

DERLEME MAKALESİ / REVIEW ARTICLE

DO OWNERSHIP, METHOD AND TYPE REALLY MATTER? A LITERATURE SURVEY ON COMPARATIVE BANK PERFORMANCE AND EFFICIENCY

SAHİPLİK, YÖNTEM VE BANKA TİPİ NE ÖLÇÜDE ÖNEMLİDİR? KARŞILAŞTIRMALI BANKA PERFORMANSI VE ETKİNLİĞİ ÜZERİNE BİR LİTERATÜR ARAŞTIRMASI

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ABSTRACT

Evaluating the performance of banks is crucial due to its strong and positive relationship with financial growth and stability. The study presents a contemporary review of the literature on bank efficiency and performance. The purpose of the study is to analyze, compare and classify the comparative studies on bank efficiency and performance by ownership structures, countries of origin, bank types and quantitative methods used in the analyses. For this purpose, 135 comparative studies encompassing the period 2008-2017 from over 30 countries are analyzed. The study introduces the application of various mathematical techniques including multi-criteria decision making methods in bank efficiency measurement. Then the relationship between ownership and bank efficiency is analyzed. Finally comparison of Islamic banking with conventional banking in terms of efficiency and performance is discussed.

Keywords: Literature Review, Bank Efficiency, Bank Performance, Quantitative Methods.

JEL Classification Codes: G21, L25, B23.

ÖZ

Bankacılık sektörünün performansı, finansal istikrar üzerinde olumlu ve önemli bir etkiye sahip olduğundan, konu ile ilgili tüm paydaşlar açısından büyük önem arz etmektedir. Bu makale, banka etkinliği ve performansı ile ilgili literatürün çağdaş bir incelemesini sunmaktadır. Bu çalışmanın amacı; sahiplik yapıları, menşe ülkeleri, banka türleri ve yapılan analizlerde kullanılan nicel yöntemler ile banka etkinliği ve performansına ilişkin karşılaştırmalı çalışmaları analiz etmek, karşılaştırmak ve sınıflandırmaktır. Bu amaçla, 2008-2017 dönemi için 30'dan fazla ülkeden 135 karşılaştırmalı inceleme yapılmıştır. Bu çalışma, banka performansı ve etkinliği ölçümünde kullanılan, çok kriterli karar verme yöntemlerini de içine alan çeşitli matematiksel tekniklerin uygulamalarını sunmaktadır. Çalışmada ayrıca, sahiplik ile banka performans düzeyi arasındaki ilişkiler analiz edilmiştir. Son olarak, İslami bankacılık ile konvansiyonel bankacılığın etkinlik ve performans açısından karşılaştırılması tartışılmıştır.

Anahtar Kelimeler: Literatür Araştırması, Banka Etkinliği, Banka Performansı, Sayısal Yöntemler.

JEL Sınıflandırma Kodları: G21, L25, B23.

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1. INTRODUCTION

Banks' role in an economy is essential because of their intermediary function of converting the deposits and savings of the public into business and trade. It means that banks are the main channels for savings and the allocation of credit (Sufian et al., 2016). These abilities of banking sector directly affect the economic growth and development of a nation. If the banking sector functions well, it enhances the economic interactions of the different segments of the market and therefore accelerates the economic growth of a country. For this reason, performance evaluations of banks are of critical importance for the public, customers, investors, bank managers and financial regulators.

The performance of banks are expressed in terms of efficiency, concentration, profitability and productivity according to the study of Bikker and Bos (2008). Efficiency focuses on achieving objectives by using the minimum resources. Bank efficiency is measured by the ratio of outputs to inputs. There exists several types such as technical, profit, cost and allocative efficiencies. Although bank performance implies a broader term that may include intangible criteria, such as customer satisfaction, performance and efficiency are frequently used interchangeably in the literature. Therefore, in this survey, studies comparing banking efficiency and those comparing banking performance are included.

Financial efficiency is an important factor for enhancing financial stability and performance. In contrast, inefficient and risky banking activities cause financial instabilities and negatively affect economic growth. According to the study of Berger and Humphrey (1997), assessing the efficiency of banks is significant efficiency for the following reasons:

- It identifies the best and worst practices and therefore improves managerial performance;
- It addresses the research issues concerning an industry's efficiency;
- It provides the ranks, comparisons and methods that are employed; and
- It investigates the possible effects of market structures, mergers and deregulation on bank efficiency inform government policy makers.

Obviously, to ensure an efficient economy together with a healthy financial system, banks should be assessed and analyzed with the most reliable and modern techniques and should be compared to one another to determine the leaders and stragglers.

There are several literature surveys of bank efficiency and performance measurements. One of the most comprehensive survey is that of Berger and Humphrey (1997). They included studies in 21 countries that examine the efficiency of finance sector; by using mainly two methods: SFA (stochastic frontier analysis) and DEA (data envelopment analysis). A later survey carried out by Berger (2007), encompasses cross-country comparisons of the bank efficiencies by using common and nation-specific frontiers. Fethi and Pasiouras (2010) conducted a more recent survey in which they discussed operations research methods and artificial intelligence techniques in measuring bank performance and efficiency.

