Since banks make most of their revenues from their

assets, their performance can be discerned primarily by using these measures. In all the research that was used, ROA and ROE were the basis of the research. But other independent variables will have to be considered, as the reality of Islamic banks is very different from those in other countries. In countries that are members of the GCC, there is financial support that allows banks to expand and be more profitable. The variables below will be used to conduct the research.

3.3. Definition of performance for research

The use of the term performance is considered to be very broad, as it encompasses several facets of a company. This term may be different depending on the entity in which it is applied. Some companies have different objectives, so their definition of performance may be different. For this research, only financial elements will be considered in defining performance, as qualitative elements such as customer satisfaction can often be difficult to compare between banks. In this research, performance will focus on getting the best possible result depending on the financial resources available. Revenues, efficiency, assets, equity, deposits, loans and other instruments are all part of bank performance.

3.4. Research model

In order to make a proper comparison between the different financial institutions, a comparison of the relevant ratios will be used. To go into more detail, a DEA model will also be used to be able to have the best indication of the performance of these banks. As this model provides information on the efficiency of the bank's resources, it will provide more depth to the results.

Current ratio

The immediate liquidity ratio provides an indication of whether an organization is able to meet its short-term obligations. In most industries, a ratio above 1:1 is considered satisfactory. Research by Ahmad (2016) showed that there is a relationship between profitability and the quick ratio. In addition to demonstrating the ability to honor commitments, this ratio shows the organization's ability to turn profits into cash. This is particularly important because banks have many assets that take a long time to turn into profit. The general liquidity ratio is also considered to be "working capital". Having a positive working capital ratio is an indicator that the firm is able to sustain its current activities and also to be able to invest in other activities. In the long term, this shows a capacity for expansion. Taking this into consideration, this measure will be used as an index in the profitability measure of banks.

Equity on total assets

This ratio shows the amount of assets that could be created with the investment of equity. This ratio is relevant for research because the greatest value of a bank is in its assets. Therefore its ability to create assets is an element that can guarantee its long-term sustainability. Equity is often the most used source of financing at the bank level.

Gross margin ratio

Trying to increase the bank's revenues to expand is an important factor, but if the bank is not able to manage its expenses well, it will be difficult to maintain such a trend over the long term. It is important for banks to maintain a gross margin ratio that is as high as possible. In addition, the gross margin ratio gives some indication of the efficiency of companies in managing the direct costs of the products they offer.

Return on assets

As explained above, this ratio is the most important for this research. Banks create most of their income using assets. Bank clients bring in different types of income (interest income, bank fees, etc.). So if a bank is able to have more and more assets, it should also have more income. Moreover, return on assets is a measure of profitability that has been used in all research that attempts to assess the performance of Islamic banks. Several pieces of research, such as Bashir (1999), showed that a bank's performance was closely related to its asset level. The size of a bank is often assessed using the total number of assets. Although size is important, it is possible that some banks that are smaller in terms of assets may generate more revenue than others if they are able to manage well. Having a ROA that is high can also have a positive effect on shareholders. Since ROA shows the ability of firms to use their assets to generate income, shareholders may be more inclined to invest in such firms to be able to make a return on their investment. This measure will then be one of the most important for comparing performance between institutions.

Return on equity

Return on equity is also a ratio that is used in most research that evaluates bank performance. According to *Investopedia*, ROA and ROE are the most important measures for assessing how a company manages its capital (Fuhrmann, 2021). This ratio is important because it does not take into account assets or debt to see performance. With this ratio, it is possible to see performance in relation to the amount of equity that has been issued in total. Taking into account that equity is equal to assets minus debt, we can then say that ROE is an indication of how well the firm is using its assets to generate profit (Fernando, 2021). ROE is also used as an indication of a firm's sustainable growth rate.

Income on deposits

Deposits are the basis of income for banks. Banks use deposits from customers in different ways. One way is to use these deposits and invest them in shares or other financial instruments. Banks also use deposits to make loans to other bank customers. Deposit management can then have an important link to a bank's performance.

Loans on deposits

The loan-to-deposit ratio (LDR) compares total loans to all deposits that were made. According to *Investopedia*, if the ratio is too high, the bank may not have enough liquidity to be able to cover items that are unexpected (Murphy, 2020). On the other hand, if the ratio is too low, it means that the bank is not operating at its full potential. This is very important when there is an economic downturn. Indeed, when the economy is not doing well, there is

a risk that there is not enough liquidity to be able to cover the loans. Moreover, in normal times, a good LDR ratio is between 80% and 90% (Murphy, 2020).

Value loans

The risk at the bank level is extremely high. Poor risk management was a major cause of the economic crisis in 2008 (Templar, 2016). Considering that banks are connected to all large companies, not managing risk well can be costly for the economy as a whole. The loan-to-value ratio (LTV) is a measure that banks evaluate before lending to individuals (Hayes, 2020). The level of LTV gives an indication of what interest rate will be charged. This measure is especially important for Islamic banks, as most of their revenues come from lending to customers. The comparison of LTV between conventional banks and Islamic banks will be interesting to analyze in terms of the interest rate. Since Islamic banks do not use interest rates, the LTV comparison may be a good way to illustrate how risk is managed. As this indicator is not always available in financial statements, it will be used to add value to other ratios if possible, but will not be used in the numerical comparison of the different ratios.

Total assets

Total assets must be considered at the bank level. The more assets a bank accumulates, the larger the bank will be. The research explained the above-used assets to compare the size of banks among themselves. ROE and ROA have shown that one bank may be more profitable even though its size may be smaller than others. This premise can be evaluated with Islamic banks, as they are normally smaller in size than conventional banks.

3.4.1. DEA model

The models are widely used to measure the efficiency of decisions that were made by a production unit. Over time this model has become increasingly used at the bank level. It is true that a comparison of performance ratios is a good way to get an idea of an organization's productivity, but several studies show that this is sometimes incomplete. Indeed, ratios can often neglect the corporate performance aspect of organizations (Vincová, 2005). As this study focuses on the performance aspect, a DEA model that focuses on productivity should be better than the others that are available. With the DEA model, it is possible to have an efficiency score depending on the banks. The DEA model gives an efficiency score between 0 and 1; 1 being that the bank is operating in the most optimal way possible.

Figure 1. DEA model

Source: http://www.fao.org/
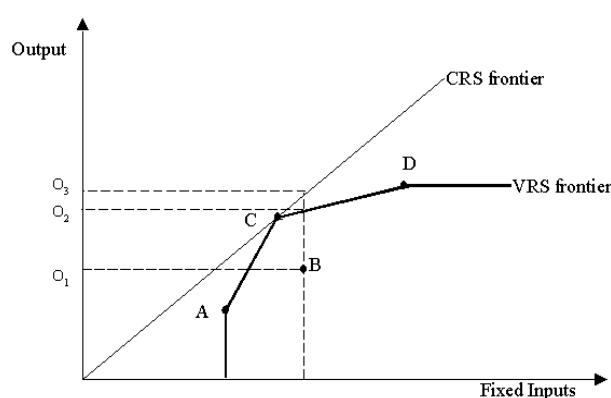
The analysis of the DEA model will yield three different efficiency scores that are interpreted in different ways. The *CRS* (constant return on scale) indicator takes into consideration that if there is an increase in inputs, outputs should also increase (Aziz, Janor, & Mahadi, 2013). It should also be noted that the model takes into account that there is no relationship between bank size and efficiency. The *VRS* (variable return on scale) indicator, in contrast to the CRS indicator, explains that an increase in inputs will lead to a disproportionate increase in outputs (Aziz et al., 2013). Second, the *Scale* indicator shows whether the bank is operating efficiently depending on its size.

