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Examining the Relationship between Customer Service, Efficiency and Financial Performance: An Application on the Egyptian Public Sector Banks

Madiha Metawie

madiha.metawie@bue.edu.eg

Dalia Ahmed Elmosalamy

The British University in Egypt, dalia.elmosalamy@bue.edu.eg

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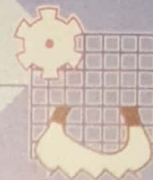


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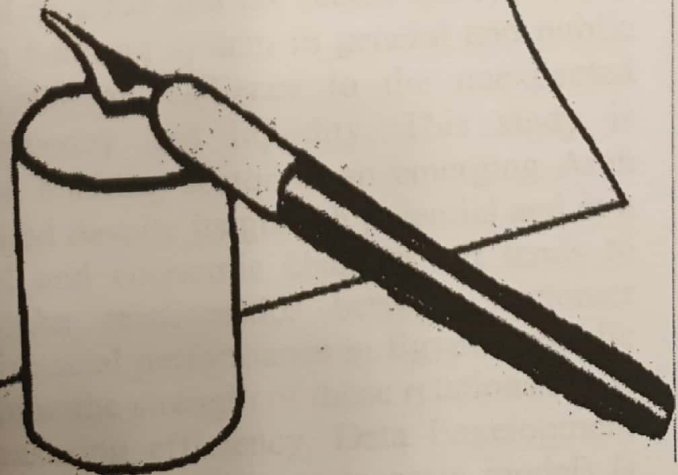
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**Examining the
Relationship between
Customer Service,
Efficiency**

**Dr. Madiha Metawie
Dr. Dalia El Mosalamy**



Examining the Relationship between Customer Service, Efficiency and Financial Performance: an Application on the Egyptian Public Sector Banks

Madiha Metawie¹ and Dalia El Mosalamy²

**¹Business Department, Faculty of Commerce, Ain Shams
University, Cairo, Egypt
Faculty of Business Administration, Economics and Political
Science, British University in Egypt,
Madiha.metawie@bue.edu.eg**

**²Faculty of Business Administration, Economics and
Political Science, British University in Egypt,
Dalia.Elmosalamy@bue.edu.eg**

Abstract

A sound, well-functioning banking system has an essential role in the economic development and sustained growth of any country. Egypt has faced two unexpected shocks; the global financial crisis at the end of 2008 and the recent 2011, January revolution. The Egyptian banking system in general and public banks in specific have shown resilience to the unexpected shocks in terms of solvency and liquidity. This study is important, examining the banking sector in an emerging Arab market that is rarely studied despite its growth potential and in a period of rapid political and economic changes. It tends to investigate empirically the relationships between customer service, efficiency and financial performance in Egyptian public sector banks and to examine the strength of those relationships if they do exist. For measuring efficiency, Data Envelopment Analysis model (under the constant returns to scale model) is

used to calculate both technical and scale efficiency of the sampled public Egyptian banks using annual observations from 2008-2014. Then, for assessing the bank's financial performance, four financial ratios that are commonly accepted and widely used in the banking industry were calculated for each of the seven years using data from the annual reports of each financial institution. Customers' service quality is then assessed using the modified SERVQUAL model that consists of six critical dimensions; tangibility, reliability, responsiveness, assurance, empathy and convenience. Then the researchers used the linear programming and regression analysis techniques to examine the relationship between customer service, efficiency and banks' financial performance. Our results partially supported the hypothesis. By developing knowledge about the way, customers perceive quality and if this affects banks' profits and if efficiency has a significant impact on this relationship, it will be possible for managers and decision makers to take concrete actions for continuous improvements. Additionally, they can identify the service areas that require improvement as a mean to retain customers, and eventually may improve banks' efficiency as well as financial performance.

Keywords: Service quality, Efficiency, Financial Performance, Egyptian Public Sector Banks.

1. Introduction

The continuing increase of global competition, market liberalization, the uprising of information technology and the rise of the knowledge society, all led to the establishment of a complex working environment for public organizations in general and financial institutions in specific (Sotirakou and Zeppou, 2005; Wright and Pandey, 2010). Despite the fact that public sector institutions have special nature and usually face distinctive operational, cultural and strategic concerns, nowadays, their organizational goals tend to become more and more similar to those of private sector enterprises and thus the call for effective service quality is becoming crucial. (Chatzoglou, *et al.* 2013)

The banking sector in any country is one of the most important drivers for the country's economic growth. Efficiency and its impact on profitability is a main concern for any financial institution in which the common assumption is that increasing efficiency will lead to improved financial performance. Tahir *et al.* (2009) argue that banks have to be not only profitable but also efficient, otherwise impediments will be created in the process of economic development. Heskett *et al.* (1994) highlighted the role of service quality in this process by arguing that customer service and productivity or efficiency are positively related, in that customer service efforts or initiatives (inputs) will be accompanied by adequate gains in revenues and profits (outputs).

