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IDENTIFYING THE BEST PRACTICES IN TRADITIONAL AND
ELECTRONIC BANKING OPERATIONS STRATEGIES IN
DEVELOPING ECONOMIES (THE CASE OF JORDAN)

Balancing resources with customer expectations in rapidly developing
business environment

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IDENTIFYING THE BEST PRACTICES IN TRADITIONAL AND
ELECTRONIC BANKING OPERATIONS STRATEGIES IN DEVELOPING
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Key Words: Traditional Banking, Electronic Banking, Operations Strategy, Developing Economies, Jordan.

Abstract

The aim of this study is to identify the best practices in traditional and electronic banking operations strategy in Jordan as a case study of developing economies over the period 1999 to 2008. During this period numerous changes faced banks in Jordan: new banking law was launched, the banks were directed towards complying with the Basel Accord II, and the banks adopted more e-banking channels.

Only the practices of all local banks were investigated due to their superior performance. A number of questionnaires were used to collect the data from different individuals in these banks. Further, annual reports were analysed and websites were reviewed.

Two data-analysis approaches were used to identify the key strategies of traditional and electronic banking in Jordan: competitive position analysis and cluster analysis. Analysis revealed eight best practices of traditional banking and four best practices of electronic banking were adopted.

Best practices are presented as prediction models. These models combine actions with capabilities and performance. The traditional banking predication models are: branches urban accessibility, branches sites accessibility (percentage of sites covered), branches sites accessibility (number of branches sites covered), account transaction time, new credit product flexibility, account customer waiting time, account transaction cost, loan approval costs, and branches layout quality. The e-banking prediction models are: Internet banking transaction time, telephone banking volume flexibility, ATM suburban accessibility, and ATM sites accessibility.

This research revealed that; financial performance achieved by e-banking strategy patterns is significantly lower than traditional banking. Also customers satisfaction, retention, and deposit market of e-banking are significantly lower than traditional banking, which indicates that the best operational practices in Jordan are still more traditional oriented despite the significant direction of banks in Jordan toward adopting e-banking channel.

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List of Acronyms

Acronym	Meaning
ACD	Automatic Call Distributor
ANI	Automatic Number Identification
AO _x	Action Score for Bank (X)
AS _{p1}	Action Score during first period
AS _{p2}	Action Score during second period
ATM	Automatic Tellers Machine
BP	Best Performance Score
BRP	Bank Relative Performance
CCTV	Closed Circuit Television
CPRC _i	Competitive Position Relative Capability according to indicator (i)
CCS _x	Change in Capability Score during period (X)
CS ₍₂₀₀₇₋₂₀₀₈₎	Capability Score during period (2007-2008).
CPSC _x	Change in Performance Score for Cluster (X).
CPS _x	Change in Performance Score for bank (X).
CAS _x	Change in Action (X) Score.
CAS _{px}	Change in Action Score during Period (X)
CTI	Computer Telephone Integration
CRM	Customer Relation Management
DNI	Dial Number Identification
EDSL	Ethernet Digital Subscriber Line
FAQs	Frequently Asked Questions
IMF	International Monetary Fund
2.5/3G	2.5/3 Generation
GNI	Gross National Income
GDP	Gross Domestic Production
HDI	Human Development Index
ISDN	Integrated Service Digital Network
IVR	Interactive Voice Response
J.D.	Jordanian Dinar
JONET	Jordanian Automatic Teller Machine Network
JPSC	Jordan Payment Service Corporation
LAN	Local Area Network
MMS	Multi-Media Short Messages
N	Number of Banks
N _{pi}	Number of Performance Indicators
N _p	Number of Periods

Acronym	Meaning
OS/2	Operating System/2
PBX	Private Automatic Branch Exchange
PCCS _x	Percentage of change in Capability (X)
PIN	Personal Identity Number
POS	Point of Sale
P _x	Performance for Bank (X)
RAO _i	Relative Action score according to indicator (i).
RAO _t	Relative Action score during period (t).
RC _x	Relative Capability for bank (X).
ROA	Return on Assets
ROE	Return on equity
ROI	Return on Investment
ROS	Return on Sales
RP _i	Relative Performance according to performance indicator (i).
RP _t	Relative Performance during the period (t).
SIM	Subscriber Identification Module
SOA	Service Oriented Architecture
SMS	Short Messages Service
SSMS	Structured Short Messages Services
SSL	Security Socket Layer
TCP/IP	Transmission Control Protocol/ Internet Protocol
TSL	Transport Layer Security
UN	United Nations
UNSD	United Nations Statistical Department
UNDP	United Nations Development Project
USSD	Unstructured Supplementary Service Data
WTO	World Trade Organization
USD	United States Dollar
VAN	Value Added Network
VoIP	Voice over Internet Protocol
WAN	Wide Area Network
WAP	Wireless Application Protocol

Chapter 1

Thesis Introduction

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1-1 Introduction:

The purpose of this chapter is to introduce the research project to provide the reader with general overview of the study project. Accordingly, the research aim motivation, objectives, Gaps, contribution and structure are discussed.

1-2 Research Aim and Motivations

This research aims to identify the best practices of traditional banking and electronic banking operations strategies in Jordan over the period 1999 to 2008. This period was chosen as a result of the banks' direction towards more adopting of electronic banking.

Accordingly, it is hoped this research helps decision-makers in Jordan to continue the expansion of their electronic services in a planned and well-articulated strategy for the long run, in order to have customer satisfaction and increase the banks' profitability, as well as how to improve traditional banking operation strategies in the e-banking era.

Moreover, the new banking law was launched at the end of 2000 along with the electronic transaction law at the end of 2001 as a part of financial sector reforms in Jordan. These laws direct banks towards developing IT competencies, relying more on electronic data, using technologies for organizing their operations (Kassim 2002), and enhancing risk-monitoring systems (Damak & Hassoun 2007).

The banks in Jordan at the beginning of 2008 complied with the Basel Accord II (Khamis 2003; Al-Rjoub 2005), which affected the operations competencies (Pennathur 2001; OCC 2003); since the Basel Accord II directs banks towards managing and measuring operational risks (Hasan 2002).

The Jordanian economy is service oriented; the capital invested in the service sector in 2006 was 88% of the total capital invested (Ministry of Industry and Trade

2006), and its contribution in the GDP in 2006 represents 54% (Central Bank of Jordan 2006). Further, Jordan's banking sector is a key pillar in the national economy, acquiring 56.4% of the total capital invested in the Amman Stock Exchange in 2006 (Amman Stock Exchange 2006).

On the other hand, Jordan is one of the countries in the Middle East and North Africa that has a well-developed, profitable and efficient banking sector, and has rigid banking supervision regulations that are Basel Accord II compliant. Moreover, the banking sector in the Middle East and North Africa has performed very well in comparison to other developing-country regions (Creane *et al.* 2004).

On the other hand, some banks in Jordan have a leading position in the Middle East and North Africa in e-banking as Jordan Kuwait Bank; this bank was one of the best consumer Internet banking providers in the Middle East and North Africa in 2005 (Trajhova 2005). Standard and Chartered in Jordan was also the best in corporate and institutional Internet banking in 2007 (Keeler 2007).

1-3 Research Objectives

- 1- Using the literature to identify the performance indicators of the banking sector, traditional and electronic banking operation competitive capabilities, and actions.
- 2- Using the literature to develop patterns of best practice in traditional and electronic banking operations strategy.
- 3- Identifying the best operations competitive capabilities were adopted by banks in Jordan over the period 1999–2008.
- 4- Identifying the significant operations actions which achieved the best operations competitive capabilities over the period 1999–2008.
- 5- Constructing the patterns of best practices in traditional and electronic banking operational strategies in Jordan over the period 1999–2008.

1-4 Research Question

This thesis seeks to answer one research question:

What were the best practices in traditional and electronic banking operations strategies in Jordan over the period 1999 to 2008?

1-5 Research Gaps

1-5-1 General Gaps

1- Limited Conceptual Contribution of Service Operations Strategy

The theoretical stance of the competency of operations strategies, as determined by the degree of fit between the market requirements and the strength and weaknesses of the operations strategy, have been developed conceptually by manufacturing strategy researchers (e.g. Skinner 1969, 1974; Wheelwright 1984; Kotha & Orne 1989; Vickery 1991; Hill 1995; Ward *et al.* 1996).

However, the conceptual contribution of service operations strategies is still limited (e.g. Armistead 1990; Armistead & Clark 1993; Kellogg & Nie 1995; Lowson 2002; Roth & Menor 2003) and affected by the manufacturing operations strategy literature.

2- Limited Empirical Contribution of Service Operations Strategy

The percentage of research contributions for strategy and objectives of operations in service was 7.2% out of 260 published articles in 10 leading journals over the period 1997 to 2002 (Machuca *et al.* 2007). However, the percentage of published articles in five leading journals between 2003 and 2008 declined to 5%.

Accordingly, numerous calls for broader research, particularly on service, are required to broaden our understanding of service operations strategies and performance. This is especially true for longitudinal studies that evaluate the capabilities of service operations strategies dynamically (Roth & Menor 2003).

Moreover, the percentage of previous academic studies of operations strategies conducted in financial institutions and insurance companies was 4.6% over the 1997 to

2002 period (Machunca *et al.* 2007), but the percentage of published articles in five leading journals declined over the 2003 to 2008 period to 2%.

Despite the financial sector in general and the banking sector in particular constituting a superior laboratory for many types of market competitiveness and performance research, this sector is also a dynamic one that faces competition from non-bank financial services firms (Roth & Jackson 1995).

3- Limited Empirical Contribution of Service Operations Strategy in Developing Countries

The majority of service operations strategy studies have been conducted in the USA, and there is thus a lack of studies in developing countries, which directs the researchers towards more investigation in developing countries (Badri *et al.* 2000).

4- Limited Empirical Contribution of Electronic Service Operations Strategy

The majority of contributions have focused on traditional operations; the strategic contribution of electronic operations is a neglected area of study (Barens *et al.* 2002 2003 & 2004). Few studies have paid attention to the process of building distinctive competencies in electronic operations (daSilveria 2003).

Accordingly, more research is needed to guide electronic operations managers to insure that the operational capabilities of an electronic service can support their organisation's objectives (Heim & Field 2007). Moreover, the strategy of traditional banking operations requires more investigation during the era of e-service, which raises the question of what are the traditional models of competitive operations strategy used to achieve sustainable advantage (Olivera *et al.* 2002; Barnes *et al.* 2003).

1-5-2 Specific Gaps

1- Limited Reporting for the Practices of Followers banks

Previous studies reporting on best practice, such as those of Metters and Vargas (2000), Powers and Hahn (2004), and Lavayssiere *et al.* (2008), focused on the practices of leading banks; the practices of followers were beyond their attention.

2- No reporting for Best Practice in Traditional and Electronic Banking Operations Strategy Across banks

Previous studies, such as those of Metter and Vargas (2000), and Lavayssiere *et al.* (2008) focused on reporting the best practices of individual cases, and the practices across banks were not covered.

3- Limited Empirical Studies in Developing Countries

Best practices were traced in developed countries. Whereas, for example, the studies of Metter and Vargas (2000), Menor *et al.* (2001), Power and Hahn (2004), and Safer (2006) were conducted in the USA, and the study of Lavayssiere *et al.* (2008) investigated in-depth cases in the UK, France, Spain and the Netherlands, only one study was conducted in a developing country (the Philippines): the study of Chu-Mei (2001).

4- Limited Developed Typologies of Traditional and Electronic Banking Operations strategy

The study of Metter and Vargas (2000) developed typologies of best practices oriented towards traditional banking; no typologies were developed for electronic banking operation strategies.

1-6 Research Contributions

- 1- The most significant traditional and electronic banking operations competitive capabilities and actions of banks in Jordan were identified in this thesis. These significant practices were presented in models (called best-practices patterns), which predict the impact of changes in operation capabilities on performance and predict the required actions to achieve the capabilities. These models present the relationships in simple and straightforward practical context (*see* Chapter 6 & 7). All these models were presented using Microsoft Excel Spreadsheets which help in presenting the prediction by the researchers and decision-makers in Jordan and other developing countries (*see* attached CD).

- 2- Proposed typologies for traditional and electronic banking operations strategies were developed as presented in the literature chapter (*see* Chapter 5). These typologies help in constructing the patterns (prediction models) of best practices in Jordan. These typologies help the researchers of banking operations strategy in developing the patterns (prediction models) of operations strategy in other country context, and also help the decision-makers in identifying which factors should be focused on to improve particular capabilities, and as a result, performance.

1-7 Thesis Structure

Chapter 2

This chapter summarises the economic and social data about developing economies (e.g. regions classification, education index, life expectancy index, economic structure, etc.), and further summarises data about the banking sector (e.g. performance, ownership structure, etc.), banking operation strategy, and customer preferences in developing economies. The purpose of summarizing all of these facts is to develop a background of developing economies to help in recommending applications of best practices for banks in developing economies.

Chapter 3

The purpose of this chapter is to discuss the methodologies adopted by previous studies to report the best operations strategies; further, this chapter summarises best practices in banking operation strategy.

Chapter 4

The purpose of this chapter is to show how the research question was answered; accordingly, this chapter discusses the different phases of this research project. The phases were classified according to research objectives, so the data-collection and analysis methods used to achieve the objectives are reviewed, and the general methodology of this research is identified.

Chapter 5

The purpose of this chapter is to achieve the first and second objectives. The classifications of traditional and electronic banking operations actions, competitive capabilities and banking performance indicators were identified by reviewing the

literature. Moreover, the relationship between actions, capabilities and performance indicators are identified. Finally, proposed typologies of traditional and electronic banking operations strategies are developed. The typologies developed in this chapter help to construct patterns (prediction models) of best practices, so the initial maps the link the actions with capabilities and performance indicators were developed by revising the proposed typologies.

Chapter 6

The purpose of this chapter was to develop best-practices prediction models (best-practices patterns) using competitive position analysis. This approach involves a thirteen-stage process, with the logic of each stage being discussed along with the relation of each stage with the next. Furthermore, many examples were used to facilitate understanding of the stages of the analysis. The patterns of best-practices prediction models are presented at the end of this chapter; these models are compared and conclusions consequently formed.

Chapter 7

The purpose of this chapter is to develop best-practices prediction models (best-practices patterns) using different analysis approaches (cluster analysis) to see how different analysis approach led to different best-practices prediction models, which improve the understanding of best practices. This approach is an eleven-stage process, with the logic of each stage discussed and the relation of each stage with the next is also reviewed. Moreover, many examples are used to facilitate understanding of the stage of the analysis. The best-practice prediction models (best-practice patterns) are presented at the end of this chapter, where these patterns are compared and conclusions are consequently formed.

Chapter 8

The purpose of this chapter is to show how a decision support system (DSS) was developed from the prediction models of both analysis approaches using Microsoft Excel Spreadsheets. This chapter discussed the reason behind combining the models of both analyses approached together in one DSS.

Chapter 9

The purpose of this chapter is to discuss patterns of best practice (best-practice prediction models). The discussion covers: the justification of the relations between model variables, the national and institutional competencies required to realise each best-practice model, and how the banks in other developing-country regions could benefit from these models.

Chapter 10

Conclusion of the dissertation is presented, then, the academic and practical applications are recommended, the practical applications focused on how the banks in different developing countries regions could benefit from the best-practice patterns (prediction models). The academic applications focused on the methodological and conceptual applications, next the proposed future researchers are recommended.

1-8 Conclusion:

The motivation to conduct this research project was the significant adoption of e-banking in Jordan during the period 1999 to 2008. Five objectives were identified to achieve the research aim and answer the research question. The subject of service operations strategy in general and banking best practice in particular is neglected area of study, so the contributions of this research are; identify the most significant capabilities

and actions, present the best practice as prediction models and develop typologies of banking operations strategy. This thesis includes ten chapters.

Chapter 2

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2-1 Introduction

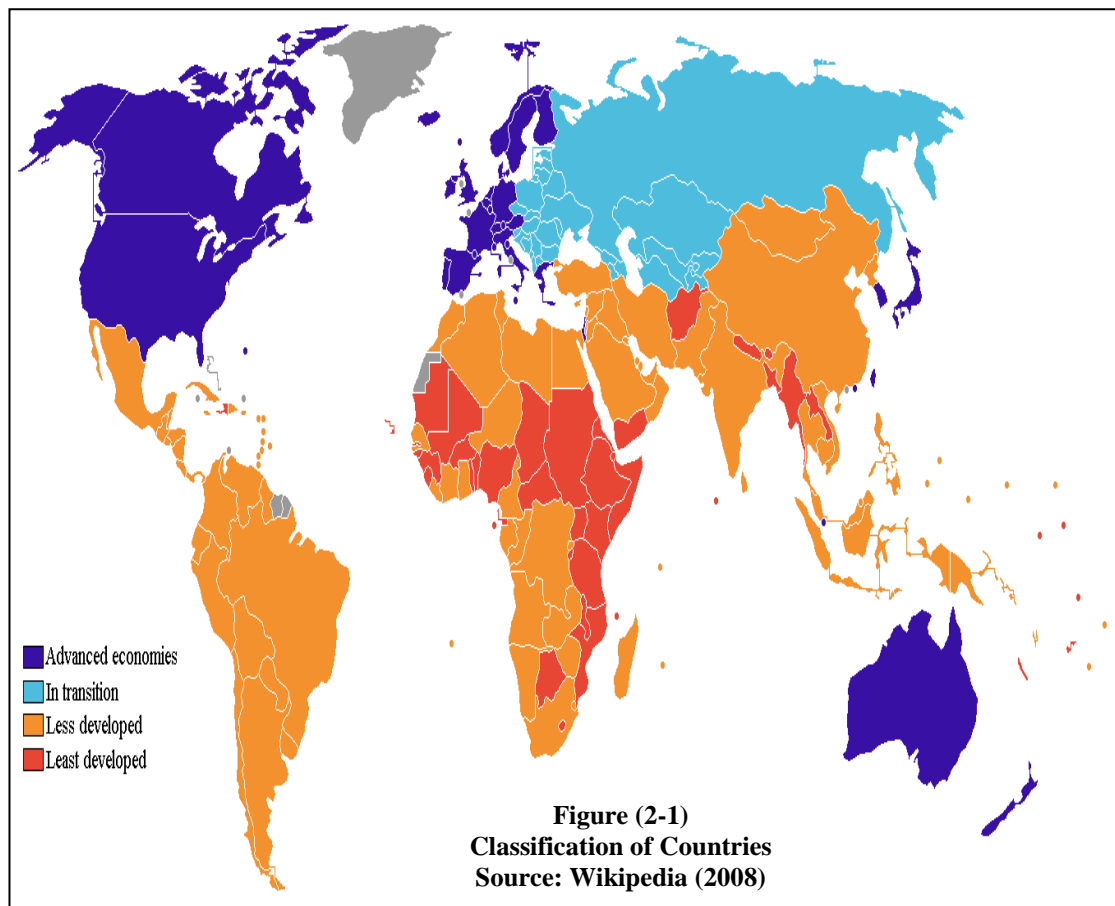
The purpose of this chapter is to develop a background of developing countries to help in recommending applications of best practices for banks in developing countries. This chapter is divided into 7 sections, beginning with an overview of the developing countries. In this section the regional classification of developing countries is identified, and each region is described according to indicators such as human development indices, economic indicators and technology diffusion.

Then, a brief overview of Jordan as country in the Middle East and North Africa region is presented according to the same indicators. Next, the banking sector in developing countries and Jordan is described in terms of ownership structure, performance, retail banking and banking sector reforms.

The remaining sections discuss operations competitive capabilities, priorities and strategies in terms of electronic and e-banking in developing economies and Jordan. The discussion revolves around the comparison of developing with developed economies, and Jordan with other developing economies.

2-2 Overview of Developing Economies

The world's countries have been categorised according to different criteria by different international organisations. According to the International Monetary Fund (IMF), the countries could be classified by two categories: 1) advanced economies, and 2) emergent and developing economies (IMF 2008a). On the other hand, the United Nations Statistics Department (UNSD) classifies the world into 1) developed regions, and 2) developing regions; developing countries are further classified into: a) countries in transition, b) less-developed countries, and c) least-developed countries (UNSD 2008) (*see* Figure (2-1)).



The International Monetary Fund (IMF) issues a publication of country classification twice a year in April and September. The main criteria used in this classification are per capita income level, exports diversification, and the degree of integration into the global financial system (IMF 2008b).

The number of developing and emergent countries according to the IMF is 141, which are classified into the following regions: Africa, Africa: Sub-Saharan, Central and Eastern Europe, the Commonwealth of Independent States and Mongolia, Developing Asia, Asian-5, the Middle East, and the Western Hemisphere (IMF 2008a).

On the other hand, despite the United Nations (UN) categorizing countries according to the level of per capita income, the categorization of countries as least developed is done according to the following criteria: low income, measured based on a

three-year average estimate of GNI (Gross National Income) per capita (under USD 745 for inclusion, above USD 900 for graduation) (UN-OHARLIS 2009).

The United Nations (UN) categorization is also done according to human capital measured by nutrition, health, education and adult literacy rate, and an economic vulnerability index that is measured by population size, merchandise exports, share of agriculture, forestry and fishers in the GDP, homelessness owing to natural disasters, instability of agricultural production, and instability of export of goods and services (UN-OHARLIS 2009).

According to the United Nations Statistics Department (UNSD), the regions of developing countries are: Africa, America excluding North America, the Caribbean, Central America, South Africa, Asia excluding Japan, and Oceania excluding Australia and New Zealand (UNSD 2008). However, the United Nations Development Project (UNDP) classifies countries into the following regions: Arab states and Pacific, Latin America and Caribbean (including Mexico), South Asia, South Europe, and Sub-Saharan Africa (UNDP 2007).

Furthermore, the World Trade Organisation (WTO) does not have a definition for developed or developing countries; members announce whether they are developing or developed countries. Nevertheless, the United Nation's definition of least-developed countries is adopted (WTO 2009).

On the other hand, the World Bank's main classification criteria are gross national income (GNI) per capita. Thus, every economy is classified as low income (USD 935 or less), lower-middle income (USD 936–USD 3,705), upper-middle income (USD 3,706–USD 11,455), and high income (USD 11,456 or more); low income and middle-income economies are classified as developing countries (the World Bank 2008).

Developing countries occupy the following geographic regions, according to the World Bank: East Asia and Pacific, Europe and Central Asia, Latin America and Caribbean, Middle East and North Africa, South Asia, Sub-Saharan Africa (World Bank 2008).

Transition economies are countries with economies that have changed from centrally planned economies to free markets. These countries' economies undergo macroeconomic stabilization and economic liberalization, and include the former USSR/Eastern Europe (Havrylyshyn & Wolf 1999).

Less-developed countries are those not as rich as the industrialised countries of Western Europe and North America. These countries have a lot of natural resources but do not have an industry to use them, so the resources are sold to the countries which can use them. These countries are known as third-world countries; their GDPs are generally below USD 5,000 and more than USD 1,500, however other high per capita income areas of advanced technology has rapid rate of growth and newly industrialised countries are included in this category (Wikipedia 2008)

However, least-developed countries are the poorest and weakest segment of the international community, with extreme poverty. The current list of least-developed countries includes 49 countries: 33 in Africa, 15 in Asia and the Pacific, and 1 in Latin America (UN-OHARLIS 2009). These countries exhibit the lowest indicators of socio-economic development, or lowest Human Development Index ratings, of all countries in the world (UNDP 2007).

On the other hand, some economic writers, such as Antoine Van Agtmael, prefer to use a more positive term than ones such as "third world countries", and he coined the concept "emerging markets" (*The Economist* 2008). This phrase is defined in terms of economics and levels of wealth: emerging markets are economies with low-to-middle

per capita income (*Financial Times* 2006). These economies are experiencing rapid informationalisation under conditions of limited or partial industrialization (Center for Knowledge Societies 2008).

Emergent economies can be classified into three subcategories: 1) advanced emerging, 2) secondary emerging, and 3) frontier. Emergent markets includes 48 countries according to the FTSE, there are 6 advanced, 16 secondary emergent countries and 23 frontier markets. The criteria used by the FTSE for classification are: a) market and regulatory environment, b) custody and settlement, and c) dealing landscape (FTSE 2008).

As previously discussed, developing economies are those that have achieved a low-to-moderate level of industrialization and standards of living, whether these countries are categorised as transition, less-developed or least-developed, or advanced emerging, secondary emerging, or frontier markets.

The average annual growth of population in developing countries over the period 1975 to 2005 was 1.9%, which is more than developed countries by 1.1%. The infant mortality rate per 10,000 people in 2005 was 57, which is higher than in developed countries by 48 (UNDP 2007), reflecting the bad healthcare in these countries in comparison with developed countries.

Also, the life expectancy rate for developing countries at birth is 66.1, which is lower than for developed countries by 12.2 years, also reflecting better healthcare in developed countries in comparison with developing countries. The adult literacy rate in developing countries is 76.7%, and the gross enrolment ratio for primary, secondary and tertiary education is 64.1%, lower than developed countries by 24.5% (UNDP 2007), showing that developed countries are more concerned about education than developing countries.

The economy of developing countries is dominated by the service sector, which employs approx. 46%. However 34% is accounted for by agriculture and 19% by the industrial sector. The service sector contributes to the GDP by 63.33%, though GDP per capita (PPP) in developing countries is USD 5,282, which is lower than in developed countries by USD 23,915 (UNDP 2007).

Finally, the technology diffusion index in terms of number of subscribers to telephone mainlines per 1,000 people is 132, which is lower than developed countries by 113. Moreover, the index for cellular phone is 229 per 1,000 people, which is lower than developed countries by 556. The index for Internet is 86 per 1,000 people, which is lower than developed countries by 359 (UNDP 2007).

2-3 Overview of Jordan

Jordan is officially known as the Hashemite Kingdom of Jordan. It is a constitutional monarchy with a representative government. Jordan is one of the developing countries located in Middle East and North Africa region. An Arabic country in South West Asia, it shares borders with Iraq to the north-east, Saudi Arabia to the east and south, Syria to the north, and Palestine to the west (*See Figure (2-2)*).



Jordan occupies 89,231 km² (34,445 mi²), with a water area of 328 km² and land area of 88,884 km² (Ministry of Tourism and Antiquities 2008). The total population of Jordan is 5.5 million, with a population growth of 3.3 (*see* Table (2-1)), which is more than other developing and developed countries (UNDP 2008).

The dominant ethnic group in Jordan is Arab, representing 98% of the population. Minorities represent 2%, half of them Circassia and the remainder Armenian. The majority of people are Sunni Muslims at 92%; Christians represent 6%, and the remainder is Shai Muslim and Druze. The official language in Jordan is Arabic, though English is widely understood too (Central Intelligence Agency 2009).

Concern about the health sector is represented by a higher life expectancy rate in comparison with other developing countries by 6.1 years (UNDP 2008). The health sector in Jordan is led by the private and public sectors; the total number of hospitals is 42, with a capacity of 6,479 beds. The total number of private hospitals is 56, with a

capacity of 3,600 beds, and the total number of clinics and medical centres is 1,107 (Ministry of Health 2006).

Furthermore, there is a clear concern about education, as reflected by a greater literacy rate in comparison with other developing countries by 16% (UNDP 2008) (*see* Table 3-1). Concern is also reflected in the capital invested in this sector, which was 24% of total the capital invested in the service sector in 2005 (Department of Statistics 2005).

The total number of schools in Jordan is 5,498, with 3,182 public schools, 178 UNARW schools and 2,138 private schools (Ministry of Education 2006). The number of universities in Jordan is 24, with 10 public and 14 private ones (Ministry of Higher Education 2006).