Previous research has shown that DEA models need to be adapted to be as accurate as possible in order to meet research constraints. Furthermore, to be able to have the most appropriate inputs and outputs, one can draw inspiration from performance ratios (ROA & ROE). These two ratios are the performance indicators par excellence for banks. The banks that often have the best performance ratios often have several elements in common:
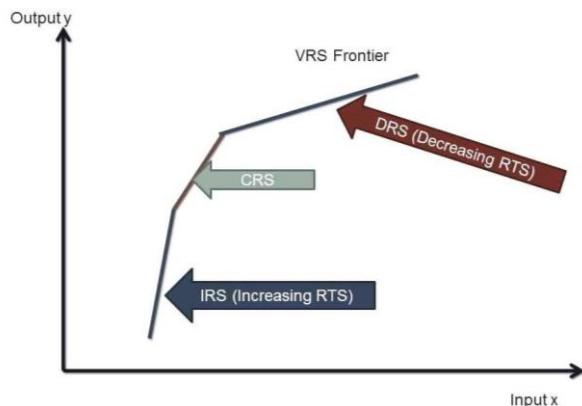
• Their total assets are performing well.
• There is good control of operating and non-operating expenses.
• Their asset level is at an acceptable level.

As observed in the comparative research, Islamic banks make a lot of income from their investment, while traditional banks do so through interest. In both situations, bank assets are used to make income. This leads us to our first input which will be *total assets*. The control of operating expenses is an element that has an influence on the performance of an entity. Making revenues at all costs is important, but if expenses remain high, it will be difficult for the bank to expand. In most research, non-operating expenses are not considered because they often include non-recurring expenses, making it difficult to make comparisons across

banks. This brings us to the second input, which is *operating expenses*. Deposits in banks make it possible to make loans to other clients and eventually make a profit for the bank. The level of deposits is also indicative of the size of the bank. *Deposits* will be the third input in the model. *Operating income* should also be considered, as it can be compared with operating profit and see how control of expenses has been achieved. It will then be the fourth input of the research.

In terms of outputs, as traditional financial statements and those of Islamic banks differ greatly, one must take outputs that are appropriate for everyone. *Operating profit* seems to be the appropriate measure. It is true that it would have been more relevant to take revenues before taxes, but taking into account the differences in non-recurring expenses, operating profit seems to be the most appropriate.

3.4.2. Bivariate analysis

As analyzed in previous research, the ROA and ROE ratio are the main indicators of bank performance. They will therefore be the basis for the bivariate analyses of this research. Two tests will be used for this analysis; correlation will be used to find out which are the different independent variables that correlate with the dependent variables. Regression will be useful to see if the independent data affects the dependent data for the different types of banks.

Taking into consideration previous research and available data, the model below shows which variables were used for the bivariate tests:

- assets to equity ratio;
- deposits on assets;
- loans on assets;
- loans on deposits.

Figure 2. Independent and dependent variables selected
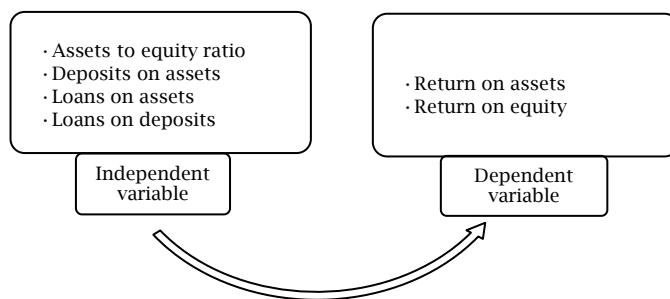
All these independent variables were chosen because they all contribute to the bank's performance. Equity is very important because it is a way of financing that will create assets for the company. With respect to deposits, banks are able to make income by lending customers' money to others and charging a higher interest rate. Loans are very important because Islamic and traditional banks need to have a certain level of loans to be able to be as efficient as possible. These tests will be very useful in determining whether the factors that influence performance factors are different depending on the type of bank.

4. RESULTS AND DISCUSSIONS

4.1. Descriptive statistics

The first important element that emerges from the analysis of comparative data between Islamic and traditional banks is the total level of assets. Traditional banks have more assets than Islamic banks. This difference can be related to

the popularity of conventional banks in the world, which is greater than that of Islamic banks. The first relevant performance indicator is that the ROA is significantly different depending on the type of bank.

The figure below illustrates the different results for the return on assets. The first performance indicator shows that the average ROA (1.34%) is slightly higher for Islamic banks than conventional banks (1.04%). This difference can be associated with the fact that conventional banks have much more total assets, which means that there are often assets that perform less well. Moreover, by analyzing the standard deviation, it is possible to see that conventional banks are much more consistent in terms of ROA results compared to Islamic banks. While it is true that most of the conventional banks that have been selected come from a similar market, one should not overlook the important differences in ROA performance of Islamic banks. Thus, management policies and economic realities can have a significant impact on ROA of Islamic banks.

Figure 3. Descriptive statistics ROA
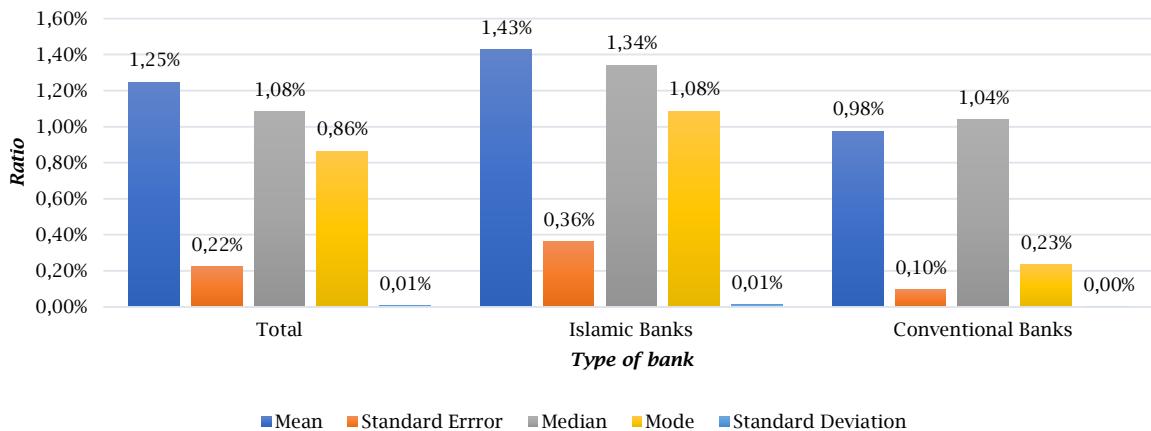
Figure 4 shows the results for the second important performance indicator, which is ROE. The average for conventional banks is around 17% which is much higher than the average of 11.76% for Islamic banks. This difference can be explained by two elements particular to conventional banks. First, conventional banks are much larger in terms of total assets, which means that they will generate more income than Islamic banks. Thus, their ROE will be higher compared to that of Islamic banks. Second, the structure of these banks justifies the difference in ROE since conventional banks are more likely to use liabilities than Islamic banks. Therefore, there are more transactions that involve equity for this type of bank. So, in most cases, equity capital is much more used and therefore its volume is often higher.

