# COMPARING TOTAL PRODUCTIVITY THROUGH EFFICIENCY AND EFFECTIVENESS IN TWO IRANIAN BANKS

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*To Allah, my late father, my beloved husband and my lovely mother*

*Who are the light of my support throughout my life.*

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I wish to convey special thanks and express my sincere appreciation to the staff of Melli Bank and Mellat Bank who help to facilitate my access to the required information and help me to fulfill the objectives of the research.

## ABSTRACT

The objective of this study is to compare the productivity level of both private and government banks in Iran based on their effectiveness and efficiency as well as their total productivity and partial productivity. The subjects used in this research were Mellat Bank (private) and Melli Bank (government). In order to obtain substantial findings, a sequential mixed method was applied for this research. Firstly, the Modified Delphi Method; a qualitative approach was conducted upon 20 top managers from each bank. In this phase, the determinants of productivity consist of input, output and outcome as the main criteria. This is further divided into: labour, capital, and deposit as the sub-criteria of input; investment and partnership, as well as loans and advances as the sub-criteria of output; and customer satisfaction, job satisfaction and profits as the sub-criteria of outcome. On a micro level, labour is further sub-categorised into the number of employees, education level, experience and personnel cost; capital is further divided into IT capital and Non IT capital; and deposit is further sub-categorised into several accounts namely current, saving, and investment. As such, a three-stage Productivity Estimation Model for Mellat Bank and Melli Bank was formed. The second phase of the research is the quantitative approach in which the Fuzzy AHP method was used. In order to obtain the weights from Fuzzy AHP method, questionnaires were distributed to the same 20 top managers from each bank. Furthermore, the secondary data from annual reports were used to derive these determinants: effectiveness, efficiency, total productivity and partial productivity. Finally, it appears that both banks (Melli Bank and Mellat Bank) are located in the Golden Quadrant where the efficiency level of Mellat Bank is more than that of Melli Bank (1.17 as compared to 1.02) but the effectiveness level of Mellat Bank (0.77) is less than that of Melli Bank (0.84). In addition, total productivity level of Mellat Bank has been computed to be 0.9 while for Melli Bank it is 0.86. With regards to the partial productivity level the capital productivity of Melli Bank is slightly more thant that of Mellat Bank (0.77 as compared to 0.74) but the labor and deposit productivity of Mellat Bank are higher than that of Melli Bank with1.17 and 0.77 respectively. Suggestions have been made for managers and also academic researchers to further this study.

# ABSTRAK

Matlamat kajian ini adalah untuk membanding tahap produktiviti yang berasaskan keberkesanan dan kecekapan sebuah bank swasta dan sebuah bank kerajaan di Iran. Di samping itu, produktiviti total dan produktiviti separa ditentukan di Mellat Bank (swasta) dan Melli Bank (kerajaan). Kaedah campuran yang berperingkat telah digunakan dalam kajian ini. Dalam fasa pertama, Kaedah Delphi yang telah diubahsuai merupakan pendekatan kualitatif yang telah dilaksanakan ke atas 20 pengurus atasas dari setiap bank. Dapatan penting untuk mengenalpasti penentu-penentu produktiviti yang terdiri daripada input, output dan hasilan sebagai kriteria utama di mana sub-kriteria input terdiri daripada buruh, kewangan dan deposit. Di samping itu, pelaburan dan perkongsian serta pinjaman dan pendahuluan diklasifikasikan sebagai sub-kriteria untuk output manakala kepuasan pelanggan, kepuasan kerja dan keuntungan merupakan komponen untuk sub-kriteria hasilan. Pada tahap mikro, jumlah pekerja, tahap pendidikan, pengalaman dan kos personel merupakan sub-kriteria kepada buruh; kewangan IT dan kewangan bukan IT adalah sub-kriteria untuk kewangan; serta akaun semasa, simpanan dan pelaburan diklasifikasikan sebagai sub-kriteria untuk deposit. Dengan itu, satu Model Penganggaran Produktiviti berasaskan tiga peringkat telah dibangunkan untuk Mellat Bank dan Melli Bank. Dalam pendekatan kuantitatif, kecenderungan (preference) dan pemberat (weight) untuk penentu-penentu yang telah dikenalpasti berdasarkan kaedah Fuzzy AHP. Untuk menentukan pemberat dari kaedah Fuzzy AHP, soalselidik telah diedarkan kepada 20 pengurus atasan dari setiap bank. Dengan menggunakan data sekunder dari laporan akhir dan dengan menggunakan pemberat yang telah diperolehi, keberkesanan, kecekapan, produktiviti total dan produktivit separa telahpun ditentukan. Akhirnya kajian ini menunjukkan yang kedua bank (Mellat Bank dan Melli Bank) berada dalam kuadran emas di mana tahap kebersesanan Mellat Bank adalah lebih daripada Melli Bank (1.17 berbanding dengan 1.02), tetapi tahap keberkesanan Mellat Bank (0.77) pula adalah kurang daripada Melli Bank (0.84). Tambahan pula, tahap produktiviti total Mellat Bank adalah 0.9 berbanding 0.86 untuk Melli Bank. Berkaitan dengan produktiviti separa, produktiviti kewangan untuk Melli Bank adalah lebih tinggi daripada Mellat Bank (0.75 berbanding 0.74), namun produktiviti buruh dan deposit bagi Mellat Bank adalah lebih tinggi daripada Melli Bank (1.17 berbanding dengan 0.77). Akhir sekali, cadangan-cadangan untuk pengurus an dan penyelidik akademik diberikan sebagai kajian lanjutan.

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| | | |
|---|---|---|
| AHP | - | Analytic Hierarchy Process |
| APO | - | Asia Productivity Organization |
| CI | - | Consistency Index |
| CIT | - | Critical Incident Technique |
| CR | - | Consistency Ratio |
| DEA | - | Data Envelopment Analysis |
| DMU | - | Decision Making Unit |
| EPA | - | European Productivity Agency |
| ISO | - | International Organization for Standardization |
| JIT | - | Just In Time |
| JPC | - | Japanese Productivity Center |
| MCDM | - | Multi Criteria Decision Making |
| MFP | - | Multifactor Productivity |
| PM | - | Performance Management |
| RA | - | Regression Analysis |
| RI | - | Random Index |
| SFA | - | Stochastic Frontier Analysis |
| TFP | - | Total Factor Productivity |
| TFPCH | - | Total Factor Productivity Change |
| TPM | - | Total Productive Maintenance |
| TQM | - | Total Quality Management |

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# CHAPTER 1

# INTRODUCTION

## 1.1 Introduction

Efficiently operated financial firms are essential in boosting and maintaining the economic growth of a country. Their main responsibilities are to allocate and multiply the society's savings, and influence the economic performance through using the resources efficiently (1996; Demirgüç-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998; Levine *et al.*, 2000). According to Fiorentino *et al.* (2009) during the last decade basic, changes such as privatization, elimination of entry obstacles, as well as introduction of new financial services and products have taken place in the financial areas of the industrialized economies. Furthermore, King and Levine (1993) as pioneers in studying the relation between economic growth and finance, demonstrate that superior financial regulation results in a tendency to improve faster.

Wheelock and Wilson (1995) point out that the aim of managers, stakeholders, as well as policy makers is to set policies that can increase the efficiency of commercial banks. However, focusing solely on utilizing resources efficiently may lead to low quality and defective performance (Mouzas, 2006). Thus, in considering the effectiveness as well as efficiency help banks to attain higher productivity with more precision. Due to the important role banks have in economic activities, investigating their productivity and efficiency is increasingly important (Rezayee *et al.*, 2008). However, measuring productivity of large banks (both

private and government) in examining their efficiency and effectiveness has not been studied extensively. Hence, the researcher has embarked on this subject for her study.

Productivity is seen as a significant contributing factor in the success of an organization (Hodgetts, 1998; Nachum, 1999). Hence, it is most likely to be the focus of operations and process management (Sink and Tuttle, 1989). Neely *et al.* (2005), Sink and Tuttle (1989), Sumanth (1998), and Dixon *et al.* (1998) point out that profitability, cost competitiveness, and long-term growth may be achieved by enhancing productivity. Furthermore, Pasiouras and Sifodaskalakis (2010) emphasize on the significance of analysing productivity since banks must attempt to boost their capability in order to convert inputs (such as deposits and savings) to outputs (loans). In addition, the limitations of human and financial resources could deteriorate the situation. Thus, by upgrading the productivity factors, some areas of economic growth can be enhanced without the need for new investments therefore reducing resource wastage.

It is hoped that a better understanding of the productivity and its components in both private and government banks can help the government and banking policy makers to develop better strategies to boost the economy particularly with regards to Iran. Also, this study is significant because the results could highlight any meaningful differences in the productivity of these banks that in turn can affect the Iranian banking industry.