Early studies mainly focused on commercial banks in developed countries. Bank performance and efficiency in developing countries and transition economies attract more attention in the last decade. Furthermore, in developing economies, where both Islamic banking and conventional banking exist, researchers have begun to examine the performance of Islamic banking.

For all types of banks, the evaluation dimensions and measurement methods have begun to change over the last decade. In addition to the common approaches focusing on inputs and outputs, numerous recent studies handle bank performance evaluation process as a multi-criteria decision making (MCDM) problem. MCDM methods can analyze both financial and nonfinancial criteria in bank performance successfully. By using these methods, it is possible to examine several criteria at the same time in a systematic manner. Furthermore the interaction between included criteria can be analyzed (Seçme et al., 2009).

This study (as far as the author knows) is the first survey to include papers that compare banks based on certain specific performance criteria (negative and positive) and rank them by using MCDM methods. Furthermore, it is differentiated from its previous counterparts by integrating comparisons of Islamic banking literature. The time period covered in this survey is particularly remarkable in that the 2008 global financial crisis has changed the dynamics of bank efficiency and performance around the world. Given that bank efficiency studies in the

last ten years cover the precrisis, crisis and postcrisis periods, performance comparisons are examined throughout this tumultuous time period. Eight years after the last survey in this area, this survey aims to contribute to the bank efficiency and performance literature by including more innovative techniques, more dimensioned determinants and more diversified bank types at both the country and cross-country levels.

This study is based on research articles and conference papers that were published in highly reputed academic journals. Papers were searched in Science Direct, Emerald, Routledge and Springer databases by several keywords such as “bank efficiency”, “bank performance”, “bank and MCDM”. There is great number of studies on bank performance and efficiency: more than 150 comparative studies in the last ten years, of which a total of 135 studies were reviewed for this study. These studies were published in 50 journals. In this study, these papers are categorized according to the quantitative methods that were used, the country of origin, the type of banking (Islamic banking and conventional banking) and the ownership of the banks i.e. state banks, domestic-private banks, foreign-private banks, foreign-participated. Their methodologies, determinants, criteria and findings are expressed and summarized.

This study has seven sections. In the next section, the distribution of the papers by year, ownership and country of origin is summarized. In the third section, efficiency measures and variables are defined briefly. The fourth section introduced and grouped the quantitative methods used. In the fifth section, the ownership effect on bank efficiency is discussed, and the findings of the articles are summarized. The sixth section includes cross-country study findings. The seventh section focuses on the comparisons between conventional and Islamic banking. The last section presents the main conclusions of the study.

2. CLASSIFICATIONS AND OBSERVATIONS

This study includes 135 research or conference papers that were published in the period from 2008 to 2017, and 52 of these studies are the cross-country comparisons of bank performance and bank efficiency. The cross-country studies include banks from OECD (The Organization for Economic Cooperation and Development), EU (The European Union), Africa, GCC (The Gulf Cooperation Council), CEE (Central and Eastern Europe), and Asia, MENA (The Middle East and North Africa), Western Europe, Latin America, and BRICS (Brazil, Russia, India, China, and South Africa) The remaining 83 studies originated from 28 different countries from all over the world. The distribution of the studies by publication year and country of origin is listed in Table 1. China has the largest number of published articles (15), followed by Turkey (7), India (7), Malaysia (7) and Taiwan (7).

Table 1. Distribution of Studies by Years and Countries

No	Country	Years										Total
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
1	China		5		1	1	2	2	1	2	3	15
2	Turkey		1		1		3		2		1	8
3	India		1	1		1		1	2		1	7
4	Malaysia				1	1	2	1		2	1	7
5	Taiwan		3				1	1	1	1		7
6	Japan		1			1	1				1	4
7	Pakistan			1					1	1		3
8	Indonesia				1				1	1		3
9	Australia	1		1						1		3
10	U.S.						1				2	3
11	Spain			1					1			2
12	Czech Republic	1						1				2
13	France					1					1	2
14	Greece			1		1						2
15	Bahrain										1	1
16	Germany			1								1
17	Saudi Arabia				1							1
18	Iran						1				1	2
19	Italia										1	1
20	Serbia							1				1
21	Brazil			1								1
22	Korea						1					1
23	Canada				1							1
24	Lithuania					1						1
25	Philippines				1							1
26	Luxembourg								1			1
27	Bangladesh								1			1
28	Hong Kong								1			1
Total		2	9	8	6	7	12	6	12	8	13	83
Cross-country		3	4	4	6	2	4	6	7	6	10	52
Grand Total		5	13	12	12	9	16	12	19	14	24	135

The majority of the articles (58) analyzed the commercial banks' efficiency in a country independent of the bank ownership and type. In this study 46 papers researched the relationship between the ownership and efficiency of banks by comparing different ownership structures, namely, foreign, state, private cooperative, investment, family, domestic, regional, joint stock, city, rural, savings or partially private banks. There are also 24 studies that compare the performance and efficiency of Islamic banking vs. conventional banking, while 5 papers include performance comparisons among only Islamic banks.