Table (2-1)**Human Development Index of Jordan**

(adopted from: UNDP (2008))

Human Development Index (HDI)		Relative to Middle East Region	Relative to Developing Countries	Relative to Developed Countries	World Out of 179 countries
Life expectancy at birth (Years)	72.2	+4.7	+6.1	-6.1	Ranked 78
Adult literacy rate (% age 15 and above)	92.7	+22.4	+16	--	Ranked 54
Combined primary, secondary and tertiary gross enrolment ratio (%)	78.7	+13.2	+14.6	-10.1	Ranked 61
GDP per Capita (PPP USD)	4,654	-2,062	-528	-24,543	Ranked 105
Life expectancy index	0.782	+0.074	+0.097	-6.1	
Education index	0.868	+0.181	+0.143	0.044	
GDP per capita Index	0.670	-0.032	+0.002	-0.277	
HDI	0.769	+0.070			Ranked 90
Level	Medium				
Total population (2005)	5.5 million				
Population growth rate (1975–2005)	3.5%	+0.9	+2.6	+2.7	

The Jordanian economy is service oriented as represented by its percentage in the GDP and the employment rate (*see* Table (2-2)). The service sector constituted 65.9% of the GDP in 2005 (Central Bank of Jordan 2007), which is higher than other sectors; furthermore, this sector employs more than 70% of the labour force (UNDP 2008), or approx. 1 million out of 1.615 million (Central Intelligence Agency 2009).

Moreover, the capital invested in the service sector in 2006 was 88% of the total capital invested (Ministry of Industry and Trade 2006). The banking sector in Jordan is a key pillar in the national economy, acquiring 56.4% of the total capital invested in the Amman Stock Exchange (Amman Stock Exchange 2006).

Table (2-2)

Economic Indicators of Jordan

The Economic Indicators		Relative to Middle East Region	Relative to Developing Countries
GDP by Economic Sectors (2006) Central Bank of Jordan (2007)			
Agricultural sector	3.9	--	--
Industrial sector	30.2	--	--
Service sector	65.9	+17.9	+2.63
Average growth in GDP per capita (01–06)	6.2%	+2.9	+1.06
Employment rate by Economic Sectors (2005) UNDP (2007)			
Agricultural sector	4%	-19.5%	-30.20%
Industrial sector	22%	-23.5%	+3.20%
Service sector	74%	+19.5%	+27.93%
Income per Capita (2006) IMF (2008b)			
GNI per capita	USD 2,850	-3,860	-1,725
Level of income	Lower Middle		
Trade balance as a percentage of GDP	-41%	-25%	-37%

On the other hand, the Jordanian service sector is a leader in comparison with other developing countries in terms of participation percentage in the GDP and in terms of employment. However, Jordan is a laggard in terms of level of income and trade balance (*see* Table 2-2).

Concern about technology in Jordan is represented by its leading position in the Middle East in terms of telephone mainline and cellular phone subscribers and Internet (*see* Table (2-3)).

Table (2-3)

Technology Diffusion Indicators of Jordan

(Adopted from: UNDP (2008))

Technology Diffusion Indicators (2005)		Relative to Middle East Region	Relative to Developing Countries	Relative to Developed Countries
Telephone mainline (per 1,000 people)	119	+13	-13	-332
Cellular phone subscribers (per 1,000 people)	304	+20	+75	-481
Internet users (per 1,000 people)	118	+30	+32	-327

The number of companies operating mobile phone services in Jordan is 4, with 1 company operating fixed telecommunication services, 1 company operating pager services, 2 Internet service providers, and 84 companies selling prepaid cards (Telecommunication Regulatory Commission 2006).

2-4 Overview of the Banking Sector in Developing Economies

The ownership structure of the banking sector in developing countries is classified into three types of owners: 1) domestic private banks, 2) domestic public or state-owned banks, and 3) foreign banks (Micco *et al.* 2006). Developing countries have more public and foreign bank than developed countries (*See Table (2-4)*).

Historically, the majority of banks in developing countries have been owned by the public sector, with few owned by local owners; however, during the 1990s the governments were directed towards privatizing public banks and opening the market to foreign investors (Hanson 2003).

Changes in ownership structure were pushed by the financial crises that occurred during this period (Hanson 2003) and the fall of the communist block in the early 1990s (Stubos & Tsikripis 2004). For example, the fall of the communist block directed the countries of southeast Europe towards privatizing the banking sector and the heavy presence of foreign owned banks (Stubos & Tsikripis 2004; Kosak & Cok 2008).

Furthermore, the banking sector of many countries in the East Asia region and especially the crisis-affected countries have undergone major restructuring efforts, often with major government involvement, by the government taking some of the banks over, but recently many of the nationalised banks have been sold to the private sector, mostly to the domestic investors or foreign owners (Laeven 2005).

Furthermore, one of the consequences of the Mexican financial crisis was a significant change in the structure of banks ownership; as a result, countries in Latin America and the Caribbean were directed towards deregulating the banking industry and opening it up to domestic and foreign investors (BIS 2007).

Domestic banks in developed countries have more shares in comparison with developing countries, but public and foreign banks have more shares in developing countries (*see* Table (2-4)). About 20% of all foreign banks in developing countries are owned by banks from other developing countries (Horen 2007).

Foreign banks are in the majority in sub-Saharan Africa and Latin America, though domestic banks have more than 50% of the share in the Middle East and North Africa, East Asia and the Pacific, and Latin America, but the public banks in South Asia have the largest share in comparison with other regions in developing countries, at approx. 56%.

Public banks in general tend to be more profitable in developing countries (Micco *et al.* 2006), but foreign banks in developed countries tend to be more profitable (Horen 2007). However, foreign banks in developing countries tend to be more profitable than domestic banks (Micco *et al.* 2006).

Furthermore, public-owned banks in developing countries tend to have lower profitability, lower margin and higher overhead costs than comparable private banks; public banks in developing countries also tend to have higher employment ratios than domestic private and foreign banks (Micco *et al.* 2006).

Table (2-4)**Ownership Structure and Performance of Banking Sector in Developing Economies**(Source: Micco, *et al.* (2006))

Region	Ownership	Market Share	ROA	Overhead Cost Relative to Total Assets	Employment Rate Relative to Total Assets
Caribbean	Domestic	49%	1.56	5.51	1.00
	Public	32%	1.88	3.51	1.00
	Foreign	19%	2.78	3.48	0.91
Eastern Asia and the Pacific	Domestic	55%	0.95	1.9	1.00
	Public	25%	0.54	1.36	1.00
	Foreign	20%	1.62	2.03	0.86
Eastern Europe and Central Asia	Domestic	44%	1.31	5.47	1.00
	Public	33%	1.1	4.02	1.08
	Foreign	23%	1.57	4.35	0.78
Latin America	Domestic	52%	1.38	5.06	1.00
	Public	19%	0.72	5.77	1.05
	Foreign	30%	1.19	5.03	1.00
Middle East and North Africa	Domestic	57%	1.4	1.84	1.00
	Public	30%	0.93	1.76	1.13
	Foreign	13%	1.15	1.72	0.92
South Asia	Domestic	34%	1.04	2.44	1.00
	Public	56%	0.54	2.64	1.02
	Foreign	10%	1.68	2.07	0.44
Sub-Saharan Africa	Domestic	43%	1.85	4.92	1.00
	Public	16%	1.77	4.47	1.00
	Foreign	41%	2.51	5.05	1.00
Developing Countries	Domestic	48%	1.93	4.19	1.00
	Public	26%	0.94	3.12	1.01
	Foreign	26%	1.71	4.15	0.91
Developed Countries	Domestic	70%	0.75	1.79	1.01
	Public	10%	0.42	1.16	0.82
	Foreign	20%	0.55	1.69	0.92

The banking services provided by banks in developing countries can be classified according to the kind of customers served: corporate, personal or retail banking. Retail banking is the leading sector of the banking industry in developing countries and the world generally; this sector generated a revenue by EUR 1,280 billion in 2006, or about 75% of the global banking revenue pool (Lavayssiere *et al.* 2008), and this sector will continue to dominate banking revenue worldwide by 2015 (Leichtfuss *et al.* 2007).

As presented in Table (2-5), developed countries were the leaders in the retail banking sector in contrast with developing countries. The revenue was generated by these countries represented 73% of the global revenue generated by retail banks, whereas the revenue was generated by the developing countries represented 25% of the global revenue.

Table (2-5)
Revenue Generated by Retail Banks Worldwide

(Adopted from: Lavayssiere, *et al.* (2008)).

Regions	Revenue Generated in 2006 (in EUR billions)	Relative to Total Revenue Generated
Developed countries		
North America	433	0.34
West Europe	350	0.27
Japan	125	0.10
Australia	30	0.02
Total	938	0.73
Developing countries		
Rest of America	95	0.07
Rest of Europe	85	0.06
China	35	0.03
India	25	0.02
Rest of Asia	35	0.03
Middle East and Africa	50	0.04
Total	325	0.25

Accordingly, the best-performing retail banks were primarily located in high-income markets, whereas retail banks in the rest of America performed better than other developing countries, followed by rest of Europe, then the Middle East and Africa.

However, non-banking customers in emerging markets will start banking during the next generation, especially the customers in India, Brazil and China; accordingly, radical changes in the revenue will be generated by these countries, especially after the last economic crisis, which affected developed countries more than developing countries.

2-5 Overview of the Banking Sector in Jordan

The financial and banking sector took ground in Jordan as early as 1925 when the first bank, the Ottoman Bank, was established in the Emirate of Transjordan, as it was then called (Arab Advisors Group 2007). The banking sector in Jordan is well developed in comparison with other sectors in the Middle East and North Africa except the Gulf region and Lebanon (Greene *et al.* 2004).

This sector is controlled by the Central Bank of Jordan, which was established in 1964. The number of licensed banks in Jordan at the end of 2007 was 23, which are subdivided into 15 local private banks (2 of them Islamic) and 8 foreign private banks (5 of them Arabic) (Association of Banks in Jordan 2007).

Table (2-6)

Ownership Structure and Performance of Banks in Jordan

(Adopted from: Association of Banks in Jordan (2007))

Performance Indicators	Local Private Banks	Foreign Private Banks
Market share		
Deposits share	98.96%	1.31%
Loans share	98.21%	1.79%
Average share	98.45%	1.55%
Financial performance		
ROA	1.64	1.56
ROE	13.12	11.86

Private local banks have approx. 98% of the market share for both deposits and loans whereas foreign banks have less than 2%. The performance of local banks is also better than that of foreign banks in terms of ROA and ROE (*see* Table (2-6)).

Banking services covered the majority of the Kingdom's regions through a wide network of branches consisting of 559 branches and 79 offices (Association of Banks in Jordan 2007). The services provided by the traditional banking system are numerous, classified into personal, corporate, private and SME services.

Personal banking operations in Jordan represent a significant percentage of the total banking operations: the total retail customer deposits in 2006 reached J.D. 5,370 million, which represents 67% of total deposits in Jordanian banks. In addition, personal loans reached J.D. 3,642.2 million, which represents 37.3% of total loans provided by Jordanian banks in 2007 (Association of Banks 2007). This sector is therefore strategic for the majority of banks in Jordan.

During the last few years the financial sector in Jordan has been reformed. The broad objective of this reform was to enhance corporate governance, lower credit costs, diversify financial sector products, develop the corporate broad market and implement the international standards and codes (Khamis 2003).

The most important actions of the reform affected the banking sector operations directly were: the new banking law (2000), the electronic transaction law (2001) and the compliance with the Basel Accord II. The new banking law was launched mid-2000, which focused on enhancing the banks' risk-monitoring systems, improving bank reporting and database warehousing and providing incentives for stronger compliance and governance at domestic level, as well as closing the gap with sound for international supervision practices (Damak & Hassone 2007).

On the other hand, the Electronic Transaction Law (2001) was launched on February 2002 aimed to facilitate the use of electronic means in transaction procedures. This law included 7 chapters and 41 articles (Central Bank of Jordan 2008), and has been criticised by some electronic banking researchers in Jordan who viewed it as a barrier towards the adoptability of electronic banking (Siam 2006).

The last reform action that proposed to impact the banking operations was the Basel Accord II. Jordanian Banks adopted the new standard approach of the Basel II capital framework by 2008, and the Central Bank of Jordan has already published a comprehensive set of regulations regarding risk weights pertaining to different asset classes (Damak & Hassone 2007).

2-6 Traditional Banking Operations Strategies, Competitive Capabilities and Priorities in Developing Economies and Jordan

2-6-1 Traditional Banking Operations Competitive Capabilities in Developing Economies

Few empirical studies have been conducted to evaluate the competitive capabilities of traditional banking operations in developing and developed economies. The majority of available studies focused on branch accessibility (e.g. Reserve Bank of Australia 1996; Matthews 1999; Matthews & Ding 2006; Beck *et al.* 2007).

Furthermore, few studies covered transaction time (e.g. Frei *et al.* 1998; Patzwald 2006; Beck *et al.* 2007), transaction costs (e.g. Kamesan 2003) and branch design quality (e.g. Backer *et al.* 1988). On the other hand, other aspects of operational performance such as flexibility, process security and process quality have not been covered.

Despite the limitation of these studies we have some indicators. Branch accessibility in developing countries according to number of branches per 10,000 people was approx. 6 branches and for developed countries approx. 30 branches per 10,000 people. Moreover, about 12 branches were available in a 1,000 km² radius in developing countries, whereas in developed countries approx. 32 branches were available in a 1,000 km² radius (Beck *et al.* 2007).

The accessibility indicators in developing countries changed over time; for example, the number of branches available in 1983 per million was 385, which decreased to 336 in 1994 (Reserve Bank of Australia 1996). Accessibility per 10,000 people was 3.85 in 1997 and decreased to 3.10 in 2002 (Matthews & Ding 2006), but the accessibility indicator of developed countries has not changed over time.

The region of developing countries that had the best accessibility indicators in terms of per 10,000 people and 1,000 km² radius was the Middle East and North Africa, but the region that had the lowest accessibility indicators in terms of 10,000 people was Sub-Saharan Africa, and in terms of 1,000 km² Latin America and the Caribbean (Beck *et al.* 2007).

On the other hand, the time required to approve consumer loans in developing countries was about 5 days and in developed countries about 4 days. Mortgage loans were approved in 15 days in developing countries and 13 in developed countries. The developing region that approved the consumer loans in the shortest time was Latin America and the Caribbean, though sub-Saharan Africa performed the best in terms of mortgage loan approval time (Beck *et al.* 2007).

According to other studies, 36% of surveyed banks in the Middle East and Europe approved mortgage loans within 5 days, 28% within 2 to 3 days, and 9% within 24 hours (Patzwald 2006). The employee activity time to open chequing accounts was

approx. 54 minutes and the customer time was 42 minutes (Frei *et al.*, 1998). The cost of transferring funds internationally in developing countries was close to those of developed countries, approx. USD 7 for USD 250 transferred (Beck *et al.* 2007).

2-6-2 Traditional Banking Operations Competitive Capabilities in Jordan

Table (2-7)

Summary of the Results of Previous Studies of Traditional Banking Operations Capabilities in Jordan

Author	Jordan	In comparison with other developing countries	In comparison with developed countries	In comparison with the Middle East region
Branches accessibility				
Beck <i>et al.</i> (2007)	5.95 branches per 1,000 km ²	-6.59	-26.28	-15.86
	10.02 branches per 10,000 people	+3.3	-20.44	-4.38
Beck <i>et al.</i> (2006)	1.93 branches to open account	-0.22	-0.21	-0.21
	2.05 branches to fill loan application	-1.25	-1.27	-1.27
Transaction time				
Beck <i>et al.</i> (2007)	2.68 days to approve consumer loan	-2.81	-1.20	-1.84
	7.24 days to approve mortgage loan	-8.17	-5.81	-14.07
Transaction cost				
Beck <i>et al.</i> (2007)	USD 5.37 for USD 250 costs for the international transfers of funds	-0.12	-1.35	-1.04

Previous studies of traditional banking operational capabilities in Jordan are limited, with only two studies providing some statistics about Jordan as part of a worldwide survey, with one surveying 3 Jordanian banks out of 23 (Beck *et al.* 2007) and the other only 1 bank out of the 23 banks (Patzwald 2006).

According to these surveys, the accessibility of bank branches in Jordan was lower than in other banks in developed and developing countries, and the banks approved consumer and mortgage loans within a shorter time. Fund transfer costs were also lower in comparison with other developing and developed countries (*see* Table (2-7)).

2-6-3 Traditional Banking Operations Competitive Priorities in Developing Economies

Previous studies tracing the competitive priorities of traditional banking focused on the attitude of customers in terms of the criteria that motivate them to deal with particular banks. Numerous such studies have been conducted in developed and developing countries.

Customers in some developing countries, such as Taiwan, shared the selection criteria of convenience, competency and free banking with customers in developed countries such as the US and Canada (Blankson *et al.* 2007). Customers in Turkey also shared the criteria of friendly employees, closer branch location to their home, and fast and efficient service (Kaynak *et al.* 1991) with customers in Canada (Lorche *et al.* 1986).

Customers in Poland shared the selection criteria of reputation, rates, service and convenience of location (except for quick services) (Kennington *et al.* 1996) with US customers (Anderson *et al.* 1976; Bayd *et al.* 1994).

However, customers in other developing countries had different selection criteria than in Hong Kong: customers selected banks according to service, physical facility, external factors, promotional factors, customer treatment, and consumer benefits (Kaynak & Kucukemiroglu 1992). In Malaysia the most important factor was convenience (Wel & Nor 2003), followed by fast and efficient service, friendliness of bank personnel, and recommendations by friends or relations (Haron *et al.* 1994).

Moreover, customers in the Middle East shared the same selection criteria as their counterparts in other countries: the customer in Jordan chose banks that are more efficient and fast, have a good reputation and image, and are more confidential (Erol & El-Bdoar 1989; Erol *et al.* 1990), whereas in Bahrain the most important factors were

technology, reputation, convenience, financial benefits and employee customer interaction (Almossawi 2001).

Customers in Egypt selected banks on grounds of speed and efficiency (Hegazy 1995). Another study found that the customers in Egypt, Kuwait and Saudi Arabia shared the same selection criteria: staff competency and speed of service (Metwally 1996). However, the most important issue to consider in studying the bank selection criteria in Middle Eastern and Islamic countries is to what extent are their differences in customer readiness towards selecting Islamic and conventional banking services?

Previous studies indicate that religious conviction is not often the only concern in the selection of Islamic banks, and some studies have found little evidence of substantial differences in the key selection criteria between Islamic and conventional customers (Gait & Worthington 2007).

Customers in Jordan, whether dealing with Islamic or conventional banks, shared the same selection criteria (Erol & El-Bdoar 1989; Erol *et al.*1990), as was case in Egypt. Customers of both conventional and Islamic banks selected banks according to speed and efficient (Hegazay 1995).

Furthermore, no differences were found between customers of conventional and Islamic banks in Egypt, Kuwait and Saudi Arabia (Metwally 1996), the same result found in other Islamic countries, such as Malaysia (Haron *et al.* 1994), but another study conducted in Jordan found that the most important factors motivating the use of Islamic banks were reputation and the religious beliefs (Naser *et al.* 1999).

2-6-4 Traditional Banking Operations Strategies in Developing Economies

The research contribution on traditional banking operational strategy is still limited and the topic needs further investigation, but some data is addressed in these limited studies which could be helpful in shedding some insight on operational strategies.

According to previous studies, banking operational strategies in some developing countries such as the Philippines could be aggregated into four strategic patterns: 1) the customer relations strategic group, 2) the bank service strategic group, 3) the promotion strategic group, and 4) ratters (Chu-Mei 2001).

Furthermore, in developed countries such as the USA, the banks' operations strategies could be classified into 1) agile and 2) non-agile (Menor *et al.* 2001), or 1) the focus strategy group, 2) the cost leadership group, 3) the customer service group, and 4) the differentiation group (Power & Hahn 2004).

Banks in developing countries such as India were directed during the period 1977 to 1997 towards opening more branches in rural areas (Burgess & Paunde 2003); accordingly, more than 50% of branches are now located in rural and semi-urban areas (Sachan & Ali 2006).

However, in other developing countries such as Namibia, branches are heavily biased towards urban areas (Kaakunga *et al.* 2004), whereas in other countries like Egypt, the increase in the numbers of branches in urban and rural areas were very close: 6% for urban branches in 2006 and 4.5% for rural ones (Nasr 2006).

Banks in developed countries like the US were directed towards opening more branches during the last years; the branch network was expanded during the period 1993 to 2003 (Hirtle 2007). The number of branches in the US increased by about 38% to just less than 70,000 between 1990 and 2004, and in 2005 alone the banking industry had a

3% annual growth rate of 2,255 net additional branch offices (Grover & Freris 2007), also more direction towards opening branches in suburban areas (Reider 2006).

Other developed countries' banks, e.g. New Zealand, opted during the period 1994–1998 towards closing branches. The number of branches fell from 1,510 to 976 (Matthews 1999).

The process design strategies in developing countries differ between banks; for example, in the Philippines different strategic groups have different process designs; the differentiation is directed towards more automation, asking customer about their needs regularly, activated complaint systems, expansion of the range of products provided, and concern for improving the skills of staff (Chu-Mei 2001).

Further, the focus differentiator and agile group in developing countries shared the majority of process design characteristics of differentiation group in Philippines. However, the service strategy group focused on process automation, a wide range of service offered in each branch, but the promotion Strategy Variety of services, and focus on advertising (Chu-Mei 2001).

Agile banks in the US increased control over electronic data-transfer networks, improved the flexibility of tellers through lower supervision and broadening their range of tasks (Menor *et al.* 2001). However, the focus strategy group focused on a narrow or limited range of services or products, emphasis on marketing specialty, but the cost-leadership group focused on trained and experienced personnel and major expenditure on technology-based systems to lower costs, and the customer service differentiation focused on extensive customer service capabilities (Power & Hahn 2004).

Moreover, 23% of retail banks in Europe and the Middle East provided their employees with real-time access to customer transaction data and customer satisfaction

data. Two-thirds of the banks analysed the customer data on a regular basis, with 45% of the banks automated the advisory system to front-line employees, and 34% of the banks had some automated process for opening current accounts, and 42% of the banks had some automated process for credit approval (Patzwald 2006).

On the other hand, the Agile banks in the US focused on improving the physical working conditions in branch (Menor *et al.* 2001). The majority of US banks focused on the following design factors: branch age, exterior attractiveness, number of branch ATMs, number of employees and "wakeup" and "drive-up" Windows facilities (Boufounou 1995). Furthermore, some of the branch layouts were modern whilst other banks had traditional layouts (Greenland & McGoldrick 2005).

2-6-5 Traditional Banking Operations Strategies in Jordan

No previous study has discussed the operational strategies of traditional banking operations in Jordan. Therefore this section was developed according to data available in the "achievement" section of available annual reports over the period 1999–2008.

The analysis was conducted using the following content-analysis methodology:

- 1- Develop a checklist of all operational decisions.
- 2- Review the "achievement" sections of available annual reports and summarise the operational decisions made for each bank annually.
- 3- Identify strategic decisions from 2- above.
- 4- Fill in the checklist for each bank accordingly.
- 5- Identify the frequencies of banks making the decisions for each year, then grouped into four periods.

The results of the content analysis were as follows (*see* Table (2-8)):

- 1- The significant structural operational decisions which had been adopted by 50% or more of local banks in Jordan during the 2004–2006 were branch-opening decisions (93%) and process routing (93%), and no significant infrastructural decisions had been adopted.
- 2- Thus, the widely made structural decisions by retail banks in Jordan were branch-opening decisions (88%) over the 2001–2008 period, followed by branch redesign (85%), then process routing (69%), and finally process simplification (50%). However, the widely made infrastructural decisions were the improvement of information systems (80%) followed by network development (69%).

The branches were concentrated in Amman and some branches opened in other urban areas. The direction towards redesign of branches was as a result of the

changing identity of some banks, or the change of some offices to branches, or the direction towards changing the role of branches to that of sales hubs.

Changes in branch designs covered a wide range of issues, such as departing the branches to units as SMEs, corporate or personal banking, expanding branch size, adding customer service units, improving security and safety aspects (e.g. CCTV and alarms systems for fires and theft).

The change in the roles branches required more availability of process routes as; ATM, Internet banking, SMS, and telephone banking. Moreover this required the re-engineering and redesign of the procedures, as well as applying the concept of universal teller, and thus the information system had been replaced accordingly.

The new system changes covered changing the architecture of the information system to be distributed architecture (client-server), so PCs replaced terminals, changing the software to a more open-environment one, such as Unix, Linux or Windows. Furthermore, there was the centralization of branch operations into a back office, so there was more concern about integration between branches and between branches and headquarters or centralised back offices.

As a result, there was more investment in networking, and the banks moved towards using Internet technology such as e-mail and intranet, as well as improving the telephone system to operate using IP protocols, and the installation of digital communication technology such as leased line transfer protocol. The high focus on IT infrastructure was for the purpose of complying with the Basel Accord II, as well as to link the banks' branches directly to returned cheques unit in the Central Bank of Jordan (CBJ), this action is required by the CBJ.

Table (2-8)
Operational Strategic Decisions Made by Local banks in Jordan

Operational decisions	1999–2000		2001–2003		2004–2006		2007–2008	
	No. N=15	Freq.	No.	Freq.	No. N=15	Freq.	No. N=15	Freq.
Structural decisions								
Process design								
Process decoupling	0	0	3	0.2	3	0.2	1	0.07
Process simplification	1	0.07	7	0.5	1	0.07	0	0
Process routing	4	0.27	9	0.6	14	0.93	8	0.53
ATM	0	0	2	0.13	0	0	0	0
Internet banking	2	0.13	1	0.07	10	0.7	5	0.33
Mobile banking	1	0.07	4	0.27	3	0.2	3	0.2
Telephone banking	3	0.2	2	0.13	1	0.07	0	0
Branches location decisions								
Opening	2	0.13	15	1	14	0.93	10	0.7
Closing	3	0.2	2	0.13	0	0	0	0
Merger	1	0.07	1	0.07	2	0.13	1	0.07
Relocate	0	0	2	0.13	4	0.27	0	0
Branches redesign								
Redesign	3	0.2	10	0.7	15	1	5	0.33
Capacity management								
Chase demand	0	0	3	0.2	2	0.07	0	0
Level capacity	0	0	0	0	0	0	0	0
Infrastructural decisions								
IT decisions								
IS replacement	1	0.07	11	0.73	13	0.87	4	0.27
Network improvement	4	0.27	10	0.7	6	0.67	2	0.13
Between branches	3	0.2	6	0.4	2	0.13	1	0.07
Between branches and headquarters	1	0.07	4	0.27	4	0.24	1	0.07
CRM	2	0.13	2	0.13	4	0.27	1	0.07
System security	1	0.07	2	0.13	6	0.4	2	0.13
Software replacement	1	0.07	5	0.33	2	0.13	0	0
Recovery and backup	0	0	3	0.2	6	0.4	1	0.07
Quality control and risk management								
Quality control	2	0.13	4	0.27	6	0.4	0	0
Risk management	0	0	3	0.2	3	0.2	1	0.07
Workforce decisions								
Cross selling and sales hub	0	0	1	0.07	0	0	0	0
Training managers and employees on sales skills	0	0	1	0.07	2	0.13	1	0.07

2-7 Electronic Banking Operations Strategies, Competitive Capabilities and Priorities in Developing Economies and Jordan

2-7-1 Electronic Banking Operations Competitive Capabilities in Developing Economies

The average accessibility of ATMs in developing countries was significantly lower than in developed countries per 10,000 people in 2006, at 7.91 for developing and 68 for developed countries. Furthermore, the accessibility per 1,000 km² in developing countries was significantly behind that of developed countries, at 83 for developed countries and approximately 23 for developing countries (Beck *et al.* 2007).

The accessibility of ATMs per 10,000 people was improved in developed countries between 1998 and 2002; it was 6 in 1998 (Matthews 1999) and expanded to 7 in 2002 (Matthews & Ding 2006). Accessibility per 1 million was also improved: from 214 ATMs in 1983 to 438 in 1994 (Reserve Bank of Australia 1996).

Moreover, the number of transactions processed by each ATM in developed countries fell between 1998 and 2002: from 67,750 transactions in average in 1998 to 45,083 transactions in 2002 (Matthews & Ding 2006). This may be as a result of the increase in the number of ATMs, but no evidence of the number of ATM transactions was processed by ATMs in developing countries.