This study explores several facets of the Iranian banking industry such as its historical background, an overview of Mellat Bank (a private bank) and Melli Bank (a government bank) with regards to their human resource, financial performance as well as technology ability. Additionally, the problem statement, research questions and research objectives are discussed in this chapter. Also, this chapter focuses on the significance and key terms in this study. At the end of this chapter, the scope, limitations, and outline are presented.

## 1.2 Banking Industry in Iran

Banking operations in Iran dated back to the dynasty of Achaemenid when banking activities were done in temples (Salehi and Alipour, 2010), during which the banking industry rose to prominence due to the rise of trade. However, the banking practice then was different from the present practice. In 1850, a British owned bank known as New East Bank was established in Iran. In 1925, Sepah Bank was first established by the government under the name of Bank Pahlavi Qoshun. This bank operated within the Iranian capital to manage the financial affairs as well as the pension funds of the military personnel.

In 1960, the Central Bank of Iran (CBI or also known as Bank Markazi) was first established with the sole purpose of issuing the currency for the Iranian government. However, as time progresses, their responsibility has extended to include national monetary policy. Due to the increasing revenue from the oil industry in the 1960s and 1970s followed by the increasing demand of the prospering economy, the banking services have expended in an exponentially. Immediately after the Iranian Revolution in 1979, the banking laws and practices have to adhere to the Islamic jurisprudence. In addition, the post-revolution in economic activities and financial resources require the banks to further consolidate along the way (Salehi and Alipour, 2010).

Business Monitor International (2010) stresses that in 2009 Iranian banks account for about 40 percent of total assets of the world's top 100 Islamic banks. In addition, Melli Bank of Iran stood in the first place with $45.5 billion assets, followed by Saudi Arabia's Al Rajhi Bank, Mellat Bank, Bank Saderat Iran with $39.7 billion and $39.3 billion respectively. The Banker (2010) points out these are thirteen Iranian banks in the top 1000 banks throughout the world in 2010. Iranian banks are categorized into three commercial government banks, five specialized government banks, and sixteen private banks are shown in Table 1.1, Table 1.2, and Table 1.3, respectively.

**Table 1.1:** Commercial government owned banks in Iran

| No | Name | Year of Established |
|---|---|---|
| 1 | Melli Bank | (1928) |
| 2 | Sepah Bank | (1925) |
| 3 | Post Bank of Iran | (1996) |

**Source:** Business Monitor International (2010)

**Table 1.2:** Specialized government banks in Iran

| No | Name | Year of Established |
|---|---|---|
| 1 | Keshavarzi Bank (Agriculture) | (1928) |
| 2 | Maskan Bank (Housing) | (1925) |
| 3 | Export Development Bank of Iran | (1991) |
| 4 | Toseye-Taavon Bank (Cooperatives) | (2009) |
| 5 | Industry and Mine Bank | (1996) |

**Source:** Business Monitor International (2010)

**Table 1.3:** Private banks in Iran

| No | Name | Year to Establish | No | Name | Year to Establish |
|---|---|---|---|---|---|
| 1 | Mellat Bank | 1980 | 9 | Refah Kargaran Bank | 1960 |
| 2 | Saderat Bank of Iran | 1952 | 10 | Garzol-Hasaneye Mehr Iran Bank | 2009 |
| 3 | Tejarat Bank | 1978 | 11 | Sina Bank | 1985 |
| 4 | EN Bank | 2001 | 12 | S-Bank "Sarmayeh Bank" | 2005 |
| 5 | Karafarin Bank | 2001 | 13 | Tat Bank | 2009 |
| 6 | Parsian Bank | 2001 | 14 | Ansar Bank | 2009 |
| 7 | Pasargad Bank | 2005 | 15 | Cyrus Bank | 2010 |
| 8 | Saman Bank Corp | 2002 | 16 | Day Bank | 2010 |

**Source:** Business Monitor International (2010)

According to the report presented by Business Monitor International (2010), the strengths of the Iranian banks are: their ability to possess the important experience in international business (larger banks), and receive full governmental support (public banks). On the other hand, the Iranian banking industry has weaknesses that include economic sanctions from other countries, as well as deposit and loan rates imposed by the Iranian fiscal policies.

### 1.2.1 Mellat Bank: A Private Bank in Iran

Mellat Bank was established in 1980 and remains as the one of the largest private banks in Iran. It emerged through the merger of 10 private banks which were in existence before the revolution. These banks were Dariush, Tehran, Etebarat Taavoni & Tozie, Pars, Iran & Arab, Omran, Bein-almelalie- Iran, Tejarat Khareji Iran, Bimeh Iran, and Farhangian. At present, Mellat Bank has 1,908 branches, and 3000 ATMs in Iran. In addition, it has five international branches. Mellat Bank facilitates foreign and domestic commercial transactions. This bank is a major source of trade guarantees. In the Financial Year (FY) 2008, Bank Mellat's pre-tax profit rose to IRR 2,519 billion; an increase from IRR 949,388 million in the previous year. However, the bank's total expenses increased to IRR 11,158 billion from IRR 10,631 billion (Mellat, 2011).

Since 2007, various economic sanctions have limited international transactions between Mellat Bank and other countries. In February 2009, Mellat Bank sold about 80% of its stake to investors and converted into the largest private-owned bank of Iran (Mellat, 2011). Some of the most prominent achievements of this bank include being ranked first for four consecutive years in attracting investments, in establishing an online current account (JAM) in all its branches, and in absorbing the total resources.

Despite the economic sanction, Mellat Bank tries to present new services to customers to increase its own share of the Iranian market and further trading with other countries. In order to keep up with the global developments and modern tools usage, Mellat Bank has pioneered into electronic banking and has created many milestones. In a speech presented by the president of Mellat Bank, he comments that Mellat Bank believes that employees and customers play significant roles in the banking industry (Divandary, 2011). Furthermore in support of the previous statement, the president of Mellat Bank, Divandary (2011) highlights their human resources and IT software and hardware infrastructures.

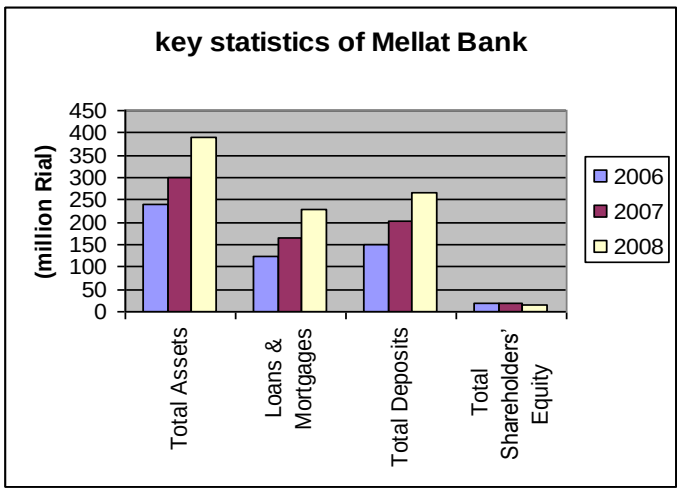



**Figure 1.1** Key statistics of Mellat Bank

**Source:** Business Monitor International (2010)

Also, Divandary (2011) enumerates some of Mellat Bank's achievements such as improving electronic banking and IT, and co-operating in large scale projects as well as coming in first with regards to total resources and deposits. Figure 1.1 demonstrates Mellat Bank's performance between 2006-2008 pertaining to human resource, financial, and technology.

### 1.2.1.1 Human Resource in Mellat bank

Human resource plays a crucial role in aiding any organization to achieve its goals. Therefore, Mellat Bank has placed an emphasis on the importance of training and motivating its employees.

As a result of Mellat's move to improve labour productivity, the number of employees with only high school certificates and diplomas were on a decline during the period of 2006-2011. On the other hand, the number of personnel with Bachelor's degree in 2011 has reached 55 percent, and the number of postgraduates in the workforce rose from 221 in 2006 to 537 in 2011. However, the number of employees decreased from 25,457 to 23,895 (Annual Report Mellat Bank (2011).