3. EFFICIENCY MEASURES AND VARIABLES

Two main approaches—intermediation and production—exist to measure bank efficiency. According to the production approach, banks provide financial services to customers. Therefore input sets involve physical variables such as labor and material, and output sets include the services offered to customers (Yılmaz and Güneş, 2015). In the intermediation approach, on the other hand, consists of interest expenses which often correspond to 30 % to 50 % of total costs.

There are various indicators of bank performance and efficiency in literature. CAMELS rating system is traditionally and commonly used by the experts in evaluating financial performance of the banks. The CAMELS

bank rating is used to evaluate financial efficiency on its own or in combination with any other methods. CAMELS represents capital ratios (C), asset quality ratios (A), management efficiency ratios (M), earning ratios (E), liquidity ratios (L) and sensitivity (S) to market risks (Wanke et al., 2016b). Each of these components is calculated on a 1 to 5 scale, and they are accumulated into a composite evaluation. While some studies rely heavily on these basic characteristics, a wide variety of variables is selected in the literature.

Along with the variables, efficiency measures also differ. While cost efficiency is used most frequently, allocative, profit, technical and social efficiencies can be used individually or integrated to any other measures. The efficiency measure of banks indicates whether a bank maximizes the output with limited inputs or at the other hand or uses minimize the inputs to produce a certain amount of outputs.

To compute cost efficiency, input price data such as operating costs, personnel costs and interest costs are identified (Gardener et al., 2011). Cost efficiency can be defined as a product of technical and allocative efficiency. Profit efficiency, concerns a bank's ability to use the optimum mix of inputs given their respective prices (Fethi and Pasiouras, 2010). Some researchers prefer focusing on inefficiency terms or bad outputs such as nonperforming loans.

Since the products and services offered by banks are intangible in nature, it is difficult to evaluate bank performance. Therefore there is a need for both nonfinancial and financial performance measurement criteria due to competition pressure, technological and economic developments, corporate culture, top management and the image of banks in both national and international platforms (Seçme et al., 2009). While most studies have used only financial indicators, MCDMs are successfully used to cover intangible performance criteria related to nonfinancial performance, such as customer satisfaction and social responsibility.

4. QUANTITATIVE METHODS

Several quantitative methods are used in bank efficiency and performance measurement. While DEA and SFA are the most common techniques, a variety of MCDM applications have been introduced in field research. This list covers AHP methodology (analytic hierarchy process), TOPSIS approach (technique for order preference by similarity to ideal solution), PROMETHEE technique (preference ranking organization method for enrichment evaluations) and VIKOR analysis (multi-criteria optimization and compromise solution).

Figure 1 shows the distribution of articles based on the mathematical model that is used in the analysis of bank efficiency and performance. The most commonly used technique is identified as DEA with 60. The second preferred method is SFA (40), and it is followed by regression analysis (30), TOPSIS (10) and AHP (6). The other methods include the Malmquist productivity index, VIKOR, Monte Carlo simulation, PROMETHEE, ELECTRE, Neural networks, Parametric distance functions, Goal programming, Bayesian estimation, and Data mining.

Figure 1. Top Five Methods used in Bank Efficiency Evaluations

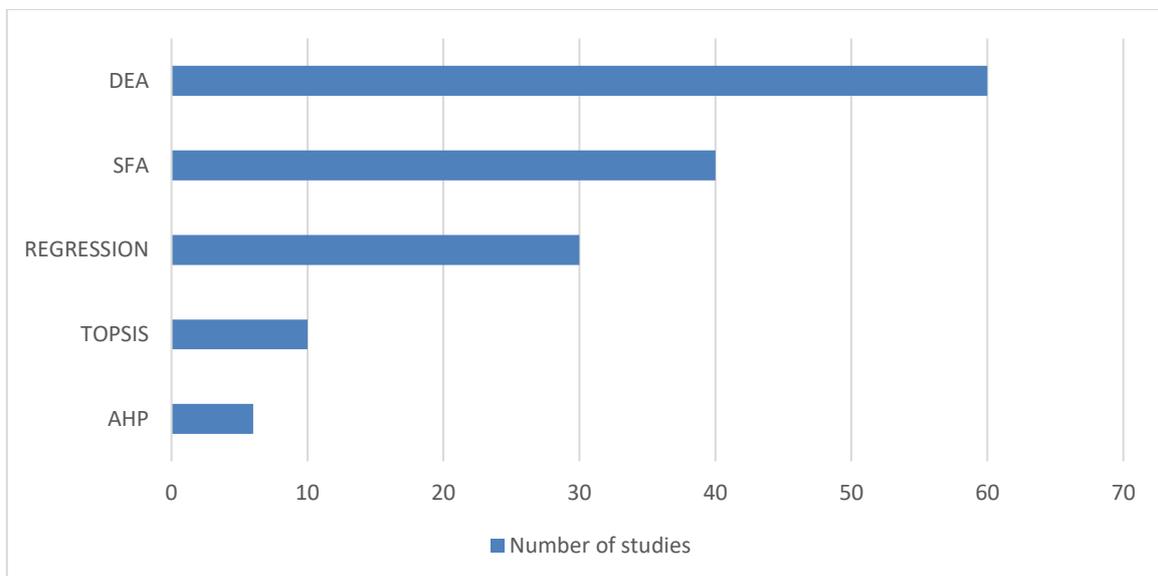


Table 2 categorizes and lists the studies according to their methodologies. The most frequently used techniques are explained below.