On the other hand, the transaction costs of ATMs in certain developing countries such as India were between USD 0.33 (Sachan and Ali 2006) and USD 0.4 per transaction, which was higher than other developing countries such as Brazil (Porteous 2006) and some developed countries, such as USA (Kurtas 2000).

Furthermore, the transaction costs of ATMs in some developing countries, such as India, were lower than the transaction costs of telephone banking (USD 0.58). In

Brazil, telephone transaction costs were USD 0.9, which was higher than ATM and Internet banking transactions costs. However, ATM and telephone banking transaction cost was higher than Internet banking transaction cost in some developing countries (e.g. India) (Sachan & Ali 2006).

The same case obtained in developed countries: ATM transaction costs were lower than telephone banking transaction costs and higher than Internet banking transaction costs. The transaction costs of telephone banking in the USA are between USD 0.35 (Morisi 1996) and USD 0.54, but for Internet banking it is about USD 0.01 per transaction (Kurtas 2000). Moreover, e-banking transaction costs in developed countries such as the UK are lower than those of branch transactions by 11 times (Jayawardehena & Foley 2000).

However, banking transactions processed through e-banking channels in developing countries were very close to their counterparts in developed countries. In Hong Kong, transactions provided by all channels were balance checks, credit card and bill payments, and fund transfer (Wan *et al.* 2005). The transactions provided by ATMs and mobile banking in South Africa were fund transfers and balance checks (Ivatury & Pickens 2006).

In Malaysia and Thailand transactions provided via Internet banking were balance checks, fund transfers, bill payments, savings and current account management, card services, order cheques, fixed deposit placements, and bank statement requests (Abdul Hamid *et al.* 2007).

In developed countries such as the UK, services provided via Internet banking were very close to those provided in Turkey, which included basic services, and credit and third-party services (Sayar & Wolfe 2007). The quality of Internet banking services encountered differed between countries in developing countries: usability was low in

Taiwan (Wu *et al.* 2004) and the functionality of United Arab Emirates (UAE) banks was basic (Awamleh & Frenandes 2005).

However, the overall quality indicator of Tunisian banks was moderate and security was highly improved. The lowest indicators were information order and ease of use (Achour & Bensedrine 2005). In Malaysia and Thailand, however, the navigation and communication aspects were high (Abdul Hamid *et al.* 2007).

Internet-banking service-encounter quality was very high for banks in developed countries; for US banks the indicators of simplicity, observability and trainability were more than 60% (Kolodinisky *et al.* 2004). The overall indicator for banks in Spain was 78% (Miranda *et al.* 2006) and the usability of Spain banks was 71.9% (Hernandez-Ortega 2007). The UK banks' service encounter was very high in terms of education but low in terms of customisation (Sayar & Wolfe 2007).

2-7-2 Electronic Banking Operations Competitive Capabilities in Jordan

Despite the limited studies tackling the capabilities of electronic banking operations in Jordan, some studies have been conducted in recent last years. These studies focused on ATMs and the Internet, so there is no evidence available about the performance of telephone and mobile banking (*see* Table (2-9)).

The accessibility of ATMs in Jordan was higher than the Middle East and North Africa by approx. 3 per 10,000 people, but lower than the Middle East and North Africa by approx. 15 per 1,000 km². Furthermore, the quality of Internet-banking service encounters was more than satisfactory at over 50%, and thus very close to that of banks in UK. On the other hand, the costs of Internet banking transactions were cheaper than for ATMs.

Table (2-9)

Summary of Results from Previous Studies: Performance of Electronic Banking Operations in Jordan

Author	Channel	Service accessibility		Transaction Time	Transaction Cost	Service Range Flexibility	Service Encounter Quality
Beck <i>et al.</i> (2007)	ATM	Per 10,000 people	Per 1,000 km ²				
Almazari and Siam (2008)	ATM Internet				Internet transaction cheaper than ATM.		
Migdadi (2008a)	Internet						No difference between banks in Jordan and the UK in terms of quality of service encounter
Migdadi (2008b)	Internet					Content 46.25 out of 50.	Navigation 13.25 out of 15. Speed 6.38 out of 15. Accessibility 6.26 out of 15. WAI = 71.69%.

2-7-3 Electronic Banking Operations Competitive Priorities in Developing Economies

The factors motivating customers in Singapore to adopt Internet banking are: 1) simplicity of procedures, 2) accessibility, 3) ease of use, and 4) the proficiency of the customer in the use of the Internet (Gerrord & Cunningham 2003). The factors that determined the overall quality of service in Internet banking in Hong Kong were: 1) credibility, 2) efficiency, and 3) problem handling (Siu & Mao 2005). The adoption of mobile banking in Malaysia was influenced by perceived ease of use and usefulness (Aim *et al.* 2008).

The three dimensions that motivated customers to use Internet banking in the UAE were: 1) independence, 2) convenience, and 3) security (Awamleh & Frenandes 2005), but in Saudi Arabia, the most influential factors in motivating customers to use Internet banking were: 1) efficiency (download speed and ease of information retrieval) and security.

On the other hand, banks in Jordan desired to adopt Internet banking to achieve a competitive advantage and as a response to changes of customer needs towards more fast transactions (Siam 2006) and low transaction costs (Siam 2006; Arab Advisors 2007).

According to a study conducted in Kuwait on the behaviour of ATM customers, the reasons for using ATMs were: convenience and ease of use, and the main reasons for not using ATMs were preferences for a human teller, lack of marketing efforts and security concern. The most frequent complaints about ATMs were: 1) ATM breakdown, 2) lack of knowledge of the range of ATM stations, 2) improper maintenance, 4) lighting, and 5) inconvenient location (El-Haddad & Almahmeed, 1992).

On the other hand, the most important problems associated with ATM use in South Africa and the USA were: 1) waiting in long queues, 2) inconvenient physical location, and 3) the interface (Roger *et al.* 1996; Thatcher *et al.* 2005). However, hackers and frauds were the barriers to the adoption of online banking in china (Laforet & Li 2005). The reasons for not using Internet banking by Australian customers were that they did not have a clear idea of the benefits of Internet banking, as well as the prices (Milind 1999).

The factors determined customer use of Internet banking in developed countries such as the UK and Australia were: 1) security, 2) usability, 3) navigation, and 4) accessibility (Waite 2006; Milind 1999). The UK also had a) high level of functionality (Jayawardhena & Foley 2000), b) accuracy of electronic banking operations, c) service personalisation, d) friendly and responsiveness customer service (Ibrahim *et al.* 2006), e) efficiency, f) visual appearance (Joseph *et al.* 2005), and g) speed (Daniel 1999).

However, the factors determined customer use of ATMs in the UK were: 1) convenience of location, 2) secure service, 3) specialised service for disabled people, 4) acknowledging by name on the screen during transaction, 5) user-friendly system, and 6) services provided in a number of different languages (Joseph *et al.* 2005).

On the other hand, the customer in the USA perceived the reliability of Internet banking as the most important factor, followed by ease of use, product portfolio, responsiveness and the competency of customer services (Yang *et al.* 2004). Beyond these, the following aspects were also significant: 1) learning or training to use e-banking, 2) ease of understanding and use Internet banking, and 3) safety and risk of Internet banking (Kolodinsky *et al.* 2004).

The factors determined customer use of ATMs in US were: 1) location in upscale consumer area, 2) secure location, 3) convenience and accessibility, 4)

explanation of proper use quick service (Stevenson *et al.* 1986), and 5) accuracy (Roger *et al.* 1997).

2-7-4 Electronic Banking Operations Strategies in Developing Economies

Generally speaking, there is no clear evidence about electronic banking operational strategies in developing countries; there are also very limited contributions available about this issue in developed countries (only four studies). The typologies of electronic banking operational strategies have not been developed and the research contributions are concentrated on the Internet banking channel.

As much as 90% of US banks concerned about the informational role of their Internet banking service encounters. In Turkey and the UK, banks more concerned about clear education of customers by providing them with clear instructions and animations about how to conduct the transactions, and how to have more secure transactions (Kaynak *et al.* 1991).

Furthermore, the majority of Turkish and the UK banks concerned about the authentication of customers, requiring them to pass through two layers of identification: the first one was Internet banking customer ID number, the second a random PIN number and password, or date of birth and random characteristics from the security number, or a password and random characteristics of a memorable word (Kaynak *et al.* 1991).

Finally, according to some cases traced in the USA, Japan and Europe, the Internet banking models used were clicks-and-mortar. The USA cases started as clicks, then added branches or offices for locals. In Japan the brick banks added the channel of Internet banking. However, in Europe Internet banking was provided for local and internal markets, which impacted the number of local branches (which were reduced).

2-7-5 Electronic Banking Operations Strategies in Jordan

The banks in Jordan adopted a high amount of e-banking channels since early 2000; these services were: 1) Internet banking, 2) automatic teller machines, 3) mobile banking, 4) Internet shopping cards, 5) money transfers, and 6) phone banking and cyber branches (Sahawneh 2003). The most commonly adopted e-channels by banks in Jordan were: 1) ATMs, 2) Internet banking, 3) mobile banking, 4) telephone banking, and 5) money transfer. The least adopted were Internet shopping cards and cyber branches.

2-7-5-1 Automatic Teller Machines (ATMs)

The widely used and adopted electronic services by banks and customers in Jordan were ATM services. The total number of ATM machines in Jordan reached 724 in 2006, a 9.2% growth in comparison to 2005, with the greatest concentration of ATMs in the capital (Amman), though they were also widely available throughout the rest of the country (Association of Banks 2007).

The growing numbers of ATMs in Jordan were a result of the increase in the number of different plastic card users, especially for Visa cards, which represented 90% of all cards used, far surpassing the number of cards issued by MasterCard and American Express (Banking 2004). Approximately 95% of Visa cardholders used their cards at ATMs and POS, whilst the majority of customers in Jordan use their cards mainly for ATMs and cash withdrawals (Banking 2004).

The wide use and acceptance of ATM services in Jordan is found throughout the Middle East. ATM and POS networks in the Middle East are proving to be already ahead of their Western Europe counterparts. The function of ATMs in Europe is primarily for simple cash withdrawals, but in the Middle East, transaction services are

significantly more complex, largely due to the unusual demographics of the region (Mehta 2005).

With the aim of increasing the convenience and availability of ATM services, the five Visa members, the Housing Bank for Trade and Finance, the Arab Bank, the Jordan Investment and finance Bank and the Cairo Amman Bank established the Jordan Payment Service Corporation (JPSC), which reformed to be the Visa Jordan Card Services (VJCS) in 1998 (VISA Jordan Card Services 2008a).

The majority of ATM machines in Jordan are interlinked with the national Jordanian automatic teller machine network (JONET). This service was created in 1997 by the JPSC, which allows Jordanian banks to connect their host computers and ATMs to a switch (network) (VISA Jordan Card Services 2008b).

The cards accepted by JONET are: Visa, Visa Electron, Plus Master, Maestro, American Express, JVB and Cirrus. The number of JONET member banks operating in Jordan is 19, 3 foreign bank branches and the remaining are local banks (Visa Jordan Card Services 2008b).

2-7-5-2 Internet Banking

The early adoption of Internet banking in Jordan arose in 2000 at the instigation of two banks: the Arab Bank and Standard Chartered Bank (Siam 2006). From 2001 to 2003 the banks in Jordan did not fully utilise the concept of web banking in comparison to developed international markets such as that of the US (Awamleh *et al.* 2003).

During this period, as surveyed by Awamleh *et al.* (2003), only two banks offered a limited number of services through their websites. No Jordanian bank offered online account-opening services or online investment application services. Websites were largely used as informational vehicles to provide detailed institutional information,

promotional information, branch locations and detailed information about the board of directors, contact details, and information on special events.

Such limited applications of Internet banking in this period reflect the limitations in the adoption of Internet banking in the Middle East, which was still in its infancy in 2000 (Gurn *et al.* 2003). Moreover, in 2001 only 18 out of the Middle East's 100 top banks had online transactional capabilities, as reported by Southwell (2001).

However, banks in Middle East in general and in Jordan in particular moved in recent years towards the adoption of more new technologies and expansion in the use of Internet banking as a response to customer needs; accordingly (Southwell 2001).

Furthermore, Jordanian banks' desire to adopt the Internet was to achieve a competitive position and as a response to the changes in customer needs towards low costs and faster transactions (Siam 2006), as well as push costs onto the customer (Arab Advisors 2007).

The adoption of Internet banking in Jordan has increased dramatically during the last few years; the number of banks adopting Internet banking increased from 2 in 2000 to 14 banks in 2008 out of the 23 banks operating in Jordan; the type of players in Internet banking in Jordan is of the clicks-and-mortar model (Migdadi 2008a).

Despite this recent adoption of Internet banking in Jordan, some banks maintain a competitive position in the Middle East and Africa, for example the Jordan Kuwait Bank, one of the best consumer Internet banking providers in the Middle East and Africa, and to of the league in terms of bill payment (Trajhova 2005). Another is Standard Chartered Bank in Jordan, which ranked top in corporate and institutional Internet banking in 2007 (Keeler 2007).

Banks in Jordan are competitive in terms of the quality of Internet banking service encounters in comparison to clicks-and-mortar and dot com. banks in the UK. The level of service-encounter quality is more than satisfactory, with no significant differences found between banks in Jordan and the UK in terms of accessibility, navigation, content and speed (Migdadi 2008a).

The majority of Internet banking users in Jordan is in the young-with-high-incomes demographics category (Siam 2006). Performance expectancy, effort expectancy, social factors and gender will impact customer intention in Jordan to adopt Internet banking (AbuShanab & Pearson 2007).

Bank website are rich in informational content, and all banks adopting Internet banking provide card and account services (100%), fund transfer services (95%) and bill payment services (75%) (Migdadi 2008b). Accordingly, banks in Jordan, as recommended by Siam (2006), should continue to expand their electronic services in a planned and well-articulated strategy.

2-7-5-3 Mobile Banking

Mobile banking services have been provided by banks in Jordan since 2000. The numbers of banks providing this service in Jordan was 15 in 2008, 12 local and 3 foreign banks. The service provided is mainly push SMS, though some banks provide pull SMS and limited number of banks provide WAP mobile banking services.

2-7-5-4 Telephone Banking

This service was launched by banks in Jordan at the beginning of the 1990s, and now many banks provide this service: 11 in total, of which 9 are local banks and 2 foreign banks. The services provided are numerous: balance enquires, last transactions details,

fund transfers between accounts, new chequebook requests, and bank statements by fax or mail.

2-8 Conclusion

According to the IMF, developing countries are those have moderate-to-low GNI per capita, and these are classified into different regions: 1) the Middle East and North Africa, 2) Sub-Saharan Africa, 3) Eastern Europe and Central Asia, 4) East Asia and the Pacific, 5) North Asia, and 6) Latin American and the Caribbean. These countries have moderate HDI (Human Development Index), their economies are service oriented, and the diffusion of technology in these countries is significantly lower than in developed countries.

Jordan is one such developing country in Middle East. It has moderate HDI its economy is service oriented, but the diffusion of technology in Jordan is better than other countries in Middle East region. The majority of banks in developing countries are owned by private local owners, with a minority of banks are owned by foreign private owners and state governments. In Jordan the majority of banks are owned by the local private sector and the minority are owned by foreign banks.

Branch accessibility in developing countries in terms of 10,000 people is significantly lower than in developed countries but has changed over time. Moreover, developing countries are very close to developed countries in terms of loan approvals. Jordan has better branch accessibility, shorter loan-approval time and lower international fund transfer costs than other developing and developed countries.

The majority of banks in developing and developed countries moved towards opening more branches in recent years. The significant traditional banking operational strategies were adopted by retail banks in Jordan during the last ten years: opening

branches, branch redesigns and process routing, and significant infrastructural decisions were IS (Information System) improvements or replacements and network improvements.

The average accessibility of ATMs in developing countries was significantly lower than in developed countries. ATM transaction costs in developing and developed countries were higher than for telephone banking, and telephone banking transaction costs were lower than for Internet banking. The services provided by e-banking channels in developing countries were the same as their counterparts in developed countries.

The quality of Internet banking service encounters in developing countries differed between banks, but in developed countries it remained consistent and high. In Jordan the average ATM accessibility ranked higher than for other banks in the Middle East region. Internet banking service encounters' quality were more than satisfactory and very close to those of banks in the UK.

The evidence about e-banking operational strategies in developing countries is still limited, so no conclusions about these strategies could be summarised. The banks in Jordan have adopted different channels of e-banking (Internet, mobile, ATM and telephone); the most widely adopted is ATM, followed by Internet. The majority of ATMs in Jordan are linked together via JONET. The functionality of Internet banking was expanded during recent years. The majority of banks in Jordan adopting push SMS, though the telephone banking call centre is widely adopted.

Chapter 3

Best Practices in Banking Operations Strategy

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3-1 Introduction

The purpose of this chapter is to review and criticise the methodologies adopted by previous studies to report best practices in operations strategies. This chapter also summarises the best practices found by these previous studies.

3-2 The Importance of Reporting Best Practices in Operations Strategy

The best practices are streams of actions best adopted by a company that has led to the best change in performance (Laugen *et al.* 2005). Accordingly, reporting best practices helps decision-makers make decisions leading to best performance. Therefore, previous studies (such as Quesada-Poneda *et al.* (2007)) have developed a database of best practices to provide to decision-makers.

The best practices of operational strategies have become a research issue since the middle of the 1990s. The majority of studies reported best practice in manufacturing institutions (e.g. Mortia & Flyun 1997; Voss *et al.* 1997; Ulusoy & Ikiz 2001; Van landeghem & Persoons 2001; Laugen *et al.* 2005; Quesada-Poneda *et al.* 2007). However, limited reporting of best practices in banking institutions (e.g. Frei *et al.* 1996; Metter & Vargas 2000; Powers & Hahn 2004; Lavayssiere *et al.* 2008).

Researchers can help decisions-makers in the banking sector by further reporting best practices. The majority of previous studies focused on tracing best practice in traditional operations rather than reporting best practice in electronic operations. In the era of e-banking, decision-makers are more interested in best practices of electronic banking, which could be a research issue.

3-3 Methodologies of Studying Best Practices in Operations Strategy

The majority of previous studies in the field of manufacturing best practice adopted quantitative survey methodologies (e.g. Mortia & Flyun 1997; Voss *et al.* 1997; Ulusoy & Ikiz 2001; Van landeghem & Persoons 2001; Laugen *et al.* 2005). However, the majority of previous studies in the field of banking operations best practices adopted qualitative case study methodologies (e.g. Frei *et al.* 1996; Metters & Vargas 2000; Lavayssiere *et al.* 2008). Adopting of survey methodology could generate a longer list of best practices so a best-practice database could be generated, but case study methodology helps in analysing best-practice actions in more depth.

All previous studies were snapshot studies rather than time-series studies, and snapshot studies do not allow for the investigation of changes in performance; they only focus on reporting exiting performance. Moreover, and the improved practices that led to best changes in performance cannot not be identified. By adopting a snapshot study methodology, the researcher is not able to identify the practices that sustained a best performance over an extended period of time.

Best practices were identified by some cases using a benchmarking technique, which means identifying the group that adopted the world-class practices, then comparing the practices of the remaining cases against the best practices group. Thus a list of best practices can be identified and the performance is evaluated to see if adopting the best practices has led to best performance. This methodology has been adopted by some studies, such as those of Mortia and Flyun (1997) and Quesada-Poneda *et al.* (2007).

The adoption of benchmarking technique requires previous knowledge of the researchers about the best practices group. This grouped can be defined by identifying the cases that awarded the world wide excellence prizes; this was done by Quesada-

Poneda *et al.* (2007), or identifying the cases that previous study reported as having adopted world-class operational strategies.

Another method is ranking cases according to manufacturing performance from low to high, then determining the differences between the ranked groups in terms of the degree of adoption of operational actions, next identifying which operational actions were related to best-ranked cases, or which actions were related to best performance: these actions are the operational best practices. This methodology was adopted by Laugen *et al.* (2005).

The rank methodology was adopted by other studies but the cases were ranked according to non-operational indicators such as cost-to-income index, identifying the cases that achieved the best index, then reporting each case's operational strategies in isolation from those of others using an in-depth case study methodology; this methodology was adopted by Lavayssiere *et al.* (2008).

The rank methodology was also adopted by other studies, but the cases were ranked and plotted according to strategy/practice outcome index versus operational outcome index, then the groups were verified according to the adoption of a previously defined list of best practices; this methodology was adopted by Ulusay & Ikiz (2001).

Other studies have clustered cases into different groups according to degree of adoption of particular operational practices, then identifying the clusters that adopted significant practices better than others, and finally identifying the differences in performance indicators between clusters; this methodology was adopted by Power & Hahn (2004).

In conclusion, three data analysis methods were adopted to identify the best practices. The first is benchmarking, which requires previous identification of the

benchmarked group with which to compare remaining cases in order to identify best practices.

The second is ranking, which involves ranking the cases according to achieved performance from low to high, then identifying the significant differences between different ranked groups in practices adopted – if the practices were adopted by the higher-ranked groups, these practices were best practices.

The last method is clustering, which involves clustering the cases according to degree of adoption of practices, creating clusters with significant best performance – best adopted practices are the best practices group.

Benchmarking restricts best practices to the practices of benchmarked cases, but some cases that are not included within the benchmarked cases could have adopted other practices that led to best performance; accordingly, the ranking methodology overcomes this methodology's drawback, but in order to have better ranking the performance indicators used should be wider and combine financial as well as non-financial indicators.

Some previous studies have developed prediction models using Regression. These models did not investigate in depth the relations between actions, capabilities and performance indicators, and did not predict the relations in a practical way. They identified the degree of impact between variables without identifying the actual actions that should be made by decision-makers.

3-4 Reported Best Practices in Banking Operations strategies

3-4-1 First Best-practice Strategy: Cost-oriented Operations Strategy

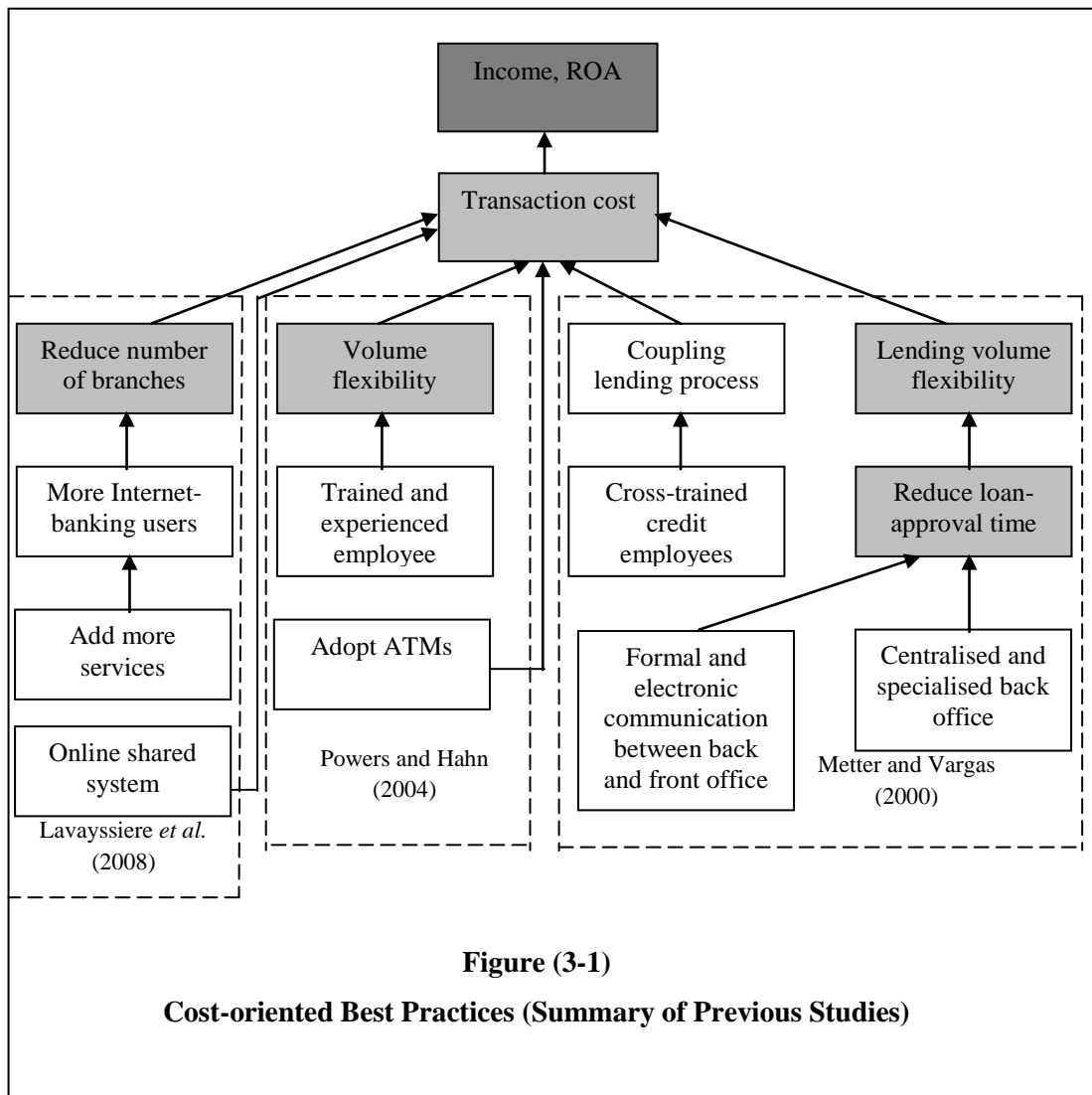


Figure (3-1) shows a summary of the previous studies: it can be seen that three studies reported cost-oriented best operational strategies. According to Lavyssiere *et al.* (2008), a bank in the Netherlands adopted this strategy and reduced costs by 25% and the improved cost/income ratio by 15% as a result of more customers using Internet banking. Since wide range of products were provided via the Internet, the percentage of Internet-banking users increased by 34%, which also cut the number of branches severely, whilst the remaining branches are used to sell products.

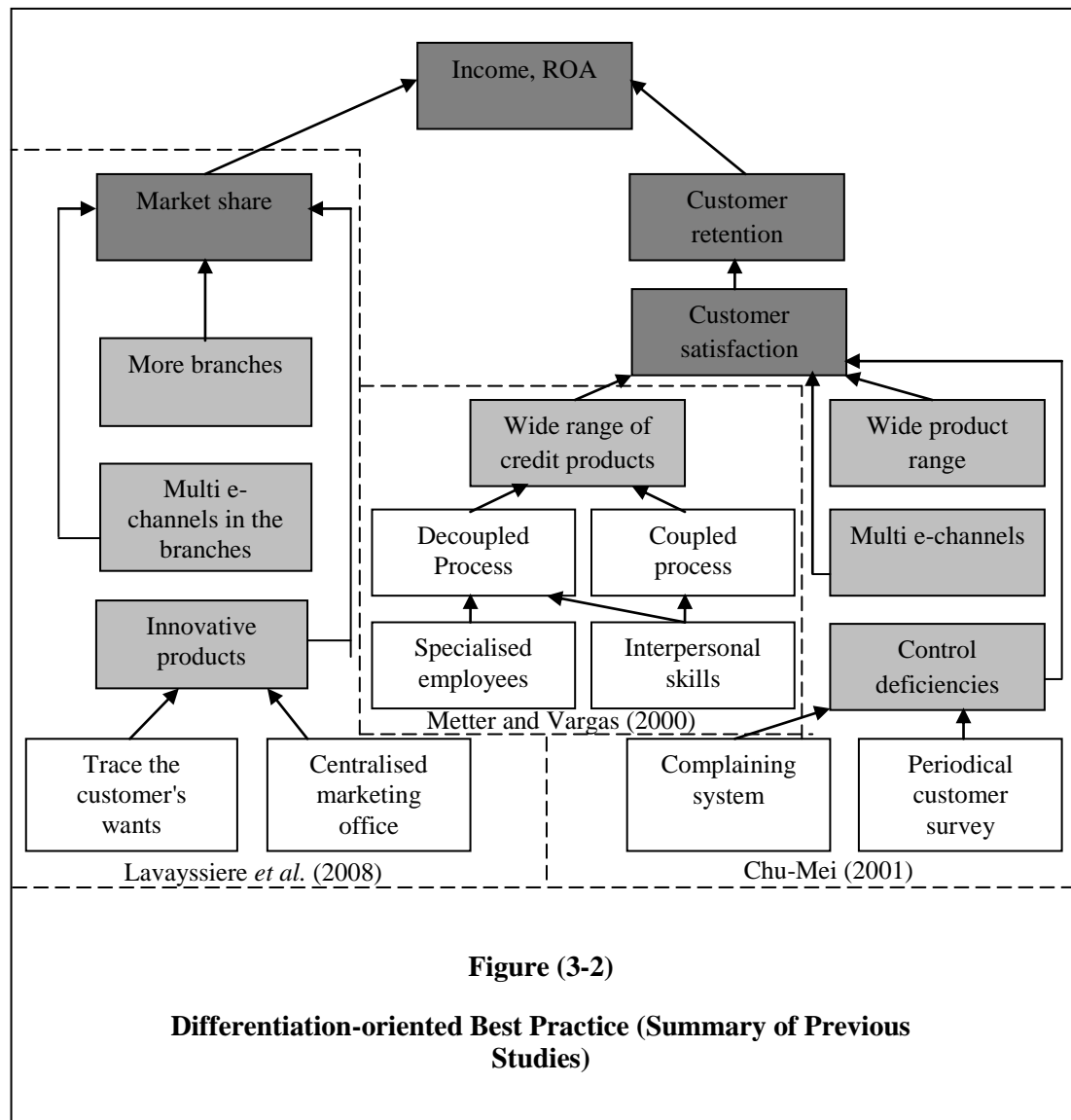
According to a survey study conducted by Powers and Hahn (2004) in the USA, the cost-leadership group was significantly correlated with return on assets; the actions adopted were: high-tech delivery systems such as ATMs, maintaining lending capacity, insuring the availability of adequate deposits and highly trained and experienced employees.