A diverse range of studies have been conducted for measuring banks' performance but mostly using traditional measures for evaluating performance like ROA and ROI as in Ongore and Kusa (2013). In parallel to research examining financial performance, abundant research in benchmarking the efficiency of banks was frequent in literature (Rosman *et al.*, 2014; Ioannis and Giokas, 2012). However, more recently, managers and decision makers find that traditional measures of performance evaluation typically based on financial views are incomplete in evaluating the overall performance of an institution and in presenting an effective feedback. Soteriou and Zenios (1999) view that the question of what drives performance is at the top of the minds of managers and policy makers alike. They argue that superior insights can be obtained by analyzing operations efficiency, service quality, and profitability simultaneously than the information obtained from benchmarking studies of these three dimensions separately. Arora (2012) argues that bankers and policy makers should not feel contented by looking at the standard performance measures on stand-alone basis but rather they should examine bank performance vis-à-vis efficiency to capture the complete picture. Duncan and Elliott (2004) argued that there are two major routes to improved financial performance for financial institutions; improved operational efficiency and improved customer service. At the same time, it is also frequently argued that there is a direct and positive

relationship between the quality of customer service and profitability, frequently mediated by customer satisfaction, loyalty and referrals (Heskett *et al.*, 1994; Rust *et al.*, 1995). The banking sector plays an essential role in the development process of Egypt. An important country with an oversized population (over 80 million people) in which the vast majority are using consumer banking services. Egypt has survived two unexpected shocks; the global financial crisis at the end of 2008 and the recent 2011, January revolution. The Egyptian banking system in general and public banks in specific have shown resilience to those shocks in terms of solvency and liquidity. This paper attempts to explore the relationship between efficiency, financial performance and customer service quality in Egyptian public banks. The aim of the study is to examine if there are measurable linkages between efficiency and financial performance, between customer service and financial performance and between customer service and efficiency in the Egyptian public sector banks. The main objectives of this study are to determine the level of efficiency among Egyptian public banks, to provide quantitative estimates of the level of customer service in Egyptian public banks and to examine empirically the relationship between efficiency, customer service and financial performance among the sampled banks.

The importance of the study stems from the scarcity of research in the area. Despite there are abundant research on the linkages between efficiency and financial performance, Olson and Zoubi (2011) assert that those linkages are analysed thoroughly in the developed markets like the USA and Europe, and little attempts has been made so far to analyse the efficiency levels of banks in the less developed countries, despite their importance and potential growth. Additionally, the subject of researching customer service quality is abundant within the service marketing and management field; however studies attempting to explore the linkages between customer service, efficiency and profitability are scarce. This motivates us to undertake the study to fill the gap and add to the existing literature through fulfilling the main aim of the paper; to bring together different performance measurements including financial ratios, linear

programming techniques and qualitative data to investigate the relationship among them, if any, rather than focusing on one measure in isolation.

This paper proceeds as follows. Section two briefly sheds some lights on the banking system in Egypt. Section three presents a literature review on efficiency and financial performance measurements in addition to measuring customer service quality and different arguments related to its relationship to profitability and efficiency. Section four presents the data and methodology used. Section five presents the results and discussion followed by conclusions, implications, limitations and areas for further research in Section six.

2. The banking system in Egypt

The banking sector plays an essential role in the development process of Egypt. It consists of commercial banks, specialized banks and financial institutions operating in the fields of investment and credit. Amer and El Domiaty (2011) asserts that the Egyptian financial sector is well established in which the vast majority of Egyptians (over 80 million people) are using consumer banking and insurance services.

The banking sector in Egypt has gone through many phases since the establishment of the first bank, the National Bank of Egypt, in 1856, followed by the nationalization of all banks by law 117/1961 and the establishment of the Central Bank of Egypt (CBE). Rashwan (2014) views that since the 1970s the sector witnessed the beginning of a new era of liberalization of the financial system, where the banking sector activities were open to private capital, both foreign and local. This move was dramatically boosted by the launching of Economic Reform and Structural Adjustment Program (ERSAP) in 1991 followed by the banking law 88/2003 in which one of its main implications was the improvement of capitalization of operating banks that led to a wave of mergers and acquisitions so banks would be able to fulfill the minimum capital requirement.