DEA: DEA methodology was first developed by Charnes, Cooper, and Rhodes in 1978; it is a nonparametric method since it does not require weights be assigned to various factors or the specification of the functional form that relates inputs to outputs (Ulaş and Keskin, 2015). This strength of DEA has made it increasingly popular in applications where there exists multiple inputs and outputs. The aim of DEA is to maximize the efficiency of each decision-making unit. The main reasons for the popularity of DEA are that it does not require the pre-specification of the production function, it is a linear based technique and it can be used for small samples (Gardener et al., 2011).

SFA: Berger and Humphrey (1997) categorized bank performance measurement techniques into two main groups: parametric and nonparametric. Although DEA is the most popular method among nonparametric tests, SFA is the most popular parametric test in the literature (Paradi et al., 2011). SFA was developed by Meeusen, Aigner and Van den Broek in 1977. The SFA methodology includes the introduction of an additive error term that consists of an inefficiency term and noise. A mostly normal or half-normal assumption is applied to the inefficiency terms and the errors. Therefore, the actual logarithmic output (cost) is obtained from the addition of an inefficiency term, a deterministic functional term, or a noise term (Behr, 2010).

REGRESSION ANALYSIS: Regression analysis is the main tool for assessing the effects of certain variables (e.g., effect of ownership, bank size or stock returns) on efficiency and performance. Although some researchers simply use regression methodology to assess ownership effect on efficiency, other researchers combine regression analysis with other mathematical methods. To increase robustness, new regression techniques, such as truncated regression, Tobit regression, quantile regression, GMM and GLS have recently been introduced.

TOPSIS: One of the most preferred MCDM tools in measuring bank performance is the TOPSIS method, which assumes that the chosen alternative is at the farthest distance from the negative ideal solution and the shortest distance from the positive ideal solution. The ideal solution can be expressed as the solution that concurrently maximizes the benefits and minimizes the total costs.

AHP: Another MCDM method to measure bank performance is the AHP methodology, which was first introduced by Saaty in 1980. AHP consists of assigning weights to each decision criterion and ranking the banks according to these criteria. ANP (analytic network process) methodology is a special form of AHP that includes the relations between criteria and is also used for bank efficiency measurements.

Table 2. Classification of Studies by Methodology

DEA	Ahmad et al. (2011), Alqahtani et al. (2017), Andries (2011), Assaf et al. (2011), Barros et al. (2011), Batir et al. (2017), Bayyurt (2013), Belanes et al. (2015), Casu and Girardone (2010), Chan et al. (2015), Chen et al. (2013), Chen et al. (2017), Chiu et al. (2013), Chiu et al. (2016), Chotareas et al. (2012 & 2013), Curi et al. (2015), Daly and Frikha (2015), Deng et al. (2011), Dong et al. (2014), Drake et al. (2009), Fernandes et al. (2017), Fujii et al. (2014), Fukuyama and Matousek (2017), Gardener et al. (2011), Hisham Tahya et al. (2012), Huang et al. (2017a & 2017b), Isik et al. (2016), Ismail et al. (2013), Ivan (2015), Johnes et al. (2014), Jose et al. (2014), Kao and Liu (2014), Kaur and Gupta (2015), Kenjegalieva (2009), Kevork et al. (2017), Kılıç (2011), Kumar and Gulati (2009), Mobarek (2014), Olson and Zoubi (2011), Paradi et al. (2011), Perea and Skully (2012), Puri and Yadav (2014), Quaranta et al. (2017), Ray and Das (2010), Repkova (2014), Rosman et al. (2014), Salim et al. (2016), Staub et al. (2010), Sufian et al. (2016), Svitalkova (2014), Thoraneenitiyan and Avkiran (2009), Titko and Jureviciene (2013), Ulas and Keskin (2015), Wang et al. (2015), Yılmaz and Güneş (2015), Zha (2016) and Zimkova (2014).
SFA	Abdul-Majid et al. (2017), Alqahtani et al. (2017), Andries (2011), Andries and Capraru (2012), Burki and Ahmad (2010), Chitnis and Vaidya (2017), Doan et al. (2017), Dong et al. (2014 & 2016), Goddard (2014), Hardianto and Wulandari (2016), Hsiao et al. (2015), Huang et al. (2017a,b & c), Ivan (2015), Jiang et al. (2009 & 2013), Koutsomanoli-Filippaki (2009a), Lensink et al. (2008), Liadaki and Gaganis (2010), Lin et al. (2016), Mamatzakis (2008), Manlagnit (2011), Margono (2010), Miah and Sharmeen (2015), Miah and Uddin (2017), Mobarek (2014), Mohanty et al. (2016), Nitoi and Spulbar (2015), Othman et al. (2017), Perea and Skully (2012), Sokic (2015), Staikouras (2008), Sturm and Williams (2010), Sun and Chang (2011), Tabak et al. (2013), Thoraneenitiyan and Avkiran (2009), Yin et al. (2013), Zuhroh et al. (2015).
REGRESSION ANALYSIS	Assaf et al. (2011), Batir et al. (2017), Beck et al. (2013), Behr (2010), Ben Slama Zouari and Taktak (2014), Berger et al. (2009), Caporale et al. (2017), Chotareas et al. (2012 & 2013), Curi et al. (2015), Daly and Zhang (2014), Djennas (2016), Fernandes et al. (2017), Gardener et al. (2011), Hardianto and Wulandari (2016), Ismail et al. (2013), Jawadi et al. (2017), Jose et al. (2014), Lin and Zhang (2009), Rashid and Jabeen (2016), Rosman et al. (2014), Salim et al. (2016), Ioanni Schiniotakis (2012), Shah and Jan (2015), Sufian et al. (2016), Wanke et al. (2016a & b, 2017), Wasiuzzaman and Gunasegavan (2013).
TOPSIS	Bayyurt (2013), Beheshtinia and Omid (2017), Chitnis and Vaidya (2017), Mandic et al. (2014), Seçme et al. (2009), Wanke et al. (2016a, 2016b, 2016c, 2017) Wu et al. (2009).
AHP	Beheshtinia and Omid (2017), Dinçer and Hacıoğlu (2013), Mandic et al. (2014), Seçme et al. (2009), Stankeviciene and Mencaite (2012), Wanke et al. (2016b), Wu et al. (2009).