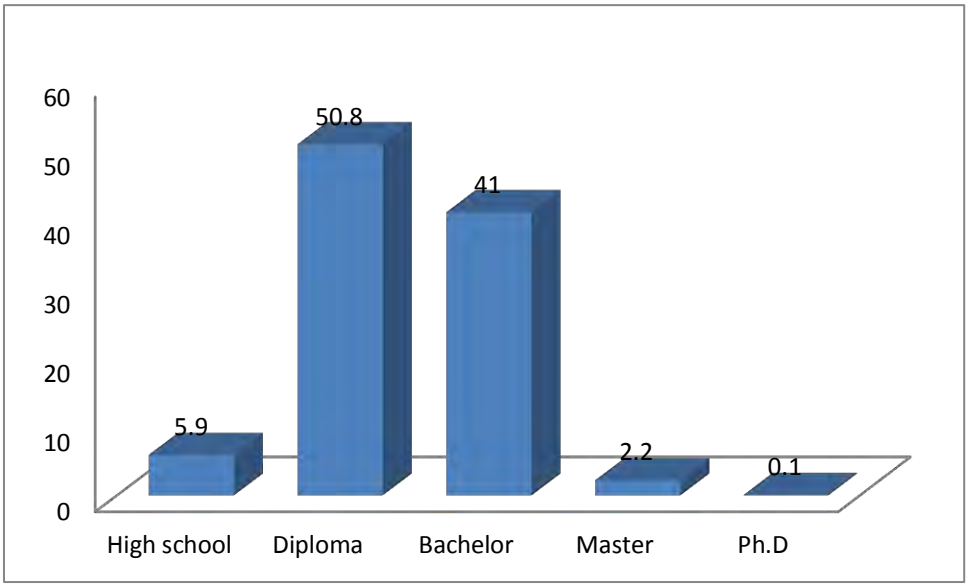



**Figure 1.2** Composition of human resource based on education level in Mellat Bank

**Source:** Annual Report Mellat Bank (2011)

In 2011, Melta Bank's personnel's years of working experience recorded a mean of 13.37. In 2006, the mean was 10.96; a majority of the workforce has 10-15 years of experience at almost 25 percent, with the least percentile of 7 percent for those with more than 30 years of experience. According to Melat Bank and the Central Bank, the decrease in the number of employees during the mentioned period was attributed to retirement. On the other hand, the personnel cost throughout this period increased more than twice from IRR 2029 billion in 2006 to IRR 4544 billion in 2011 (Annual Report Mellat Bank, 2011). The main reason for this increase is due to yearly increase in salaries imposed by the Iranian Ministry of Cooperatives Labour and Social Welfares.

### 1.2.1.2 Financial Performance in Mellat Bank

According to Mellat Bank's financial reports, in 2011 the bank's profit charted a growth of about 75 percent compared to 2010. This increase in investments and loans has helped the bank to increase their profits.

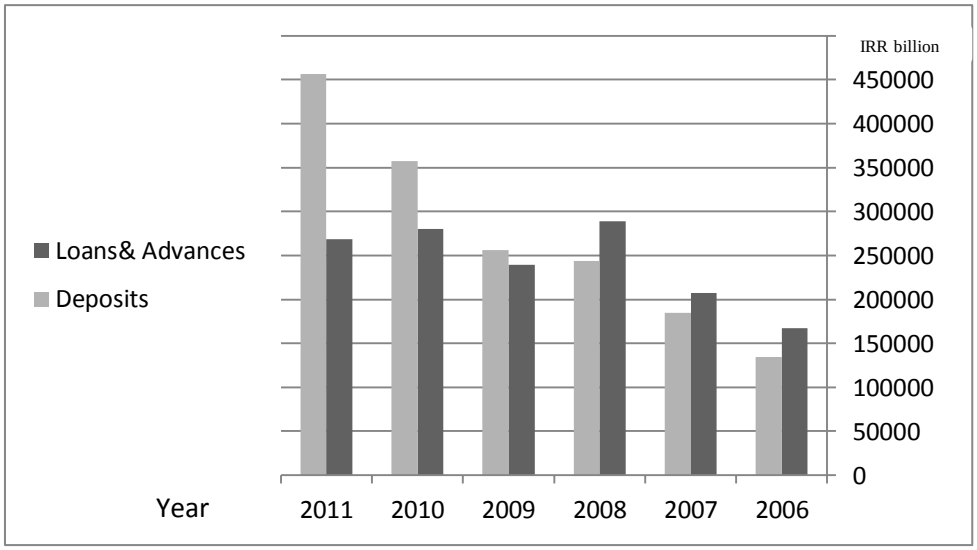



**Figure 1.3** Trends of loans & advances and deposit in Mellat Bank
**Source:** Annual Report of Mellat Bank (2011) and Central Bank of Iran (2011)

Figure 1.3 reveals a fluctuating trend for the loans and advances between 2006-2011. Although, there is an increase from 2006 to 2008, after 2008 there is a continued fluctuation. The amount of loans & advances in 2008 can be expressed in IRR (the equivalent of Iranian currency to US Dollar during 2006-2011 was 0.000125-0.0001) 300,000 billion as the highest in five years. On the other hand, deposits have gone up sharply throughout except in 2008-2009 where it remains stable (Annual Report Mellat Bank, 2011).

Whilst, deposits have gone up sharply except throughout 2008–2009 where the trend has been fixed. According to Figure 1.4, the main reason of increasing the deposits refers to investment account that there is a big gap with saving account as well as current account. However, the amount of investment account has been similar approximately as to the amount of current account for two years (2006-2008). So, the current account has stood at the second place during this period and the least amount belongs to saving account.

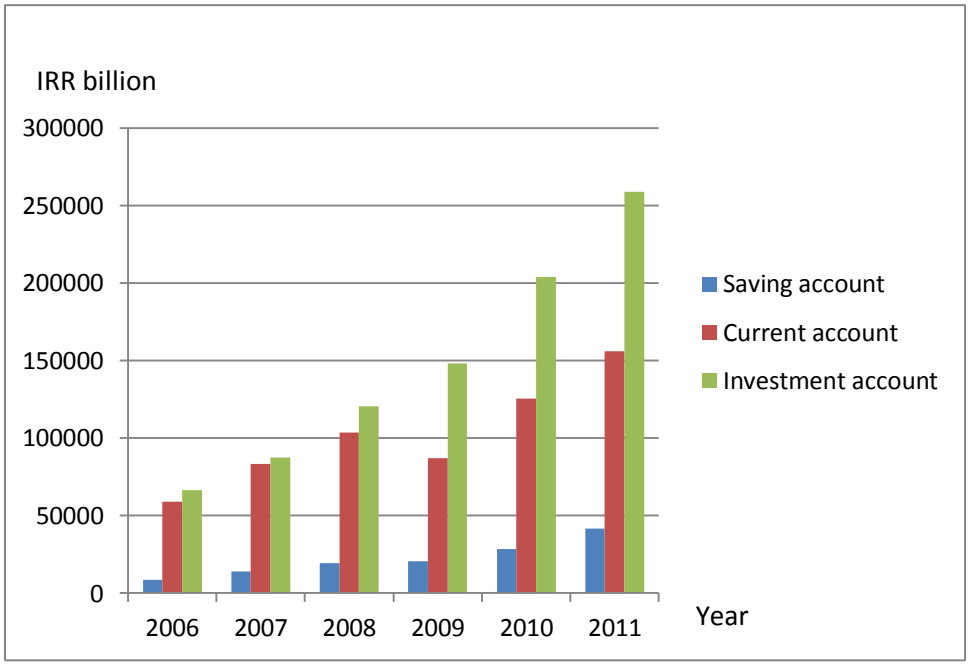



**Figure 1.4** Trends of deposits in Mellat Bank

**Source:** Annual Report of Mellat Bank (2011) and Central Bank of Iran (2011)

According to Figure 1.4, e tothe main reason for the increase in deposits is du investments. However, there is a wide difference between the amount in the increase .of deposits for the investment account with saving and current accountsDespite this difference, the amount of deposit in investment and current accounts has remained at a constant for two years (2006-2008).

Both the investment and saving accounts show an increasing trend. However, the increase for saving account is gradual unlike the sharp increase for investment account. This increase has been attributed to increase in the interest rate and high inflation rate. The, investment account charts an increase from IRR 66347 billion to IRR 258902 billion during 2006-2011. On the other hand, the current account shows a fluctuating trend; rising rapidly between 2006 to 2008 then, drops slightly from IRR 103,462 billion in 2008 to IRR 87,163billion in 2009. Then, picks up in 2010 rising steadily subsequently.

### 1.2.1.3 Technology in Mellat Bank

Due to globalization and the widespread use of IT and electronic services, Mellat Bank has improved its IT infrastructure to provide reliable online and electronic transactions to maintain its hold in the market. These improved services include: upgrading branches to incorporate online transactions, providing PIN pad (a PIN pad or PIN entry tool is an electronic device applied in a credit, debit or smart card-based transaction to enable and encode a cardholder's personal identification number (PIN)), increasing Point Of Sales (POS), providing automated teller machine (ATM), and issuing debit card. In addition, Mellat Bank has increased the number of branches providing swift transactions (from then on will be known as swift branches) from 58 in 2006 to 85 in 2011.