Metters and Vargas (2000) reported success cases in credit operations that adopted a cost model. Two patterns were adopted: 1) the cost leader and 2) the “kiosk”. According to the former, the back office is centralised and operated by highly specialised employees with few cross-trained employees, emphasizing maximum task speed. Furthermore, technology is used to link branches with headquarters. The communication between back and front office is highly formalised, and limited products are provided.

However, according to latter “Kiosk” pattern, the lending process is coupled, so employees in the branches also carry out back-office functions, reducing costs since the number of back office employees is reduced. The number of employees in each branch is small, two or three, and they are cross-trained.

3-4-2 Second Best-practice Strategy: Differentiation-oriented Operations

Strategy



According to Lavyssiere *et al.* (2008), the documented case in Spain adopted the differentiation strategy, accordingly expanding its market share with 447,000 new client accounts opened. Operating expenses increased but the growth in income was more than the increase in operating costs. This bank expanded its branch network by an additional 212 branches. Moreover, a multi-channel strategy was adopted in the branches such as ATMs, landlines and mobile phone access points, and innovative products were launched.

However, the documented case in France adopted the differentiation strategy; accordingly its market share increased, the costs per customer decreased by 5.5% and the annual income growth increased by 4.3%. This case focused on offering innovative products (25 products) and maintaining close relationships with clients, and so a centralised marketing back office was developed.

According to Chu-Mei (2001), banks in the Philippines adopted different strategies such as the customer-relations strategy, which is aimed at establishing good business and public relations, and a rapport and goodwill with customers. The banks therefore provided a variety of products and services, including banking services via ATM, Bank net, trained bank personnel to assist customers, and maintained a constant check on the service level, monitoring service deficiencies through a number of devices such as periodical customer surveys, suggestions boxes and complaints handling system.

According to Metter and Vargas (2000) the service pattern was adopted to run credit operations: the aim was to develop and maintain strong personal relationships to last several years. Two options were followed: self-service branch is a bank in itself) or focused professional service.

Loan officers do all lending process individually and the range of products is wide. In contrast, the product range of the focused professional service is wide. The process is decoupled and front office employees should have interpersonal skills and be specialised in running particular tasks.

3-4-3 Third Best Practice: Hybrid-oriented Operations Strategy

The hybrid strategy was discussed conceptually by Safer (2006), and involves adopting of both costs and differentiation strategies. As such, products and services are standardised, the focus is on the point of sale, the integration of distribution channels, an

increase in the use of IT in the front and back office, and the improvement of customer relations.

According to Menor *et al.* (2001), the agile banks adopted this hybrid strategy. The banks took the following actions: increasing internal control over electronic data transfer networks, extending branch operational hours, improving the flexibility of tellers through lower supervision to perform a broad range of tasks, and increasing the number of customer-service representatives. However this study did not examine the relationship between capabilities. This strategy achieved best performance in terms of return on assets.

Frei *et al.* (1998) reported an innovative practice in retail banking in the USA using a case-study methodology. The researchers interviewed executive managers, branch line managers and employees. The case adopted a hybrid costs and service to reduce transaction costs through merging hundreds of branches, locating the administrative and routine tasks to a centralised location outside the branches and changing the branches to become retail stores.

The branches were therefore well-equipped with e-channels such as ATMs and available telephones in the branch for transactions, resulting in a 65% teller reduction. Customers were directed towards tellers or sales representatives to deposit cash, access safety-deposit boxes, or meet representatives to purchase products. Furthermore, a customer relations manager was appointed in each branch, and employees were transformed into sales personnel to deliver added value, e.g. customised transactions and advice coupled with sales efforts.

3-5 Conclusion

Limited studies have reported the best practices of banking operational strategies, and previous studies adopted survey and case-study methodologies. Best practices were identified using benchmarking, ranking and cluster methodologies. The best practices of banking operational strategies reported in these previous studies were cost-, differentiation- and hybrid-oriented.

Chapter 4

Research Methodology

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4-1 Introduction

Research methodology and methods should be consistent with the aims and objectives of the research and should be able to answer the research questions. This chapter therefore aims in general to identify the research methodologies and methods used to achieve the research aims and objectives.

This chapter discusses the different steps of this research project, and the objectives that were achieved under each step. Data-collection and analysis methods are identified and reviewed and the general methodology of this research is identified at the end according to the different research methods used.

4-2 Thesis Aims, Objectives and Questions

Aims

To identify the best practices in banking operational strategies in Jordan over the period 1999–2008.

Objectives

- 1- Using the literature to identify the performance indicators of the banking sector, traditional and electronic banking operation competitive capabilities, and actions.
- 2- Using the literature to develop patterns of best practice in traditional and electronic banking operations strategy.
- 3- Identifying the best operation competitive capabilities were adopted by banks in Jordan over the period 1999–2008.
- 4- Identifying the significant operation actions which achieved the best operation competitive capabilities over the period 1999–2008.

5- Constructing the pattern of best practices in traditional and electronic banking operational strategies in Jordan over the period 1999–2008.

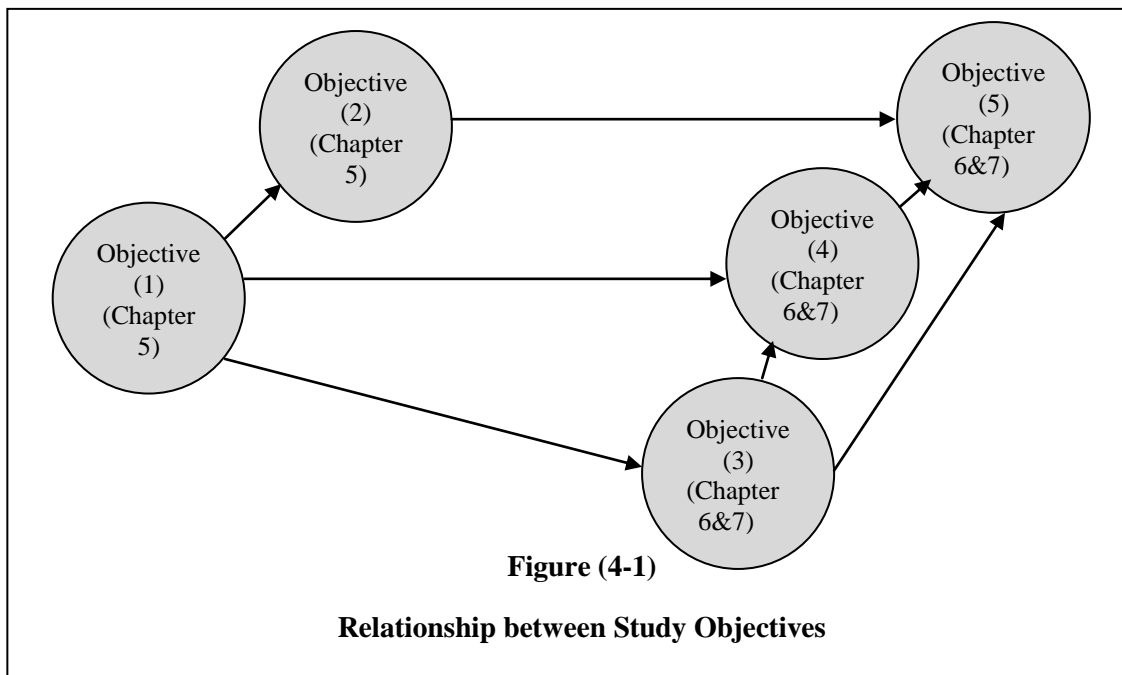


Figure (4-1) shows the relationship between the study objectives and in which chapter they were achieved. Before identifying best operational capabilities (objective (3)) the capabilities and performance indicator classification and measures should be clear; therefore, in Chapter 5 a list of traditional and electronic banking operational competitive capabilities and performance indicators are identified, as well as how to measure them.

The construction of a conceptual pattern of operational strategies (objective (2)) requires a clear list of operational capabilities, actions and performance. Moreover, the construction of a best-practice pattern (objective (5)) requires a clear conceptual relationship between performance, competitive capabilities and actions; it also requires the identification of the best operational competitive capabilities, and adopted actions to achieve these capabilities.

Research Question

What were the best-practices in traditional and electronic banking operations strategies in Jordan during the period 1999–2008?

The achievement of pervious research objectives led to the answer of the research question, thus different data-collection and data-analysis methods were adopted to achieve the research objectives and answer the question accordingly. In the following section the data-collection and data-analysis methods are discussed.

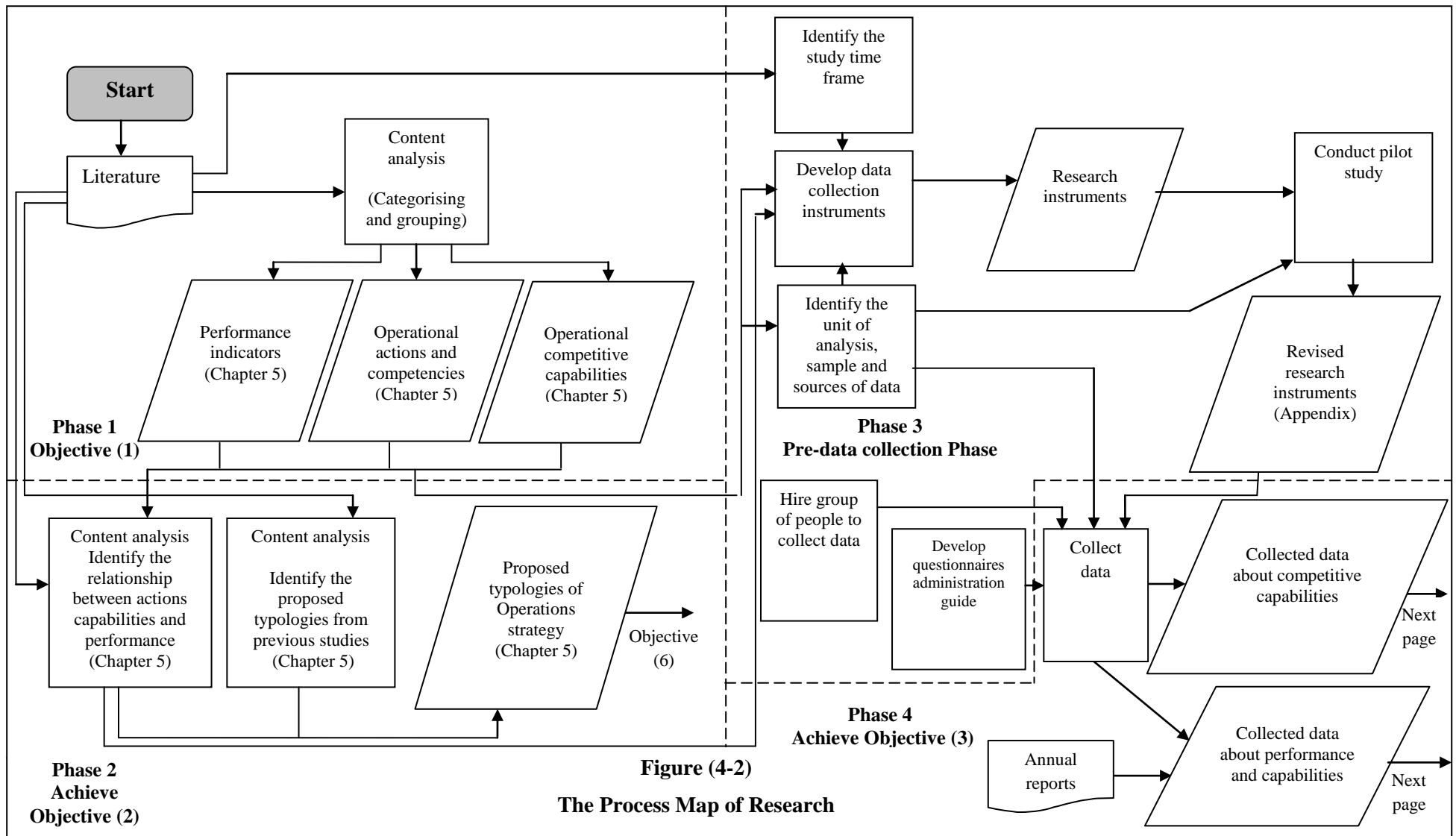
4-3 How the Research Question Was Answered

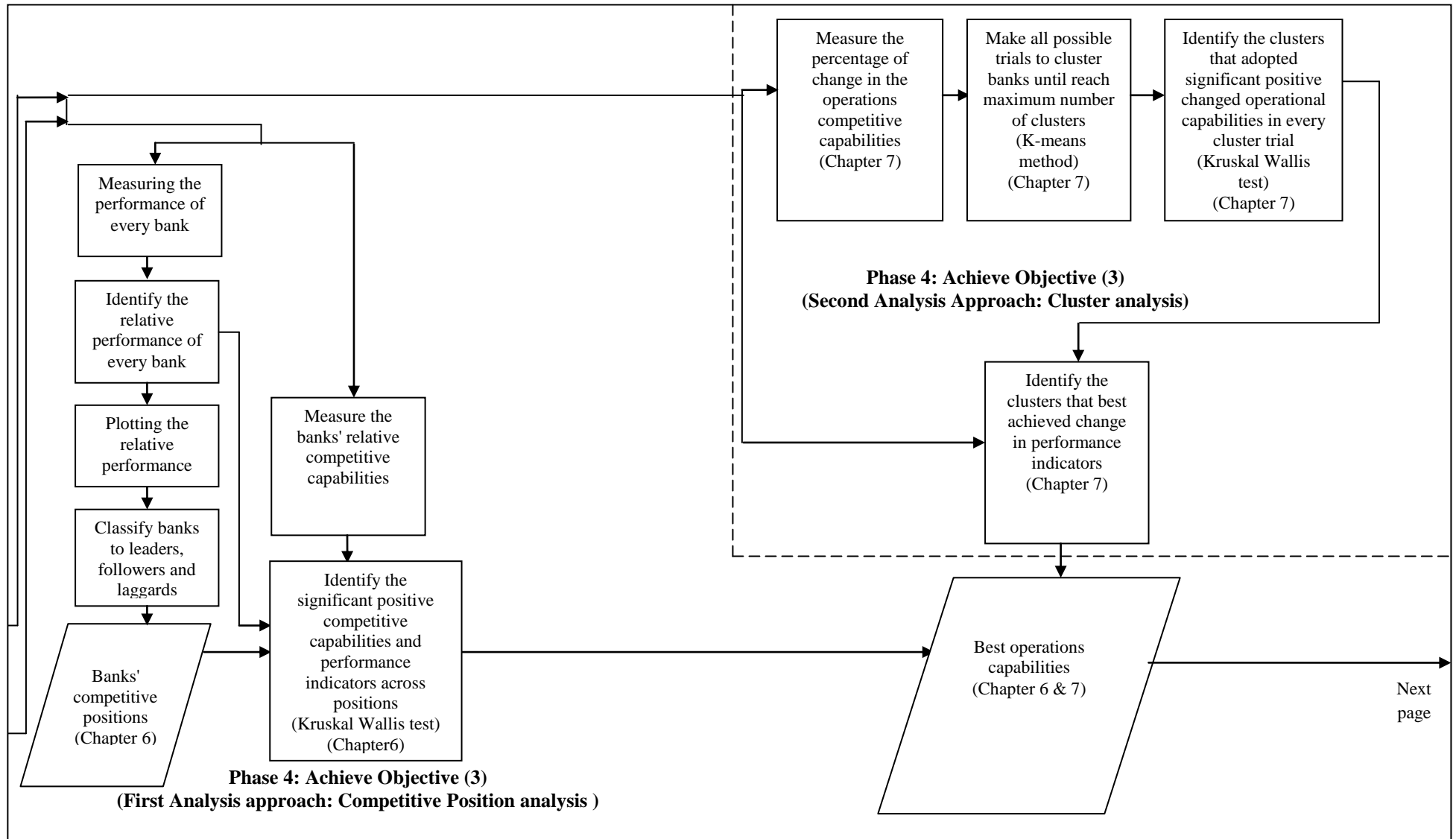
Figure (4-2) shows the phases of the research project. It can be seen that there were six phases to the research project. Phase 1 tackled defining and identifying the study variables (actions, competencies, competitive capabilities and performance indicators), and for this the secondary literature was revised. For phase 2 the secondary literature was revised to identify the relationship between study variables and develop the conceptual typologies of traditional and electronic banking operational strategies.

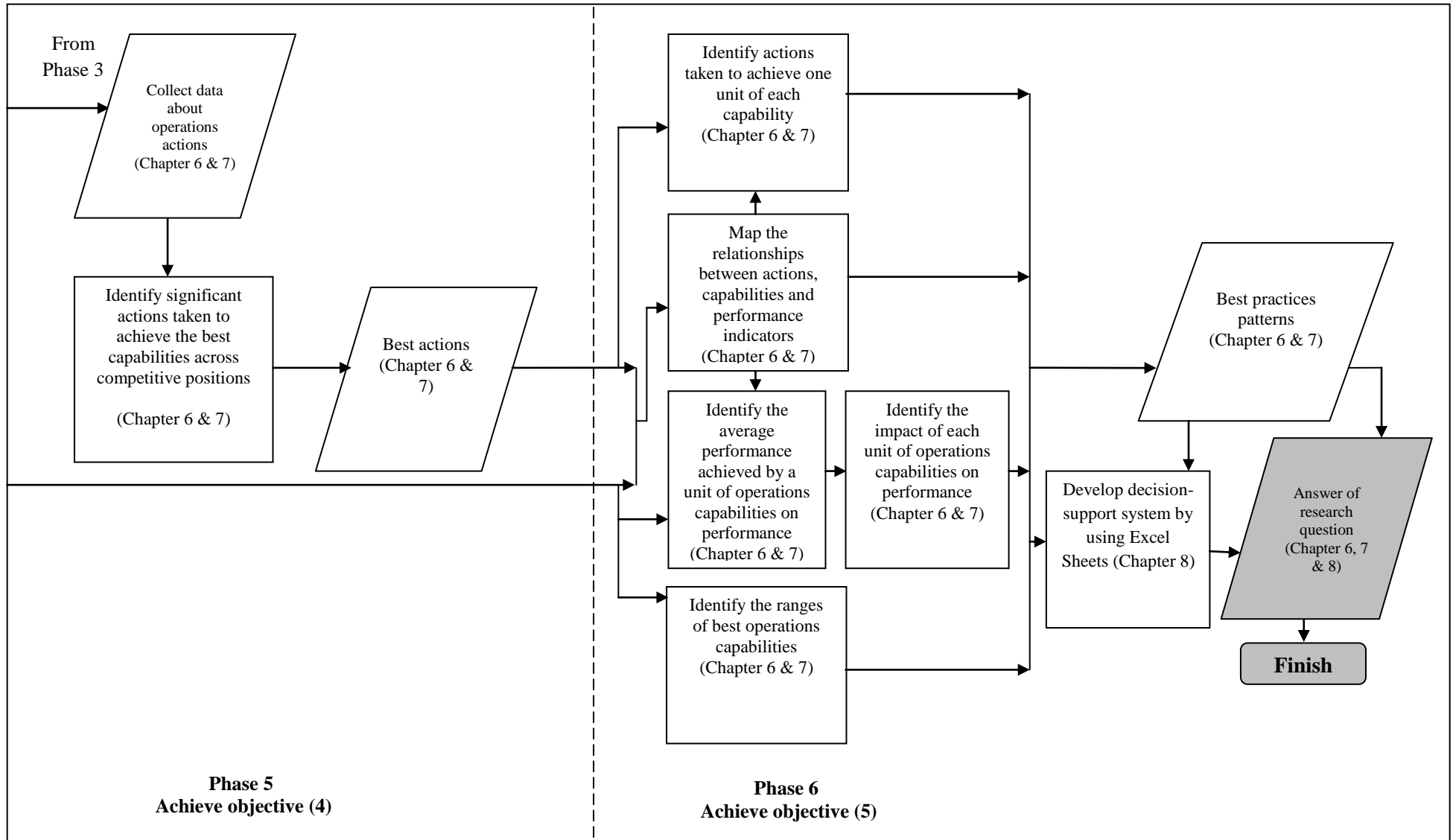
The outcomes of Phase 1 and 2 were very important for Phase 3, in which the data-collection instruments were developed. The development of these instruments required a clear understanding of study dimensions and how to measure them; further, the study unit of analysis, study sample, research time frame and respondents were identified for this purpose; next, a pilot study was conducted resulting in new, revised data-collection instruments.

Phase 4 focused on achieving the third objective; the data relating to operations capabilities was collected and analysed using two analysis approaches: competitive position analysis and cluster analysis, In Phase 5, the fourth research objectives was achieved, thus the data about operation actions was collected and the actions affecting the best operation competitive capabilities were identified using two analysis approaches: competitive position analysis and cluster analysis.

Next, in Phase 6 the patterns of best practice in operations strategies were constructed, accordingly, maps of the best operation capabilities and their related actions and performance indicators were developed. Then the ranges of best operations capabilities were identified as well as the impact of each unit of operation capability on performance and the actions that required. Finally, a decision-support system was developed to help decision-makers and researchers.







4-3-1 Phase 1: Achieving the First Objective

O1: Using the literature to identify the performance indicators of the banking sector and traditional and electronic banking operation competitive capabilities, and actions

The operations strategies as discussed in the literature consist of streams of actions that affect the organisation's competitive advantage and position. Consequently, studying operations strategies requires the identification of the operational actions that should be investigated, as well as the operational competitive capabilities that achieved through realizing these actions, and the performance achieved as a result of operational capabilities and actions.

Previous studies of banking operations strategies focused on certain some actions; for example Menor *et al.* (2001) investigated technology, capacity expansion, and human resources; Gupta *et al.* (2001) investigated quality, process capacity and facility; and Rhee and Mehra (2006) investigated encounter management strategies, operations integration, capacity management strategies and facility management strategies.

Furthermore, previous studies of banking operations strategies focused on investigating capabilities such as accessibility, productivity, costs, quality and transaction time, but the list of operational capabilities is wider and covers other aspects according to manufacturing strategy literature and some service operations strategy literature. Thus previous studies of banking operations strategies did not identify a comprehensive list of the operations competitive capabilities that should be examined.

Furthermore, electronic banking operations capabilities and actions were not identified clearly in e-banking operations strategy: the majority of previous studies

focused on Internet banking operations strategies, and the focus was mainly on website-design attributes and quality.

Moreover, previous studies of banking operations strategies focused on measuring certain performance indicators rather than evaluating all performance indicators that were affected by the capabilities. Some of these studies did not justify the reasons behind using certain performance indicators over others, and some of them assumed a direct relationship between certain performance indicators and capabilities, when in reality the impact occurs indirectly through certain mediating performance indicators.

Thus a clear list of banking operational capabilities, actions and performance indicators was required. Identifying these elements is important for better investigating operations strategies since the best practices can be realised in any capability or action that has not been covered by previous studies. The procedure used to achieve this objective is as follows.

1: the general components of operations strategies were identified by reviewing the literature on operations strategy formation. According to this literature the general components are the overall performance indicators, the operational capabilities (operations competitive priorities) and operational actions.

2: identifying the specific components of each general component. The literature on operations strategy content and formation was revised. The components of performance were marketing indicators and financial performance indicators. The capabilities were classified in general into 1) costs, 2) quality, 3) flexibility, and 4) speed, and the actions were classified into 1) process design actions, 2) facility layout actions, 3) location actions, and 4) capacity management actions.

3: Identifying the definition and measures of each specific capability and action in the context of the service and banking sectors, as well as identifying the most appropriate performance indicators for measuring bank performance. The literature relating to service and banking operations was therefore reviewed, accordingly, and the result of this review is provided in Chapter 5.

4-3-2 Phase 2: Achieving the Second Objective

O2- Using the literature to develop conceptual patterns of best practices in traditional and electronic banking operations strategies

The identification of typologies in this research context was used to determine how to construct the pattern of best practice, and how significant operational capabilities, actions and performance indicators identified could be linked together to form a particular pattern. Constructing operations strategy patterns is important in identifying the impact of particular combinations of capabilities and actions on performance, so that decisions can be made accordingly.

The majority of operations strategy typologies were developed by manufacturing strategy literature (e.g. Hayes & Wheelwright 1984; Kathoria & Orne 1989; Hill 1995; Ward *et al.* 1996; Devaraj *et al.* 2001), and few typologies were developed by the service operations strategy literature (e.g. Kellogg & Nie 1995; Metters & Vargas 2000; Lowson 2002; Aranda 2003) and the banking operations strategy literature (e.g. Metter & Vargas 2000; Chu-Mei 2001; Power & Hahn 2004; Lavayssiere *et al.* 2008).

Banking operations strategy typologies were limited in their scope; some of them only covered loan operations (e.g. Metter & Vargas 2000) or account operations (e.g. Chu-Mei 2001; Power & Hahn 2004; Lavayssiere *et al.* 2008). Moreover, there was limited focus on electronic banking operations strategy typologies, as the focus was mainly on Internet banking operations strategies (e.g. Chu-Mei 2001).

The focus was also on process-design strategies (e.g. Metter & Vargas 2000), with limited or no concern about the other aspects of operations strategies such as layout, service encounter, capacity and location. Therefore, more comprehensive typologies should be developed to gain a better insight into best-practice patterns in Jordan. This was done according to the following steps.

1: previous studies in manufacturing and service operations strategies and banking operations secondary literature sources were revised to identify the relationship between variables.

2: the literature on operations strategy typologies was revised with more emphasis on the literature of service and operations typologies, so that general typology patterns were identified.

3: according to general patterns defined in the previous studies, new proposed banking operations strategy typologies were developed, which are more comprehensive and combine all components of banking operations strategies (*see* Chapter 5).

4-3-3 Phase 3: Pre-Data Collection

After defining the study variables, how to measure them and their interrelationships, the preparatory phase for field study was begun. In this phase the research time frame was determined, as well as the sample and the respondents. The questionnaires were developed, a pilot study was devised and conducted, and the revised data-collection instruments were ready.

4-3-3-1 Identifying the Research Time Frame

Changes in operations strategies and competency indices can be identified more clearly if the research is extended over a long period of time, since operations strategies and their competencies develop and change over an extended period of time (Vickery 1991).