The Central Bank of Egypt, which is the main regulatory body responsible for regulating and managing the banking sector and the monetary system, in general, has not issued a new

commercial banking license since 1979. The only way for a new commercial bank, whether foreign or domestic, to enter the market (except as a representative office) is to purchase an existing bank. As part of its 2004 plan to restructure the banking sector, the government has sold shares in several joint venture banks to foreign banking entities. The first public bank to be partially privatized was the Bank of Alexandria, which was sold to Sanpaolo Intesa of Italy in 2006. Currently the three remaining state-owned banks are Banque Misr, Banque DuCaire and the National Bank of Egypt.

According to the 2013/2014 Economic review published by (CBE), in 2013/2014, the sector is dominated by private banks, which represent 87.5% or 35 banks; however, the state owned banks have almost 45% of all the sector assets, with the National Bank of Egypt alone controls 30% of the banking sector's assets.

3. Literature review

Performance of banks is a major concern for regulators and policy makers because of its strong impact on the economy. Rozani and Rahman (2013) defined the term bank's performance as the capacity to generate sustainable profitability. Arora (2012) views that profitability is the natural outcome of efficiency and asserted that bankers worldwide use performance measures as indicators of profitability and efficiency. Many studies cited in literature as in El Seify (2013), Olson and Zoubi (2011), Akhtar (2010), and Samad (2004) evaluated banks' performance using conventional accounting measures as financial ratio analysis and/ or risk and return measures. Duncan and Elliott (2004) approved that there is a generally accepted relationship between risk and return and therefore measuring both are essential for examining bank's performance. However, they view that, as with any method of analysis using one methodology, there are always limitations particularly because of the reliance on one perspective as the use of few ratios in isolation for example. In their study, they used four performance measures: interest margin, capital adequacy, expense to income ratio and return on assets. Duncan and Elliott (2004) argue that

although these four ratios are few but they collectively represent commonly used financial indicators.

The measurement of banks' efficiency and its relation to profitability attracted attention as an important area of research especially in developing economies. Efficiency is commonly defined as how much the observed performance deviates from desired performance. Olson and Zoubi (2011) regarded efficiency as the relationship between outputs of a system and the corresponding inputs used in their production. Thus, Efficiency ratios act as indicators of banks' ability to convert inputs to outputs. Olson and Zoubi (2011) added that banks' efficiency can be calculated by the distance away from some ideal frontier measured relative to the lowest cost or highest profit bank in the sample adopting either nonparametric techniques as data envelopment analysis (DEA) that impose no functional form on the cost or production function, or parametric techniques based on the parametric estimation of cost, production, or profit functions.

Coelli et al., (2005) asserted that frontier analyst software as the DEA could refer to variable returns to scale (BCC) model and to constant returns to scale (CCR) model. Under the variable returns to scale model, DEA calculations tend to minimize inputs to produce the same level of outputs and assume variable returns to scale, that is doubling inputs doesn't necessarily produce double the outputs. BCC efficiency results are not affected by scale efficiencies since the model assumes that there is no scale inefficiencies in which the size of all units of operations are assumed to be optimal.

Alternatively, the constant returns to scale model, the DEA calculations tend to minimize the inputs to produce the same outputs assuming constant returns to scale, that is assuming doubling the inputs will produce exactly double the outputs. The CCR model does not consider whether the unit is operating at its optimal scale and thus the efficiency scores will be affected by scale inefficiencies.

Many studies evaluated the efficiency of banks using a nonparametric approach as the Data Envelopment Analysis Model (hereafter DEA). Gishkori and Ullah (2013) employed

DEA to investigate the technical efficiency of banks in Pakistan for the period of 2007 to 2011 and found that the source of technical inefficiency was due to pure technical inefficiency rather than scale inefficiency. Rosman (2014) examined the efficiency of banks in the Middle East during the global financial crisis using the DEA and presented evidence that most of the Middle Eastern Islamic banks were scale inefficient, and that profitability and capitalization were the main determinants of banks efficiency.