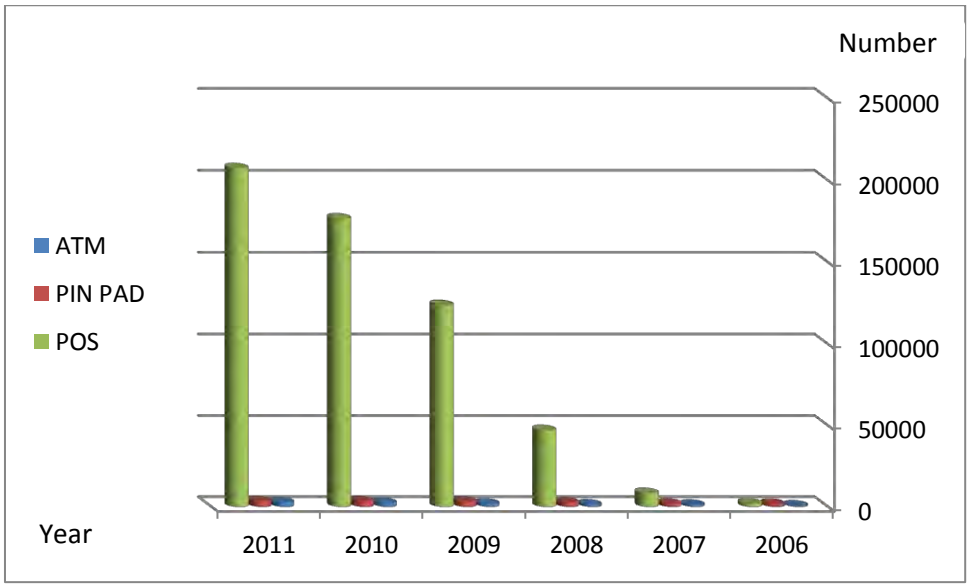



**Figure 1.5** Trends of ATM, POS, and PIN PAD in Mellat Bank

**Source:** Annual Report of Mellat Bank (2011) and Central Bank of Iran (2011)

Although, there are no significant changes in the number of branches with online facilities, Figure 1.5 indicates that the number of ATMs, POS, and PIN pads has shown positive growth. Also, during the period 2006-2011, the number of PIN pad has doubled. However, the growth in POS is greater than the number of ATMs and PIN pad. The number of POS in 2007 was 8,444 to 207,388 in 2011. In addition, during 2006-2011, the number of debit cards issued by Mellat Bank has increased

considerably from 422,576 in 2006 to 24,085,381 in 2011 (Annual Report Mellat Bank, 2011).

### 1.2.2 Melli Bank: A Governmental Bank in Iran

The year 1928 is considered the defining moment in the history of Iran's economy and banking industry with the naming of Melli Bank as the first Iranian commercial bank after 40 years of being dominated by foreign-owned banks. This marks the end of Iran's dependency on foreign banks in handling its economic activities and trades. In 1931, the Iranian Parliament endorsed Melli Bank to issue banknotes and thus enhanced the direction of its financial resources towards improving the country's industrial, agricultural and commercial activities hence boosting its economy.

As a result of the parliamentary endorsement, Melli Bank collaborated with the central bank and undertook the responsibility in carrying out government banking, determining the direction of currency circulation, and defending the currency value with supervision from the Iranian banking industry players. According to the law enacted in 1950, the Central Bank was introduced and Melli Bank was allowed to focus primarily on developing its own commercial banking functions. Melli Bank has maintained to be the largest Iranian government Bank with a powerful image in the domestic or international financial market (Melli, 2005).

Melli Bank is a credible major bank in Iran because it possesses a considerable market share in Iranian banking industry and also employs the state-of-the-art technology in banking operation. This bank attempts to maintain its position through the introduction of new services has proven to be difficult because of the limitations and sanctions that imposed by the western governments. Currently Melli Bank has more than 41,000 personnel with 3,293 branches out of which sixteen (16) are international branches and 3,277 are domestic branches.

The next section will discuss the trend in Melli Bank with regards to its human resource, financial ability, and technology capability. According to the statistics issued by Melli Bank and the Central Bank of Iran (refer to Appendix A), there are several factors affecting the trend which will be elaborated in the following sections.

### 1.2.2.1 Human Resource in Melli Bank

As previously mentioned Melli Bank has a workforce of more than 41,000 employees stationed in the domestic or international branches. According to the Figure 1.6, thof these workers have diploma e majority this is followed by employees with bachelor degrees. During 2006-2011, it was found that the number of employees with diplomas has decreased but the number of those with bachelor degrees has risen by 15 percent. In addition, the numbers of employees with masters and PhD degrees have reached 6 percent and 4 percent respectively in the five years.

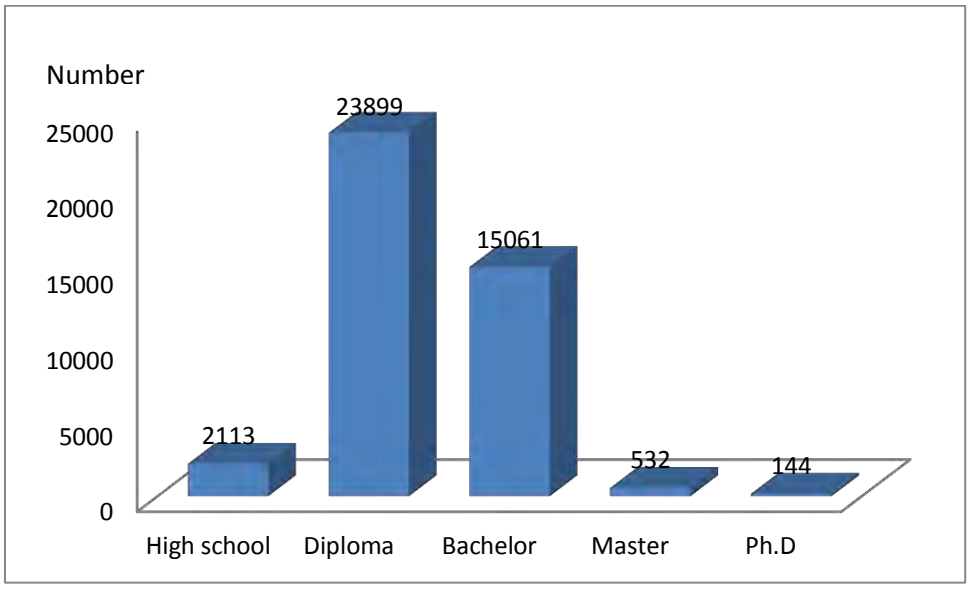



**Figure 1.6** Composition of human resource based on education level in Melli Bank

**Source:** Annual Report of Melli Bank (2011) and Central Bank of Iran (2011)

Furthermore, Figure 1.7 illustrates that most (%28) of the staff has 15-20 years of working experienced. The least percentile falls to two groups of employees with 0-5 and 25-30 years of experience at 7 percent.

On the other hand, although the number of workers in Melli Bank decreased from 43,333 in 2006 to 41,800 in 2011 because of lesser intences and having more retierments, the personnel cost throughout these years increased with considerable growth more than twice, i.e. IRR 5632 billion in 2006 as compared to IRR 12159 billion in 2011 which is also caused mostly because of the requirement by Iranian Ministry of Cooperatives Labor and Social Wefares to yearly increase salaries of workers.

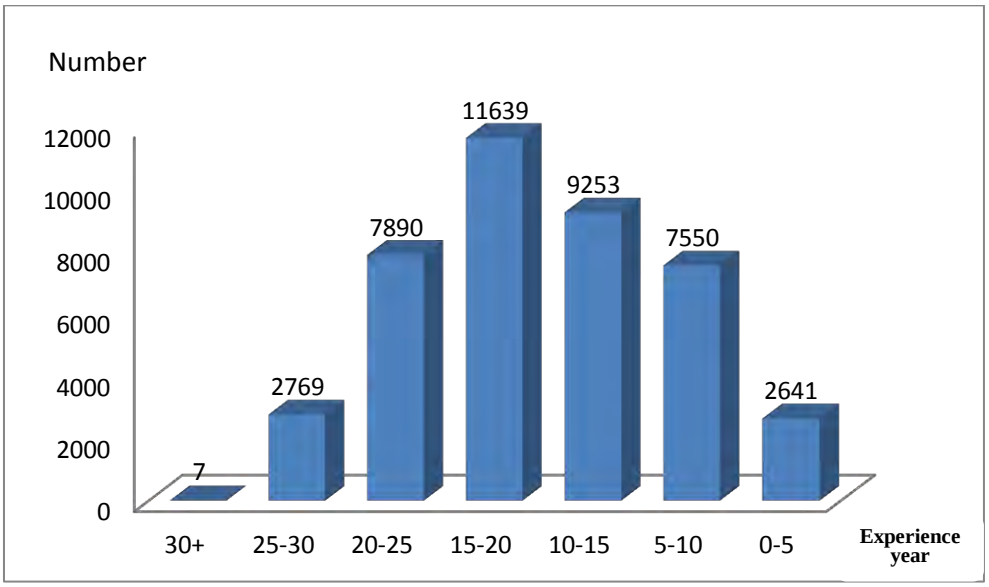



**Figure 1.7** Distribution of employees by experience years in Melli Bank

**Source:** Annual Report of Melli Bank (2011) and Central Bank of Iran (2011)

### 1.2.2.2 Financial Performance in Melli Bank

According to the annual report issued by Melli Bank and the Central Bank of Iran, although the profit of Melli Bank increased to IRR 4142 billion in 2010, in 2011 there was a decline to IRR 3900 billion.