Accordingly, the time frame of this research was set at ten years, from the beginning of 1999 to the end of 2008. During this period the majority of banks had started to adopt certain e-banking elements. Moreover, this period saw the enactment of a new banking law at the end of 2000 and an electronic transaction law at the end of 2001 as a part of a financial-sector reform, as well as compliance with the Basel Accord II.

4-3-3-2 Identifying the Research Unit of Analysis, Sample and Sources of Data

4-3-3-2-1 Identifying the Unit of Analysis and Sample

The population includes all retail banks in Jordan, which consist of 23 retail banks; 15 local retail banks listed in the Amman Stock Exchange, and 8 foreign retail bank branches (Association of Banks in Jordan 2007). As a result of small population size, and since the study aims to identify best practices in banking operations strategies which were identified by comparing the capabilities and actions of banks together. Accordingly, all population elements were included in the sample, which was the same as population.

Local retail banks listed on the Amman Stock Exchange were the object of the primary research and foreign banks were the object of a pilot study step, since local banks have significant operations in comparison with foreign banks. Local banks possess 95% of branches and ATMs in Jordan, and their market share for deposit values is 89.12% and 84.32% for loan values (Association of Banks in Jordan 2007).

4-3-3 Developing Data-Collection Instruments

Numerous questionnaires were used to collect the data, since a lot of data should be collected from different sources and from people in different locations. Using questionnaires reduced the data-collection time, and as the targeted people are busy

during the working day and they may refuse interviews out of work hours, questionnaires allowed them to respond during their leisure time (Gray 2004).

4-3-3-1 Identifying Questionnaires Number, Content and Respondents

The questionnaires were divided into two groups: traditional banking questionnaires and electronic banking questionnaires. The reason behind this division is that the respondents of each channel differ from each other and there are differences between these two channels in terms of the actions carried out.

Traditional Banking Questionnaires

Table (4-1) shows a summary of traditional banking questionnaires. It can be seen that the number of questionnaires used was seven. The reason behind the use of more than one questionnaire is that different respondents had the required data. Moreover, the questionnaires were also classified according to channels: account operations questionnaires and credit operations questionnaires.

The reason behind classifying questionnaires thus was due to the respondents: the employees of each channel are specialised in the channel operations, so they should be surveyed using separate questionnaires.

Some of these questionnaires were used to collect data about operational capabilities, performance and actions (e.g. T1(a), T1 (b)), others used to collect data about operational capabilities and actions (e.g. T2(a), T2(b), T3, T4). All questionnaires were used to collect primary data. Except (T5) which used to collect secondary data. These questionnaires provided the required data to achieve the study objectives.

Electronic Banking Questionnaires

Table (4-2) shows a summary of electronic banking questionnaires. It can be seen that the number of questionnaires used was seven. The reason behind using more than one questionnaire is collecting data from different respondents. Furthermore, the questionnaires were classified according to channel: ATM, Internet banking, mobile banking and telephone banking.

The reason behind classifying questionnaires according to channels is the differences in the actions carried out in each channel. One of these questionnaires was used to collect data about operational capabilities, performance and actions (E1). The remaining questionnaires were used to collect data on operational capabilities and actions. All questionnaires were used to collect primary data except E3 and E7, which were used to collect secondary data. These questionnaires provided the required data to achieve the study objectives.

Table (4-1)

Traditional Banking Questionnaires: Content and Respondents

Que. Code	Channel	Respondent (source of data)	Operations Competitive Capabilities											
			Transaction time	Transaction costs	Customer waiting time	Volume flexibility	Productivity	New product flexibility	Service availability	Quality of branch design	Branch accessibility	Service availability	Transaction quality	Transaction security
T1 (a)	Account	Account operations executive	√	√	√	√	√	√				√	√	√
T1 (b)	Credit	Credit operations Executive	√	√	√	√	√	√	√			√	√	√
T2 (a)	Account	Tellers	√	√	√				√	√	√		√	√
T2 (b)	Credit	Front office credit employee	√	√	√				√	√	√		√	√
T3	Both	Branch managers												
T4	Both	Branch executive manager							√		√			
T5	Both	Secondary									√			
Ques. Code	Channel	Respondent (source of data)	Performance Indicators Related data						Operational Actions					
			ROA	ROE	Customer satisfaction	Customer retention	Operating revenue/total revenue	Market share (J.D.)	Market share (customers)	Service delivery process design	Branch layout	Branch location	Capability manager	
T1 (a)	Account				√	√			√	√				
T1 (b)	Credit				√	√			√	√				
T2 (a)	Account									√				
T2 (b)	Credit									√				
T3	Both										√			
T4	Both										√	√	√	
T5	Both		√	√			√	√				√		

Table (4-2)

Electronic Banking Questionnaires: Content and Respondents

Que. Code	Channel	Respondent (source of data)	Operations Competitive Capabilities									
			Transaction time	Transaction costs	Volume Flexibility	Productivity	New service flexibility	Service availability	Design Quality of service encounter	Accessibility	Transaction quality	Transaction security
E1	All	IT executive or e-banking manager	√	√	√	√	√	√	√	√	√	√
E2	Internet	Operators or technical personnel	√	√	√			√			√	√
E4	ATM		√	√	√			√	√		√	√
E5	Mobile		√	√	√			√			√	√
E6	Telephone		√	√	√			√			√	√
E3	Internet	Website archive							√			
E7	ATM	Secondary								√		
Que. Code	Channel	Respondent (source of data)	Performance Indicators Related Data		Operational Actions							
			Customer Satisfaction	Customer retention	Service delivery process design	Service encounter	Location	Capability management				
E1	All		√	√	√	√	√	√				
E2	Internet				√			√				
E4	ATM				√	√		√				
E5	Mobile				√			√				
E6	Telephone				√	√	√	√				
E3	Internet					√						
E7	ATM						√					

4-3-3-2 Identifying Sources of Items and Scales of Each Instrument

The questionnaire items were determined from the literature (*see* next sections). The scales of questionnaires were nominal, ratio and interval:

Nominal: for actions made and certain competencies, since these are facts and not a matter of judgment or attitude.

Interval: only for importance of operational capabilities, since it depends on managers' attitudes.

Ratio: for capabilities and performance indicators, since these are continuous measures.

The actions were rated according to rating scores. The rating of actions carried out was for the purpose of identifying the degree of competency in each action realised by a bank. This method was developed by Cleveland (1989) and Vickery (1991), according to whom actions can be categorised as strengths or weaknesses, hence using rates facilitate this.

Different rating scores were used to identify the degree of adoption for each action. These rates were developed by the researcher, so the actions were entered on an Excel spreadsheet as rating scores, then the average rating score of each bank was computed for each period. The rating facilitates the identification of the relative action scores and percentage of change in actions more accurately than by using actions carried out or not.

The operational capabilities and performance indicator scores were entered into the Excel spreadsheet as an actual measure (e.g. minutes, number of products, etc.), then the percentages of change or relative scores were computed.

4-3-3-3-3 Questionnaire Layout

Shared issues between questionnaires

- **Cover letter:** this was the first page of the questionnaire, which provided the respondents with an overview of the purpose of the research project and how to protect the banks' anonymity and confidentiality.
- **Overview of the questionnaire:** this was provided on the second page, which presented the purpose of the questionnaire, the number of sections and the time required to fill in the questionnaire. This section was important for the respondents' understanding of the purpose of filling in the questionnaire and to ensure that the person reading this section was the appropriate person to fill in the questionnaire.
- **Introductory definitions:** covered the general ambiguous concepts that were repeated in the questionnaire.
- **Sub-period classification:** the ten years period (1999–2008) was classified into four sub-periods: 1999–2000, 2001–2003, 2004–2006, and 2007–2008; the purpose of this classification was to help track changes more accurately.

Questionnaires T1 (a), T1 (b) and E (1)

These questionnaires included many issues for the respondents to respond to. Accordingly, these questionnaires were divided into different sections titled by the capability title; under each capability title the following arrangement was made:

- 1- Yes or No question; this question helps in directing the respondents as to whether or not they should continue or move on to another section.
- 2- The sequence was logical: importance and capability score, then actions made to achieve these capabilities.

Remaining Questionnaires

The majority of these questionnaires were long, so each questionnaire was divided into different sections numbered sequentially. Moreover, Yes or No questions were used as much as possible to direct the respondents and reduce response time. Also, the sequence was logical: questions relating to particular actions were laid out sequentially, followed directly by the related capabilities that measured these competencies.

4-3-3-4 Ethical Issues of Questionnaire Design

Each bank questionnaire was verified by a code representing the bank. These codes were alphabetic letters, each letter representing a bank. Thus on the second page there was a space at the top for this purpose. There was no question in the questionnaire identifying the person who responded, nor the bank.

4-3-3-4 The Pilot Study

The pilot study was applied to foreign bank branches in Jordan. The number of pilot-study objects was eight, and these banks were chosen as a result of their limited operations in Jordan (as discussed earlier).

The following aspects were examined: how to administer the questionnaire, the respondents were asked for feedback to identify any difficulties or ambiguities in the questions or which were unnecessary and should be discarded, or whether some were difficult questions. They were also asked to assess whether each question item offered a reasonable range of response and to check if all questions were answered.

4-3-3-4-1 Translation of Questionnaires

The researcher translated all questionnaires from English to Arabic. In order to use the accurate Arabic banking concepts, the researcher reviewed the annual reports and

websites of the banks. From these sources the required Arabic banking concepts were identified.

Further, to check the accuracy of the translated instruments, the researcher asked one of his Ph.D. colleagues, a chief executive officer in the Saudi Arabia Monetary Association, to check the translation.

4-3-3-4-2 Questionnaire Content Validity and Comprehensibility

The respondents were asked to evaluate the content validity of the questionnaires. In order to achieve this, an evaluation sheet was attached at the end of each questionnaire. The evaluation form covered three aspects: 1) the coverage of all aspects related to the dimensions measured by the questionnaire, 2) to what extent the questionnaire was easy to understand, and 3) whether the sequence of the items facilitated understanding.

As represented in Table (4-3), the content validity score was high (100%) for all questionnaires; furthermore the comprehensibility of the questionnaires was high (approx. 93%) and the score for the sequence of items facilitating understanding was also high (approx. 96%).

Table (4-3)**Content Validity**

Questionnaire #	Covered all dimensions	Comprehensibility	Sequence of items to facilitate understanding and response
T1(a)	Yes: 100% No: 0	High: 70% Moderate: 30% Low: 0%	High: 70% Moderate: 30% Low: 0
T1(b)	Yes: 100% No: 0	High: 83% Moderate: 17% Low: 0	High: 100% Moderate: 0 Low: 0
T2(a)	Yes: 100% No: 0	High: 100% Moderate: 0 Low: 0	High: 100% Moderate: 0 Low: 0
T2(b)	Yes: 90% No: 10%	High: 90% Moderate: 0 Low: 10%	High: 90% Moderate: 10% Low: 0
T3	Yes: 100% No: 0	High: 95% Moderate: 5% Low: 0	High: 100% Moderate: 0 Low: 0
E1	Yes: 100% No: 0	High: 100% Moderate: 0 Low: 0	High: 100% Moderate: 0 Low: 0
E2	Yes: 100% No: 0	High: 100% Moderate: 0 Low: 0	High: 100% Moderate: 0 Low: 0
E4	Yes: 100% No: 0	High: 98% Moderate: 2% Low: 0	High: 100% Moderate: 0 Low: 0
E6	Yes: 100% No: 0	High: 100% Moderate: 0 Low: 0	High: 100% Moderate: 0 Low: 0
E7	Yes: 100% No: 0	High: 95% Moderate: 5% Low: 0	High: 97% Moderate: 3% Low: 0
Average	Yes: 100% No: 0	High: 93.27% Moderate: 5.36% Low: 1.36	High: 96% Moderate: 4% Low: 0

4-3-3-4-3 Response Rate and Time

The response rate per questionnaire during the pilot step was high, at more than 97%. Moreover the response rate for the items of each questionnaire was high, except for some items on the executive questionnaire. The moderate response rate was for the items relating to operational capabilities.

Thus to overcome the moderate response rate drawback of operational capabilities, some of these indicators were moved to the questionnaires for credit

employees, tellers and technical personnel of electronic banking operations. This action success in the main study step. Moreover, the coordinator (for more details about this person see next section) advised asking some branch managers to answer the (T1(a) and T1(b)) questionnaires to ensure that these were fully filled in, since some branches managers have enough experience and knowledge to complete these questionnaire.

This was therefore implemented in the main study phase and it success. Furthermore the coordinator recommended separating the service accessibility and quality of branch design sections in a separate questionnaire and directing this questionnaire to branch managers at headquarters, so a further questionnaire was developed (T4).

The time required to complete the pilot-study step was 25 days. The acceptance to participate took between 3 to 5 days, the response time for traditional banking executive questionnaires was 4–6 days, and 5–7 days for e-banking executive questionnaires.

On the other hand, the response time for the teller, credit employee and branch manager questionnaires was 1–2 days, and the response time for the questionnaires for technical personnel in e-banking units was between 3–5 days. Therefore the actual data-collection time was between 6 to 7 days maximum. This information was used in developing a project plan and timing the main data-collection phase.

4-3-3-5 Hiring People to Participate in Data Collection

Since the number of questionnaires was high and directed to numerous people in headquarters and branches, a group of people were required to administer the questionnaire. Accordingly, the researcher hired a group of three people: a coordinator and two support people.

The researcher decided to select people able to deal with the process effectively. Therefore the coordinator was chosen carefully. This person has been a banker for more than 20 years, so he has a lot of personal relations with people in the banking sector, which facilitated cooperation with the study. One of the other two persons works in media (The Jordan National Radio Station), and the last one is working in ARAMIX (a professional company dealing with shipping and delivery within Jordan).

The coordinator interacted with the public relations or research and development units of the banks to obtain acceptance in participating in the project. He provided them with a covering letter from the research's supervisor, a welcoming letter from the researcher, a table declaring the purpose of each questionnaire and the number of questionnaires to be distributed. Following acceptance, the coordinator asked them to provide him with covering letter to distribute the questionnaires within the branches.

The coordinator was responsible for providing executives and e-banking technical personnel and operators with questionnaires. The other two persons were responsible for distributing the questionnaires into the branches. All questionnaires were self-administered.

4-3-3-6 Developing the Data-Collection Guide

Since several people rather than just the researcher participated in the administration of the questions, a guide was developed to direct these people. This guide includes the data-collection steps, the questionnaire respondents, the number of questionnaires to be distributed, the addresses of the banks' headquarters, and a letter and table were submitted for each bank.

4-3-4 Phase 4: Achieving the Third Objective

O3: Identifying the best operations competitive capabilities adopted by banks in Jordan over the period 1999–2008.

O3-1 Collecting Bank Performance Data for the Period 1999–2008

Collecting bank performance data was important to identify the best operations competitive capabilities, since these were those related to best changes in performance. Accordingly, two general groups of performance data were collected; the financial performance indicators, and marketing indicators.

O3-1-1 Collecting Financial Performance Data

Three financial indicators were traced for all banks; these indices were: Return on Assets (ROA), Return on Equity (ROE), and Operating Revenue/Total Revenue. The first two indicators were used to measure bank performance since they are widely used in measuring bank performance. However, the last indicator reflects the results of banking operations regardless of revenues generated by interest (Uzelac & Sudarevic 2006). The following procedures were followed to collect this data:

1: Accessing Financial Indicator Data Sources

The data about all financial indicators was available in the banks' annual reports, so the annual reports of 15 local banks were collected from the banks' websites and the website of Monetary Fund Association (www.mfc.gov.jo). Also, pre-computed indicators for some periods were available in the annual reports of Jordan Banks Association (JBA); these reports were collected from its website (www.jba.org.jo) and include the 2000–2008 reports.

2: Collecting the Required Data from Annual Reports

Table (4-4)

Financial Indicator Data Sources

Financial indicator	Annual reports	JBA annual reports
Return on Assets	Net Income: income statement Total assets: balance sheet	Pre-computed ratios for some banks for the period 2004–2007
Return on Equity	Net income: income statement Net owners equity: balance sheet	Pre-computed ratios for some banks for the period 2004–2007
Operating revenue/total revenue	Total revenues: income statement Non-interest total revenue: income statement	

Table (4-4) shows the sources of financial indicator data; it can be seen that two sets of data relating to return on assets were collected from banks' annual reports. These were net income which available from income statements, and total assets which available from balance sheets. Also, two sets of data were collected to compute return on equity; these were net income which available from income statements, and net owner's equity which available from balance sheets.

Two sets of data relating to operating revenue/total revenue were collected from annual reports: total revenue and non-interest total revenue. These two data sets were available from income statements. Certain indicators, such as return on assets and equity, were pre-computed in JBA annual reports for the years 2004–2007. The data was collected for every bank annually from the end of 1999 to the end of 2008, since the study time-frame covers this period. A form was used to collect this data.

O3-1-2 Collecting Marketing Performance Data

Three marketing indicators were traced: 1) market share, 2) customer satisfaction, and 3) customer retention. These three indicators were traced because they are widely used in the secondary literature and cover the results of customer behaviour. Since this study covers the 1999–2008 period, historical data about number of customers, customer satisfaction and retention is available in headquarters' record, so top executive managers were able to provide such data.

Accordingly, they were asked about these issues in questionnaires T1 (a), T1(b) and E(1). The first two questionnaires were directed towards traditional banking executives (*see* Table (4-5)). The items relating to these performance indicators were identified from previous studies.

The data about deposit and loan market shares which is the amount of personal deposits and loans were collected from annual reports (balance-sheet statement). All of the previous data was collected for every bank annually.

Table (4-5)

Questionnaires Items Reported Performance Indicators

Performance indicator	Questionnaire items			Scale	References
	E1	T1 (a)	T1 (b)		
ROA	----- ¹	-----	-----	%	Uzelac and Sudarevic (2006)
ROE	-----	-----	-----	%	
Ratio of non-interest operating revenue/total revenue	-----	-----	-----	%	
Customer satisfaction	10-1	8-1	8-1	5-point scale	Bloemer <i>et al.</i> (1998), Weinstein (2002), and Chen and Chang (2006)
Customer retention	10-3	8-2	8-2	%	Johnson and Clark (2001)
Market share (number of customers)	10-2	8-3	8-3	%	Jacobson (1988) and Lavery (2001)
Marker share (deposit and loan market share)	-----	-----	-----	%	

¹ -----: no items, secondary data (annual reports).

O3-2 Collecting data relating to traditional and electronic banking operations capabilities for the Period 1999–2008

O-3-2-1 Collecting data relating to traditional banking operations capabilities

The data relating to operations capabilities for personal accounts and personal credit operations were collected from 15 retail banks. The data about personal account operations competitive capabilities was collected from tellers and executives of personal account operations. The data relating to personal credit operations competitive capabilities was collected from credit employees and executives of personal credit operations.

The data was collected from executives, branch tellers and credit employees who have been appointed in their position since 1999, since the study time-frame is ten years from 1999 to 2008. Therefore those appointed in 1999 were more than able to provide the data. Moreover, the data relating to operations capabilities were collected from different regions. The reason behind collecting data from multiple respondents from different geographic regions was to increase the reliability, or consistency of the results by using different respondents' viewpoints.

The questionnaires used for reporting traditional banking operations competitive capabilities were: T1(a), T(b), T2 (a), T2 (b) and T4 (*see* Table (4-6)). The questionnaires were developed by the researcher and the sources of items were determined from the previous studies. Scales of operations capabilities were: ratio, number, time, percentage and cost (*see* Table (4-6)).

Table (4-6)

Questionnaires Items Reported Operations Competitive Capabilities

Competitive Capabilities	Traditional Banking Questionnaires						E-banking Questionnaires							References
	T1 (a)	T1 (b)	T2 (a)	T2 (b)	T4	Scale	E1	E2	E3	E4	E6	E7		
Transaction time/loan approval time	1-7	1-7	11	11	-----	Minutes (account), days (loan)	1-7	4	-----	4	4 11	3 11 24	Seconds	Devaraj et al. (2001) Frohlich and Dixon (2001)
Customer waiting time	2-5	2-5	10	10	-----	Minutes	-----	-----	-----	-----	-----	-----	Minutes	
Service availability	-----	-----	12	12	1-3 1-6	Days, weeks, months	4-3 4-4	6	-----	6	-----	-----	Days, hours	
Volume flexibility	3-5	3-5	-----	-----	-----	Number	2-5	5	-----	5	-----	4 12 25	Number	Wheelwright (1984), Chang <i>et al.</i> (2005)
Flexibility of introducing new service	4-4	4-4	23	23	-----	Number	3-6	-----	-----	-----	-----	-----	Number	Wheelwright (1984), Chang <i>et al.</i> (2005)
Productivity	3-6	3-6	-----	-----	-----	Number of transactions/employees	-----	-----	-----	-----	-----	-----	Number/employee Number/ATM	Golany and Storbeck, (1999), Wheelock and Wilson (1999), Zenion <i>et al.</i> (1999), Krishnasamy <i>et al.</i> (2004), and Swierczek <i>et al.</i> (2005)
Service rang flexibility	4-6	4-6	-----	-----	-----	Number	3-3	2	-----	2	2 9 35	1 8 16	Number	Aranda (2002, 2003)
Service accessibility ²	-----	-----	-----	-----	2-6	Number of branches/10,000 people	9-3 9-10 9-14	-----	-----	-----	-----	-----	Number of ATM/10,000 percentage of abandon	Miller and Roth (1994), Frohlich and Dixon (2001)

²The accessibility of branches and ATMs were evaluated by using secondary data.

..... Continue Table (4-6)

Performance indicators	Traditional banking Questionnaires						E-banking Questionnaires							References
	T1 (a)	T1 (b)	T2 (a)	T2 (b)	T4	Scale	E1	E2	E3	E4	E6	E7	Scale	
Quality of branch design	-----	-----	Second section	Second section	-----	5 points	-----	-----	-----	-----	-----	-----		Greenland and McGoldrick (2005)
Quality of e-banking service encounter	-----	-----	-----	-----	-----	-----	-----	-----	3	-----	-----	-----	5 points	Kitten <i>et al.</i> (2008) and Kircher <i>et al.</i> (2008), Diniz (1998), Diniz (2005), Palmer (2002) Hernandez-Ortega (2007), Agarwal and Venkatesh (2002)
Transaction costs	5-5	5-5	-----	-----	-----	JD	5-4	-----	-----	-----	-----	6 14 27	JD	Sum <i>et al.</i> (2004)
Transaction quality	7-2	7-2	22	22	-----	% of errors	7-5	14	-----	14	5 13	7 15 28	% of errors	
Transaction security	6-1	6-1	15	15	-----	% of customer complaints	6-1	11	-----	10	27	5 13 26	% of customer complaints	

All capabilities of traditional banking were collected from bank employees and managers except branch accessibility; the data for this indicator was collected from different secondary sources (bank annual reports, bank websites, department of statistics, ministry of health, and ministry of industry and trade).

From bank annual reports and websites, the number of branches in urban, suburban and rural areas of every bank was identified; moreover, the specific addresses of branch sites were also identified from these sources. The population numbers in urban, suburban and rural areas were identified from the website of the department of statistics, the number of hospitals from the ministry health website, and the number of shopping and business areas from the ministry of trade website.

O3-2-1 Collecting Data relating to Electronic Banking Operations Capabilities

Data on the operations capabilities in terms of ATMs, Internet banking, mobile banking and telephone banking was collected from 15 retail banks. The data for each channel's capabilities was collected from top managers of e-banking operations, and from technical personnel or operators of each e-banking channel.

The data was collected from managers and technical people or operator who have been appointed in this position since 1999, since the study time frame was ten years from (1999–2008). The reason behind collecting data from multiple respondents was to increase the reliability or consistency of the result by using different respondents' viewpoints.

The questionnaires used for reporting the electronic banking operations competitive capabilities were; E1, E2, E3, E4, E6 and E7 (*see* Table (4-7)). The questionnaires were developed by the researcher; the sources of items were identified from the previous studies.

The electronic banking operations competitive capabilities were evaluated by top managers of e-banking operations and the operators of e-banking channels, on the other hand, some capabilities as branches and ATM accessibility were evaluated by the researcher, however, the quality of Internet banking service encounter was evaluated by the researcher and group of IT students as pseudo customers.

All capabilities of electronic banking were collected from banks' employees and managers except ATM accessibility and Internet banking service encounter quality. The data on accessibility was collected from different secondary sources: bank annual reports, bank websites, the department of statistics, the ministry of health and the ministry of industry and trade.

From the banks' annual reports and websites, the number of ATMs in urban, suburban and rural areas of every bank was identified, as well as the specific locations of the ATM sites. The population numbers in urban, suburban and rural areas were identified from the website of the department of statistics, the number of hospitals from the ministry health website, and the number of shopping and business areas from the ministry of trade website.

Data of internet banking service encounters' quality was evaluated by three IT students after studying the banks' websites. The history of the banks' websites was accessed through www.archive.org, allowing the participants to access back-history from 1996 to 2008. The use of this technique was better than asking customers about their website satisfaction, since the time scale of this research is ten years: the customer cannot be expected to remember their satisfaction accurately over such a long period of time, and it is not easy to find customer who has been using the website since 1999.

Accordingly, using the IT students' opinions of the sites improved reliability, as proposed by Agwal and Venkatesh (2002). Three students plus the researcher

participated, and a questionnaire was used for this purpose (E3). Moreover, the students were trained by the researcher on how to access the website history and how to fill in the questionnaire.

O3-3 First Analysis Approach: Competitive Position Analysis

O3-3-1 Identifying the banks' competitive position during the period 1999–2008

According to this analysis approach the best performing banks are assumed to have the best operations' capabilities and actions, therefore banks are initially ranked according to their competitive position. Accordingly, the following actions were made:

- 1- Measuring the banks' performances over the period 1999–2008 (*see* stage 1, Chapter 6).
- 2- Measuring the Banks' relative performance (*see* Stage 2, Chapter 6).
- 3- Plotting the banks' overall relative performance and identifying the banks' competitive positions (*see* Stage 3 & 4, Chapter 6).

O3-3-2 Identifying the best operations competitive capabilities across competitive positions (*see* Stage 6, Chapter 6)

O3-4 Second Analysis Approach: Cluster Analysis

According to the second analysis approach, the best practices of operations strategies are those that determine the best changes in banks' performance, so the best changed capabilities and their related actions that led the banks to achieve best positive changes in performance are the best practices.

O3-4-1 Measuring the percentage of change in operations competitive capabilities (*see* Stage 1, Chapter 7)

O3-4-2 Making all possible trials to cluster banks until reach maximum number of clusters (*see* Stage 2, Chapter 7)

O3-4-3 Identifying the clusters of each clustering trial that significantly adopted best capabilities (*see* Stage 3, Chapter 7)

O3-4-4 Identifying the best operations capabilities (*see* Stage 3, Chapter 7)

4-3-5 Phase 5: Achieving the Fourth Objective

O4: Identifying the significant operations actions made to achieve best operations competitive capabilities over the period 1999–2008.

O4-1 Collecting data relating to traditional banking actions

The implementation of operational capabilities required taking certain actions, so best practices is related to best capabilities and the actions associated with them. Thus data relating to traditional banking service delivery actions, branch-location actions, branch layout design actions and capacity management actions were collected.

O4-1-1 Collecting data relating to traditional banking service-delivery process actions.

Primary data was collected from branch tellers and credit employees of 15 banks, who have been appointed in this position since 1999. Two employees from each branch were surveyed using questionnaires (one teller and one credit employee), and the data was collected from top operations managers of credit and account operations (one account manager and one credit manager from each bank).

Despite the fact that the process design is largely standard and uniformly adopted by all branches, multiple respondents from different geographic regions were

surveyed for the purpose of increasing the reliability, or consistency, of the results by using different respondents viewpoint.

The tellers and credit employees were asked to provide such data so that managers were not solely relied upon. Tellers and credit employees interact directly with the process; they can therefore remember how the process was during the study period more than managers, and whilst managers can turn to their records to identify the actions made, this could not be guaranteed.