Regression analysis is frequently used to investigate the effects of some factors on bank efficiency (e.g., governance, ownership and geographic environment). To overcome statistical limitations of DEA, a double bootstrap procedure with second stage regression has been introduced. Assaf et al. (2011) and Chortareas et al. (2012) present applications of truncated bootstrap regression techniques. The other techniques, regressed DEA scores on a variable, include Tobit regression (Gardener et al., 2011; Ismail et al., 2013), GMM (Assaf et al., 2013) and GLS (Mollah and Zaman, 2015; Rashid and Jabeen, 2016). Moreover, Behr (2010) and Jawadi (2017) discussed the quantile regression technique as a compromise approach between parametric SFA and nonparametric DEA.

Frontier analysis, such as SFA and DEA, are input-output oriented approaches. The efficiency measure in these techniques is minimizing inputs or maximizing outputs. The other MCDM methods handle bank performance evaluation as a decision problem with several criteria (indicators). Assigning weights relative to the importance of each criterion is a fundamental step in MCDM models. AHP methodology enables us to weight the criteria or indicators included in analysis. In DEA in contrast, these weights are endogenously defined in the model. Hence, it is difficult to perform comprehensive sensitivity analysis based on input/output weights. To overcome this

shortcoming of the contemporary DEA models, Wanke et al. (2016b) developed an easy-to-calculate robust TOPSIS model strengthened by the quantile regression method.

Wu et al. (2017) proposed a cross efficiency interval with a compromise technique, VIKOR, determining the weight of each variable and avoiding the extreme and unrealistic weights that exist in the traditional DEA model. A mutual problem of the alternative innovative methods involves finding the best weighting system for bank performance criteria. Doumpos and Zopounidis (2010) proposed an answer to this problem by developing a PROMETHEE based evaluation model where different weighting scenarios could be specified through Monte Carlo simulation.

Although the information in a performance analysis should be precise, exhaustive and certain in real life, it is sometimes difficult to obtain precise and accurate data; therefore, there is a need to address the uncertainty of a fuzzy or stochastic environment. A fuzzy decision-making technique in bank efficiency assessment is very useful in such cases. Beheshtinia and Omid (2017), Dinçer and Hacıoğlu (2013), Wanke et al. (2017), Mandić et al. (2014), Seçme et al. (2009), Chen et al. (2013) and Amile et al. (2012) are some of the authors who prefer fuzzy methods for the reasons mentioned above.

Wu et al. (2009) compared the TOPSIS method with the VIKOR approach based on the fuzzy weighted criteria with AHP, concluding that the performance ranking order of the banks with VIKOR technique are the same as the results derived from TOPSIS. The result is not surprising since both of the approaches are similar in that they are compromise techniques.

More recently, some researchers (Wanke et al., 2016a and 2016c) have started using predictive models such as artificial neural networks in the second stage analysis to assess efficiency drivers in banks. Inspired by theories about how the brain works, artificial neural networks can successfully predict the probability of an efficiency outcome.

5. OWNERSHIP EFFECT ON EFFICIENCY

The ownership structure of banks has a strong effect on bank efficiency and performance. In this study, 46 articles that compare banks with different types of ownership are included. The most common comparisons are between foreign and domestic banks.

There is strong empirical evidence supporting the claim that foreign banks generally have higher performance than domestic banks, especially in developing countries. Assaf et al. (2013) explained the reasons for the higher efficiency levels of foreign banks as follows.

- Foreign-owned banks usually obtain inexpensive financial resources from the international interbanking market or their parent companies. Independence from interbanking markets or the Central Bank's lending facilities provides a competitive advantage for foreign banks.
- Foreign banks operate with fewer number of branches compared to domestic banks since the business activities of foreign banks target mostly corporate customers. Therefore, foreign banks operate with lower costs.
- Foreign banks' business activities rely on more sophisticated financial services, such as leasing and syndicated loans, which are less risky than standard credit operations.