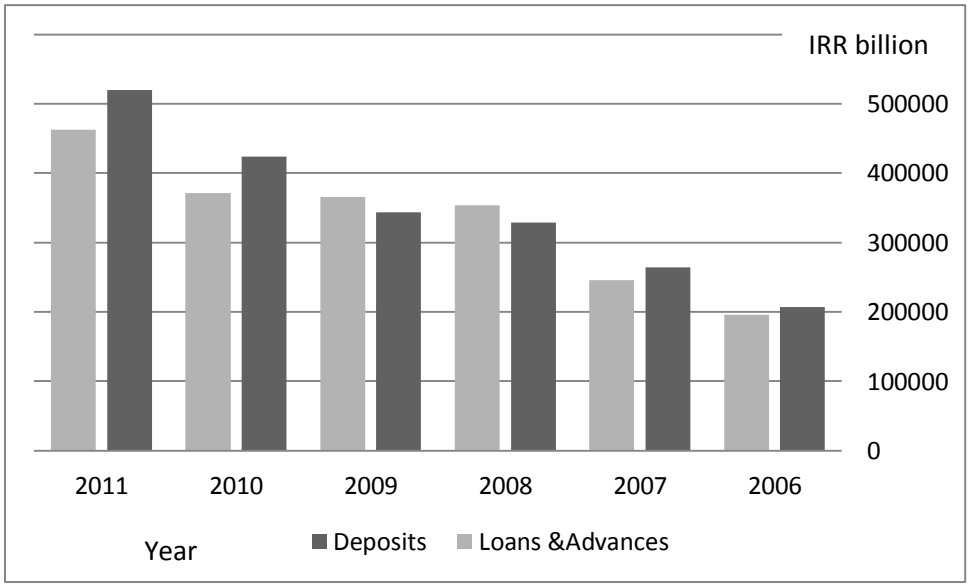



**Figure 1.8** Trends of loans & advances and deposit in Melli Bank

**Source:** Annual Report of Melli Bank (2011) and Central Bank of Iran (2011)

In addition, Figure 1.8, illustrates the bank's deposits (savings, current, and investment accounts) have remained stable between 2008 and 2009. However, the deposits indicate a sharp increase in two periods; 2006-2008 and 2009-2011. Unlike deposits; loans and advances indicate an increase in 2006-2008, remains stable during 2008 to 2010. In 2011, there was a major increase in loans and advances.

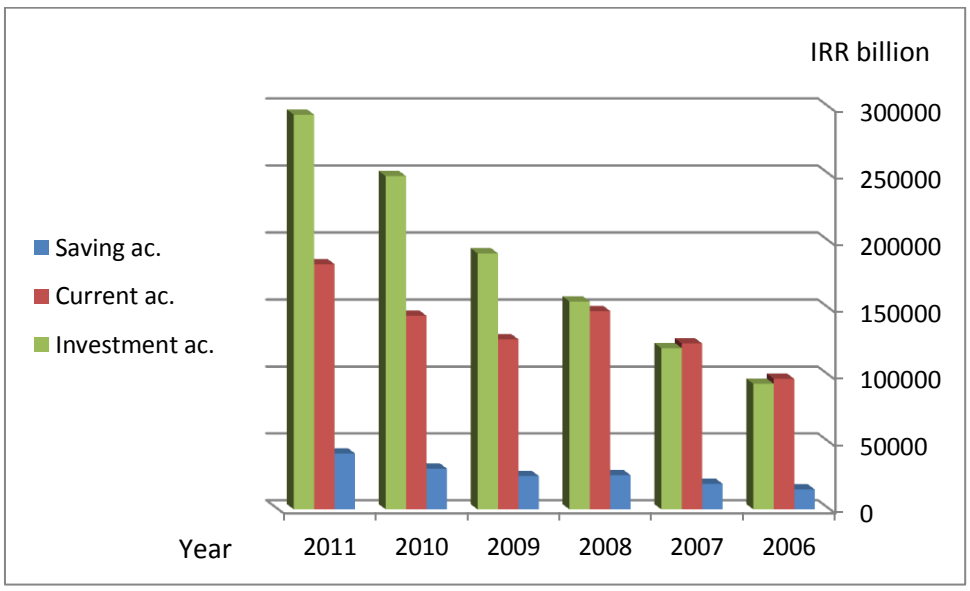



**Figure 1.9** Trends of deposits in Melli Bank

**Source:** Annual Report of Melli Bank (2011) and Central Bank of Iran (2011)

Figure 1.9 illustrates the breakdown of these deposits into investment, current, and saving accounts. The investment account shows a marked increase throughout the during the five year period. However, the saving account exhibits a fairly stable trend. On the other hand, the current account shows a steady growth during 2006-2008. However, it decreases slightly in 2009 and thereafter picks up steadily. Saving account makes up the least amount of deposit during the period of 2006-2011, whilst investment account makes up the most during 2008-2011.

### 1.2.2.3 Technology in Melli Bank

Melli Bank has constructed a robust IT centre which helps to attain profitability and customer satisfaction. In 2007, Melli Bank considered the strengths and weaknesses of its IT system and has since accomplished various projects which include expanding its electronic system, and ensuring that its network system and hardware are in proper working conditions. Furthermore, the bank provides its customers with debit/credit cards facilities, telephone banking, internet banking. Also, the bank has increased the number of ATMs, branches with online facilities, and branches providing swift services (known as swift banks from here onwards) all over the country.

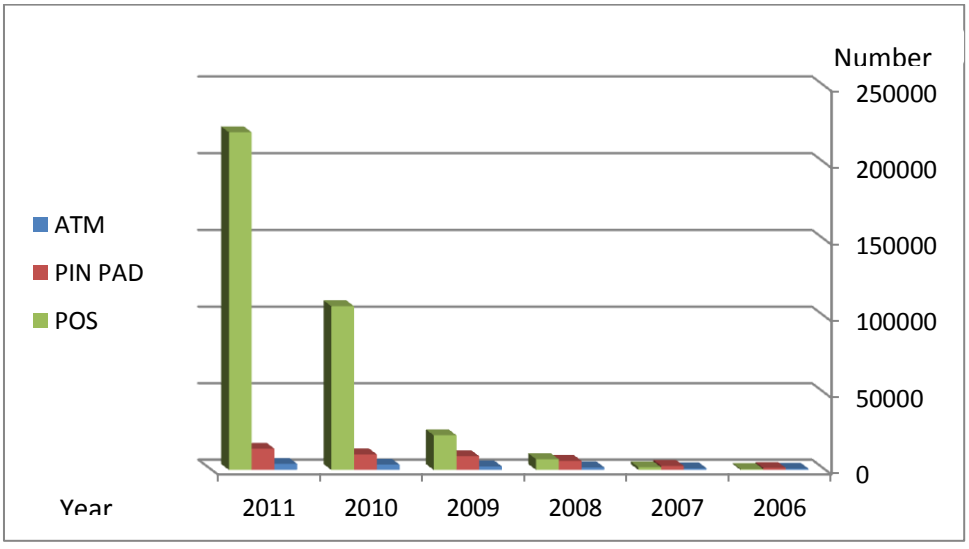



**Figure 1.10** Trends of ATM, POS, and PIN PAD in Melli Bank
**Source:** Annual Report of Melli Bank (2011) and Central Bank of Iran (2011)

According to Figure 1.10, during the period 2006-2011 the number of ATMs has increased fourfold in 2006. Figure 1.10 demonstrates that there is an increase in the number of POS, as well as PIN pads throughout this period. In addition, the number of POS has shown a rapid increase as compared to the number of ATMs and PIN pads. In order to provide better services to its customers, Melli Bank has increased the number of swift branches to 151 in 2011, from 65 in 2006. In addition, the number of debit cards issued by the bank has gone up from 2,842,840 in 2006 to 23,019,086 in 2011 indicating a sevenfold increase.