The data was collected using two manager questionnaires, T1 (a) and T1 (b). The first one was directed at personal account operations managers, but the second was directed at personal credit operations managers. Also, two non-manager questionnaires were used for this purpose, T2 (a) and T2 (b). The first questionnaire was directed at tellers and the second at credit employees. All questionnaires were developed by the researcher, and the items were developed according to secondary data (*see* Table (4-7)).

Table (4-7)

Questionnaires Items Reported Traditional Banking Service Delivery Process Design

Dimensions of Main Actions	Questionnaire Items		Scale	Item References	Action Scores (items in questionnaires T2 (a) & T2 (b))	Max. Score
	T1 (a) & T1 (b)	T2 (a) & T2 (b)				
Structural Actions						
Process simplicity	1-5-10 5-4-7	1	Ratio	Collier and Meyer (1998)	Relative: number of steps	Relative number of steps
Process automation	1-6-1 5-3-6	2	Ration	Jacob <i>at al.</i> (2002), McKendrick (2002a), McKendrick (2002b), Keyes (1998)	Relative: number of transaction steps processed via computer/total number of transaction steps	100%
Process decoupling and coupling	1-6-2 to 1-6-3 5-4-2 to 5-4-3	3	Ratio	Chase and Tansik (1983), Larrson and Brown (1989), Metter and Vargas (2000), Safizadeh <i>et al.</i> (2003), Zomerdijk and Deveries (2007)	Relative: number of steps processed in the back office or front office/total number of steps	100%
Customer participation	1-5-1 5-4-1	7 to 8	Nominal	Larrson and Brown (1989), Fitzsimmons and Fitzsimmons (2006)	Fill forms: yes: 1, other actions: 2	2
Infra-structural Actions						
Information System Actions						
Core banking system architecture	1-6-8, 1-6-12	17-1 to 17-2	Nominal	Jacob <i>at al.</i> (2002), McKendrick (2002a), McKendrick (2002b), Keyes (1998)	PC: 2, terminal: 1	2

Table (4-7) continued...

Dimensions of Main Actions	Questionnaire Items		Scale	Item references	Action Scores (items in questionnaires T2 (a) & T2 (b))	Max. Score
	T1 (a) & T1 (b)	T2 (a) & T2 (b)				
Advancement of operating software	1-6-9	17-3 to 17-4	Nominal	McKendrick(2002a), Mutter (2002)	Windows: 2, OS/2: 1	2
Integration with headquarter	1-6-2 to 1-6-4	16	Nominal	Keyes (1998), Garey and Chapman (1997), Jacob <i>et al.</i> (2002)	Online 3, island of automation: 2, one PC and send paper copies: 1	3
Formalisation of communication with back office	1-5-7	5	Nominal	Metter and Vargas (2000)	Yes: 1	1
Advancement of communication with back office	1-6-6	6	Nominal	Metter and Vargas (2000)	Post: 1, fax: 2, e-mail: 3, electronic network: 4	4
Adopting WAN	1-6-4 to 1-6-5	17-5 to 17-6	Nominal	Monaham (1998), Keyes (1998)	With headquarters: 1, with other branches: 2	3
Advancement of communication protocol	1-6-7	17-7 to 17-8	Nominal	Monaham (1998), Keyes (1998)	Dial-up: 1, EDSL: 2	2
Integration with e-banking channels	-----	18	Nominal	Barens <i>et al.</i> (2002), Barens <i>et al.</i> (2004)	Soiled: 0 Integration: with e-banking: 2, retrieving: 1	3
Integration with customer service and relations management portal	3-3-5	19	Nominal	Metter and Vargas (2000b), Mayer <i>et al.</i> (2003), Fitzsimmons and Fitzsimmons (2006)	Customer service: answer questions: 1, solve problems: 2 Data mining: data mining: 1, data-mining results available to front office employee: 2	6
Authentication	6-2 to 6-4	13 to 14	Nominal	Collier and Mayer (1998)	Layers: each layer: 1, MAX. = 4 Methods: employee: password: 1, question: 3, ID card: 5 Customer: account number: 1, ID card: 2	16
Data integrity and risk management	6-5	20	Nominal	Harins (2003)	IT solutions: data integrity technology: 2, power outage: 1 Update: 1 Review: system and network: 2, data: 1 Organizing and HR: written procedures: 1, training: 3, committee: 5	16

Table (4-7) continued...

Dimensions of Main Actions	Questionnaire Items		Scale	Item references	Action Scores (Items in questionnaires T2 (a) & T2 (b))	Max. Score
	T1 (a) & T1 (b)	T2 (a) & T2 (b)				
<i>Quality Control Actions</i>						
Quality control	7-3 to 7-4	21	Nominal	Fitzsimmons and Fitzsimmons (2006)	Standard: develop standard: 1, comparing performance: 1 Evaluation: e-reports: 1, customer evaluation: 3, SPC: 5 Solving and recovery: system able to recover: 1, clamming system: 2 Backup: weekly: 1, daily: 3, online: 5	23
<i>Human Resources Actions</i>						
Workforce flexibility	1-5-4 to 1-5-5, 1-5-8 5-4-4	9	Nominal	Hunter and Hitt (1999), Hunter (1995), Metter and Vargas (2000), McKendrick, (2002a)	Promotion: 1 Making decisions: solve problems: 1, making interest decision: 2 Cross-trained: do back office: 1, do front office: 1	6
Degree of back office centralisation	1-5-6 5-4-5	4	Nominal	Metter and Vargas (2000)	In branch managers or specialised employees: 1 In a centralised office shared between branches: 2	2
Degree of back office specialisation	1-5-9 5-4-6	4	Nominal	Metter and Vargas (2000)	Branch manager: 1, branch manager and specialised employees in the branch: 2, specialised employees in the branch: 3, specialised employees in a centralised location: 4.	4

O4-1-2 Collecting data relating to traditional banking capacity management actions.

Data was collected on personal account and credit capacity management. Primary data was collected from branch management executives and top account and top credit operations managers at the headquarters of 15 banks. The data about capacity management could not be collected from branches, since its overall actions covered all branches. Further, the data about these issues required turning back to historical records, which were available only at headquarters.

The branch executive at headquarters had access to a lot of this data, since the person in this position is responsible for planning capacity issues with other managers. Moreover, surveying other managers as top credit and top account operations managers increases the reliability of data, since those managers already had access to these records.

The data was collected using three manager questionnaires: T1 (a), T1 (b) and T4 (*see* Table (4-8)). The first one was directed at personal account operations managers, the second at personal credit operations managers, and the third at branch managers.

Table (4-8)

Questionnaires Items Reported Capacity-management Actions

Dimensions of Main Actions	Questionnaire items		Item references	Action score	Max. score
	T1 (a) & T1 (b)	T4			
Chase demand	1-6-9 to 1-6-10 2-3-1 to 2-3-2, 2-3-5 to 2-3-6 2-4 3-3-1 to 3-3-5 3-4 5-3-1 5-3-3 to 5-3-10 1-6-9 to 1-6-10	1-2 1-5	Klassen and Rohleder (2001), (2002)	<u>Active teller station:</u> Number <u>Active credit offices:</u> Number <u>Number of new hired employees:</u> Number <u>Working hrs, days, weeks:</u> Number of added <u>Change in automation and customer participation:</u> % <u>Number of new branches added:</u> number <u>Increase server capacity, use excess capacity:</u> yes: 1	Relative
Level capacity	2-3-3 to 2-3-4 5-3-2	-----	Klassen and Rohleder (2001), (2002)	Yes: 1	5

O4-1-3 Collecting data relating to branch-layout actions.

Primary data was collected from branch managers in-branch, and branch management executives at headquarters. The latter had access to a lot of this data, since the person in this position is responsible for planning branch layout. However, branch managers have direct contact with branch layout daily, and so are capable of providing historical data about layout design.

Branch managers in different geographic regions were surveyed, since branch-layout design can change from region to region; therefore multiple respondents from different geographic regions increased the reliability of data.

Data was collected using two questionnaires: T3 and T4. The first one was directed at branch managers, the second at branch management executives at headquarters,. All questionnaires were developed by the researcher, and the items were developed according to secondary data (*see* Table (4-9)).

Table (4-9)
Questionnaires Items Reported Branch-layout Actions

Dimensions of Main Actions	Sub-dimension	Questionnaire Items		Item References	Scale	Competency Score (Items in Questionnaire (T3))	Max. Score
		T4	T3				
Visual	-----	3-3-4	1-1 to 1-3	Baker <i>et al.</i> (1988), Bielski (2007), Feig (2005), Greenland and McGoldrick (2005)	Nominal	Window: 1 teller, stations: 3, lighting: 5	9
Convenience	Isolation	3-3-1 3-3-9 3-3-10	3-1	Baker <i>et al.</i> (1988), Greenland and McGoldrick (2005), Bielski (2007), Feig (2005)	Nominal	Yes: 1 No: 0	1
	Air conditioning		3-2 to 3-6		Nominal	Ventilation: 1, entrance air conditioner: 3, hall air conditioner: 5, teller station air conditioner: 7, credit offices air conditioner: 9	25
	Central heating		3-7 to 3-8		Nominal	Central heating: 1 Heating thermostat: 2	3
	Seats and disks		3-9 to 3-11		Nominal	Seats in the front of teller stations: 1, VIP halls: 5, disks: 7	13
	Parking		3-12		Nominal	Yes: 1 No: 0	1
Aesthetic	Colours	3-3-2	2-1 to 2-3	Greenland and McGoldrick (2005)	Nominal	Warm colours: 3, cool colours: 2, subdued colours: 1	3
	Floor		4-1, 4-3		Nominal	Carpeted floor: 1, hard surface: 2	3
	Pictures and plants		4-2		Nominal	Yes: 1, No: 0	1
Safety and security	CCTV	3-3-7	5-1 to 5-6		Nominal	CCTV in the branch: 1, outside: 2	3
	Alarms		5-2 to 5-3		Nominal	Entrance: 1, front of teller stations: 3, offices: 5, connected: 7	16
Modernity	-----	3-3-5	7		Nominal	The max. number of times	

Table (4-9) continued...

Dimensions of Main Actions	Sub-dimension	Questionnaire Items		Item References	Scale	Action Scores (Items in Questionnaire (T3))	Max. Score
		T4	T3				
Social responsibility	Recycling	3-3-3	6-1 to 6-3	Feig (2005), Bielski and Streeter (2007)	Nominal	Solar panel: 5, collecting water: 3, recycled rubber floor: 1	15
	Walls		6-4, 6-7		Nominal	Changed colours: 1, classed walls: 2	
	Community		6-5 to 6-6		Nominal	Children's playing area: 1, community meeting halls: 2	
Information factor	Signs and labels	3-3-8	8-1 to 8-5	Baker <i>et al.</i> (1988), Bielski (2007), Feig (2005), Greenland and McGoldrick (2005)	Nominal	Dept. title signs: 5, direction signs: 3, teller station title and number signs: 1 Digital signs: 2, traditional: 1	9+2
	Promotional leaflets and facilities		8-6 to 8-8		Nominal	Leaflets at the entrance: 1, leaflets in the hall: 3, TV screens: 5	5
	Badges and uniforms		8-9 to 8-10		Nominal	Uniform: 2, badges: 1	3
	Customer service		8-11 to 8-12		Nominal	Electronic kiosks: 2, staff: 1	3
	Departmentalisation		1-4 to 1-5		Nominal	Departmentalisation: 1, customer service unit: 2	3
E-banking channels	Internet banking	3-3-6	9-1 to 9-2	Baker <i>et al.</i> (1988), Feig (2005)	Nominal	Wireless laptop area: 2, Internet café: 1	3
	ATM		9-3 to 9-4		Nominal	Wall ATMs: 1, inside ATM: 2	3
Teller stations	Type of teller stations	3-3-13	10-1 to 10-3	Baker <i>et al.</i> (1988), Feig (2005)	Nominal	Stand-up: 1, seat: 3, tower: 5	9
	Number	3-3-11	11-1		Nominal	Number	Relative number > Average + standard deviation
Credit offices	Number	3-3-14	11-2	Baker <i>et al.</i> (1988), Feig (2005)	Nominal	Number	Relative number > Average + standard deviation

O4-1-3 Collecting data relating to branch-location Actions

The actions undertaken were collected from branch management executives at headquarters. The managers in this unit plan the branch locations and are responsible for managing branches, so they have access to records of the actions undertaken related branch location.

This data was part of the T4 questionnaire, and the items were developed by the researcher according to previous studies (*see* Table (4-10)). In order to have more reliable data, the data relating to actions was collected from secondary sources: the number of branches in urban, suburban and rural areas and the specific branch addresses were collected from the banks' annual reports and websites.

Table (4-10)

Questionnaires Items Reported Branch-location Actions

Dimensions of Main Action	Questionnaire Items T4	Scale	Reference	Action Scores (Secondary Data)	Max. Action Score
Branch market density	2-4-1 to 2-4-4 2-7-1 to 2-7-4	Ratio	Mok (2002), Vace (2000)	The number of branches in urban, suburban and rural areas.	Relative
Branch site density	2-4-5 to 2-4-8 2-7-5 to 2-7-8	Ratio	Mok (2002), Vace (2000)	The percentage bank branches in specific address such as universities, malls, shopping areas, hospitals, airports, stand- alone, etc. The number of sites covered by bank branches	Relative

O4-2 Collecting data relating to electronic banking actions.

O4-2-1 Collecting data relating to electronic banking service delivery actions.

Primary data was collected for each e-banking channel (ATM, Internet banking, telephone banking and mobile banking) from e-banking executives and the technical personnel of each e-banking channel. The executive and one technical or operating personnel for each e-banking channel in each bank were surveyed.

The top executives were surveyed since they are responsible for undertaking the e-banking actions, though they have to resort to the historical records. However, the technical or operating personnel provide the data according to their experience: they interact with the e-banking channel since they run the service.

Surveying managers and technical personnel increased the reliability of data as a result of different rating viewpoints. Four questionnaires were used to collect the related data (E1, E2, E4, E6 and E7) (*see* Appendix). All these questionnaires were developed by the researcher according to previous studies (*see* Table (4-11)). The first questionnaire was directed at e-banking executives, but the remaining questionnaires were directed at technical or operating personnel: E2 for Internet banking operators, E4 for ATM operators, E6 for telephone banking operators, and E7 for mobile banking operators.

Table (4-11)

Questionnaires Items Reported Electronic Banking Service Delivery Process

Dimension of Main Actions	Questionnaire Items					Scale	Item References	Action Scores	Max. Score
	E1	E2	E4	E6	E7				
Structural Actions									
Process simplicity	1-5-4	3	3	3, 10, 11	9, 2	Ratio: E2, E4, E6. Nominal: E7	Collier and Meyer (1998)	Number of steps	Relative: number< average-standard deviation
Telephone banking process routing (IVR, call centre)	2-4-4 4-2-4 9-13-1	-----	-----	1, 6	-----	Nominal	Makino and Kanemaru (1998), Read (2005), Jack <i>et al.</i> (2006)	IVR: 1, call centre: 2	3
Telephone banking process routing (contact centre)	2-3-9 4-2-4	-----	-----	12	-----	Nominal	Araya (2005), Read (2005), Jack <i>et al.</i> (2006)	Fax: 1, e-mail: 3, e-form via website: 5, voice web chat: 7, video web chat: 9	25
Mobile banking process routing	2-4-4	-----	-----	-----	1, 8, 20	Nominal	Krugel <i>et al.</i> (2007), Rotimi <i>et al.</i> (2007), Tiwari and Buse (2007),	SMS push: 1, SMS pull: 3, mobile Internet banking: 5	9
Telephone banking process customisation	9-13-2	-----	-----	1-2, 7-1, 8-2	-----	Nominal	Pinedo <i>et al.</i> (1998), Fluss (2005), Makino and Kanemam (1998), Pinedo <i>et al.</i> (1998)	The customer will interact first with interactive voice response to choose the agent: 1 The customer will interact with specialised agents in particular banking services or able to speak a particular language: 1	1
Infrastructural Actions									
Information System Actions									
Core banking architecture	9-9-3 1-6-5	7	-----	22-1 22-2		Nominal	Claessens <i>et al.</i> (2002), Sharp (2003)	Internet: stand-alone server: 2, web server: 1 Telephone: mainframe: 1, server: 2	2
Integration with other banks' e-banking systems	1-5-6 2-4-5 4-2-5	-----	17-6	-----	-----	Nominal	Kitten <i>et al.</i> (2007a), VISA (2007)	1	1

Table (4-11) continued...

Dimensions of Main Actions	Questionnaire Items					Scale	References	Action Scores	Max. Score
	E1	E2	E4	E6	E7				
Integration with other channels	1-5-6	8	11	23	33	Nominal	Kitten <i>et al.</i> (2007a)	1	1
Integration with customer services and relations management portals	2-3-3	12	12	17	34	Nominal		Telephone: telephone transaction data: 1, branch transaction data: 3, other e-banking channels: 5, results of data mining: 7. Other channels: answer questions: 1, correct errors: 3, data mining: 5	16 9
Advancement of operating software	1-6-2	-----	16	20-3	-----	Nominal	Kitten <i>et al.</i> (2007b), Kitten <i>et al.</i> (2008),	ATM: OS/2:1, Windows: 2 Telephone: Windows: 1	2 1
Advancement of communication protocol	1-6-1	-----	18	25	-----	Nominal	Medcroft (2001), Kicher <i>et al.</i> (2008),	ATM: dial-up: 1, lease line: 2 Telephone: traditional: 1, digital: 2	2 2
Browsing technology		-----	-----	-----	17 29	Nominal	Mobey Forum Financial Services (2003), Krugel (2007)	Pull SMS: SSMS: 1, MMS: 3, USS1: 5, USS2: 7, SIM application: 9 Mobile Internet: WAP1: 1 WAP2: 2	9 2
Advancement of data-transfer channel	9-13-6	-----	18	-----	38	Nominal	Kircher <i>et al.</i> (2008), Tiwari and Buse (2007)	Mobile: 2G: 1, 2.5G: 2, 3G: 3 ATM: Wired: 1, wireless: 2	3 2
Advancement of telephone operator system	1-6-5 9-13-4	-----	-----	24	-----	Nominal	Makino and Kanemarn (1998), Medcroft (2001)	Key telephone system: 1, PBX: 2	2
Automatic call distributor	1-6-5	-----	-----	21-2	-----	Nominal	Pinedo <i>et al.</i> (1998), Gans <i>et al.</i> (2003), Araya (2005)	Yes: 1	1
Computer telephone integration	9-13-4	-----	-----	21-1	-----	Nominal	Pinedo <i>et al.</i> (1998), Gans <i>et al.</i> (2003), Araya (2005)	Yes: 1	1
Dialled number identification	1-6-5 9-13-2	-----	-----	21-3	-----	Nominal	Pinedo <i>et al.</i> (1998), Gans <i>et al.</i> (2003), Araya (2005)	Yes: 1	1

Table (4-11) continued...

Dimensions of Main Actions	Questionnaire Items					Scale	References	Action Scores	Max. Score
	E1	E2	E4	E6	E7				
Degree of operations outsourcing/sourcing	5-3-7	18	-----	18	35	Nominal	Krugel <i>et al.</i> (2007)	No: 1 (sourcing) Mobile: Yes: 1 Telephone: employee outsourcing: 1, employees and management: 3, technologies, employees and management: 5 Internet: employees: 1, servers: 3	Sourcing: 1 Outsourcing: Mobile: 1 Telephone: 5 Internet: 4
Authentication	6-3 6-4 6-2-1 6-2-2	9 to 10	7 to 8	33 to 34	18 to 19 30 to 31	Nominal	FFIEC (2006), Pernumal (2006), Monetary Authority of Singapore (2008)	Each method: 1 point	6 (ATM) 6 (Telephone) 5 (Mobile) 15 (Internet)
Data integrity and risk management	6-2-3 to 6-2-5	13	9	28	37	Nominal	Claessens <i>et al.</i> (2002), Hutchinson and Warren (2003)	IT Solutions: firewalls and SSL: 1, update and data-integrity technologies: 3, periodical review of data integrity: 5, electricity outage: 7, (plus encrypted messages for mobile banking: 9) Organising and HR: written procedures: 1, training: 3, committee: 5 Customer role: clear instructions: 1, confirmation letter: 2 (for ATMs, mobile and telephone banking), clear instructions: 1, anti-virus: 3, encryption: 5, confirmation letter: 7 (Internet banking)	28 (ATM) 28(Telephone) 41(Internet) 37 (Mobile)
Quality-control Actions									
Process quality control	7-4	15	13	26 20-4 20-5	36	Nominal	Hash (2006), Shan and Weihua (2006), Kitten <i>et al.</i> (2007a)	Standard: develop standard: 1, comparing performance: 1 Evaluation: e-reports: 1, customer evaluation: 3, SPC: 5 (for telephone banking; call recording: 9, agent actions: 7) Solving and recovery: system able to recover: 1, clammng system: 2 Backup: weekly: 1, daily: 3, online: 5	23 Telephone = 23 + 16 = 39

Table (4-11) continued...

Dimensions of Main Actions	Questionnaire Items					Scale	References	Action Scores	Max. Score
	E1	E2	E4	E6	E7				
Human resource Actions									
Specialised call agent	1-5-3 9-13-2	-----	-----	8-2 14-3	-----	Nominal	Fluss (2005)	Yes: 1	1
Cross-trained call agent	1-5-2	-----	-----	8-1 14-4	-----	Nominal	Gans <i>et al.</i> (2003)	Yes: 1	1
Structured job design	1-5-3	-----	-----	14-1	-----	Nominal	Varca (2006), Feig (2004)	Break time, adherence to schedule: 1 Specialised back office employee: 2	3
Flexible job design	1-5-2	-----	-----	14-2 14-5	-----	Nominal	O'Herron (2004), Varca (2006)	Give call agent leeway in setting work schedule, flexible call length or break time: 1 Further job done by call agent: 1 Able to handle all calls: 1	3
Rewarding based on absenteeism and adherence to schedule	-----	-----	-----	16-1 16-2	-----	Nominal	Hash (2006)	Yes: 1	1
Rewarding based on transaction time	-----	-----	-----	16-3	-----	Nominal		Yes: 1	1
Rewarding based on transaction errors	-----	-----	-----	16-5	-----	Nominal		Yes: 1	1
Rewarding call agent based on good treatment	-----	-----	-----	16-4	-----	Nominal		Yes: 1	1
Training call agents on soft skills and technologies	8-2-8	-----	-----	15	-----	Interval	Hash (2006), Jack (2006)	5-point scale	5
Total IS competency score									ATM: 51 Internet: 68 Telephone: 73 Mobile: 64
Total quality-control competency score									Telephone: 39 Other channels: 23
Total human resources competency score									17

O4-2-2 Collecting data relating to electronic banking capacity management actions.

Primary data was collected for each e-banking channel (ATM, Internet banking, telephone banking and mobile banking) from e-banking executives and the technical personnel of each e-banking channel. The executive and one technical or operating personnel from each bank were surveyed for each e-banking channel.

The top executives were surveyed since they are responsible for undertaking the e-banking actions, though they have to resort to historical records. However, the technical or operating personnel provide the data according to their experience: they interact with the e-banking channel since run the service.

Surveying managers and technical personnel increased the reliability of data as a result of different rating viewpoints. Four questionnaires were used to collect the related data: E1, E2, E4, E6 and E7 (*see* Appendix). All of these questionnaires were developed by the researcher according to previous studies (*see* Table (4-12)). The first questionnaire was directed at e-banking executives, but the remaining questionnaires were directed at technical or operating personnel: E2 at Internet banking operators, E4 at ATM operators, E6 at telephone banking operators, and E7 at mobile-banking operators.

Table (4-12)

Questionnaires Items Reported Electronic Banking Capacity-management Actions

Dimensions of Main Actions	Questionnaire items					Item references	Action Scores	Max. Score
	E1	E2	E4	E6	E7			
Chase demand	1-4-3 2-3-1 2-3-2 2-3-5 2-4-1 to 2-4-6 4-2-1 to 4-2-7 5-3-1 to 5-3-4 9-9-4 9-13-5	17 16-1 16-2 16-4	17-1 to 17-3 19	22 29-1 to 29-5 30 to32	2 10 23	Klassen and Rohleder (2001), Medcroft (2001), Klassen and Rohleder (2002), Gans <i>et al.</i> (2003), Jack <i>et al.</i> (2006), Shan and Weihua (2006), Kitten <i>et al.</i> (2007a), Good <i>et al.</i> (2007), Kitten <i>et al.</i> (2007b), Kitten <i>et al.</i> (2008)	<p>Process simplicity: % of steps reduced Server capacity: % of capacity increased Operator capacity: % of capacity increased Process routing: number of routes ATM cash replenishment: staff: 1, outsourcing: 2 Telephone-line characteristics: using telephone lines to carry out large numbers of calls at the same time: 1, using high-speed telephone lines: 1 Telephone operator system type: using system able to carry out large numbers of calls at the same time: 1 Number of telephone trunk lines: number of lines Number of full and part-time call agents: number of employees</p>	Relative
Level capacity	2-3-4 1-4-4	16-3	17-3 17-4 17-5	29-6	20 32			

O4-2-3 Collecting data relating to electronic banking location actions

The location actions were related to two e-banking channels: ATM and telephone banking (call centre). Primary data was collected from e-banking executives; one executive from each bank was surveyed as they decide on e-banking locations. The telephone banking operators were also asked to identify the location actions since they directly interact with call centre locations (one operator from each bank). The opinions of telephone banking operators and executives were surveyed to improve the reliability of data.

The primary data was collected using two questionnaires: E1 and E6. The first was directed at e-banking executives and the second at telephone banking operators. The items relating to e-banking locations were identified from previous studies (*see* Table (4-13)).

Secondary data about ATM locations was collected from banks' annual reports and websites. The data collected consisted of the number of ATMs in urban, suburban and rural areas and the address of ATM kiosks. A special form was used for this purpose.

Table (4-13)

Questionnaires Items Reported Electronic Banking Location Actions

Dimensions of Main Actions	Questionnaire items		Scale	Reference	Action Scores	Max. Competency Score
	E1	E6				
ATM market density	----- ³	-----	Ratio	Mok (2002), Vace (2000)	The number of bank ATMs in urban, suburban and rural areas	Relative
ATM site density	-----	-----	Ratio	Crrol (1992), Vace (2000)	The percentage bank ATMs in specific locations such as universities, malls, shopping areas, hospitals, face-to-shopping areas, airports, stand-alones, etc. Number of sites covered by bank ATMs	Relative
On shore/offshore call centre	-----	19-1 to 19-2	Nominal	Read (2005)	Yes: 1	1
Urban/rural call centre	-----	19-3 to 19-4	Nominal	Shap (2003)	Yes: 1	1
Terminated ATM	5-3-5	-----	Nominal	Mok (2002), Hirtle and Melti (2004)	-----	-----
Added ATM	9-6-1 to 9-6-3	-----	Nominal	Mok (2002), Hirtle and Melti (2004)	-----	-----
Relocate ATM	5-3-6	-----	Nominal	Hirtle and Melti (2004)	-----	-----

³ -----: no items: secondary data (annual report).

O4-2-4 Collecting data relating to electronic banking service encounter actions

Primary data was collected for each e-banking channel (ATM, Internet banking and telephone banking) from the e-banking executives and the technical personnel of each e-banking channel. The executive and one technical or operating personnel of each e-banking channel were surveyed for each bank.

The top executives were surveyed since they are responsible for making e-banking decisions, though they have to resort to historical records. However, the technical or operating personnel provide the data according to their experience: they interact with the e-banking channel since they run the service.

Surveying managers and technical personnel increased the reliability of data as a result of different respondents' viewpoints. Two questionnaires were used to collect the related data: E1 and E4 (*see* Appendix). All these questionnaires were developed by the researcher according to previous studies (*see* Table (4-14)). The first questionnaire was directed at e-banking executives, but the other (E4) was directed at ATM operators.

Direct observation methods was used to collect data about Internet banking service encounters (websites). The data was collected using questionnaire T3, which was developed by the researcher according to previous studies (*see* Table (4-14)). The history of the website was accessed through (www.archive.org), a site that allows the observer back-history access from 1996 to 2008.