Figure 4. Descriptive statistics ROE
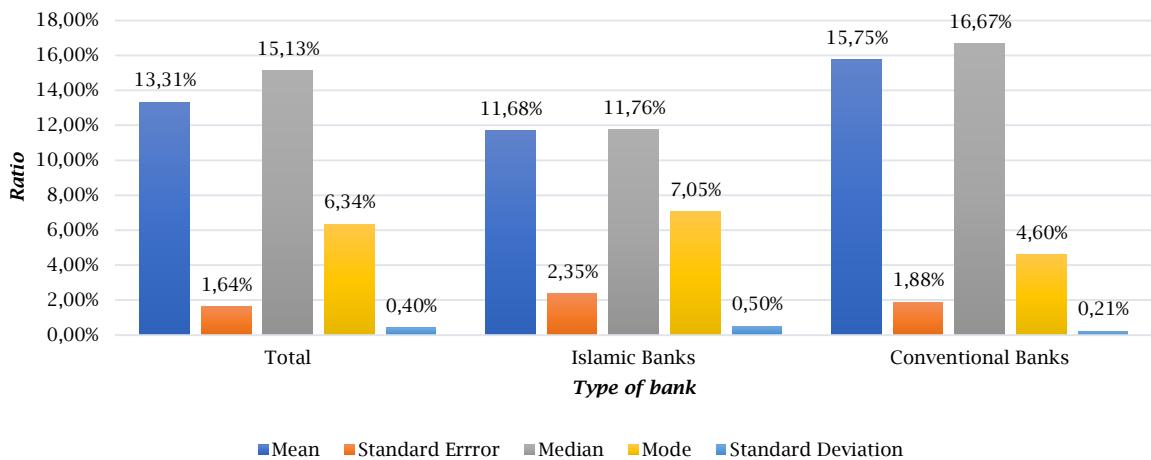
In most of the research that had been done on bank performance, deposits were often a very important source of income. In this sense, it is very easy for banks to make income from deposits because they can lend this money to other clients at interest rates that are higher than their near-zero financing rate. This is why banks like JPMorgan in China are trying to increase deposits as much as possible using tactics such as accounts that have no monthly fees (Richter, 2018). After analyzing the results (Figure 5), we observe that Islamic banks have an average of 2.60% while conventional banks have 1.53%. It is important to take into account that the level of deposits is much higher in conventional banks, which may explain the fact that their performance is lower. However, this does not prevent Islamic banks from performing better in this sector. Again, the standard deviation is much higher for Islamic banks compared to conventional banks. This supports the earlier explanation that each Islamic bank may have some important differences that greatly affect performance.

Figure 5. Return on deposits
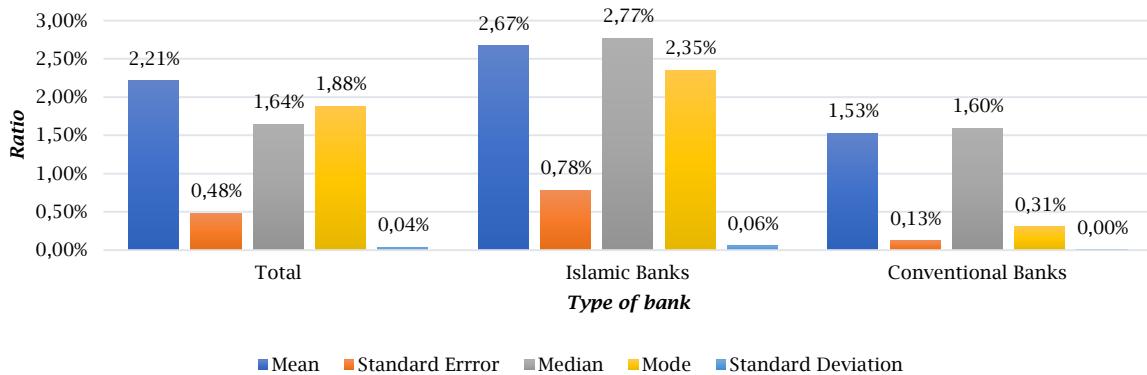
The LDR is an indicator that is very important because it allows for the analysis of two elements. First, if the ratio is too high, it means that the bank may not be able to protect itself against unanticipated events. Second, if the ratio is too low, it means that the bank is not using its deposits to full capacity and is not earning as much revenue as it should. Thus, this indicator measures both performance and a portion of the bank's risk. *Investopedia* defined that a good LDR ratio should be between 80% and 90%. Conventional banks averaged 80% and Islamic banks 85%. Looking at these results

in Figure 6, it can be concluded that conventional banks are much more focused on risk protection while Islamic banks favor performance. It is also important to see that for both types of banks, the standard deviation is relatively low, so the results are more consistent than those presented for the other indicators (ROA, ROE, return on deposits). Thus, both types of banks are in the right range for the LDR ratio. However, the only difference is that Islamic banks make better use of deposits to generate income compared to conventional banks that have a less risky approach to this aspect.

Figure 6. Loans on deposits
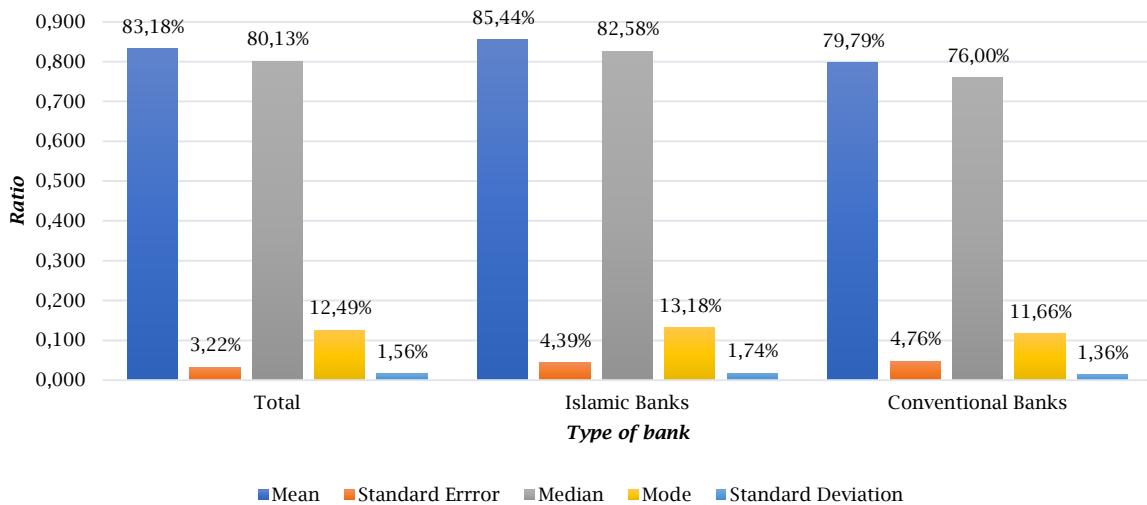
The gross margin indicator is represented by revenues after removing expenses related to the bank's core activities. This ratio is important because good expense management is extremely important for banks trying to expand. The two types of banks have a fairly similar gross margin ratio (about 60 percent as shown in Figure 7), but Islamic banks still have better management of operating expenses compared with traditional banks. This difference with traditional banks can be explained

by the fact that conventional banks will have significant interest charges while these charges are not present for Islamic banks. We also note that the standard deviation for Islamic banks is high. This difference between Islamic banks can be explained by the size of the different banks and their local market. Most small and medium-sized banks had more problems with their income and expense management, as some banks are relatively new compared to the total sample.