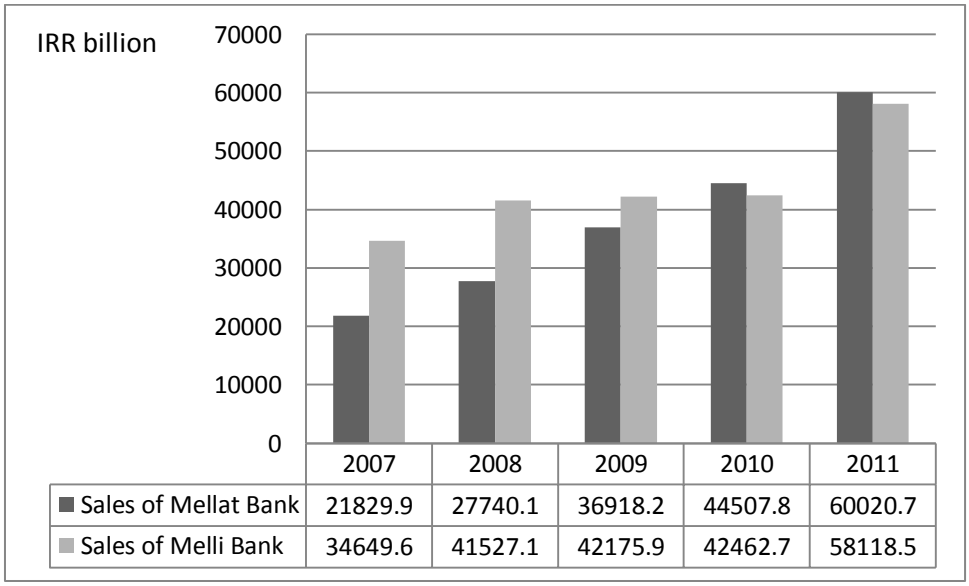
### 1.2.3 Comparing Mellat Bank and Melli Bank

A summary of comparison between Mellat Bank and Melli Bank for the period 2006 - 2011 is as follows:

- The number of Mellat Banks' personnel is 23,800 compared to a strength of 41,800 in Melli Bank.
- The percentile of employees with university degrees: Mellat Bank has 43 percent while Melli Bank has 38 percent.
- The mean of working experience in 2011 are as follows: Mellat Bank was 13.37, whereas Melli Bank is at 15.24.
- The amount of loans and advances provided by Mellat Bank was IRR 268,817 billion as compared to Melli Bank providing a sum of IRR 462,493 billion.
- The number of bank branches for Mellat Bank is 1908 and Melli Bank has 3,293.
- The year of establishment: Mellat Bank was formed in 1980, whilst Melli Bank was established in 1928.

The Industrial Management Organization of Iran releases a list of a hundred leading Iranian companies based on sales. However, it should be noted that various industries measure performance differently. Industries such as banking base their performance on revenues. In 2011, Mellat Bank was ranked seventh followed by

Melli Bank (see http://imi100.imi.ir/SitePages/RankingFirst100.aspx) listed as eighth top Iranian companies. This was not always the case because between 2007 and 2009, Melli Bank was ahead of Mellat Bank (see Figure 1.11). Then in 2010, Mellat Bank rose from the eighth position to seventh position with sales amounting to IRR 44507.8 billion. Melli Bank lost its position to its decreasing sales from IRR 43593.6 billion in 2010 to IRR 42462.7 billion in 2011. Moreover, Mellat Bank is the first privatized bank with the least amount of Iranian Government share (20%) compared to other privatized banks. Additionally, performance can be measured by looking at an organization's productivity that includes efficiency and effectiveness. Understanding productivity and its components act as a complementary measure to assist the bank management and policy makers in devising strategies in improving their services.




| | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|
| Sales of Mellat Bank | 21829.9 | 27740.1 | 36918.2 | 44507.8 | 60020.7 |
| Sales of Melli Bank | 34649.6 | 41527.1 | 42175.9 | 42462.7 | 58118.5 |

**Figure 1.11** Trends of Mellat Bank & Melli Bank Sales

**Source:** Ranking Top 100 Iranian Companies Reports (http://imi100.imi.ir/SitePages/RankingFirst100.aspx)

## 1.3 Statement of the Problem

The financial sector plays a crucial role in the effective allocation of resources, economic growth, and job creation (Athanasoglou *et al.*, 2009). During the last two decades, fundamental changes have become apparent throughout the financial sectors. Technological progress, financial globalization, as well as banking deregulations have made the industry vulnerable to the increasing pressure from competition. Therefore, companies from both the private and government sectors have to consider strategies in entering a market, building a name, and protecting its position in the competitive market. As such the banks are beginning to realize that it is not possible for banks to offer all products and be at their best for all customers (Zineldin and Bredenlöw, 2001). Banks are driven to find a new basis for competition and they have to improve quality and productivity of their own products/services (Zineldin, 1996) and reduce operation costs as well (Fiorentino *et al.*, 2009).

Thus, measuring productivity can serve as an additional monitoring instrument because low productivity detected can be used as an early warning sign for the management to take the necessary actions. In addition, studies on bank productivity are useful because they are well-documented evidence indicating the efficiency of channelling available resources to productive usage. Hence, productivity a powerful mechanism for economic growth (Levine, 1997).

The banking system in Iran, as in other developing economies plays an important role in the economy by channelling funds with excess to those with productive needs. Even though both Mellat Bank and Melli Bank are two of Iran's biggest banks, they are facing competition and problems related to managing growth. Therefore, in order for these banks to maintain their hold in the market and achieve a sustainable growth in a highly competitive environment, these banks should constantly redesign and redirect their strategies with the objective of boosting their performance. This can be achieved by making comparisons with the competitors in identifying their strengths and weaknesses.

Furthermore, the Industrial Management Organization of Iran stresses that Iran's economy like any other developing countries whereby the prices are unable to reflect the true economic situation. Existing subsidies and government intervention in controlling the prices have a big influence on the prices. Hence, the prices are unable to reflect the actual growth of a firm. For example, in a healthy economy, the sales growth of a company indicates an increase in prices either from an improved in quality or an increase in quantity of products sold. On the contrary, in Iran the change in prices is often due to an existing monopoly, government intervention or inflation rate. Therefore, in employing other performance measurements such as looking into the productivity will give a clearer picture of the real situation.

Roger *et al.* (1994) believe that competitive business conditions have shifted management concentration from "doing the job right" as in the 1960s and 1970s to "doing the right job" in the 1990s. They note that optimization and cost reduction are replaced by customer and employee satisfaction. Rusbult *et al.* (1988) state that job satisfaction is a crucial component to understand the organization's effectiveness as a whole. Nevertheless, Kumar and Gulati (2009) point out that a firm may efficiently use resources (inputs), but may not be able to function effectively, and vice versa. On the other hand, Van Looy *et al.* (1998) indicate that if increased production from a quantitative perspective is the only reason for improving productivity, this may result in lower quality and more defective performance. Also, this view yields short-lived profitability (Mouzas, 2006). Mouzas (2006) explains that emphasizing on effectiveness and disregarding efficiency may lead to "unprofitable growth". Thus, it is necessary for organizations to strive for sustainable profitable growth and pay equal attention to effectiveness and efficiency. Therefore, the value of productivity will be measured based on their effectiveness and efficiency to get accurate and true values.

Among the most frequently encountered problems related to the service industry are intangibility, heterogeneity, inseparability, simultaneity and perishability (Yu and Lee, 2009). Due to the nature of the service industry, this sector often has difficulty in synchronizing supply and demand (Klassen *et al.*, 1998). Hence, when evaluating bank performance it is worth noting that it is more difficult to evaluate

service provision than manufacturing production or consumption processes. Since services are often created and consumed concurrently, there is interaction between the provider and consumer.

As a result of the components' intangibility in affecting the productivity of service processes, it is difficult to state them in a determinable form. Lina *et al.* (2010) point out that service comprises various components, either tangible or intangible. In addition, the intricacy of outputs and inputs leads to more difficulty in measuring productivity. Thus, it is significant to understand which bank inputs, outputs and outcomes are to be considered in the process of assessing productivity. Additionally, the reality with determinants is that each has a fair contribution to productivity with has its own significance. As such the significance is determined by an organization's top managers and strategy makers.