This literature review confirms this opinion, since most of the articles that compare banks with foreign and domestic ownership have declared that foreign-owned banks are more efficient than domestic banks (Assaf et al., 2013; Bayyurt, 2013; Berger et al., 2009; Chiu et al. (2013), Chiu et al. (2016), Deng et al., 2011; Doan, 2017; Dong, 2016; Fujii, 2014; Gardener et al., 2011; Hsiao et al., 2015; Koutsomanoli-Filippaki et al., 2009a; Lee and Kim, 2013; Lin et al., 2016; Mamatzakis et al., 2008; Sokic, 2015; Staikouras et al., 2008; Wanke et al., 2016c).

Assaf (2013) stated that the highest efficiency change and productivity change scores are achieved by the foreign banks in Turkey through a focus on nonperforming loans (NPLs). Bayyurt (2013) reached the same result with Assaf (2013) that average financial efficiencies of foreign banks in Turkey are higher than that of domestic banks. In Malaysia, foreign banks were found to be more efficient than domestic private commercial banks on average (Deng et al., 2011). Another study focusing on five Southeast Asian countries, including Malaysia, supports this finding by stating that foreign banks are superior in both technical and cost efficiency (Gardener et al., 2011). Lin

et al. (2016) explored bank efficiencies in 12 Asian countries (including Turkey and Malaysia) and found that the presence of foreign banks improves bank efficiency levels primarily in countries with financial freedom. However, after privatization in Pakistan, new private banks operate with greater cost efficiency than foreign-owned banks before the global financial crisis (Burki and Ahmad, 2010).

Chiu et al. (2013) and Chiu et al. (2016) report similar results, i.e., that the operating performance of foreign banks in Taiwan is better than domestic banks after crisis. Fujii et al. (2014) analyze the efficiencies and inefficiencies of Indian banks and contribute to the opinion that foreign banks operate at better performance levels. The same results are valid for Southeastern European countries (Sokic, 2015; Staikouras et al., 2008).

Although foreign ownership seems more advantageous in terms of banking sector efficiency, the topic requires further discussion considering the geographic, economic and legal dimensions of the problem. For example, in the case of the Australian market, domestic banks are found to be more efficient than foreign banks (Sturm and Williams, 2008 & 2010). By applying SFA in 105 countries prior to the global economic crisis, Lensink et al. (2008) found that foreign ownership affects bank efficiency in a negative way. In addition, the financial performance of domestic banks in MENA countries (Caporale et al., 2017) and GCC countries (Alqahtani et al., 2017) during the crisis was higher than that of foreign-owned banks.

Selection of the performance criteria also has an impact on the ownership comparisons. Based on nonfinancial customer satisfaction criteria, the performance measurement of Turkish banks shows that state banks and privately owned domestic banks exhibit higher performance in satisfying customer needs than foreign banks (Dinçer and Hacıoğlu, 2013).

Between the domestic banks, state-owned banks are more efficient than private domestic banks for Southeast Asian banks (Gardener et al., 2011), Indian banks (Kaur and Gupta, 2015) and Brazilian banks (Staub et al., 2010).

Meanwhile, private domestic banks are more efficient than state-owned banks in Pakistan (Burki and Ahmad, 2010), Indonesia (Margono et al., 2010) and Korea (Lee and Kim, 2013). However, Alqahtani et al., (2017) concluded that there is no significant difference between state-owned banks and private domestic banks in GCC countries.

Since Chinese banks have a different categorization of bank ownership, they are treated separately. The state banks of China are less profitable and less efficient compared to other types of ownership according to Lin and Zhang (2009). The most efficient banks are found to be joint-stock banks in terms of technical efficiency (Yin et al., 2013; Huang et al., 2017c) and profitability (Jiang et al., 2009). Dong et al. (2016) stated that foreign banks are the most cost efficient and that state banks are the most profit efficient. During the global crisis, the financial performance of Chinese domestic banks exceeded that of foreign banks (Chen et al., 2017). The advantage of a larger number of bank branches and a large customer base in China may explain the high profit efficiency of Chinese domestic banks during and after crisis (Hsiao et al., 2015).

Geographic difference is an important factor that affects efficiency. Tabak et al. (2013) found that geographical factors affect the efficiency levels of savings banks in the United States. Huang et al. (2015) emphasized the origin dimension of the ownership effect. They researched 1,466 banks from 17 Eastern European and Central European Countries and found different results depending on the country. For countries such as the Czech Republic, Bulgaria, Croatia, Serbia and Latvia, privately owned domestic banks are more efficient than foreign-owned or state-owned banks. In Russia, Lithuania, Macedonia, Slovenia, Ukraine and Slovakia, domestic banks are less technically efficient than foreign-owned banks. However, in Romania, Estonia and Poland, state banks perform better than both private and foreign banks.

The global economic crisis in 2008 affected the ownership factor in terms of efficiency. In the case of Taiwan, although domestic banks had a competitive advantage before and during the crisis, the production and operational performance of foreign banks became higher than that of domestic banks after the crisis (Chiu et al., 2016).