Figure 7. Gross margin ratio
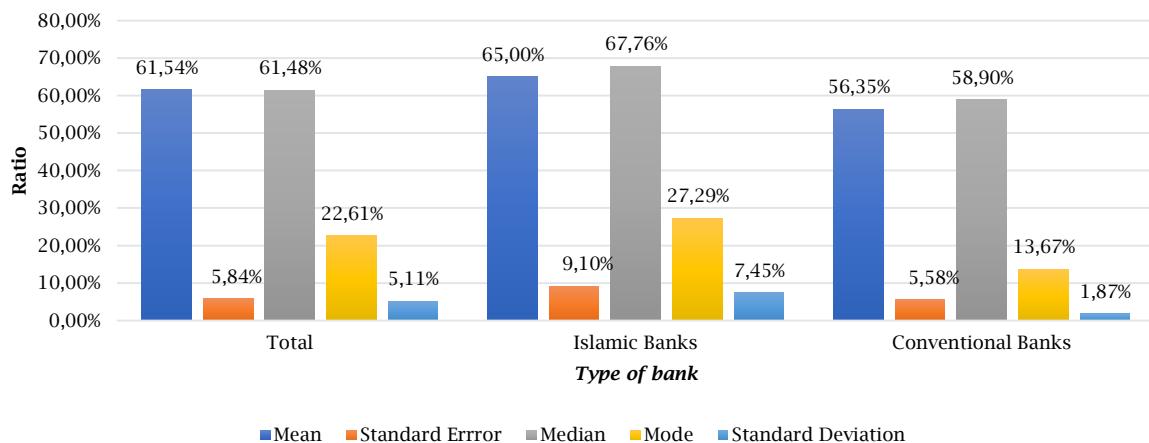
The current ratio is used in most analyses of companies to determine whether they are able to meet their short-term liabilities. In our case, this ratio can be useful in determining whether the bank is using its debts to be able to create revenue-generating assets. Islamic banks have had an average that is higher than that of traditional banks, but we also see that the standard deviation is very high (Figure 8). Therefore, the results are not very consistent when comparing one Islamic bank to another. Therefore, some banks had a current ratio that was very low compared to other Islamic banks. The market in which the banks operate may be one reason for these differences. Indeed, as explained in the literary review, for an Islamic bank to be well established, it needs the support of the government and the abolition of certain taxes that cause Islamic banks to underperform. So, if there are restrictions, this can have an impact on the bank's financial instruments which are an important part of the assets.

Figure 8. Current ratio
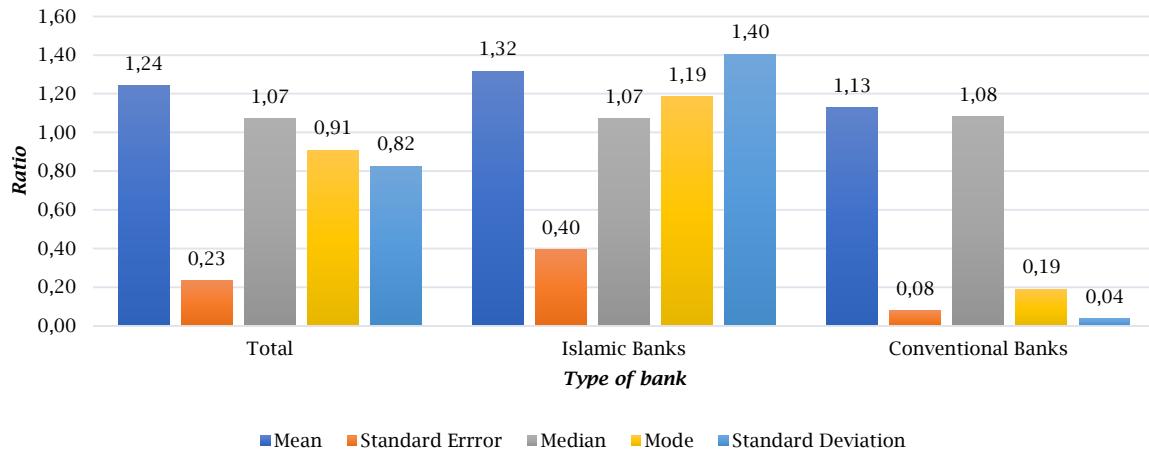
The ratio of equity to total assets is useful in determining the extent to which equity generates the bank's assets. In addition to having this utility, this ratio can be useful in justifying ROE performance. Islamic banks averaged 11.75% while conventional banks averaged around 6.38% (Figure 9). These results validate the fact that Islamic banks use much more equity capital for transactions than conventional banks. Taking into account that deposits are included in the bank's liabilities, one can consider that equity capital is an important source of income for Islamic banks. In addition, the fact that the ratio is high also explains why the ROE ratio is lower for Islamic banks. The fact that conventional banks use less equity capital for their transactions also results in a low ROE ratio. Conventional banks will favor debt over equity transactions. On the other hand, banks that are publicly traded do not tend to make equity issues that have significant value. Thus, in normal times the main source of change in equity will be retained earnings.

Figure 9. Equity to assets ratio
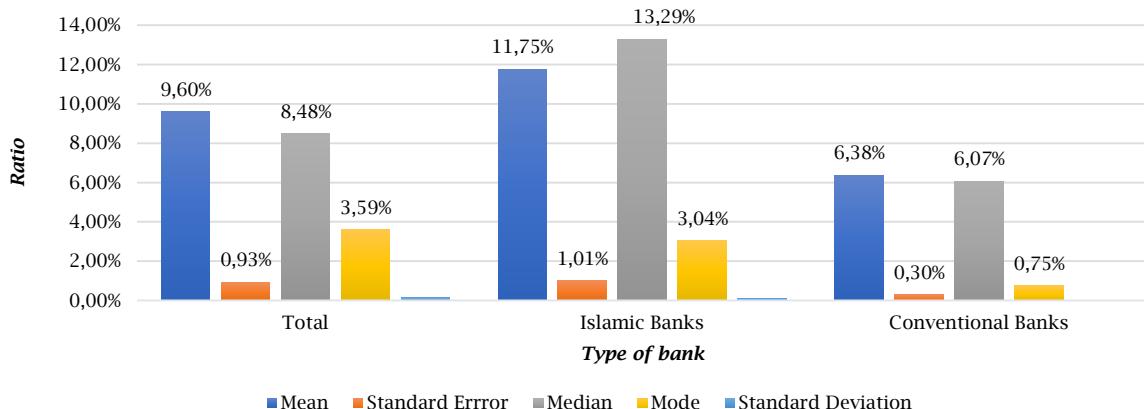
4.2. Bivariate analysis

Bivariate analyses are often very important to be able to explain the relationship between a dependent variable and an independent variable. Islamic and traditional banks are so different that some elements may be critical to performance for one type of bank but not important for the other type. The regression analysis will allow seeing which elements have an impact on the performance ratios (ROA & ROE). In this sense, an analysis of statistical regressions of ROA, ROE ratios was presented first for Islamic banks and then for so-called conventional banks.

4.2.1. Islamic banks

The results of this regression (Table 1) show that 31% of all independent variables have an effect on the ROA of Islamic banks. This low R-squared can be explained by the fact that Islamic banks have different ways of concentrating their activities to obtain revenues. Indeed, depending on the size of Islamic banks, it is possible that some financial decisions made by the largest banks may not

necessarily benefit the smaller ones. Indeed, a new Islamic bank will find it more difficult to offer real estate financing than larger banks. This is one of the reasons why smaller banks often focus on day-to-day operations, as costs are lower. Using the correlation test, it can be seen that the only independent variable that has a significant effect is the equity on assets. Indeed, the value of 0.54 is the highest of the values present. This means that the two variables move in the same direction in certain situations. This result can be explained by the fact that Islamic banks make more transactions with equity capital to generate income. Indeed, several financial instruments such as venture capital are widely used to acquire assets that will yield income over the long term.

Table 1. Islamic banks "R" statistic (dependent variable ROA)

Regression statistics	
Multiple R	0.561350004
R-squared	0.315113827
Adjusted R-squared	-0.369772346
Standard error	0.012695427

Table 2. Islamic banks regression results (dependent variable ROA)

	ROA	Loans on deposits (LDR)	Equity to assets ratio	Deposits on assets	Loan on assets
ROA	1				
Loans on deposits (LDR)	-0.174496843	1			
Equity to assets ratio	0.544533155	-0.170804349	1		
Deposits on assets	-0.175278543	-0.061950522	-0.147328878	1	
Loan on assets	-0.225644091	0.43471054	-0.186224171	0.86874841	1

Subsequently, in analyzing the results for return on equity (Table 2), it is not possible to determine a variable that really has a significant effect on ROE. The R-squared shows that the data that was taken explains 15% of the total ROE, so that explains why there is no data that has a strong correlation with ROE. In spite of these differences, we notice that the equity on assets has a 34% correlation with the ROE. This correlation is obvious because an increase in the ratio will surely have a negative effect on the ROE. There will therefore be an increase in equity, but not necessarily in total income. The correlation would have been higher if the sample of Islamic banks had been more uniform. As explained earlier, Islamic banks have different ways of doing business depending on the market in

which they operate. Looking at the ratio of deposits to assets and total loans to assets, they both have a negative correlation of around 20 percent. This correlation can be explained by the fact that an increase in equity will decrease total ROE, but increase total assets because equity will be a type of financing to acquire assets.