The data was collected by three IT students and the researcher. The use of this technique was better than asking managers about the actions undertaken, since the time-scale of this research is ten years, so the managers could not be expected to remember the actions undertaken accurately.

Table (4-14)

Questionnaires Items Reported Electronic Banking Service Encounter Actions

Score of Main Actions	Questionnaire Items			Scale	References	Action Scores	Max. Score
	E1	E3	E4				
Transactional functionality	9-13-7	1-1 to 1-10	2	Nominal	Diniz (1998), Diniz (2005), Kitten <i>et al.</i> (2008), Kircher <i>et al.</i> (2008)	Each function = 1 point	34 (Internet)
Informational functionality		1-11 to 1-32	15-4 15-5	Nominal			
Relational functionality		1-33 to 1-35	16-5 15-7	Nominal			
Navigation	8-2-1	2-1 to 2-10	-----	Nominal	Palmer (2002), Hernandez-Ortega (2007)	Each navigation function = 1 point	Internet: 10
Customisation	8-2-2	2-11	15-3	Nominal	Agarwal and Venkatesh (2002), Palmer (2002)	Internet: yes: 1	Internet: 1
Content	8-2-7	2-12 to 2-15	-----	Nominal Ratio	Agarwal and Venkatesh, (2002), Palmer (2002)	Internet: each function: 1 Number of update times: number	
Accessibility	8-2-4 to 8-2-6 9-9-1 9-9-2	2-16 to 2-19	-----	T1: Nominal T3: Ratio	(Palmer 2002), Miranda <i>et al.</i> (2006)	Size of home page: relative Number of pages: relative Size of the pages: relative Number of links: relative Search-engine rank: relative	100
Models of ATMs	9-6-5	-----	20	T1: Nominal T4: Ratio	Kitten <i>et al.</i> (2007a)	Relative	100
Attractiveness	8-2-3	-----	15-1 15-2	Nominal	Kitten <i>et al.</i> (2008), Kircher <i>et al.</i> (2008)	Coloured screens: 2, black and white: 1	2

O4-3 Identify the Significant Operations Actions

O4-3-1 First analysis approach: Identify significant operations' actions made to achieve the best capabilities across competitive positions (*see* Stage 7, Chapter 6).

O4-3-2 Second analysis approach: identifying the operations actions that significantly affected best operations capabilities (*see* Stage 5, Chapter 7).

4-3-6 Phase 6: Achieving the Fifth Objective

O5- Constructing a pattern of best practice in traditional and electronic banking operations strategies in Jordan over the period 1999–2008.

Achieving the third and fourth objective lead to identifying the best operations capabilities and actions required to achieve them. Next it is important to identify to what extent adopting the best capabilities achieve particular performance and what level of actions should be adopted to achieve a particular level of capability. In order to achieve this objective it is normal to build a prediction models, however, such models require high level of statistical significance methods based on large sample.

Although the data set for the research is extensive in that it includes all the domestic owned banks in Jordan and it is very wide in its scope covering many aspects of traditional and electronic banking, the total population of banks in Jordan is only 15, therefore whilst the data is comprehensive it is more appropriate to build indicative models for best practices rather than to try to build prediction models. The method of building the models are set out below:

1: Maps the relationships between significant actions, best capabilities and significant performance indicators according to the conceptual models developed in Chapter 5 (*see* stage 8 Chapter 6); this is important in order to identify the relations between variables, so the independent and dependents variables are identified, and the impact could be measured.

2: Identify the average performance achieved as a result of adopting each best operational capability (*see* stage 9 Chapter 6).

3: Identify the impact of each unit of best operational capabilities on performance indicators (*see* Stage 10 Chapter 6); this will help in predicting the impact of best capabilities on performance, so the decision maker can make predication simply by change number of capability units.

4: Identify the actions required to achieve one unit of each best capability (*see* Stage 11 Chapter 6); this will help in guiding decisions, so the change in number of capability unit will indentify the number of actions units required.

5: Identify the ranges of best-practice operational capabilities (minimum and maximum) (*see* Stage 12 Chapter 6); this is important since the best capabilities in Jordan were adopted within these ranges, so more than these ranges could be drain of resources, and less than these ranges may have no impact.

6: Constructing the indicative model of each best capability (*see* Stage 13 Chapter 6); this model is a representation of relationship between actions, capabilities and performance indicators by using boxes, and arrows, this will simplify understanding the relations between variables. The relations are presented by one unit of operations capability. The presentation of each capability in a separate indicative model makes action selection easier, since combining all capabilities in one model make it impossible to understand the impact of each unit of each capability, since the impact on performance is an accumulation of all capabilities.

7: Electronic decision-making sheets were developed using Microsoft Excel software; this electronic version helps decision-makers identify which actions should be made to achieve a particular capability, as well as predict performance as a result of changes in particular capabilities (*see attached CD*) (*see chapter 8*).

4-4 General Methodology Type of this Research

The type of research methodology that fits this research is the analytical survey. According to Collis and Hussey (2003) survey methodology is suitable if a representative sample of the population or the whole population is studied to have better inferences about the population. In this research the whole population was studied to gain a better insight into best practices in Jordan.

Further, the methodology is analytical according to Collis and Hussey (2003) if the relations between variables are examined, so this research project is analytical since the relations between operational actions, operational competitive capabilities and performance indicators were investigated to identify the patterns of best practices.

4-5 Conclusion

To answer the research question, six Phases were followed: Phase 1 involved defining and identifying the study variables (actions, competencies, competitive capabilities and performance indicators), for which the literature was reviewed. For Phase 2 the literature was reviewed to identify the relationship between study variables and develop the conceptual typologies of traditional and electronic banking operations strategy.

The outcomes of Phase 1 and Phase 2 were very important for Phase 3, in which phase the data-collection instruments were developed. The development of these instruments required a clear understanding of study dimensions and how to measure

them. Furthermore, the study unit of analysis, study sample, research time-frame and respondents were identified for this purpose. Next, a pilot study was made and new revised data-collection instruments were devised.

Phase 4 focused on achieving the third objective; the data relating to operational capabilities was collected and analysed using two analytical approaches: competitive position analysis and cluster analysis. In Phase 5 the fourth research objective was achieved; the data relating to operational actions was collected and the actions that affected best operational competitive capabilities were identified using two analytical approaches: competitive position analysis and cluster analysis.

Next, in Phase 6 the best-practice patterns of operations strategy were constructed; accordingly, maps of the best operational capabilities, their related actions and the performance indicators associated with them were developed. Then the ranges of best operational capabilities were identified, and the impact of each unit of operational capability on performance and the actions that were required were also identified. Finally, a decision-support system was developed to help decision-makers.

Chapter 5

Proposed Typologies for Traditional and Electronic Banking

Operations Strategies

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5-1 Introduction

The purpose of this chapter is to develop a conceptual framework for electronic and traditional banking operations strategies which combines the operational actions with competitive capabilities and performance. Best-practice “typologies” of banking operations strategies are then identified.

Accordingly, the actions and competitive capabilities of traditional and electronic banking operations are reviewed, as well as the banking performance indicators, the relationship between actions and competitive capabilities and between competitive capabilities and performance indicators. Finally, the proposed typologies are developed.

5-2 The Importance of Developing Banking Operations Strategy Typologies

The building of frameworks or configurations of service operations strategies is very important for senior managers, to help them in relating operational activities to the firm's overall service performance. Moreover, this will help in identifying the key elements that must be addressed in the strategy-development process, as well as help positing the firm's operations in relation to competitors (Chase & Hayes 1991).

Also, such models will help in the designing of consistent service delivery and identifying the reasons for failure in delivering the required services to customers (Armistead 1990). However, only a few studies analysed the differences and interactions between the different dimensions configuring the service operations strategies in general (Aranda 2003) and banking operations strategies in particular.

The configuration is a grouping base (logical subset of variables) for organisations. Thus the organisations can mirror each other based upon the grouping

base (Meyer *et al.* 1993). There are two approaches used to develop strategy configurations: the typology approach and the taxonomy approach (Miller 1996).

Typologies are ideal types, each of which represent a unique combination of organisational attributes that are believed to determine relevant outcomes (Doty & Glick 1994), while taxonomies are an empirical classifications of mutually exclusive and exhaustive groups (Miller 1996).

Compared to the typology approach, the taxonomy approach tends to be more firmly based on data (or at least on quantitative data). Moreover, the classification variables are carefully selected based on existing theory and tasks at hand, and seeks to test the following question: are the proposed groups stable across techniques and sample data? (Bozarth & McDermott 1998).

The typology approach provides generalised large-scale and mid-range theories applicable to individual types and specifies the individual dimensions that define the types which are empirically testable. Also, it tests the following question: does greater alignment between an organisation and defined ideal types result in greater organisational performance? (Bozarth & McDermott 1998).

Since the aim of this study is to identify best practices in banking operations strategies, the configurations of banking operations strategies are the ideal mixer of different characteristics of operations strategies that the banks should adhere to in accordance with operational competitive capabilities consistently imposed by the market.

The majority of empirical research contributions to operations strategy configurations are taxonomies of manufacturing strategies, such as the contribution of

Miller and Roth (1994), Kathoria (2000), Frohlich and Dixon (2001), Menor *et al.* (2001), Sum *et al.* (2004) and Zhao *et al.* (2006), rather than typologies.

Also, The majority of general-scope typologies of operations strategies were developed by manufacturing strategy literatures (e.g. Hayes & Wheelwright 1984; Kathoria & Orne 1989; Hill 1995; Ward *et al.* 1996; Devaraj *et al.* 2001), and few general-scope typologies were developed by the service operations strategy literature (e.g. Kellogg & Nie 1995; Metters & Vargas 2000; Lowson 2002; Aranda 2003).

Accordingly, the majority of typology frameworks that have been developed by service operational strategy scholars are related to process design (limited scope) (e.g. Chase & Tansik 1983; Schmenner 1986; Hill 1995; Tinnila & Vepsalainen 1995; Zomerdijk & DeVeries 2007). However, the scope of operational strategies is broader, including other decision dimensions such as location, capacity and facility layout, and the majority of these typologies are theoretical (e.g. Hayes & Wheelwright 1984; Kotha & Orne 1989; Hill 1995; Kellogg & Nie 1995; Metters & Vargas 2000).

On the other hand, the majority of the frameworks were developed as a general-sector models (e.g. Hayes & Wheelwright 1984; Kotha & Orne 1989; Kellogg & Nie 1995; Ward *et al.* 1996), and few are developed for particular service or manufacturing industries (e.g. Metters & Vargas 2000; Lowson 2002; Aranda 2002, 2003). Thus the typologies that are developed in this chapter are of a broader scope, more sophisticated, and oriented towards the banking industry.

5-3 Identifying Traditional Banking Operations Strategy Actions and Competitive Capabilities

5-3-1 Definition of Traditional Banking Operations Strategy

The concept of operations strategy is used as an interchangeable concept with manufacturing. Really the concept of manufacturing is a part of operations, but more popular and well developed. The concept of operations strategy is broader and covers non-manufacturing companies (Harrison 1993; Brown *et al.* 2005).

So generally speaking the concept of manufacturing strategy is the adoption of operations strategies in manufacturing companies, and the concept of operations strategy includes both manufacturing and service, whether profit or non-profit, government or non-governmental (Slack & Lewis 2002).

Service operations strategies, according to functional viewpoint of operations strategy, are choices, actions and decisions related to service-delivery systems (Armistead & Clark 1993; Lawson 2002; Roth & Menor 2003), which could be long to medium term (Lawson 2002), whether deliberate, emergent or both (Swamidass *et al.* 2001; Barnes 2002; Englyst 2003), and which identify how the organisation delivers service.

The operational choices should respond to service operational capabilities (Armistead & Clark 1993; Patrovia 2001; Roth & Menor 2003). Also the service operations competitive capabilities should be consistent with the target market requirements (Armistead 1990; Patrovia 2001; Roth & Menor 2003). Thus the company's competitive position will be affected by these choices (Roth & Menor 2003).

The traditional banking service could be defined as the experience and outcomes of the total banking service package (Johnston & Clark 2001) that is delivered to and

perceived by a customer through direct face-to-face (Chase & Hayes 1991) and standardised contact with the service provider (Tinnila & Vepsalainen 1995).

Accordingly, traditional banking operations strategy could be defined as the stream of face-to-face banking service delivery system decisions or actions (whether deliberate, emergent, or both) that are consistent with the target market's requirements and aimed at developing or sustaining the bank's competitive position.

5-3-2 Identifying the Actions of Traditional Banking Operations Strategies

In the context of this research the operational actions are the realised stream of actions relating to banking operations, whether traditional or electronic. In manufacturing literature the scope of choices can be wider to cover the value chain; or narrower to cover the actions relating to operations functional units (Lowson 2002).

The value chain viewpoint is difficult to adopt in information intensive sectors such as banking; since the supply chain is not easy to identify, supply chain management has a direct relevance to services that include the provision of manufactured goods as a part of the service concept, such as retailers, equipment service and repair companies and airlines (Johnson & Clark 2001).

Thus researchers of banking operations strategy adopted the functional viewpoint. Their classification scheme includes integrated technology, capacity expansion and human resources (Menor *et al.* 2001), or quality, process, capacity and facilities (Gupta *et al.* 2001), or expanded to include encounter management strategies, operations integration, capacity management strategies and facility management strategies (Rhee & Mehra 2006).

The diagnosing of operations strategy actions has been developed mainly by the manufacturing strategy literature. The contribution of the service literature is still

limited; well-developed diagnostic procedures for measuring manufacturing strategy actions is still limited, which could be summarised by the contributions of Cleveland (1989), Vickery (1991), Narasimhan *et al.* (2004) and Schmenner and Vastag (2006).

The widely used methodology for assessing the actions of operations strategy is competitor-centred, and the widely used competitors-centred is self-reporting management judgment (e.g. Ahmed & Montagno 1995; Williams *et al.* 1995; Avella *et al.* 2001; Deveraj *et al.* 2001; Deveraj *et al.* 2004; Narasimhan *et al.* 2004; Power & Hahn 2004; Schemener & Vastag 2006).

However, the least used is the market-positioning method (e.g. Cleveland 1989 & Vickery 1991). According to Cleveland (1989) and Vickery (1991), the actions can be regarded as strengths or weaknesses, so the actions will be evaluated based on the capabilities of the process to achieve the desired objective or meet particular performance levels. Strengths are indicated by (+1), weaknesses by (-1) and neutral situations by (0).

5-3-2-1 Service-delivery Process Actions

The characteristics of banking service delivery processes include: breaking the process activities between back office and front office "decoupling" (Chase & Tansik 1983; Slivestro *et al.* 1992; Metters & Vargas 2000; Zomerdijk & DeVeries 2007), customer participation (Larsson & Bowen 1989), the degree of process automation (Metters & Vorgas 2000), the process simplification and the number of process routings (Collier & Meyer 1998).

5-3-2-2 Branch-layout Actions

The characteristics of branch environment are part of structural actions. This is known as the "servicescape", or physical environment which surrounds the employees and

customers (Bitner 1992 & Hoffman *et al.* 2003). The physical surroundings are in general more important in service settings because customers as well as employees often experience the firm's facilities (Baker *et al.* 1988; Bitner 1992).

The banking servicescape differs from those of other service sectors (Greenland & McGoldrick 2005). The competencies of bank servicescapes can be classified into: 1) ambient conditions, 2) aesthetics, 3) privacy, 4) efficiency and 5) social conditions (Baker *et al.* 1988). Moreover, it could be classified into: 1) physical factors, 2) emotional stressors, 3) use facilitators, and 5) core product or service facilitators (Greenland & McGoldrick 2005).

5-3-2-3 Capacity Management Actions

Various general strategic models have been developed to manage capacity and demand, such as Sasser (1976), Heskett *et al.* (1990) and Crandall and Markland (1996).

According to Sasser (1976) service capacity strategies could be classified into chase demand and level capacity strategies. Chase demand means planning capacity to meet whatever demands occur, and level capacity strategy means maintaining the capacity consistent to handle the average number of daily transactions; Heskett *et al.* (1990) expanded the strategies of Sasser (1976) to include modified chase demand, but Crandall and Markland (1996) suggested four service capacity strategies: 1) match, 2) provide, 3) control, and 4) influence.

The options of managing demand (level capacity) and capacity management (chase demand) are classified by Klassen and Rohleder (2001) according to long-term and short-term options, and explicit or implicit, so they developed a matrix. The explicit demand management options are those providing fairly precise control over the arrival of customers, but implicit options are those influencing but not controlling the arrival of

customers. Management can adopt a combination of different strategies (Klassen & Rohleder 2001).

5-3-2-3 Branch Location Actions

Branch location actions are a part of the structural actions; branch management executives or operations managers should first identify the market or a local area whose boundaries enclose in their behavioural characteristics or in the pattern of home life (urban, suburban, town and rural) work and recreational aspects, then identify the location, followed by local network size, and finally the site selection or the specific site address (Crrol 1992).

Various distribution strategies can be adopted, such as branch network concentration, branch network expansion in new or existing markets, branch network reconfiguration, merging branches, divestiture or closing, and relocation (Chelst *et al.* 1998; Hirtle & Melti 2004; Hirtle 2007).

As a part of location strategies the manager should decide which service site will be closed or opened, and the specific site of branches, such as: shopping areas, in front of shopping areas, stand-alone branches, in business areas, in airports, hospitals, etc.. They should also determine the number of branches in a geographic area.

5-3-2-5 Quality Management Actions

Banks should concern themselves with developing quality standards, which should be consistent with customer expectations (Fitzsimmons & Fitzsimmons 2006). Then the quality of service delivery should be evaluated to ensure compliance with standards (Johnston & Clark 2001), so periodical customer surveys should be carried out and a complaints system should be activated (Chu-Mei 2001).

5-3-2-6 Information System Actions

These include the competencies of banking information systems, which include the core banking system architecture. The architecture could be mainframe or (client-server) distributing computing (Jacob *et al.* 2002). The degree of integration between head office and branch systems is a part of architecture, which could be stand-alone or semi-integrated or online system. Transactions of semi-integrated systems taking place in-branch are consolidated and then sent to the head office at the end of each working day.

However, the transactions of online shared system, updated online in a central database at headquarters. Various scenarios could be adopted by banks for a shared system: a host-centric scenario, or host-centric scenario with local application (Jacob *et al.* 2002), or having the key branches in major cities act as regional hubs, with these hubs connected to the head office (Keyes 1998; Jacob *et al.* 2002).

Moreover, as a part of the information system architecture, the branch system could be integrated with other banking channels. This is applicable by adopting a service-oriented architecture (SOA). According to this architecture the centralised database can be shared between all channels and any transaction conducted through any channel will be available on real time with other channels. Furthermore, transactions conducted by each channels can be completed using other channels (Harnis 2003; Patzwald 2006).

Also, as a part of information system architecture, the branches information system could be integrated with customer service and relations, so customer services and relations are able to retrieve all service history data to answer questions or resolve issues with customers, and the agent is able to update the service data and modify or cancel service subscriptions at the customer's request (Mckendrick 2002a; Harrison

2003). Furthermore, the results of customer data analyses (data mining) are available to front-line employees (Mckendrick 2002a; Harrison 2003).

The advancement of communication technology used to transfer and coordinate information between two or more geographic regions or two parties within a process is an information technology competency. Such technologies could be used: LAN, WAN, VAN intranet or extranet (Chan 2000), telephone, fax, or e-mail (Metter & Vargas 2000; Zhu *et al.* 2004).

The advancement of software used to run the system could be Windows software or OS/2. The former is more advanced and easier to use. The communication protocol could be dial-up or EDSN. The latter is more advanced and guarantees digital transfer of data (McKendrick 2002b, Muller 2002), as well as data integrity and security (Harrison 2003).

5-3-2-7 Human Resources Actions

The human resources competencies are a part of infrastructural competencies. These competencies are the degree of human resources flexibility: how the employees will be assigned to front or back office, whether front-office personnel will do the job of the back office (Zomerdijk & Deveries 2007), and whether back- or front-office personnel are cross-trained to do any job (Metter & Vargas 2000).

This also includes the degree of employee specialisation (Metter & Vargas 2000) or the range of tasks the employee performs under lower levels of supervision (Menor *et al.* 2001), the empowerment of employees to correct specific types of errors or to change the financial product rates (Hunter & Hittle 1999), and whether branch personnel are responsible for promoting and selling the bank's products and providing customers with advice (Feig 2005).

5-3-3 Identifying the Competitive Capabilities of Traditional Banking Operations Strategies

The widely adopted classification scheme is: cost, quality, delivery and flexibility (e.g. Skinner 1969, 1974; Vickery & Droge 1993; Hill 1995; Ward *et al.* 1996; Ward *et al.* 1998; Badri *et al.* 2000; Ward & Duray 2000; Avella *et al.* 2001; Devaraj *et al.* 2001, Slack & Lewis 2002, Sum *et al.* 2004; Fang & Wang 2006); other authors have added additional dimensions, such as after-sales service and broad distribution (Miller & Roth 1994; Zhao *et al.* 2006).

Cost is related to produce at low product unit. Delivery could be categorised according to speed and dependability. The former relates to quick delivery of products and the latter to timely delivery products (Skinner 1969, 1974; Vickery & Droge 1993; Hill 1995; Ward *et al.* 1996; Ward *et al.* 1998; Badri *et al.* 2000; Ward & Duray 2000; Avella *et al.* 2001; Devaraj *et al.* 2001; Slack & Lewis 2002; Fang & Wang 2006).

However, flexibility is categorised into internal and external. The first category is related to the ability to meet customer requirements efficiently; it includes machine, components, materials, routing flexibility (Chang *et al.* 2005), distribution of information flexibility, and labour or workforce flexibility (Aranda 2002, 2003).

The external aspect is affected by the changes of demand or environment uncertainty; it is classified into new product flexibility (or the ability to develop new products or models quickly), product mix or range flexibility (the ability to provide a variety products), and volume flexibility (increase or decrease in the aggregate production level) (Chang *et al.* 2005).

Finally, quality is providing superior quality by either higher quality in a standard product, or providing features or performance characteristics that are unavailable in competing products (Wheelwright 1984). The concern here is about the

percentage of rework, the percentage of scrape, and the percentage of products returned which are defective (Devaraj *et al.* 2001).

Despite the fact that the classification of operations competitive capabilities and its definition has been developed in the manufacturing literature, the same classification scheme could be adopted for the research of service operations strategy in general (Chase & Hayes 1991) and banking operations strategy research in particular (Gupta 2001; Menor *et al.* 2001), though with minor modifications.

The priorities of costs and delivery speed could be adopted without modification. External flexibility could be adopted, but the internal aspect could be a part of operational competencies. Therefore flexibility could be categorised into new products or services flexibility, service range flexibility, volume flexibility, and process availability.

On the other hand, the definition of quality in the service context is broader, since the service concept includes the service outcome and service experience; accordingly, the servicescape and transaction quality should be evaluated.

Table (5-1)

Statistics of Traditional Banking Operations Competitive Capabilities Evaluated by Previous Studies

Operational Competitive Capability	Number of Studies
Operations productivity	9
Branch location accessibility	6
Transaction time	5
Transaction costs	4
Quality of branch layout	2
Service availability	1
Customer waiting time	0
Transaction quality	0
New products flexibility	0
Products range flexibility	0
Volume flexibility	0
Transaction security	0

Table (5-1) shows traditional banking operations capabilities have been evaluated in the previous studies. These are: transaction time, costs, branch accessibility, branch convenience, branch-layout quality and service availability. Productivity was widely evaluated by nine studies followed by branch accessibility, and the least evaluated was service availability and branch-layout quality.

The previous studies examined or investigated some operations competitive capabilities, other capabilities such as; customers waiting time, transaction quality, transaction security, new product flexibility, product range flexibility, and volume flexibility were not investigated at all. However, for this study it was considered that these were more important capabilities that would affect customer satisfaction; therefore they were added to the list identified from previous studies. This is considered to be a comprehensive list and it was confirmed as such by managers during pilot study.

The accessibility of branches was measured by the number of branches per 10,000 people living in the area (e.g. Matthews 1999; Nasr 2006; Matthews & Ding 2006), or the number of branches per 1,000,000 people (e.g. Reserve Bank of Australia 1996), or the number of people served per branch (e.g. Kaakunga *et al.* 2004). This is called demographic branch accessibility.

Despite the previous studies examined or investigated some operations competitive capabilities, other capabilities as; customers waiting time, transaction quality, transaction security, new product flexibility, product range flexibility, and volume flexibility are not investigated at all, accordingly, in this study all capabilities whether investigated or not investigated by previous studies were surveyed.

Accessibility has been measured by the number of branches per 1,000 km², called the geographic branch accessibility (Beck *et al.* 2007), and further measured by the number of branches providing the account or loan services (Beck *et al.* 2006). Previous studies of branch-layout quality used a survey methodology by surveying customer attitude (e.g. Baker *et al.* 1988; Greenland & McGoldrick 2005; Reimer & Kuehn 2005).

Delivery speed has been measured by asking the respondents to identify the time required to conduct the account transaction or approve the loan (e.g. Frei *et al.* 1996; Beck *et al.* 2007). Transaction costs were measured by asking the respondents to identify the costs per transaction (e.g. Kamesan 2003; Sochan & Ali 2006; Beck *et al.* 2007).

Many previous studies decided to track change in productivity as a consequence of different changes in the banking sector, such as deregulation (e.g. Humphery 1991; Wheelock & Wilson 1999) or mergers (e.g. Krishasamy *et al.* 2004). Productivity could be defined as output per unit of inputs (Humphery, 1991).

The definition and indicators of inputs and output for bank branches is not forward and controversy remains in the literature (Camanho & Dyson, 1999, 2005). This depends on the approaches used by the researchers to define whether the bank branches were production or intermediation units (Camanho & Dyson 1999, 2005; Galagedra & Edirisuriya 2005).

According to the production approach, the branches act as services providers for account holders. The outputs are loans, savings and account activity, measured by the number of transactions processed. The inputs are physical, such as capital and labour. Interest costs and revenue are excluded from this approach since only physical inputs are needed to perform transactions or provide other types of services (Camanho & Dyson 1999).

The intermediation approach views the bank branches as intermediating funds between savers and investors. The input includes both interest and non-interest costs or deposits, but the outputs are total balance or revenue of loans and investments (Camanho & Dyson 2005). The choice of either of these two approaches depends on the aim of the analysis: if the purpose is to analyse the bank's productivity, then the production approach is more appropriate (Galagedra & Edirisuiya 2005).

The most widely adopted approach among previous studies is the production approach (e.g. Golany & Storbeck 1999; Wheelock & Wilson 1999; Zenion *et al.* 1991; Krishnasamy *et al.* 2004; Swierczek *et al.* 2005). The measures of banking outputs were the numbers of transactions processed in deposit or loans account or both (a flow measure) (e.g. Camanho & Dyson 1999).

Other measures of outputs were the real or constant dollar value of funds in the deposit and loan accounts (a stock measure) (e.g. Golany & Storbeck 1999; Wheelock & Wilson 1999; Sathy 2002; Krishnasamy *et al.* 2004; Galagedra & Edirisuriya 2005),

the number of deposits and loan accounts serviced by banks (a stock measure) (e.g. Zenion *et al.* 1991; Swierczek *et al.* 2005).

However, the preferred measure for outputs is seemingly an output flow, which is expressed in the number of transaction processed since the output is typically a flow, and stock measures might be proportional (on average) to a flow measure; also, stock measures could be used if flow measures are unavailable (Humphery 1991).

The input measures adopted by previous studies were labour according to number of workers (tellers, non-tellers, or both) (e.g. Camanho & Dyson 1999; Wheelock & Wilson 1999), total worker hours worked (e.g. Golany & Storbeck 1999), or total worker salaries and wages (e.g. Krishnasamy *et al.* 2004).

Other measures of inputs were constant dollar value of physical capital (e.g. Wheelock & Wilson 1999; Alam 2001), total operating expense (e.g. Camanho & Dayson 1999; Galagedra & Edinirisuriya 2005), and working space or floor space of branches (e.g. Camanho & Dayson 1999; Golany & Storbeck 1999).