Various analytical techniques may provide different results for the same data. Measurement by the SFA method results in higher efficiency scores than the quantile regression approach when comparing commercial, savings and cooperative banks in Germany. Moreover, the differences in efficiency levels are very small for savings banks, whereas there are considerable differences in the mean scores of cooperative banks; the largest differences are for commercial banks (Behr, 2010). To benchmark alternative methodologies, the measurements should be based on the same frontiers. Chitnis and Vaidya (2017) compare the effect of SFA-TOPSIS combined methodology with super-efficiency DEA. Although the ranks of Indian banks differ slightly from each other, both approaches can be

used successfully according to the Wilcoxon test. Analyzing performance with the same criteria by three different MCDM methods, Bayyurt (2013) states that ELECTRE and DEA give the same results, i.e., that foreign banks are more efficient than domestic ones, but that TOPSIS results do not show a significant difference between the group's mean efficiencies.

6. CROSS-COUNTRY STUDY FINDINGS

In this survey, 52 cross-country articles are included. Among these articles, 31 of them compare ownership types, and the findings of these articles are discussed in the ownership comparison section. There are 21 cross-country studies that compare commercial banks without considering the ownership structure. The majority of these articles (15) investigated the efficiency of European banks. In contrast, 3 studies are from Asian banks, 1 study is from OECD banks, 1 study is from BRICS banks, 1 study is from the MENA region's banks and 1 study is from Latin American banks.

The cross-country studies generally focus on the effect of the global financial crisis on the relative efficiency of banks in different countries. There was an increase in bank efficiency levels in the precrisis period for European countries due to positive impacts of comprehensive legislative changes and EU accession (Andries, 2011; Andries and Capraru, 2012; Chortareas et al., 2013). European banks experienced an overall decline in bank efficiency levels after the financial crisis (Matousek et al., 2015). Brissmis et al. (2010) stated that before the global financial crisis, the most efficient banks were in Germany, Austria and the UK, while the least efficient banks were in Ireland, Portugal and Sweden in terms of technical and allocative efficiency. For the same period, the technical efficiency of banks in the Czech Republic and Romania were relatively higher, while the least efficient banks were in Slovenia (Andries, 2011). After the global crisis, banks in Poland, Romania, Russia and Hungary experienced a decrease in efficiency, while banks in Bulgaria and the Czech Republic experienced stagnation in their efficiency indices (Nitoi and Spulbar, 2015).

Banks in MENA countries were slightly less cost efficient than European banks before the 2008 global financial crisis, but their profit efficiency levels were higher relative to banks worldwide (Olson and Zoubi, 2011). Asian banks continued to feel the effects of the 1997 Asian financial crisis before the global financial crisis. Banks in Indonesia, South Korea, Thailand and the Philippines have lower cost efficiency levels than Chinese banks between 1998 and 2008, because the 1997 Asian financial crisis severely affected these four countries (Sun and Chang, 2011). After this deteriorating experience, Asian banks improved their risk management capabilities and restrictive balance sheet activities and therefore were not significantly affected by the 2008 global crisis (Chan et al., 2015). Between the same region and the same time period, the efficiency levels differ by country. There are country-specific dynamics of bank efficiencies, including customer preferences and legal or political implementations.

7. COMPARISON OF ISLAMIC BANKING WITH CONVENTIONAL BANKING

There is strong evidence that conventional banking has a higher cost efficiency than Islamic banking. Abdul-Majid et al. (2017), Beck et al. (2013), Hardianto and Wulandari (2015), Miah and Sharmeen (2015), Miah and Uddin (2017), Mobarek and Kalonov (2014) and Zuhroh et al. (2015) reached the same results with samples from different origin countries.

The main reason for the cost inefficiencies of Islamic banks (IBs) are the high operating expenses they face (Ahmad and Lou, 2010; Wanke et al., 2016a & 2016c). A large firm size enables a bank to attain and utilize input with relatively low cost because of the strength of service networking, increased trust by people, and labor productivity increases supported by technology utilization or by output diversification in many kinds of qualified credit skim (Zuhroh et al., 2015). Relatively small firm size and low market share are structural problems that contribute to cost inefficiencies of Islamic banking. In addition, compared to conventional banks, IBs appear to allocate a significantly greater share of their assets to financing or loans implying greater exposure to credit risk (Ariss, 2010).

Despite their low cost efficiency levels, IBs are strongly positioned to avoid the negative effects of financial crises and economic downturns; they performed better during the global financial crisis compared to conventional banks (CBs) (Alqahtani et al., 2017; Djennas, 2016). IBs balance higher portfolio risk with significantly lower financial

risk through higher capitalization levels (Ariss, 2010). In addition to better capitalization levels, their higher intermediation ratio and higher asset quality (Beck et al., 2013) explain the strength of IBs during the crisis period.

The technical efficiency of IBs is higher than that of CBs in Indonesia (Zuhroh et al., 2015), Turkey (Yılmaz and Güneş, 2015), Germany and the United Kingdom (Ahmad and Lou, 2011). Moreover, Handriche (2015) stated that profit efficiencies of Islamic banking in GCC countries are better than that of conventional banking in general.