Table 3. Islamic banks "R" statistic (dependent variable ROE)

Regression statistics	
Multiple R	0.38962795
R-squared	0.151809939
Adjusted R-squared	-0.696380122
Standard error	0.091828799

Table 4. Islamic banks regression results (dependent variable ROE)

	Loans on deposits (LDR)	Equity to assets ratio	Deposits on assets	Loan on assets	ROE
Loans on deposits (LDR)	1				
Equity to assets ratio	-0.170804349	1			
Deposits on assets	-0.061950522	-0.147328878	1		
Loan on assets	0.43471054	-0.186224171	0.86874841	1	
ROE	-0.112173957	0.340389335	-0.223773506	-0.247923242	1

4.2.2. Conventional banks

For conventional banks, we can see that deposits on assets have a positive relationship with the return on assets. This result can be explained by the fact that conventional banks do many more transactions with deposits than Islamic banks. As explained in the literature review, deposits are considered to be important sources of income for conventional banks. This is one of the reasons why one of the largest banks in the world "JPMorgan chase" had made a significant increase in deposits, as it considered it a very important element to expand further and increase revenues. It is also important to note that 88% of independent data influences the ROA of conventional banks (Table 5). This result is explained by the fact that the data is much more consistent than in Islamic banks. The 4 independent variables allow making revenues for the banks and this is reflected in the R-squared.

Table 5. Conventional bank "R" statistic (dependent variable ROA

Regression statistics	
Multiple R	0.940924141
R-squared	0.88533824
Adjusted R-squared	0.426691198
Standard error	0.001770999

Table 6. Conventional bank regression results (dependent variable ROA)

	ROA	Loans on deposits (LDR)	Equity to assets ratio	Deposits on assets	Loan on assets
ROA	1				
Loans on deposits (LDR)	0.114594484	1			
Equity to assets Ratio	-0.7816207	-0.234768067	1		
Deposits on assets	0.808134781	-0.054125366	-0.651742431	1	
Loan on assets	0.499775622	0.870856444	-0.522295702	0.443429381	1

For the analysis of the return on equity (Table 7), there are several elements to note. First, the R-squared is still very high at 91% this time. This can be explained by the fact that all independent data have an impact on bank revenues. As explained above, conventional banks do far fewer transactions that involve equity compared to Islamic banks. This will ensure that anything that varies income will have an effect on R-squared because there is little variation in equity in general for this type of bank. Second, deposits on assets and total loans on assets have a fairly strong positive relationship. Thus, at 1% these variables move in the same direction. The ratio of equity to assets shows a negative relationship at 89%, so this variable has a strong relationship, but it moves in the opposite direction to ROE. This relationship can be explained by the fact that high equity to asset ratio will decrease ROE because the denominator will be higher. Deposits on assets have a correlation that is high with ROE because the more that deposits increase the more that the bank's revenues will increase and this translates into an increase in ROE.

Table 7. Conventional bank "R" statistic (dependent variable ROE)

Regression statistics	
Multiple R	0.958487285
R-squared	0.918697875
Adjusted R-squared	0.593489377
Standard error	0.029320097

Table 8. Conventional bank regression results (dependent variable ROE)

	Loans on deposits (LDR)	Equity to assets ratio	Deposits on assets	Loan on assets	ROE
Loans on deposits (LDR)	1				
Equity to assets ratio	-0.234768067	1			
Deposits on assets	-0.054125366	-0.651742431	1		
Loan on assets	0.870856444	-0.522295702	0.443429381	1	
ROE	0.175958296	-0.896704387	0.748178719	0.522084003	1

In conclusion, this section has shown several major differences between Islamic banks and traditional banks. The results were much more consistent for conventional banks, which can be explained by the fact that practices in this type of bank are considered to be uniform. Because of the difference in results between Islamic banks, only the equity to asset ratio can be considered to have a significant impact on the ROA and ROE of this type of bank. In one sense the results are obvious because Islamic banks do not use debt to a great extent for their operational activities, where only equity and assets will bring income to these banks. For conventional banks, all independent values except loans on deposits had an impact on ROA and ROE. Therefore, by optimizing assets, loans, and deposits, conventional banks should be able to improve their financial performance, while Islamic banks need to focus on optimizing assets as a whole as well as equity to have more revenues.

4.2.3. T-test Islamic banks & conventional banks

To be able to see if there is a significant difference between the different results obtained in the comparison of the performance ratios, the student's T was used. Most of the comparisons yielded results that were not significant except for two items. Indeed, the ratio of equity to assets and total assets have differences that are significant. The reason that the other results did not differ significantly is that the sample size was not large enough to see the statistical differences.

Table 9. Significative T-test results

Equity on assets		
Mean	0.117499547	0.06376772
Variance	0.000924451	5.5594E-05
Observations	9	6
Hypothesized mean difference	0	
df	9	
T stat	5.077578123	
P (T <= t) one-tail	0.000332505	
T critical one-tail	1.833112933	
P (T <= t) two-tail	0.000665011	
T critical two-tail	2.262157163	
Total assets		
Mean	55612023.9	1385824933
Variance	4.1614E+15	1.1087E+18
Observations	9	6
Hypothesized mean difference	0	
df	5	
T stat	-3.0905825	
P (T <= t) one-tail	0.01357075	
T critical one-tail	2.01504837	
P (T <= t) two-tail	0.0271415	
T critical two-tail	2.57058184	

Looking at the ROA results, it is true that the results are not considered significant but looking at the average we can see that there is a difference that shows that Islamic banks are performing a little better than conventional banks. In future research using more data could give more significant differences between the different analyses.

Table 10. Significative T-test results (ROA)

ROA		
Mean	0.01427765	0.009757
Variance	0.00011766	5.4708E-06
Observations	9	6
Hypothesized mean difference	0	
df	9	
T stat	1.2088144	
P (T <= t) one-tail	0.12876639	
T critical one-tail	1.83311293	
P (T <= t) two-tail	0.25753277	
T critical two-tail	2.26215716	

4.3. DEA model

By using this tool, it was possible to get more information on the efficiency of the entire sample of banks.