(Al-Hawari and Ward, 2006) represent another group of studies, which tried to document a relationship between costs, financial performance, customer satisfaction, and customer retention in banks. Service quality in the broader context has received much attention as numerous studies provided evidence that service quality has a significant positive effect on several business performance measures as attracting new customers, increasing profitability and sales volume (Lewis, 1993; Zeithaml, 2000). Parasuraman *et al.* (1985) argues that service quality is a driver of corporate marketing and financial performance. In this respect, Wiele *et al.*, 2002, Yeung *et al.*, 2002 and Anderson *et al.*, 1994, all documented a positive significant relationship between customer satisfaction and banks' financial performance. There has been almost an agreement among service quality scholars that superior service quality has vast benefits for service organizations, and is considered one of the critical success factors that influence the competitiveness of an organization (Abu-El Samen, *et. al.*, 2013, Gupta and Dev, 2012).

Service quality has been defined in services marketing literature as an overall assessment of service by the customers (Ganguli and Roy, 2011) and is considered a vital factor affecting customers' satisfaction level in the banking industry. In banking, quality is a multi-variable idea, which includes differing types of convenience, reliability, services portfolio, and critically, the staff delivering the service (Gupta and Dev, 2012). The rise in globalization has increases the dynamics and competitiveness of the operating environment for banking industry. In pursuit of competitive advantage, banks are placing more focus on service

quality. The principal source of value creation for a service (service quality) is performance by the service provider. It is often the small things that influence a customer's overall perception of service quality (Kumar *et.al.* 2010, Lai, *et al.*, 2007).

Service quality perceptions result from a comparison of consumer expectations with actual service performance. Quality evaluations are not made only on the outcome of a service; they also involve evaluations of the process of service delivery. Because of service intangibility, a firm may find it more difficult to understand how consumers perceive services and service quality, so the service quality model proposed that consumers' quality perceptions are influenced by a series of distinct gaps occurring on the marketers' side (Parasuraman *et, al.*, 1985).

Measuring service quality in the banking industry is both important and necessary. Providing a good quality service is a demanding task, with the specific characteristics of services in general, and those of banking services in specific, complicating the process. Since the service quality experience is subjective, its measurement is a constant challenge and is among the essential issues addressed through research (Dosen and Zizak, 2015).

A number of studies have established service quality measures meant to be appropriate across cultures and banking institution types. (Al-Jazzazi and Sultan, 2014, Gounaris, Spiros, 2005 Jabnoun and Al-Tamimi, 2003), These measures have largely been based on studies related to the SERVQUAL model (Parasuraman *et al.*, 1985, 1988) and the SERVPERF model (Cronin and Taylor, 1992, 1994).

These models vary in the number of dimensions that they use to measure service quality, the elements that comprise each dimension and whether they are a one, two or three column format. The one column survey measures the actual level of service received. The two column survey format measures the difference between perceived service and the minimum level of service that customers are willing to accept, and the three column format measures the level of service that customers

believed “can be” and “should be” provided compared to what is provided (Duncan and Elliott, 2004).

Most of research has focused on measuring service quality in the consumer sector and particularly using the SERVQUAL scale as developed and subsequently modified by Parasuraman, who has placed consumers’ perception of service quality along a scale ranging from ideal quality to totally unacceptable quality. (Keisidou *et al.* 2013; Abu-El Samen, *et al.*, 2013; Kumar *et al.* 2010; Kumar *et al.* 2009; Lai, *et al.*, 2007; Gounaris, Spiros, 2005; Parasuraman *et al.*, 1985).

Other recent studies (McCollin *et al.*, 2011; Pansiri and Mmereki, 2010) continue to use it in its original form (five dimensions with 22 dimensions in total), without serious alterations. (Chatzoglou, *et al.* 2013) anticipated its benefits from being a statistically valid instrument, as a result of its extensive test on the field. Therefore, it escapes the difficulty of being perceived as something that has been skewed to cause certain types of response.

Parasuraman *et al.* (1985) found that the customer’s perception of service quality depends upon the size and direction of the gap between the service the customer expects to receive and what he or she perceive to have been received. Thus, service quality is defined as the gap between customers’ expectation of service and their perception of the service experience.

In their original formulation, Parasuraman *et al.* (1985) identified ten components of SQ:

- (1) Reliability;
- (2) Responsiveness;
- (3) Competence;
- (4) Access;
- (5) Courtesy;
- (6) Communication;
- (7) Credibility;
- (8) Security;
- (9) understanding/knowing the customer;
- (10) Tangibles.