On the other hand, most econometric approaches employed are used to understand the extent in which efficiency and productivity have changed after privatization (Humphrey and Pulley, 1997; Berger and Mester, 2003; Grabowski *et al.*, 2012). Moreover, these studies were carried out more in developed countries than in developing countries (Gilbert and Wilson, 1998; Leightner and Lovell, 1998). This is mainly due to the shortage of microeconomic data. In addition, with the increased realization of the important roles the government banks play in developing countries, studies have revealed that government ownership hurts the performance of an enterprise. Even though, if there is a possibility of corruptions taking place in the government banks, Clark *et al.* (2005) point out that there are other reasons these government corporations are not performing as efficiently as the privatized banks. Among these reasons include government intervention (Nellis and Shirley, 1992; Claessens and Peters, 1997; Djankov, 1999) such as imposing multiple goals and principles without transparent monitoring. Also, it is found that some government managers are less motivated than their counterparts in the private sectors in maximizing revenue and minimizing costs (Megginson, 2005). This could be because the top management do not encounter a credible threat of losing their jobs for non-performance and are less likely to receive performance related pay. Therefore, being aware of the productivity level helps these organizations to stay in

the market and stay competitive. Also, this helps the government to plan short-term and/or long-term strategies for their organizations.

Unfortunately, to this date there has been limited research in measuring the productivity by examining the efficiency and effectiveness of several factors. Furthermore, there has been no comparative study of the private and government banks especially in Iran. Hence, this study compares the productivity of a government and private bank in Iran by assessing the ability of Mellat Bank and Melli Bank to enhance their financial services to customers, and achieve their objectives with regards to the existing resources (both qualitative and quantitative factors). Additionally, this study looks at both banks' ownership. Thus, the main aim of this study is to identify the banks' productivity based on their efficiency and effectiveness as well as confirm the ranking of Mellat Bank and Melli Bank in the top hundred Iranian companies list.

## 1.4 Research Questions

To approach the aforementioned problems and prepare solutions to those problems of this study, six research questions were formulated as follows:

RQ1: What model could be developed for measuring the productivity of Mellat Bank and Melli Bank based on effectiveness and efficiency concurrently?

RQ2: What are the inputs, outputs, and outcomes of Mellat Bank and Melli Bank?

RQ3: How to measure the productivity considering the managers' opinions of Mellat Bank and Melli Bank about the preferences of inputs, outputs, and outcomes?

RQ4: What are the values of effectiveness and efficiency of Mellat Bank and Melli Bank?

RQ5: What are the values of Partial and Total Productivity at Mellat Bank Melli Bank?

RQ6: Where do the productivity of Mellat Bank and Melli Bank stand in Effectiveness-Efficiency Matrix?

## 1.5 Research Objectives

To address the aforementioned questions of this study, the following objectives were developed:

1- To develop the model for assessing the productivity of Mellat Bank and Melli Bank through effectiveness and efficiency simultaneously.
2- To determine the Inputs, Outputs, Outcomes of Mellat Bank and Melli Bank.
3- To assess the preferences of determinants in measuring productivity considering private and government Iranian Banks.
4- To compare the values of Total Productivity and Partial Productivity of Mellat Bank and Melli Bank.
5- To compare the values of effectiveness and efficiency of Mellat Bank and Melli Bank.
6- To assess the level of productivity in Mellat Bank and Melli Bank based on the effectiveness-efficiency matrix (ideally, an organization desires to be in the high efficiency, high effectiveness quadrant as this would indicate high productivity).

## 1.6 Significance of the Study

Advancing competition encourages service organizations such as banks to seek options which either increase productivity and efficiency or reduce costs; in

other words they seek to optimize operations (Angelini and Cetorelli, 2003; Amel *et al.*, 2004). Kirikal and Tallinna (2005) illustrate that productivity is a significant factor in analysing, monitoring, and supervising performance and can be the most significant part of process and operational management (Sink and Tuttle, 1989). There is consensus among scholars that performance management is an important component of continuous improvement and successful management (Anderson *et al.*, 1997; Neely *et al.*, 2005; Acur and Englyst, 2006). Also, it can help firms to attain their missions, visions, policies, objectives and targets (Dixon *et al.*, 1990; Kaplan and Norton, 1996; Rantanen *et al.*, 2007). However, due to the difficulty in quantifying productivity of financial organizations, most studies measure efficiency instead (Keh *et al.*, 2006).

Moreover, assessing efficiency enumerates as an indicator of successful banking performance (Diaz Avilez, 2011). Since the 1980s and early 1990s, the academic interest in this topic has been on an increase as a result of bank failures and liberalization. The majority of the researches related to banking efficiency over the past four decades were conducted primarily in the United States (Berger *et al.*, 1993; Berger and Humphrey, 1997; Mester *et al.*, 2003; Berger, 2007). Relatively very few researches were carried out in developing countries (Berger and Humphrey, 1997).

Furthermore, most of these studies employed either parametric or non-parametric methods to estimate productivity change (Berger and Humphrey, 1997; Berger *et al.*, 2001; Koutsomanoli-Filippaki *et al.*, 2009). More recently, studies on the banking industry are focusing on efficiency assessment (Kumar and Gulati, 2009) or productivity changes, by applying Data Envelopment Analysis (DEA) and Malmquist Index (Fukuyama and Weber, 2002; Tortosa-Ausina *et al.*, 2008; Banker *et al.*, 2010; Matthews and Zhang, 2010; Sufian, 2010). Currently, there are a few researches on defining productivity and presenting productivity measures emphasizing on effectiveness and efficiency (Kumar and Gulati, 2009). Thus, there is a gap in measuring the productivity levels based on efficiency and effectiveness accurately. Inspite of this, the number of studies on the banking industry has been growing in developing and emerging countries such as Iran (Haghighat and Nasiry 2003; Dadgar and Niknemat 2006; Hoseini and Sury 2006; Rezayee *et al.*, 2008).

Since the introduction of higher productivity as a key aspect of the seven-sections of the Iranian economic reforms (Hosseini, 2011), researches into productivity has garnered lots of interests. The seven-sections of Iranian economic reforms were issued by the government in 2009 as shown in Figure 1.12.

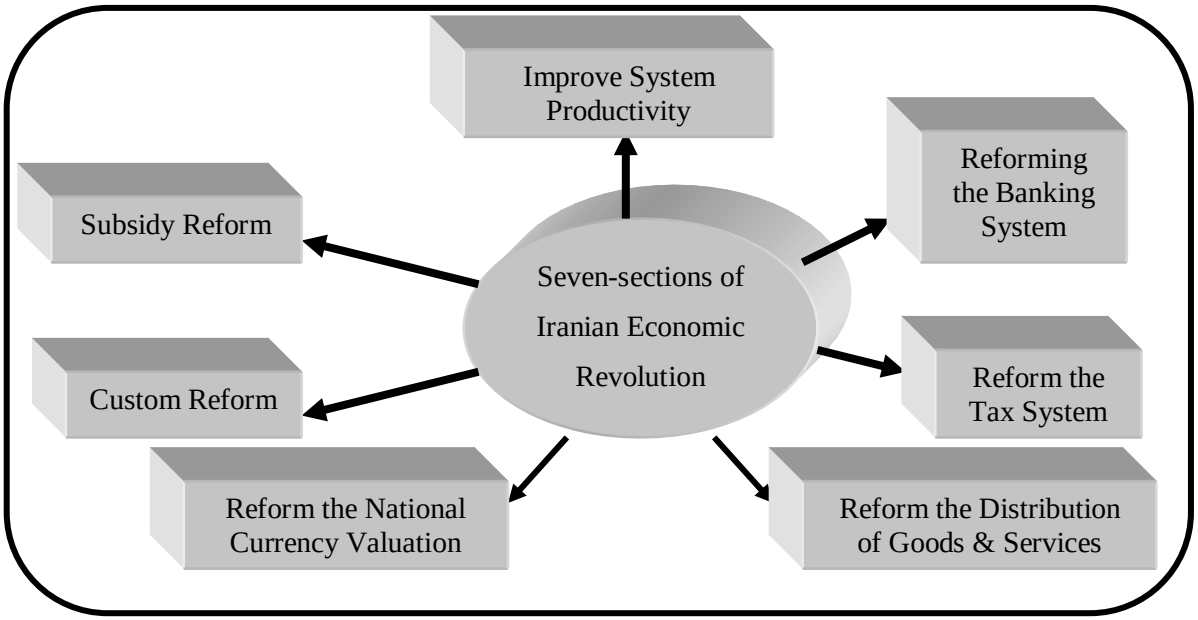



**Figure 1.12** Seven-sections of Iranian economic revolution
**Source:** Reforms (2009)

With reference to Figure 1.12, the measurement system design and productivity analysis were introduced as important areas of the operational strategy in line with the Improved System Productivity (Reforms, 2009). According to the document on Iran's twenty year perspective and the fifth development plan, Iran targets to gain an eight percent (8%) economic growth; that is a 4.2 percent productivity gain that needs to be reached (Appendix B). As a result, the Iranian government has imposed their corporations to assess their productivity and efficiency as well as redesign their strategies and objectives to reach a higher level of productivity. Thus, in addition to developing innovative services to attract customers and remain competitive, these banks need to have an accurate assessment of their productivity.