Figure 10. Bank efficiency 2017 & 2018

Bank efficiency 2017

Bank efficiency 2018
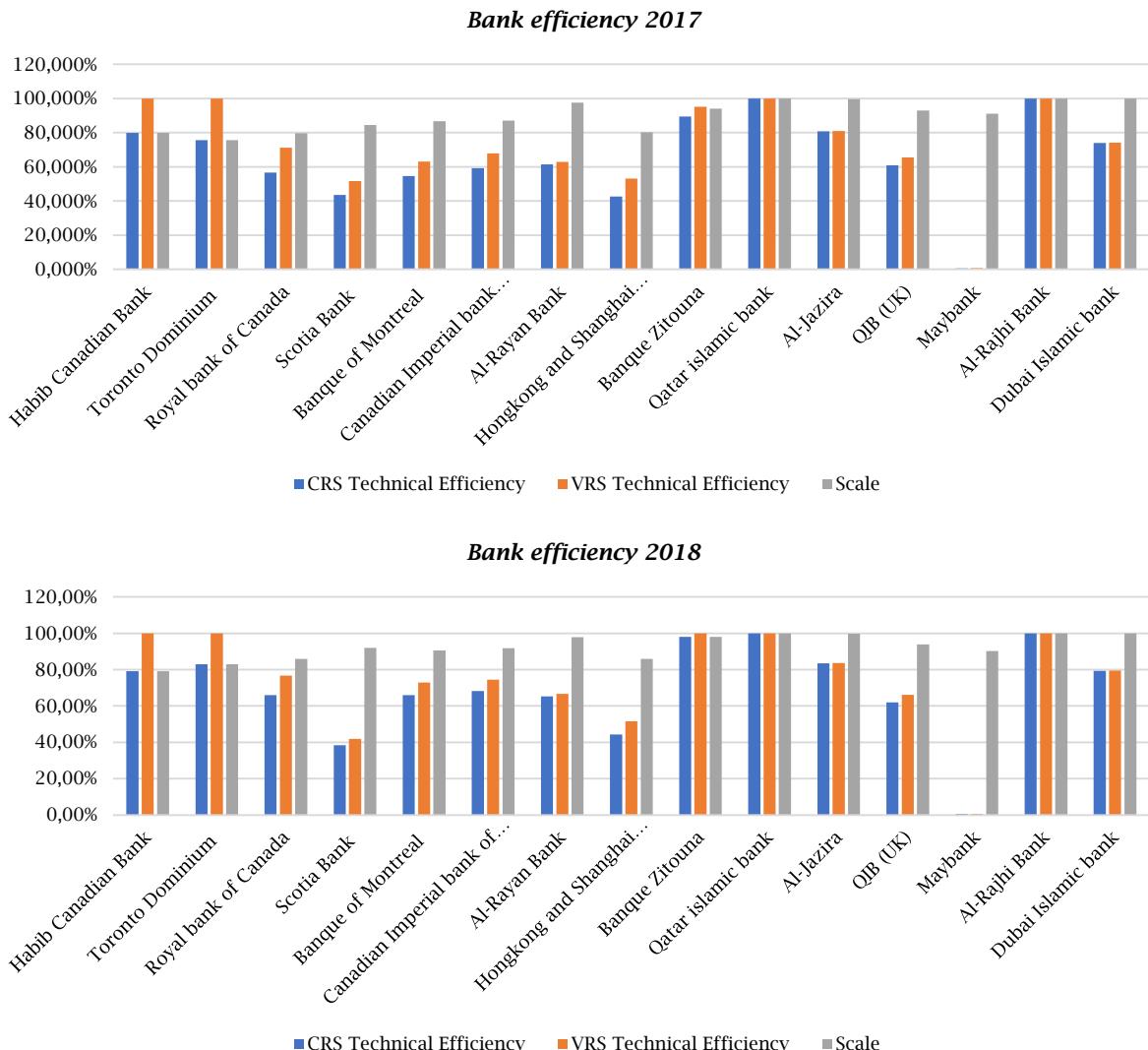
First, looking at the CRS indicator, it indicates that there is a fairly large difference between the efficiency of Islamic banks and conventional banks (Figure 10). On average, Islamic banks have a CRS of 73 percent while conventional banks have a CRS of 58 percent. Looking at the descriptive statistics, we also notice that the standard deviation for conventional banks is very low. This leads to the conclusion that the results are consistent with the efficiency scores that have been obtained by this type of bank. For Islamic banks, the average is higher than for conventional banks, but it is possible to see that there are some discrepancies in the data. For example, the Maybank, which is significantly larger than other Islamic banks, had an efficiency score that is very low because revenues compared to other inputs are not optimal. Second, it is possible to see the different efficiency scores for VRS. The results are very similar to that of the CRS except for the smaller banks, which have a slightly higher score than the other indicator. Average efficiencies are more similar between Islamic banks and conventional banks using VRS, but still, efficiency is higher for Islamic banks. Finally, the Scale indicator inferred that Islamic banks perform at a good level relative to their size. Conventional banks also obtained a high score of "85%", but there is still 15% inefficiency that could be improved at the level of conventional banks.

4.3.1. Performance of banks compared to Islamic banks in Canada

One of the main objectives of the research was to compare Islamic banks operating in Canada with those in the rest of the world. Using all of the statistical tools used above, it will be possible to make a comparison between Habib Bank and other banks. Of all the banks in the sample, Habib Bank is

the smallest in terms of total assets. It is much less developed than the others, so its income is also much smaller. As a result, it has the lowest ROA and ROE compared to all the other banks. This level of income can be related to the fact that Islamic banks are not very well known in Canada. The fact that revenues are low has an effect on returns on deposits which are also the lowest of all the banks identified. A positive point for this bank is that it has good control over its direct expenses. So taking

into account all these revenues, more than 78% are converted into gross income. The control of the direct expenses is well done by the bank, but the other expenses made the bank's income not as good as it should have been during the last years. The LDR ratio is also at 78% so the loan and deposit ratio is considered acceptable, but we can see that the bank favors risk management because it could increase the loans it makes to have a higher ratio, but it does not.

Table 11. Comparison of technical efficiency ratings (Canadian Islamic banks & conventional Islamic banks)

Banks	CRS technical efficiency	VRS technical efficiency	Scale
Habib Canadian Bank	79.200%	100.000%	79.200%
Islamic banks	73.056%	76.439%	95.228%
Conventional banks	58.192%	68.692%	85.225%
Islamic banks (without Habib bank)	72.244%	73.494%	97.188%

Despite the fact that Habib Bank is not performing as well as expected when analyzing performance ratios, when looking at efficiency scores it is considered to be performing well. Indeed, when looking at the CRS indicator, the bank is at 79%, which is higher than the average for all other types of banks. This high efficiency must be related to the fact that the bank is managing its expenses in relation to its revenues. Because the bank does not have a ROA ratio which was very high, we cannot say that the assets are the cause of this high score. The same analysis can be done for the VRS indicator, but the percentage is 100%, so according to this indicator, Habib Bank would be efficient according to the inputs that were chosen.

In conclusion, Habib Bank is not performing as

well as it should in the Canadian market because it is not as popular as that. The lack of revenue means that performance indicators are not high when compared to other Canadian banks and Islamic banks. But looking at efficiency, we can say that the bank is performing at the level of outputs that are produced by the bank and that the management of direct expenses is very satisfactory.

4.3.2. Comparison between size and performance

One of the objectives of the research was to find out whether size had an impact on bank performance. To do this, the sample was separated into several groups based on their size, which is measured with total assets.

**Table 12.** Comparison of size and performance indicators

Banks	ROA	ROE	Return on deposits	Technical efficience CRS	Technical efficience VRS
Banks 10 millions assets	0.51%	5.58%	0.63%	74.54%	82.05%
Banks 100 millions assets	1.69%	12.08%	4.05%	60.68%	60.77%
Banks 200 millions assets	1.91%	15.51%	3.11%	59.10%	59.15%
Banks 1000 millions assets	1.05%	17.03%	1.59%	55.03%	61.93%
Banks more than 1000 millions assets	0.90%	14.47%	1.47%	61.35%	75.45%

If we separate the results between performance and efficiency ratios, it is possible to see some trends. ROA and return on deposits show that the size of a bank has a positive effect on its performance up to a certain level. The 200 million asset segment is considered to be a non-peak performance segment. Indeed, at this level, the more assets increase, the more performance seems to decrease and the more assets decrease, the more performance also decreases. Only the ROE ratio shows an increase at the level of the 1000 million assets segment. This increase can be related to the fact that more developed banks use fewer transactions that involve equity. This is confirmed by looking at the results for the smaller banks. These banks had a lower ROE than all other segments, partly because they need some financing to have an income that is considered stable.

But when it comes to efficiency, other conclusions can be drawn. The CRS indicator

appears to be decreasing more and more as assets increase. The segment with the lowest number of assets has the highest efficiency. This may be related to the fact that economic entities tend to become more complex as they become larger, which makes management more complicated and makes it difficult to have management that is as efficient as possible. The VRS indicator gives similar results, but the indicators seem to increase after passing the 200 million asset level.