Parasuraman *et al.* (1988) combined them into five dimensions: reliability, assurance, tangibles, empathy, and responsiveness.

Reliability, tangibles and responsiveness remained distinct, but the remaining seven components were combined into two collective dimensions, assurance and empathy. Parasuraman *et al.* (1988) developed a 22-item instrument with which to measure customers' expectations and perceptions (E and P) of the five RATER dimensions. Four or five numbered dimensions are used to measure each dimension.

Buttle (1996) clarified that reliability is about the ability to perform the promised service dependably and accurately, tangibles is the appearance of physical facilities, equipment, personnel and communication materials, whereas responsiveness is the willingness to help customers and to provide prompt service. Knowledge and courtesy of employees and their ability to inspire trust and confidence among customers are under the assurance dimension. The dimension, empathy is the provision of caring, individualized attention to customers, in other words, how a firm appreciates their customers.

Berry *et al.* (2002) indicate the importance of an additional dimension; convenience as it is one of major concern for the bank customers. The perception of service "convenience" may affect customers' overall evaluation of the service, including satisfaction with the service and perceived service quality and fairness. Additionally, Kumar *et al.* (2010) showed that competence in banks could be related to "convenient operating hours" and "ability to conduct a transaction in a short waiting period". On the other hand, the study showed that convenience is the easy way of getting the service in accordance with the customers' need, which in turn results in saving customers time and effort.

Based on the above views and service quality literature surveyed, Parasuraman *et al.*'s (1988) SERVQUAL, being a well-established instrument, was selected in our particular study to measure service quality in Egyptian public banks. Accordingly, and in addition to the traditional five dimensions of service quality, we made minor modifications to this instrument by adding the dimension of "convenience" to contribute to overall service quality. The dimension of "convenience" measures whether the banks have sufficient

branches and ATM or not, how easy it is to change service options, the availability of special services for elderly or disabled and how convenient it is to pay bills or reach customer service representatives.

To conclude, bank performance literature is generally accounting-based, economics-based, or marketing based. Accounting-based studies of bank performance generally use comprehensive information from financial statements to identify the determinants of bank profitability. Economics-based research has focused on efficiency, while marketing-based research has mainly focused on measuring service quality and customer satisfaction. Recently some studies attempted to combine aspects of the different approaches (Duncan and Elliott, 2004, Wiele *et al.*, 2002, Yeung *et al.*, 2002 and Anderson *et al.*, 1994). They generally recommended bringing together several performance measures, financial ratios and linear programming techniques along with service quality and investigate the interplay between them rather than looking at individual measures in isolation and this is the same direction this study intends to go.

Therefore, based on the literature highlighted above the following hypotheses were proposed:

- H1: There is a discrepancy in the Financial Performance measures of Egyptian Public banks
- H2: There is a discrepancy in the Efficiency measures of the Egyptian Public banks
- H3: There is a discrepancy between Customer service qualities in the Egyptian public banks
- H4: There is a positive relationship between Customer service and banks' financial performance
- H5: There is a positive relationship between Customer service and banks' efficiency
- H6: There is a positive relationship between banks' Efficiency and financial performance.

4. Data and Methodology

The data to calculate financial performance and efficiency are obtained from the sampled banks annual reports using Bankscope database and cross checked with the annual reports available on the respective banks' website for accuracy. The sample of the study consists of the three public banks operating in Egypt and covering the period from 2008-2014. The sample period was chosen to start from 2008 as it is considered a stable period for the banks sampled. In late 2005 there was an acquisition announcement in which NBE acquired Mohandes bank and also, there was a merger announcement between Banque DuCaire and Banque Misr that was called off in late 2007; this is why we considered 2008 a good starting point for our sample, given that the respondents to our questionnaire are required to be customers for the respective banks at least 7 years. The authors focused only on public banks for several reasons; Egyptian public banks have the widest representation throughout Egypt, have the largest number of customers and the largest asset base (45% of total assets held by all banks) and to avoid comparison problems between various types of banks especially that the market shares of private banks is still relatively small.

Four financial performances measures are used in this study: interest margin, capital adequacy, expense to income ratio and return on assets ratio to give collectively an indication on banks' financial performance (Duncan and Elliott, 2004).

To measure efficiency, annual observations were collected from the banks' annual reports and to compare data from one year to the next, price data were expressed in constant dollars by applying the consumer price index (CPI) as measured by the central bank of Egypt. Following the work of Coelli *et al.*, (2005) and using inflation adjustment process, all values are expressed in terms of the common reference year 2014.