Ariss (2010) has found that IBs in 13 different countries showed better allocative efficiency levels compared to CBs before the global financial crisis. In the period before and during the crisis, IBs are found to be more efficient in allocating and utilizing their resources in Malaysia (Ismail et al., 2013). On the other hand, Hisham Yahya et al. (2012) could not observe a significant difference in efficiency between IBs and CBs in the same period in Malaysia.

Numerous studies comparing IBs and CBs from different countries have found that the efficiency levels of IBs and CBs are very similar (Mollah and Zaman, 2015; Daly and Frikha, 2015; Djennas, 2016; Hisham Yahya et al., 2012; Johnes et al., 2014; Marie et al., 2013; Mohanty et al., 2016).

In general, these studies have shown mixed results regarding the efficiency levels of IBs compared to CBs, which is consistent with previous surveys on IB efficiency by Narayan and Phan (2017) and Hassan and Aliyu (2018). The main reason for the discrepancies in comparisons is that the size and market share of IBs are still not sufficiently large.

8. CONCLUSION

This study presents a contemporary review of the comparative literature on bank performance and efficiency by covering a total of 135 studies published in respected journals from 2008 to 2017. In this study, methodology, ownership type and country-based classifications were used to demonstrate bank efficiency and performance. The main concluding remarks are as follows.

Even though DEA and SFA retain their places as the most popular techniques, alternative methodologies are increasingly being used in bank efficiency assessment. The successful applications of multi-criteria decision-making methods have increased over the last decade. Regardless of whether they use conventional or alternative methods, the mathematical models are strengthened by implementing second-step regression tools in most recent studies. It can be stated that the average bank efficiencies have slightly changed according to the methodology implemented.

The comparisons of assessment accuracies across different studies should be treated with extreme caution. Differences are raised not only from the methodology or assumptions of the models but also from the chosen variables, sample data, origin country and the time period considered. Accurate assessment of the changes in bank rankings requires further studies comparing methods with the same dataset, analysis of the data against the same frontier and validation of the findings through robustness and accuracy testing.

Although there is a common belief that foreign-owned banks are more efficient on average compared to domestic banks, we can say that the impact of ownership is closely related to the time period considered. Since the 2008 global financial crisis had deteriorating effects on bank efficiencies, it is better to evaluate ownership effect in three time periods: precrisis, during the crisis and postcrisis. Foreign banks demonstrated lower performance levels than domestic banks during the crisis, as in the case of GCC and MENA countries. The reason is that a higher number of subsidiaries of foreign banks cause them to have a higher degree of exposure to risk in developing countries. Efficient domestic banks in the precrisis period or during the crisis had difficulty maintaining their superior performance after the crisis, as the crisis had a magnifying effect on bank risk variables. We can conclude that foreign-owned banks had better efficiency than domestic banks in developing countries after the financial crisis and that foreign banks improved efficiency levels primarily in developing countries with financial freedom.

These results have been found in both cross-country and country-specific studies. The majority of cross-country studies target EU countries. When analyzing EU bank efficiencies, we can say that foreign bank entry with European integration had a positive impact on bank cost efficiency during the precrisis period. While average EU bank efficiency increased until 2008, there was an overall decline after the global crisis. The cross-country studies show that the global financial crisis decreased the efficiency levels of banks in Europe in the short run, whereas the efficiency of banks tended to improve in the long run. On the other hand, Asian banks were not as affected as

European banks by the global crisis because of their improved risk management capabilities and restrictive off-balance sheet activities after the Asian financial crisis.

The literature has shown that Islamic banking is less cost efficient compared to conventional banking due to higher operating costs. Since the IB sector is still developing, structural problems such as small firm size and low market share cause cost inefficiency. On the other hand, the Islamic financial system is more stable and more resilient to global crises than the traditional financial system is. The reasons for IBs' higher efficiency levels compared to CBs during the 2008 global financial crisis is that they are better capitalized, associated with higher asset quality and a higher intermediation ratio. However, IBs lost their cost and profit efficiency superiority after the crisis. Different performance and efficiency measures indicate that IBs are less competitive than CBs.

As a result, higher interest rates, higher inflation rates, and more concentrated markets tend to result in higher banking system inefficiencies. On the other hand, bank efficiency levels are positively associated with a country's gross savings, higher microeconomic stability, and more disciplined environment. Large banks are more efficient as a result of economies of scale. While better capitalized banks are more efficient, banks that undertake high risks are less efficient.

This study reviews only studies on comparative efficiency and performance that cover ownership, method and type effects. Since this subject has multiple dimensions in nature, there are many other variables to consider, such as technology usage, bank size, and board size, as well as macroeconomic and regulatory factors.

Beyond their intermediation functions, banks are organic structures that may reach every segment of society. From the sustainability perspective, social responsibility and value adding activities will increase the commitment of customers and brand reputation. Digital maturity level (e.g., advanced internet service), cyber-security (e.g., advanced security systems) and big data (e.g., deeper analysis of customer database) applications may provide future direction for operating activities and hence competitive advantage in the market. Furthermore, future studies will analyze more than past efficiency and performance; rather, they will predict future performance by developing an early warning system enabling managers and decision makers to identify banks that are likely to face problems.

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