So in conclusion, size has an impact on bank performance depending on the definition of performance that is used. In our situation the performance of banks increases up to a certain level of assets after having passed this level, the performance seems to decrease. But in terms of efficiency, we notice that banks with fewer assets have a performance that is higher than other banks.

Figure 11. Comparison of performance and bank size
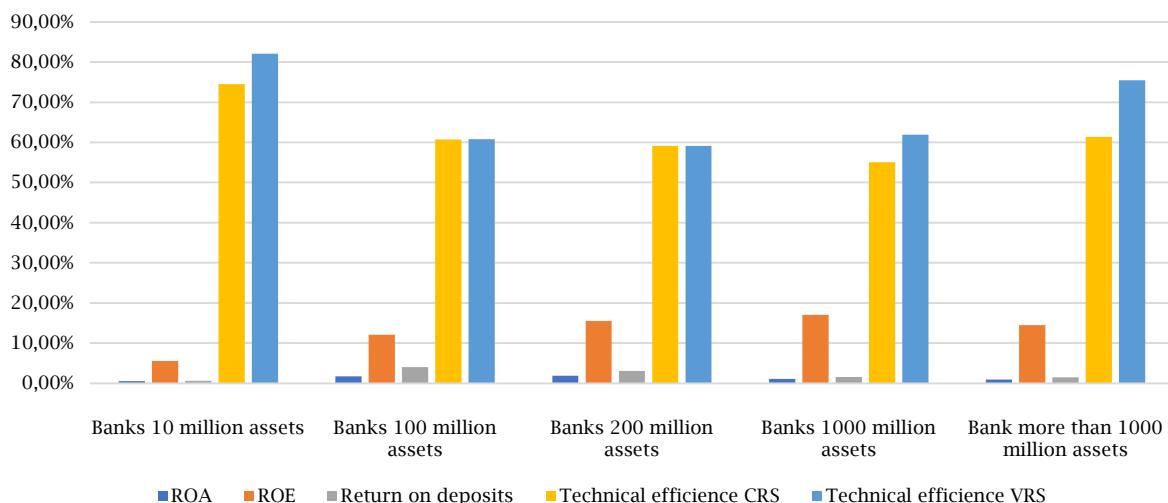
5. CONCLUSION

The objectives of this research were to determine whether finance would be a reasonable alternative in Canada and also to compare the performance of conventional banks with Islamic banks. With the methodological research and the quantitative results, it is possible to see that Islamic finance could be a viable alternative in Canada, as the performance of existing banks is satisfactory. It is known that if there are new banks setting up in Canada, their size is likely to be much smaller than conventional banks. So having good efficiency will be the key to surviving in this market. Habib Bank has proven to be efficient despite the fact that its performance ratios were not necessarily high compared to other banks. Having new Islamic banks could have a positive impact on the popularity and increase the customer base which will have a positive impact on revenues. Manzil Bank is a new Islamic financial institution beginning its entry into the Canadian market. This bank could have a significant impact on future Islamic banks in Canada. Islamic finance could complement existing finance in Canada. All Canadians would then have the opportunity to experiment with an alternative way of managing their finances. Since the principles surrounding Islamic banking are more ethical than traditional finance, it could attract more people who are more risk-averse than others. By giving clients more alternatives, they will be more tempted to use the services and this will lead to a stimulation of the economy. Risk-sharing among stakeholders is the element that could attract more people to Islamic finance. In most cases, when individuals do business with banks, they assume all the risks that come with their financial decision. As a result, they are often reluctant to make certain financial decisions because of the risk. In addition, we see that Islamic finance is growing in many countries around the world and the demand for it is increasing in Canada.

It is important to have the support of Canada's political governments as well to ensure successful implementation. This is one of the ways in which Islamic banks in England have grown and are now an integral part of finance in the country. Despite all the important elements that were found in this research, the limitations that were present need to be taken into account. In order to have a conclusion that is more detailed, one would need to have a larger bank sample that encompasses more banks around the world. This is because different banks face different economic and political elements that can have a significant impact on performance as well as revenues. In addition, having more data on the results of all banks will help reduce abnormal items in the financial statements and have results that are more consistent. With respect to the secondary objectives, at the performance level, it was noted that Islamic banks had better results in terms of comparing performance ratios. These results were also reflected in the DEA model where Islamic banks also had a higher efficiency score than traditional banks. These differences in performance can be related to the diversity of activities of Islamic banks. Detailed analysis of the financial statements showed that revenue sources were well distributed across several business lines. This spread reduces the total risk of Islamic banks compared to conventional banks and increases performance as well. Since conventional banks earn a large part of their income from interest, if this segment experiences problems, revenues will also decrease significantly.

In the future, governments should consider this alternative for the banking sector, as it provides more choice for the country's customers. But for the differences in these financial systems to work, economic barriers that can diminish the financial performance of banks must be limited. This is how England gave Islamic banks the opportunity to expand. By following this example, Canada could stimulate its economy, which has been underperforming in recent years.

The fact that information on Islamic banks is very limited makes it difficult to make analyses that are really detailed. It is noticeable that conventional banks are very similar to each other in terms of their operations and their source of income, whereas Islamic banks are much more diversified. This makes trends more complicated to analyze. In order

to have results that are more in-depth, it would be necessary to have more banks in the sample and, if possible, to have a total data set that spans more than three years. This will allow for results that are more consistent and clear. Moreover, Islamic finance is still very new in Canada, so it is difficult to see what the future of Islamic finance in Canada will be in the coming years. Despite all these limitations, this research is important for investors and all stakeholders connected to banks because it shows them that Islamic banks are very efficient and perform very well despite the fact that they are smaller than traditional banks. Any negative opinions or apprehensions should be reduced, which will give investors the opportunity to make decisions that are more rational. The country's regulatory bodies could also take note of this research as encouraging Islamic banks in Canada could help in the recovery of the economy for years to come.

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APPENDIX

Figure A.1. Breakdown of DIB Bank revenues

Income repartition

▪ Income from Islamic financing and investing assets

▪ Income from investments in Islamic sukuk

▪ Income from international murabahas with the Central Bank

▪ Income from investment and wakala deposits with financial institutions

▪ Income from international murabahas with financial institutions
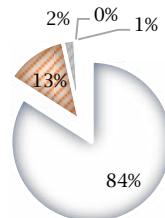
Table A.1. Breakdown of CIBC's revenue allocation

Income repartition	2018		2017	
Interest income				
Loans	13,901	55%	11,028	53%
Securities	2,269	9%	1,890	9%
Securities borrowed or purchased under resale agreements	1,053	4%	495	2%
Deposits with banks	282	1%	180	1%
Underwriting and advisory fees	420	2%	452	2%
Deposit and payment fees	877	3%	843	4%
Credit fees	851	3%	744	4%
Card fees	510	2%	463	2%
Investment management and custodial fees	1,247	5%	1,034	5%
Mutual fund fees	1,624	6%	1,573	8%
Insurance fees, net of claims	431	2%	427	2%
Commissions on securities transactions	357	1%	349	2%
Gains (losses) from financial instruments measured/designated at fair value through profit or loss (FVTPL), net (2017 and 2016: trading income (loss) and designated at fair value (FVO) gains (losses), net)	603	2%	227	1%
Gains (losses) from debt securities measured at fair value through other comprehensive income (FVOCI) and amortized cost, net (2017 and 2016: available-for-sale (AFS) debt and equity securities gains, net)	-35	0%	143	1%
Foreign exchange other than trading (FXOTT)	310	1%	252	1%
Income from equity-accounted associates and joint ventures	121	0%	101	0%
Other	453	2%	695	3%
Total	**25,274**		**20,896**	