Data Envelopment Analysis software is used to calculate both technical and scale efficiency and to compare the relative efficiency of banks sampled. Constant returns to scale model is

considered appropriate for this study and the analysis will focus on both technical efficiency and scale efficiency data. This uses a small sample of only three banks and with limited number of observations, and the authors acknowledge the concern of having inaccurate or biased results. However, Taylor *et al.* (1997) in Duncan and Elliott (2004), both studied a similar number of few financial institutions using the DEA model and provided evidence that if the model is kept simple, that is if the inputs and outputs are kept to a minimum, the efficiency results will not be severely biased or affected by the small number of observations. Our study replicates their simplified input-output model comprising of two inputs (total deposits and total non-interest expense) and one output (total income defined as the sum of interest and non-interest income).

The sample size of customers is chosen based on the general guidelines for sample size that depends on the number of variables involved in the study. As the instrument used in this study has 30 dimensions (statements), the required sample size should be approximately 300 subjects, i.e. ten times of total number of dimensions (Nunnally, 1978). The primary data have been collected using the convenience sampling method and 300 questionnaires were distributed among banks 'customers. The usable sample consisted of 259 customers, where the males approximately composed 47 % of the sample and the females approximately 53%. The demographic profile of the customers is shown in Table I.

Table 1: Respondents' Profile*

	Frequency n259	Valid Percent %
Gender		
Male	123	47.5
Female	136	52.5
Bank Name		
Banque Misr	58	22.4
National bank of Egypt	134	51.7
Banque Du Caire	67	25.9
Age		
21 – 30 years	52	20.1
31 – 40 years	92	35.5
41- 50 years	75	29.0
Over 50 years	40	15.4
Education		
Diploma	37	14.3
Graduate	125	48.3
Postgraduate	97	37.5
Monthly Income		
Below 5000	96	37.1
From 5001 to 10000	88	34.0
From 1001 to 15000	36	13.9
From 15001 to 20000	20	7.7
Over 20000	19	7.3

Following an extensive review of relevant literature, Parasuraman *et al.*'s (1988) SERVQUAL instrument was chosen to measure service quality in this study, since it is a well-established instrument to measure service quality. Also Berry *et al.*, (2002) and Kumar *et al.* (2010) identified the importance of convenience to the banks, which was added to the dimensions in the instrument. The implemented modifications were quite limited and solely included rephrasing of various dimensions to ensure that they were better understood by the sample population. Moreover, it included 22 dimensions that correspond to the dimensions used in recent. All research dimensions were measured using five-point Likert scale ranging from strongly disagree (1) to strongly disagree (5). Finally, an additional part of the questionnaire was used to collect general demographic

information about the customers of the Egyptian Public banks (gender, age, education, and income). The modified SERVQUAL instrument that was used in the study was tested for its internal consistency (reliability) by using Cronbach's α . The Cronbach's α appeared as 0.730 for Tangibility, 0.774 for Reliability, 0.793 for Responsiveness, 0.743 for Assurance, 0.752 for Empathy and 0.766 for Convenience. It can thus be seen that the reliability figures are high, all above the recommended lower limit of 0.70 (Nunnally, 1978).

5. Research findings

Table 2 shows the 7 year means of the selected financial performance indicators. It is worth mentioning that the 7 year data of the public banks sampled were generally stable and therefore the mean can be used as a reliable measure. Table 2 shows that during the 7 year period from 2008-2014; Banque Du Caire had the highest interest margin, significant at 5% level of significance which may reveal that this bank may be more focused on traditional and safer banking activities and services like investing in government securities with shorter maturities, rather than the riskier ventures. The same bank has also the highest significant value for ROA, scoring the highest profits in relation to its overall resources. NBE scored the highest capital adequacy ratio and the lowest expense to income ratio, however all the values were insignificant.

Therefore, H_1 is partially supported.

Table 3 shows the comparative means for each efficiency measure for the three banks and shows that the means for the three banks are significantly different for efficiency CRS and scale efficiency. Banque Du Caire had the highest overall efficiency and scale efficiency. This result scored by Banque Du Caire, which is considered the smallest bank among the three sampled, contradicts the commonly accepted "economies of scale" argument and generally agrees with Duncan and Elliot (2004) results. Based on this result, we can conclude the H_2 is supported.