Academic publications seldom if not never address the issue of measuring of Iranian banks' productivity especially in terms of effectiveness and efficiency. An additional uniqueness of this study is in its consideration of the qualitative and quantitative features of inputs, outputs, and outcomes which are the productivity

determinants. Therefore, a method is required to combine these factors such that decision makers can extract their weight and apply it in a productivity formula. One of these multiple decision-making approaches is Analytic Hierarchy Process or AHP (Han and Ji, 2009). In order to assess accurate and meaningful results, it is preferable to use the complementary AHP method or Fuzzy AHP.

The definition of productivity as presented by the European Productivity Agency (1958) and adjusted by the Japan Productivity Centre (JPC), is that it is a social concept and an "attitude of mind". Therefore assessing productivity can vary among organizations. It is important to consider the viewpoint of Mellat and Melli Bank top managers when measuring productivity. As such, this study evaluates the productivity with regards to the views of Mellat and Melli top managers, by weighting their preferences on productivity determinants while using the Fuzzy AHP method which makes this study significant for banks management.

Furthermore, this study is significant in its attempt to apply more than one research method or data collection technique; as each method addresses a particular research problem dimensions. A mixed method combining qualitative and quantitative aspects is used in this thesis. The data is a set of primary information including Modified Delphi findings, the Fuzzy AHP questionnaire results and also secondary data derived from annual reports.

The researcher hopes that its findings can assist the management teams in Mellat and Melli Banks in enhancing their productivity and improve their strategies which eventually can be a guideline for them in future. Also, this study is significant since the results of this comparison can address the limitation of ranking drawn by the Industrial Management Organization of Iran. This study can be significant in the banking industry because it measures productivity by examining the efficiency and effectiveness of several determinants. In addition, it is also significant because it look at the similarities and differences of the factors from the perspectives of the banks' management team. These similarities and differences can assist the government of Iran in determining the direction of both types of bank in terms of productivity, as

well as the long and short term strategies. This in turn will help them to compete efficiency in the long run.

## 1.7 Scope of the Study

This study focuses on understanding the differences in the productivity and its components of the private and government banks in Iran. Thus, the largest bank in each category was chosen to make this comparison meaningful.

The private bank selected for this study is Mellat Bank of Iran. This bank consists of 1908 branches, 1903 national and 5 international branches, with 24,800 employees. A crucial factor in selecting Mellat Bank is that it is the one of biggest private banks in Iran. Hence, a precise measurement of the productivity is crucial for Mellat Bank as well as the Iranian banking industry (micro view), and Iran's economic growth (macro aspect).

On the other hand, Melli Bank is chosen since it is the biggest government bank in Iran with 3,293 branches and 41,000 workforces. This bank is also known as the national Iranian Bank. Thus, Melli Bank's critical role in boosting the Iranian banking industry and the country's economy is obvious.

The top managers from Mellat Bank and Melli Bank participating in the questionnaires for Modified Delphi Method and Fuzzy AHP were from various departments such as the Human Resource Department, Marketing Department, Research and Planning Department, Risk and Financial Department, and Strategic and Operational Planning Department.

## 1.8 Definition of Terms

**Total Productivity**: Saari (2006) presents the ratio of output quality and quantity to input quality and quantity as the definition of total productivity. A managerial perspective is presented by Tuttle (1983), who points out organization components that create effective and efficient organization functioning from a managerial perspective regarding productivity classification meanings.

**Effectiveness**: "Doing the right things" and adequately choosing activities are defined as effective (Drucker, 1963; Anthony *et al.*, 1984; Griffin, 1987). Effectiveness also measures the firm's ability to achieve prearranged objectives and goals (Keh *et al.*, 2006). Simply put, an organization is considered effective if it attains its goals (Asmild *et al.*, 2007).

**Efficiency:** "Doing things right" is a basic definition of efficiency presented by (Drucker, 1963), in which a measure of efficiency appraises the organization's ability to achieve the output(s) considering minimum input levels. Chan (2003) defines efficiency as the utilization of resources (Labor, Machines, Capacity, and Energy). He expresses that the ideal utilization of resources brings financial and time savings, which consequently leads to improved company performance.

**Partial Productivity:** Productivity that relates net or gross output to a single input (Kendrick and Creamer, 1965). The input selected can be labour productivity, capital productivity, energy productivity and material productivity to name a few.

**Input:** The invested resources which enable a firm to obtain the desired output are called input (Wisconsin-Extension, 2003). According to APO (2008) input usually consists of 4M; Man, Machine, Material, Method. In measuring productivity and its components in the banking industry, the input can include labour, capital, deposit (Chandrasekharvand Sonar, 2008; Fukuyama and Weber, 2002).

**Output:** Output means services or goods achieved and are ready to be utilized (OECD, 2001). Bank outputs can be defined as prepared services and products that are received by the customers. Also, the result of such transactions is assumed to be output measures (Swierczek and Shrestha, 2003) can compromise of total loans, investments or the number of teller transactions.

**Outcome:** Outcome relates to input, process as well as output and implies the firms' objectives and strategies. Bank outcomes can include non-interest and net-interest income depending on the policy goals of the banks that is maximizing them (Kumar and Gulati,2009) and profits (Moradi-Motlagh, 2011).

**Investment and Partnership:** A specific division of banking related to the creation of capital for other companies. In the banks' balance sheet, this item is considered as an asset that is divided into investment in listed companies, legal partnership and direct investments, as well as foreign investments.

**Loans and Advances:** The amount is in the form of loans; refers to the sum paid to the borrowers. Advances is a facility given to borrowers. Loans and advances granted by commercial banks are highly beneficial to the public sector, subsidiaries as well as other parties. It is considered as an asset in the balance sheet (Central Bank of Iran, 2011).

**Deposit:** According to Invetopedia Dictionary, deposits refer to the amount of money placed by customers in a bank. It is considered as the bank's liability in the balance sheet. For Iranian banks, deposit accounts are divided into savings account without interest, current account and investment account adhering to the Islamic jurisprudence (Central Bank of Iran, 2011).

**Analytic Hierarchy Process (AHP) Method**: Saaty (1990) has developed a multi-criteria decision making (MCDM) method which is helpful for decision-makers in solving complex, multi-criteria decision problems based on pair-by-pair comparisons in various fields such as political, social, management and economic

sciences. Several papers on the application of the AHP method in various fields have been published, with the oldest one by Saaty (1972).

**Fuzzy AHP Method:** Despite its wide usage, the AHP method is often criticized for its inability to unify the inherent ambiguity and inaccuracy related to converting the decision-maker's understanding of exact numbers (Deng, 1999). In order to overcome this problem, the Fuzzy AHP was developed (Mikhailov and Tsvetinov, 2004). Fuzzy AHP method enables decision-makers to declare approaching or flexible priorities applying fuzzy numbers at which adding fuzziness to the input implies adding fuzziness to the judgment (Feng, 1995; Erensal *et al.*, 2006; Wang *et al.*, 2008).

## 1.9 Plan of the Thesis

This study comprises of 5 chapters: Introduction, Literature Review, Research Methodology, Results and Findings, Conclusion and Recommendations. The first chapter describes the outline of this research which includes a research background concerning productivity and its own financial service determinants in the Iranian banking industry. In addition, this section briefly outlines the history of the banking industry in Iran and explains some points related to Mellat Bank and Melli Bank. Problem statement, objectives, research questions, and significance of the problem are also discussed in this chapter. The chapter includes a list of research significance and key terms. In the following Chapter 2, relevant literature on productivity and partial productivity, as well as effectiveness and efficiency were reviewed. In addition, chapter 2 discusses the effectiveness and efficiency measurements as well as their qualitative and quantitative influencing factors.

Chapter 3 discusses the mixed method approach employed in this study. The chapter first presents the research design with its conceptual and theoretical models. Then, the researcher explains the Modified Delphi Method that includes its approaches and questionnaires, and steps in determining the input, output and

outcome. The Fuzzy AHP method is discussed with the aid of with tables, logical steps and questionnaires.

The Fourth chapter reports on the findings from testing the conceptual model. Therefore, this chapter highlights the results of this study. Finally, chapter 5 discusses the conclusions on the findings. In addition, this chapter highlights the contributions from and suggestions to managers and researchers.

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