Table A.2. Interest income since 2008 CIBC

Year	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Prime rate	39.5%	3.70%	3.08%	2.70%	2.78%	3.00%	3.00%	3.00%	3.00%	2.75%	2.50%	4.54%
Total assets	651,604	597,099	565,264	501,357	463,309	414,903	398,006	393,385	383,758	352,040	335,944	353,090
Interest income												
Loans	16,048	13,901	11,028	9,833	9,573	9,504	9,795	10,020	10,184	7,288	7,183	9,308
Securities	2,779	2 269	1 890	1 774	1 524	1 628	1 631	1 690	1 421	193	324	1 535
Securities borrowed or purchased under resale agreements	1,474	1,053	495	329	310	320	347	323	365	562	1,705	2,682
Deposits with banks	396	282	180	156	76	25	38	42	63	52	85	638
Total	**20,697**	**17,505**	**13,593**	**12,092**	**11,483**	**11,477**	**11,811**	**12,075**	**12,033**	**8,095**	**9,297**	**14,163**
Interest return on assets (IRA)	**3.2%**	**2.9%**	**2.4%**	**2,.4%**	**2.5%**	**2.8%**	**3.0%**	**3.1%**	**3.1%**	**2.3%**	**2.8%**	**4.0%**

Table A.3. ROA by DIB segments

Income per segments Dubai Islamic Bank												
	Consumer banking		Corporation banking		Treasury		Real estate development		Other		Total	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Segment assets	36,577,206	37,174,504	103,133,862	91,692,691	32,378,462	25,040,977	5,836,167	6,276,084	45,756,462	47,152,753	223,682,159	207,337,009
Segment liabilities	70,272,323	64,471,917	83,428,270	80,256,935	828,067	576,251	1,306,539	1,215,983	33,720,216	31,935,405	189,555,415	178,456,491
Net operating revenue	3,397,452	3,319,671	3,216,051	2,561,567	665,839	872,817	262,080	285,262	660,283	647,797	8,201,705	7,687,114
Operating expense	-1,380,118	-1,421,895	-366,904	-358,429	-56,402	-42,359	-157,085	-155,066	-361,493	-357,893	-2,322,002	-2,335,642
Impairment (loss)/ release	-919,331	-792,764	-47,387	-134,337	10,940	114,207	29,995	0	92,312	-10,559	-833,471	-823,453
Profit before income tax	1,098,003	1,105,012	2,801,760	2,068,801	620,377	944,665	134,990	130,196	391,102	279,345	5,046,232	4,528,019
Income tax expense											-42,414	-24,439
Profit for the year											5,003,818	4,503,580
Return on asset (operating revenue per segment)	9.3%	8.9%	3.1%	2.8%	2.1%	3.5%	4.5%	4.5%	1.4%	1.4%	3.7%	3.7%
ROA net	3.0%	3.0%	2.7%	2.3%	1.9%	3.8%	2.3%	2.1%	0.9%	0.6%	2.3%	2.2%
Contribution to pre-tax income	21.8%	24.4%	55.5%	45.7%	12.3%	20.9%	2.7%	2.9%	7.8%	6.2%		
Contribution to gross income	41.4%	43.2%	39.2%	33.3%	8.1%	11.4%	3.2%	3.7%	8.1%	8.4%		

Table A.4. ROA by CIBC segments

Income per segments Canadian Imperial Bank of commerce												
	Consumer banking		Commercial banking		USA		Capital market		Corporate and other		Total	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Segment assets	259,130	246,316	55,713	50,832	42,028	19,905	166,231	156,440	75,339	68,872	598,441	542,365
Segment equity	2,547	2,420	1,307	1,138	565	203	1,069	1,090	-221	-152	5,267	4,699
Net operating revenue	8,605	8,372	3,865	3,590	1,766	876	2,912	2,823	686	619	17,834	16,280
Non-operating expense	4,297	4,261	2,059	2,012	916	501	1,488	1,368	841	887	9,601	9,029
Impairment (loss)/release	839	853	14	25	186	128	4	1	514	375	1,557	1,382
Profit before income tax	3,469	3,258	1,792	1,553	664	247	1,420	1,454	-669	-643	6,676	5,869
Income tax expense											1,422	1,162
Profit for the year												
Return on asset (operating revenue per segment)	3.3%	3.4%	6.9%	7.1%	4.2%	4.4%	1.8%	1.8%	0.9%	0.9%	3.0%	3.0%
ROA net	1.3%	1.3%	3.2%	3.1%	1.6%	1.2%	0.9%	0.9%	-0.9%	-0.9%	1.1%	1.1%
Contribution to pre-tax income	52.0%	55.5%	26.8%	26.5%	9.9%	4.2%	21.3%	24.8%	-10.0%	-11.0%		
Contribution to gross income	48.3%	51.4%	21.7%	22.1%	9.9%	5.4%	16.3%	17.3%	3.8%	3.8%		

Table A.5. Coefficient results regression Islamic bank (ROA)

	Coefficients	Standard error	T stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.01879835	0.21744822	0.08644976	0.93526343	-0.5849347	0.62253139	-0.5849347	0.622531393
Loans on deposits (LDR)	-0.0260634	0.247818127	-0.1051714	0.9213027	-0.7141168	0.66199005	-0.7141168	0.66199005
Equity to assets ratio	0.17794115	0.166335595	1.06977194	0.34498073	-0.2838805	0.6397628	-0.2838805	0.639762801
Deposits on assets	-0.0252164	0.268199061	-0.0940214	0.92961355	-0.7698564	0.71942353	-0.7698564	0.719423531
Loan on assets	0.02406141	0.321310047	0.07488533	0.94390152	-0.8680383	0.91616112	-0.8680383	0.916161117

Table A.6. Coefficient results regression Islamic bank (ROE)

	Coefficients	Standard error	T stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.07110768	1.57285057	0.04520943	0.96610735	-4.2958256	4.43804095	-4.2958256	4.43804095
Loans on deposits (LDR)	0.00291418	1.792522752	0.00162574	0.99878069	-4.9739268	4.9797552	-4.9739268	4.9797552
Equity to assets ratio	0.70941688	1.203141766	0.58963699	0.58712931	-2.6310402	4.04987395	-2.6310402	4.049873951
Deposits on assets	-0.0135889	1.939942511	-0.0070048	0.99474645	-5.3997328	5.37255498	-5.3997328	5.372554975
Loan on assets	-0.0543704	2.3241059	-0.0233941	0.9824564	-6.5071229	6.39838202	-6.5071229	6.398382016

Table A.7. Coefficient results regression conventional banks (ROA)

	Coefficients	Standard error	T stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.55335947	0.544818298	1.01567711	0.49504873	-6.3692134	7.47593231	-6.3692134	7.47593231
Loans on deposits (LDR)	-0.6748668	0.667404224	-1.0111815	0.49646065	-9.1550415	7.80530792	-9.1550415	7.805307917
Equity to assets ratio	-0.3438723	0.257014696	-1.3379482	0.40861022	-3.6095537	2.921809	-3.6095537	2.921808999
Deposits on assets	-0.8235519	0.837409048	-0.9834524	0.50531109	-11.463843	9.81673888	-11.463843	9.816738877
Loan on assets	1.06595845	1.052717948	1.01257744	0.49602155	-12.310091	14.4420082	-12.310091	14.44200823

Table A.8. Coefficient results regression conventional banks (ROE)

	Coefficients	Standard error	T stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	8.457386	9.019839666	0.93764261	0.52048069	-106.15054	123.065315	-106.15054	123.0653155
Loans on deposits (LDR)	-10.042418	11.04933354	-0.9088709	0.53036903	-150.43751	130.352676	-150.43751	130.3526762
Equity to assets ratio	-7.4499393	4.255054131	-1.7508448	0.33036635	-61.515528	46.6156497	-61.515528	46.61564966
Deposits on assets	-12.349969	13.86387972	-0.8908018	0.53672548	-188.50726	163.807325	-188.50726	163.8073252
Loan on assets	15.8586239	17.42846587	0.90992655	0.5300012	-205.59103	237.308279	-205.59103	237.3082794