Table 2: Financial Performance Findings

Seven year mean financial performance measure	NBE	Banque Misr	Banque Du Caire	Combined F between Groups	Sig. "p"
Interest Margin	2.79	2.21	4.211	8.696	0.002*
Return on assets	0.72	0.42	1.35	3.277	0.09*
Capital Adequacy Ratio	8.78	5.61	7.15	0.818	0.457
Expense to income ratio	0.54	0.75	0.85	0.622	0.548

*Significant at 5% level of significance.

Table 3: Comparative efficiency of banks' means over the 7 years period

Measure	NBE	Banque Misr	Banque Du Caire	SD	Combined F between Groups	Sig. "p"
Efficiency CRS	1.3	0.566	1.3	0.178	40.224	0.0001*
Scale Efficiency	1.14	0.566	1.26	0.166	34.951	0.0001*

*Significant at 5% level of significance.

To explore whether there is a discrepancy between the service quality among the three banks, table 4 presents the results in which the ANOVA is carried out to test for significant differences across the means of the three public banks. The test confirms that there are significant differences in the means of "Tangibility" and "Reliability" across the three banks at a significance level of 0.035, and 0.031 respectively.

Table 4: Descriptive statistics of each SERVQUAL statement across banks.

Variable	Banque Misr n=58		National Bank of Egypt n=134		Banque DuCaire n=67		Combined F between groups	P value
	Mean	SD	Mean	SD	Mean	SD		
Tangibility	9.7241	2.455	10.47	2.253	10.791	2.4342	3.390	0.03
Reliability	20.78	4.504	21.761	3.603	20.418	2.813	3.519	0.03
Responsiveness	13.2069	3.417	13.142	3.284	12.85	2.6529	0.248	0.78
Assurance	14.8793	2.72788	14.8358	2.77257	14.3881	2.36102	0.750	0.474
Empathy	19.7586	4.32581	19.8657	4.23340	19.9254	3.40371	0.027	0.973
Convenience	24.0172	5.04190	24.8209	4.91407	23.8806	4.04341	1.122	0.327

Table 4 shows that there is a significant difference in the mean values of "Tangibility" in favor of Banque Du Caire and National Bank of Egypt compared to Banque Misr, and there is a significant difference in the mean values of "Reliability" in favor of the National Bank of Egypt compared to Banque Du Caire. Meanwhile there is no significant difference in the other dimensions among the three banks. Consequently, H_3 is partially supported.

Stepwise regression analysis has been used to examine the research hypotheses. Table 5 highlights the results of the regression analysis of the relationship between the dimensions of service quality, efficiency and financial performance. One service quality dimension (Tangibility) has significant relationship with efficiency CRS, scale efficiency, interest margin and return on assets. According to R^2 value, the dimension 'Tangibility' explains 22%, 25%, 18%, and 19% of the variation in Efficiency CRS, Scale efficiency, Interest margin and return on assets respectively.

The other service quality item 'Reliability' has significant relationship with capital adequacy and expense to income ratio as shown in Table 6. According to R^2 value, where 'Reliability'

explains 34% and 8% of the variation in capital adequacy and expense to income ratio respectively. T-value and Multiple R indicates linear association and moderate correlation between the independent variable and the dependant variables. Consequently H₄, H₅ and H₆ are partially supported.

Table 5: Regression analysis of customer service (tangibility), efficiency and financial performance

Independent variable(x)	Dependent variables (y)	β	t- value	p- value	R ²
Tangibility		.020	2.426	.016	0.22
	Efficiency CRS	.017	2.572	.011	0.25
	Scale efficiency	0.042	2.185	.030	0.18
	Interest margin	0.020	2.244	.026	0.19
	Return on assets				

Table 6: Regression analysis of customer service (reliability) and financial performance

Independent variable (x)	Dependent variables (y)	β	t- value	p- value	R ²
Reliability	Capital adequacy	.046	2.130	.034	0.17
	Expense to income ratio	-.006	-2.655	.008	0.27

Discussion

The study tends to explore the main hypothesis; is there a relationship between customer service quality, banks' efficiency and financial performance. This general hypothesis is partially supported. One service quality dimension (Tangibility) has significant positive relationship with efficiency CRS, scale efficiency, interest margin and return on assets. The correlation between tangibility and overall efficiency contradicts the study of Duncan and Elliott, (2004) who found a negative correlation between service quality efficiency CRS and a positive correlation between scale efficiency and customer service quality. This significant positive correlation between technical efficiency and tangibility is in accordance with the argument that implies as the banks use more state of the art equipment its tangibility increases. The other service quality dimension 'Reliability' has significant relationship with capital adequacy and expense to income ratio. This indicates that as the previous customer service quality's dimension increases, the financial performance of banks may be enhanced. Again, this is a remarkable finding. From the results, we can conclude that it may be more beneficial for Banque Misr to focus more on improving its "Tangibility" due the difference in this dimension in favour to Banque du Caire and National Bank of Egypt. In addition, it is more beneficial for Banque du Caire to focus more on the dimension of "Reliability" due to the difference in this dimension in favour to the National Bank of Egypt.

Our findings are consistent with Parasuraman *et al.*'s (1988) study of four companies in different industry settings (bank, credit card, telephone, and repair and maintenance), and the study of Dosen and Zizak, (2015) and Choudhury, (2013) on banks. The studies presented evidence that the two most critical dimensions of service quality for all four firms were "reliability" and "assurance", while the least important dimension was "empathy". It is noteworthy that the study concluded that the "tangible" dimension is more important to banks than it is to the other three types of firms, which is consistent also with the study of Gupta and Dev, (2012) and Cui *et al.* (2003).

Conversely, the “responsiveness” dimension was more important to the other three types of firms than it is to banks. Alternatively, the results of our research contradicts with the findings of Lai, et al., (2007) on mobile communications industry, which shows that “assurance”, “empathy” and “responsiveness” are the most important dimensions in determining service quality, while the “tangible” dimension is the least important. This could be explained to the different perceptions of service quality between banks and mobile communications industry. In addition, it contradicts with Kumar *et al.* (2009) which shows that convenience and competence are the major indicators of service quality in the Malaysian banking industry. Bitner (1990) identified that due to the intangible nature of services that the banks offer, it is often difficult for customers to realize services and tend to comprehend it on the basis of the physical facilities like equipment, ATM machines and their performance; premises of the banks; or perhaps the appearance of the bank’s staff which are all tangible in nature. Wakefield and Blodgett (1999) found also that the tangible and physical surroundings of the service environment could leave a significant impact on customer’s affective responses and their behavioral intentions.

6. Limitations, implications and areas of future research

Although our study is important in attempting to explore the linkages between customer service, efficiency and profitability, still the study had several limitations. First, our findings are from Egyptian public banks, which may not be generalized to other industry settings, like retail stores, and restaurants. With respect to measuring banks’ efficiency, financial performance and service quality, this study uses a limited number of banks. Most of other studies referenced in literature used a larger number of banks. However, the two main studies used as a reference for this research carried by Duncan (2004) and Taylor *et al.* (1997), both used a very limited number of banks and asserted that this limitation did not affect the value of their

findings, if some factors were taken into consideration (as keeping the DEA model simple).

The study acknowledge that there may be other variables influencing the banks' profits including behavioural variables as people may feel safe to invest in public banks no matter the level of customer service, and testing the impact of these variables on financial performance, efficiency and customer service quality actually opens the room for future research in this area.

Addressing these research questions has important implications on practitioners, bankers and policy makers whose main goal is to improve and develop strategies that would better meet the specific banking needs of their customers, and identifying the service areas that require improvement as a mean to retain customers, improve banks' efficiency and financial performance. In addition, the study could provide managers with the relevant dimensions of service quality they should emphasize to meet consumers' expectations, enhance their competitive advantage and help them react faster to the rapid environmental, political and economic changes.

To conclude, bank management should focus on "Tangibility" since it is a strong predictor for efficiency and financial performance in addition to "Reliability" as it is a strong predictor for financial performance. The findings of this study stresses on the importance to ensure that employees keep promises, insist on error free records and provide accurate services on time. In addition, Banks should make sure the availability of up to date and appealing equipemnts and Physical facilities. Findings of our study should be interpreted with caution, as our results should not be used to derive causal relationships among the variables tested but rather to deduce possible relationships that deserves future extensive research in other sectors and for longer periods.

Several future research directions are suggested; first, studies could examine the effect of culture and demographic variables (e.g. income, religion, gender, age, profession) on perceptions of

service quality among banks and then examine the relationships with financial performance and efficiency. Second, the examined relationships could be studied in other settings, like different industries and different cultures, or in banking sectors using a larger sample including private and Islamic banks. Apart from the limitations discussed above, it is claimed that this study presents significant questions in relation to the Egyptian public banks, particularly in its attempt to measure empirically the relationships between customer service quality, efficiency and financial performance.

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