5-4 Identifying Electronic Banking Operations Strategy Actions and Competitive Capabilities

5-4-1 Definition of Electronic Banking Operations Strategy

Recent advances in technology have created a surge in "technology-based self service" (Dabholkar *et al.* 2003), which have changed the way that the service firms and consumers interact, out of which have arisen a host of research and practice issues relating to the delivery of e-services (Rowley 2006). This dramatic impact in the service industry in general has its triggering effect on the financial sector and banking sector in particular (Durkin *et al.* 2008), which created an e-banking applications.

Different definitions of e-services have been imposed in the literature, but there is an absence of agreement in the definitions. Some authors define it as web-based or interactive services (Reynolds 2000), or self-service technologies provided through the Internet (Boyer *et al.* 2002). The same definition was used to define e-banking, which is known by the majority of authors as Internet banking (e.g. Durkin *et al.* 2008).

According to Rowley (2006), the concept of e-services in general should be extended to embrace all applications where service might be delivered with the mediation of IT such as websites, information kiosks and mobile devices. Thus Internet banking is a part of e-banking initiatives (Ibrahim *et al.* 2006).

E-banking is an e-business application (Lowson 2002). It is the provision of banking products and services through electronic delivery channels (Nsouli & Schaechter 2002). Thus many "virtual banking" or "non-branch bank" practices are included in the e-banking concept, such as ATMs, telephone banking, personal computers, Internet banking (Liao *et al.* 1999), automatic bill payments and electronic funds transfers (Kolodinsky *et al.* 2004).

However, the concept of electronic banking in this research can be defined as: a self virtual digital content service package mediated by IT applications such as the Internet, kiosks or mobile devices, which includes a range of applications such as ATMs, telephone banking, mobile banking or Internet banking.

The terms electronic operations in general and electronic service operations in particular is an emergent and new concept still in its infancy; this concept is well defined in the electronic commerce literature (e.g. Barends *et al.* 2002; daSilveria 2003; Lowson 2002; Schniederjans & Cao 2002).

Accordingly, e-operations are simply the application of the Internet and its attendant technologies to the field of operations management (Lowson 2002; Lowson & Burgers 2003), but as discussed earlier, the concept of e-service is more extended to include all self-services mediated by IT applications.

Generally speaking, an organisation can be considered to have electronic operations if it uses information and communication technology in the management of its order fulfilment and delivery process (Barnes *et al.* 2002). According to Ghosh and Surjadjaja (2004), e-service operations encompass all customer-centric activities, starting from pre-transaction activities with customers, transactions and post-transaction activities, or the exchange of data and information using electronic media to provide operations, improvement innovations and integration, as well as efficiency of the business process (Lowson & Burgers 2003).

The e-operations strategy is the choices that let the organisation exploit its resources better than its competitors (daSilveria 2003), or the pattern of long- to mid-term choices that execute or implement the general business strategy, and effectively use the tools and information flows involved in information technology and systems (Lowson & Burgers 2003).

Accordingly, the e-operations choices should be fitted or aligned with the business environment (Schniederjans & Cao 2002). The managers in the new and emerging form of operations, such as B2C, must understand how operations can enhance customer value (Hiem & Sinha 2001a). They should also be able to develop new capabilities by exploiting competitive resources (Lowson & Burgers 2003)

As stated above, e-banking operations strategies are the stream of decisions or actions, whether deliberate, emergent, or both, which relate to the banking service fulfilment and delivery of self-virtual banking services mediated by IT applications,

which are well aligned with the external market requirements and impact the bank's competitive position.

5-4-2 Identifying the Actions of Electronic Banking Operations Strategies

5-4-2-1 Service-delivery Process Actions

These actions relate to the transaction process's simplicity, or the number of steps required to conduct the transaction, as well as the number of process routes or the number of electronic channels available to conduct the transactions. This could be adopted by telephone banking systems, and this service could be provided by IVR (interactive voice response) or via call centres (Makino & Kanemaru, 1998, Read 2005; Jack *et al.* 2006) or both.

Process routing is related to the number of self-services adopted by call centres such as outbound voice messages or outbound IVR, the use of FAQs through bank website, outbound e-mails, VoIP or fax (Araya 2005; Read 2005; Jack *et al.* 2006), or providing mobile banking services whether by SMS (pull and push) or mobile Internet banking (Rotimi *et al.* 2007), or both.

5-4-2-2 Capacity Management Actions

The chase demand actions are structural actions such as expanding the capacity of each e-banking channel server, replacing the existing servers with larger servers, using the unused server capacity, increasing the number of ATM kiosks on and off premises, the sharing of bank ATMs with other banks by using switch technology, separating the web server from the Internet banking server, and designing the e-banking process to be more simple (Klassen & Rohleder 2002).

It also includes expanding the telephone operator system capacity, replacing the existing system with a more advanced one such as PBX (which allows the adoption of

advanced technologies such as IVR, CTI and calls routing), increasing the number of channels or trunks connected to the call centre telephone system, increasing the number of call agents (especially part-timers in peak-demand periods (Gans *et al.* 2003)), cross-training call agents to chase demand, and using other channels of communication (such as the web) to reduce the demand level of call centres (Jack *et al.* 2006).

Level of capacity through educating customers about the different e-banking channels available, informing them of the peak working hours of e-banking channels, and providing e-banking channels without fees (Klassen & Rohleder 2002) are structural capacity management competencies.

5-4-2-3 Location Actions

Locating ATMs in more convenient, safe and secure locations (Kitten *et al.* 2007a) is a structural action. ATMs could be located on or off the premises. The off-premises locations could consist of a wide range of sites, such as on branch walls or as stand-alones. The stand-alones could be in stores, petrol stations, supermarkets, speciality retailers, department stores, hospitals, schools or campuses, fast-food restaurants, airports, or bus stations (Bickers 2002).

The call centre could be located onshore, offshore, or onshore/offshore. Onshore means the call centre will be established in the bank's home country; offshore means the call centre will be established in another country (Read 2005). Or it could be located in rural or urban areas as a result of real estate costs, or located in any area where high speed and high quality of communication resources are available (Sharp 2003).

5-4-2-4 Electronic Banking Service Encounter Actions

Electronic banking service encounter design attributes are a part of structural actions. For Internet banking the website design attributes or principles are the Internet banking

service encounter design competencies, so the website should be easy to use. The website design covers a lot of attributes, such as navigability, responsiveness, accessibility, interactivity and content (Nielsen 1993, 2000; Agarwal & Venkatesh 2002; Palmer 2002; Wu *et al.* 2004).

Navigability is allowing the users to acquire the information they are seeking more easily. E-tools that improve this dimension are: compatibility or the ability to access via widely used explorers, home buttons, labels on the pages of the website, translation of the website into different languages, keywords searches, internal website links in new windows, back-to-top buttons, breadcrumbs, the number of clicks to reach the object, and further tutorial documents or leaning demonstrations (Palmer 2002; Hernandez-Ortega 2007).

Responsiveness means the presence of feedback to users. E-tools that could be available are feedback sections and frequently asked questions. The speed of accessing website is related to the download delay, whether the initial access speed or the speed of display between pages (Palmer 2002). Furthermore, accessibility could be improved by a higher rank in search-engine ranks, and more site popularity through the number of internal and external links (Miranda *et al.* 2006).

However, interactivity is the customising the site's look, feel and content, as well providing interaction with users. Finally, content quality is related to the amount and variety of content, as well as the use of text, graphics and multi-media, as well as to what extent the information is current and timely (Agarwal & Venkatesh 2002; Palmer 2002).

The service encounter of ATMs is related to such decisions as the selection of ATM kiosks, which is one of the most important decisions. There are different ATM models that could be deployed, such as: outdoor island with canopy, outdoor building,

graphic wrap, wall ATM, drive-up ATM, free-standing enclosure, and topper for lobby ATMs. Each one of these models is more appropriate to particular site conditions (Kitten *et al.* 2007a).

As a part of service encounter decisions is locating ATMs in safe or secure locations (Kitten *et al.* 2007a). Further, the use of closed-circuit television cameras that monitor ATM users and areas around the machine and good lighting, especially for off-premises ATMs to protect the customers (Hall 1989; Lee 2004; Good *et al.* 2007), the attractiveness of ATM screen displays (coloured), and the running of customised advertisement or advices (Kitten *et al.* 2008).

Telephone banking service encounter quality includes the call agent's treatment of the customer, such as using the customer's first name and smiling during the transaction (Gans *et al.* 2003).

5-4-2-5 Sourcing and Outsourcing Actions

Moreover, the outsourcing of e-banking operations is a part of structural actions; accordingly, call centre services, whether self-service or live agent, could be in-house or outsourced. The institution could have a complete in-house system if it owns the equipment, and hire and manage the live agents. However, the degree of outsourcing could be high if the equipment is owned by another party which has hired the employees and manages them (Read 2005).

However, the outsourcing could be partial through only outsourcing the equipment but hiring the people and managing them under the authority of the institution; alternatively the equipment could be owned by the institution and the hiring and managing of personnel could be carried out by a second party, or the institution owns the equipment and personnel but the system is managed by a second party (Read

2005). Only 20% of all financial services firms have outsourced any of call centre activity, but this figure is expected to double in the future (Krebsbach 2004).

The transmission of SMS banking messages is carried out by the network operator's short message service centre (SMSC), which receives the message and routes it to the destination device; or the bank can run its own SMSC (Peevers *et al.* 2008). Also the mobile banking operator could be the bank, or it could be outsourced, whether to mobile network operators or to a third party (Sankanan 2006).

5-4-2-6 Quality Management Actions

The quality of call centre transactions should be monitored consistently, e.g. call length and time between calls (Feig 2004). Technologies like IVR and ACD are playing a dynamic role in recording call identification numbers, the actions taken, and the time taken to deal with customer enquiries (Gans *et al.* 2003; O'Herron 2004; Jack *et al.* 2006).

Software is used for this purpose, such as Nicelog (O'Herron 2004), and other software could be used to record the voices of call agents to be screened later (Sablosky 2004). The quality of call-centre services could be evaluated by customers (Dean 2002, 2007; Hash 2006).

5-4-2-7 Information Technology Actions

In terms of the architecture of e-banking systems, two architectures could be adopted for Internet banking: a client/web server and a client/stand-alone service application architecture (Claessens *et al.* 2002). The new trend in ATMs is to adopt inter-bank shared architecture, in which a computer network connects the ATMs of different banks. This network allows all cards holders belonging to the same network to use the

ATMs of the other banks belonging to the same network (VISA 2007 and Master Card 2008).

The information technology architecture for live call agents could be a client server or mainframe architecture (Sharp 2003). The architecture covers the integration between the call agent computer and the telephone system (computer-telephone integration), so customer details will appear directly to the call agent when the customer inserts their PIN or account number via the IVR system (Sharp 2003).

Further, the electronic banking architecture could be shared, meaning the electronic banking channels share the core banking of other banking channels, or could be independent, with the telephone banking has its own database and system, and the core banking system being updated later (Harnis 2003; Patzwald 2006).

Finally, as part of a service-oriented architecture, the customer relations management database should be integrated online with the electronic banking database, so the analysed data of electronic banking customers guiding the agent during the interaction with the customer as well as the history of customer transactions and preferences will be available online for the agents; the suggested sales actions could also be made available (Grans *et al.* 2003; Sablosky 2004; Araya 2005).

The operating software of e-banking is also a part of operations competencies. The new trend in ATMs in recent years has been a migration from using IBM OS/2 software towards using Windows software. The most widely used software over the world is OS/2 (Kitten *et al.* 2007b; Kitten *et al.* 2008).

The communication protocol used to transfer data for wired ATMs could be through EDSN, TCP/IP or dial-up; however, the wireless communication between the ATM and the bank database can be through different protocols (GSM, CDMA, GPRS,

and Satellite) (Kitten *et al.* 2008). ATMs can be connected directly with their ATM processor via either by a landline or wireless (Kircher *et al.* 2008); the landline or wired communication could be done via a dial-up modem over a telephone or leased line (Good *et al.* 2007; Kircher *et al.* 2008).

The protocol used for transferring the data could be ISDN (Integrated Service Digital Network), which is a digital telephone line. This protocol is able to carry out multiple channels at the same time, as well as carry out video conferencing, since this protocol is a high-speed protocol (Medcroft 2001). As for the kind of landline service provided by the landline service provider, this line could be digital or traditional. Digital is more advanced and supports a large number of telephone calls (e.g. 24 calls) at the same time on a single connection (Medcroft 2001).

The telephone operator system could be PBX (Private Automatic Branch Exchange) (Makino & Kanemarn 1998). This system is an automatic phone switch used to direct a large number of calls in premises. Other advanced technologies that could be adopted are computer telephone integration, automatic call identification, dialled number identification, automatic call distribution, predictive dialling and dynamic network routing (Pinedo *et al.* 1998; Gans *et al.* 2003; Araya 2005). The adoption of these technologies requires the adoption of more advanced operator systems such as PBX or modified PBX.

The users of mobile Internet banking can access and interact with the Internet via their mobile devices through the browsing technology WAP 1.0 or WAP 2.0. The first technology is very limited in its capabilities, displaying black-and-white screens and transmits the data slowly (Mobey Forum Financial Services 2003).

However, SMS banking could adopt different communication systems, such as SSMS (Structured Short Messages Services), or MMS (Multi-Media Short Messages),

SIM application toolkits such as SAT, or Unstructured Supplementary Service Data 1 (USSD1) or Unstructured Supplementary Service Data 2 (USSD2) (Krugel 2007).

The bearer channel of mobile banking services between the customer and the mobile banking system is the mobile phone service provide bearer channel; this channel could be classified into; 1st generation 2nd generation, 2.5 generation and 3rd generation. 3G which is the most advanced and provides high data transmission and guaranteed quality of service (Kausaridas *et al.* 2007; Tiwari & Buse 2007).

Moreover, the infrastructural competencies could be related to security tools used. Authentication methods could be used, such as something the user knows (e.g. passwords and PINs, questions or queries that require specific customer knowledge to answer, customer selected images that must be selected from a pool of images, etc.) (FFIEC 2001).

Further, authentication methods could be used, such as something the user has: the physical devices known as tokens, such as USB token devices, smart cards, password generator tokens, finger print recognition, face recognition, voice recognition, finger and hand geometry, iris scan, retinal scan, and key stork pattern (FFIEC 2001).

Other authentication techniques that could be used are non-hardware based ones, such as one-time password scratch cards, out of band authentication by sending the fund transfer request or purchase authentication by telephone, e-mail, fax, moreover, the IP address recognition or geographic region, and consumer verification techniques (FFIEC 2001).

The protection of confidentiality and integrity (communication security) can be done via message authentication codes that are built into the secure socket layer (SSL), which was an initiative of Netscape to allow the web browser and web server to

communicate over the secured connections (Claessens *et al.* 2002; Hutchinson & Warren 2003).

Transport layer security (TLS) provides a secure communication channel between client and the bank over the Internet, and the use of firewall hardware and software handled in the interface server (Claessens *et al.* 2002; Hutchinson & Warren 2003).

Also as a part of data integrity and risk management techniques, the customers are provided with anti-virus software, auto-logout, conducting regular system network configuration reviews and data integrity checks (Monetary Authority of Singapore 2008). To protect the non-repudiation of transactions, technologies like public-key cryptography, digital notary, and digital signature could be used (Hutchinson and Warren 2003), a unique session ID number for tracking transactions (Sayar & Wolf 2007).

5-4-2-8 Human Resources Actions

The skills of the call agents form part of operations actions. All call agents could be able to deal with any customer enquiry and they could be cross-trained to offer all services (Gans *et al.* 2003). Or call agents could be specialised in running certain kinds of transactions, so customers would be directed towards the most specialised agent (Fluss 2005), or alternatively an intermediate model where call agents are cross-trained to deal with all transactions but run specific kinds of transactions (Gans *et al.* 2003).

The degree of discretion the call agent has over his work methods (tasks, tools, space of work, schedule, vacancies and technology design), or over customer interaction (control over handling non-routine requests and control over the pace of serving customers (Batt 2002) are indicators of flexible job design.

The performance of agents can be evaluated using customer feedback, quality monitoring scores, worker feedback. The most common productivity metrics upon which agent rewards or recognition are based are average transaction time, absenteeism, and adherence to schedule (Hash 2006).

Training call agents is a part of human resources actions, the call agents could be trained on the telephone skills, customer services skills, corporate policies, company culture, technology (desktop tools, e-mails etc. (Hash 2006; Jack *et al.* 2006). Training could also be provided on relevant customer-service skills so they can treat customers better for the purpose of improving the quality of customer experiences, communication skills (e.g. how to use tone, better use of inflection, and how to deal with customers that are hard of hearing) (Feig 2004), the use of the customer's name, speaking to the customer with a smile (Gans *et al.* 2003).

5-4-3 Identifying the Competitive Capabilities of Electronic Banking Operations Strategies

Table (5-2) shows the operational competitive capabilities of electronic banking that have been evaluated by previous studies. It can be seen that the indicators that were evaluated were: 1) transaction costs, 2) volume flexibility, 3) service range flexibility, 4) new service flexibility, 5) service accessibility, and 6) service encounter quality.

However, other capabilities as transaction quality, transaction security, new product flexibility, product range flexibility and productivity were not investigated by the previous studies. However, for this study it was considered that these were more important capabilities that would affect customer satisfaction; therefore they were added to the list identified from previous studies. This is considered to be a comprehensive list and it was confirmed as such by managers during pilot study.

The operational capabilities of ATMs were the most widely evaluated, followed by telephone banking, and then Internet banking. The least evaluated was mobile banking. Service-encounter quality capability was the most widely evaluated across all channels by seven studies, followed by transaction costs. The least evaluated was transaction time, which was only evaluated by one study.

Table (5-2)

Statistics of Electronic Banking Operations Competitive Capabilities Evaluated by the Previous Studies

Operational Performance Indicators	E-Banking Channels				Number of Studies
	Internet	ATM	Mobile	Telephone	
Service encounter quality	√				7
Transaction costs	√	√		√	6
Service accessibility		√		√	6
Service range flexibility	√	√	√	√	4
Volume flexibility		√			2
Transaction time				√	1
New service flexibility					0
Transaction quality					0
Process security					0
Service availability					0
Productivity					0

The evaluation of website usability has been debatable; some scholars view usability as multifaceted, and argue that it must be assessed by using different measures. Others view usability assessments as subjective from the user viewpoint. However, the most important frequently used approaches are heuristics and laboratory testing (Agarwal & Venkatesh 2002). Other scholars classified them into manual and automated: the manual is the same as heuristic, but the automated is done using software to evaluate, for example, the site's speed (Baner & Scharl 2000).

Heuristic evaluations are assessments conducted by a small group of evaluators against a pre-established set of guidelines or heuristics, with the evaluators usually being experts. Laboratory testing is evaluation by use of actual users as subjects, and

provides detailed insight into specific problems and issues that users face while interacting with the targeted website (Agarwal & Venkatesh 2002).

The previous studies evaluated cost per transaction objectively by asking the respondents to identify the average transaction costs (e.g. Morisi 1996; Kurtas 2000; Kamesan 2003; Porteous 2006). Some of these studies compared the transaction costs of each e-banking channel with other e-banking channels (Kurtas 2000; Kamesan 2003; Porteous 2006) and with traditional banking transactions (Jayawardehena & Foley 2000). However, very few studies decided to compare the performance indicators across countries (Porteous 2006); all of these studies were snapshot studies.

The automatic teller machine location accessibility was evaluated by using the same approach of branch location accessibility. Two objective measures were adopted: demographic and geographic. Both of these indicators were evaluated using secondary data. The demographic indicator was measured by the number of ATMs per 10,000 people (e.g. Matthews 1999; Matthews & Ding 2006; Beck *et al.* 2007) or per 1,000,000 people (e.g. Reserve bank of Australia 1996).

However, the accessibility of mobile banking was evaluated using survey methodology (e.g. Feinberg *et al.* 2002), so a questionnaire was used for this purpose. The operators of the call centres were asked to identify the operational determinants of call centres as data in terms of percentages (e.g. average abandonment rate, percentage of calls blocked) or time (e.g. speed of answer, average talk time, average time in queue) (e.g. Feinberg *et al.* 2002; Gans *et al.* 2003; Araya 2005; Jack *et al.* 2006).

On the other hand, few studies decided to evaluate the accessibility of ATMs across different periods (time series) (e.g. Reserve bank of Australia 1996), or across countries or geographic regions (e.g. Matthews 1999; Matthews & Ding 2006; Beck *et*

al. 2007), but mobile banking accessibility was evaluated on the annual basis (e.g. Feinberg *et al.* 2002).

5-5 Identifying the Performance Indicators of Banking Operations

These indices could be classified in keeping with previous studies into 1) financial, and 2) marketing. The majority of researchers adopted the financial indicators only (e.g. Vickery & Droge 1993, Power and Hahn 2004, and Rhee and Mehra 2006), and few researchers decided to use a combination of different indicators (e.g. Cleveland 1989; Kim & Arnold 1993; Menor *et al.* 2001).

It is recommended to adopt different indicators from different perspectives which will provide the researcher with a better insight about the impact of operational strategy capabilities. Furthermore, some indicators such as the financial indicators could be affected by other factors, rather than operational strategies.

The researchers adopted different methodologies for measuring performance, but the widely adopted methodology is the self-reporting methodology. The respondents are asked to compare the existing performance with historical performance, or with competitors' performance.

The least used methodology is objective measurement. The adoption of a methodology over another depends on the indicators used to assess performance and availability of data, the level of analysis and the heterogeneity or homogeneity of sample items. On the other hand, the adoption of self-reporting measure depends on the objectivity of the respondents and the time horizon of the study. Though objective performance is more accurate than the self-reporting, but it depends on the availability and the accessibility of data.

5-5-1 Financial Indicators

The indicators adopted by previous studies were profitability indicators such as ROI (return on investment), growth in ROI, ROA (return on assets), pre-tax ROA, and ROS (return on sales) (e.g. Cleveland 1989; Kim & Arnold 1993; Vickery & Droge 1993; Williams *et al.* 1995; Ahmed & Montagno 1996).

The use of objective financial measures could be beneficial in single dominant business type sample and within industry studies, but the researcher should insure that the comparing companies adopt the same accounting policies; furthermore the objective measures cannot be meaningfully used at strategic business unit level due to an aggregate problem (Venkatraman & Ramanujam, 1986).

Adopting subjective measures has less problems of external interpretation and aggregate data, and could be used both at corporate and strategic business level of analysis, but the data is likely to be biased (Venkatraman & Ramanujam 1986).

In the banking industry the widely used profit indicators are ROE (return on equity) and ROA (return on assets) (Uzelac & Sudarevic 2006), and are widely evaluated by previous studies (e.g. Menor *et al.* 2001; Power & Hahn 2004; Rhee & Mehra 2006).

On the other hand, the researcher should keep in mind that adopting profitability measures like ROA and ROE includes the income from interest and non-interest, so the researcher can adopt NIE/revenue (non-interest income as a percentage of total revenue) which is preferred and more appropriate as a result of its reflection of core activities or operations (Hallowell 1996).

5-5-2 Marketing Indicators

The most widely evaluated marketing indicators are 1) market share (Cleveland 1989; Kim & Arnold 1993; Ahmed & Montagno 1996), 2) growth rate (Cleveland 1989), and 3) perceived quality (Roth & Jackson 1995; Menor *et al.* 2001). The researchers used the self-reporting methodology through asking managers to rate their performance in comparison with their competitors.

Firms in recent years have focused more on tracing retention. Customer retention is a pivotal strategic issue, and in the 1990s several streams of research focused on this (Eriksson & Vaghutt 2000). Accordingly, the key task of service operations management is retaining valuable customers (Johnson & Clark 2001).

The customer retention concept has been used interchangeably with customer loyalty to describe the same phenomenon by some researchers; others view the two concepts as related but different: customer loyalty consisting of repurchase intentions, positive and negative word of mouth and price sensitivity, but retention being a part of the loyalty concept which relates to repurchase intention (Ranaweera & Neely 2003).

The most widely used measure for customer retention adopted by previous studies is self-reporting by surveying the attitudes of customers (e.g. Balchinger & Rubinson 1996; Bloemer *et al.* 1998; Ranaweera & Neely 2003; Liang & Wang 2004; Chen & Chang 2006). However, few studies adopted objective measures (e.g. Hallowell 1996).

The objective measures adopted or developed in the literature focused on the length of the relationship as a percentage of active customers during a period of time (Hallowell 1996); it could also be measured on an annual basis (Johnson & Clark 2001).

According to empirical studies in the banking sector, the bank's customer retention is affected directly by customers' satisfaction (Bloemer *et al.* 1998; Weinstein 2002; Chen & Chang 2006), so the customers' satisfaction is also one of the marketing indicators that should be investigated in this research project. Customers' satisfaction is the cognitive and emotional judgments the customers have about the banks' service experience and outcomes.

The service experience includes; branches layout quality, convenience of branches location, transaction speed, however, service outcome includes the products' range and new products, the confidentiality and quality of banking transactions provided. The most widely used measure for customers satisfaction adopted by previous studies is self-reporting by surveying the attitudes of customers (Bloemer *et al.* 1998; Weinstein 2002; Chen & Chang 2006).

The measurements of marketing indicators in this study are identified in section (6-4-1). The market share of personal deposit and loans was measured by percentage of deposit of loans measured in J.D. the bank had during the study period, the data was collected from annual reports. However to measure customers retention; the executives were asked about the percentage of customers closed their account during the period, but to measure customers' satisfaction the executives were asked about level of customers satisfaction were identified by the banks' surveys.

5-6 Constructing Typologies of Traditional and Electronic Banking Operations Strategies

5-6-1 Identifying the General Classifications of Operations Strategy Typologies

According to previous studies of service operations strategy, operations strategies can be grouped into three ideal groups: 1) process oriented, 2) customer oriented, and 3) service oriented (Reyniers 1993; Chakravarty *et al.* 1995; Finch & Helms 1996; Driscoll 1999; Melnick *et al.* 1999; Aranda 2002, 2003; Hoeck 2006; Wisskirchen *et al.* 2006).

Previous studies of best practice in banking operations strategy are still limited and studied leading banks' operations strategies and reported their practices, but in the context of banking operations strategies, the strategies could be grouped into 1) cost leadership, 2) differentiation, or 3) hybrid (Safer 2006), or the operations strategies could be classified into: 1) cost leader strategy, 2) kiosk strategy, 3) focused professional strategy, and 4) personal service strategy (Metters & Vargas 2000).

Moreover, the operations strategies adopted by retail banks could be classified into: 1) fast time to market, 2) innovative product offering, 3) better channel optimisation strategy, 4) dynamic branch management strategy, and 5) multi-brand portfolio strategy (Lavayssiere *et al.* 2008), or 1) customer relations strategy, 2) banking services strategy, 3) banking promotion strategy, and 4) banking rate strategies (Chu-Mei 2001).

Regardless of the titles provided to each strategy pattern by each researcher, these patterns could be classified into three typologies; cost, differentiation and hybrid. Accordingly, the typologies developed by previous studies were discussed under these typologies titles.

The general classifications are:

- Cost-oriented typology
- Differentiation-oriented typology
- Hybrid-oriented typology

The components of each typology are:

- Operational actions
- Operational competitive capabilities
- Performance indicators

5-6-2 Identifying the Relationship between Performance Indicators

Figure (5-1) shows the relationship between performance indicators; it can be seen that the impact of marketing performance on financial performance is debatable. Previous studies found that market share could impact profitability directly (Venkatraman & Prescott 1990), whilst others found that market share does not impact business profitability significantly (Montgomery & Wernerfelt 1991; Schwalbach 1991).

According to the empirical studies in the banking sector, the banks' customer retention or loyalty is affected directly by customer satisfaction (Bloemer *et al.* 1998; Weinstein 2002; Chen & Chang 2006); furthermore, market share is affected by customer loyalty (Balchinger & Rubinson 1996).

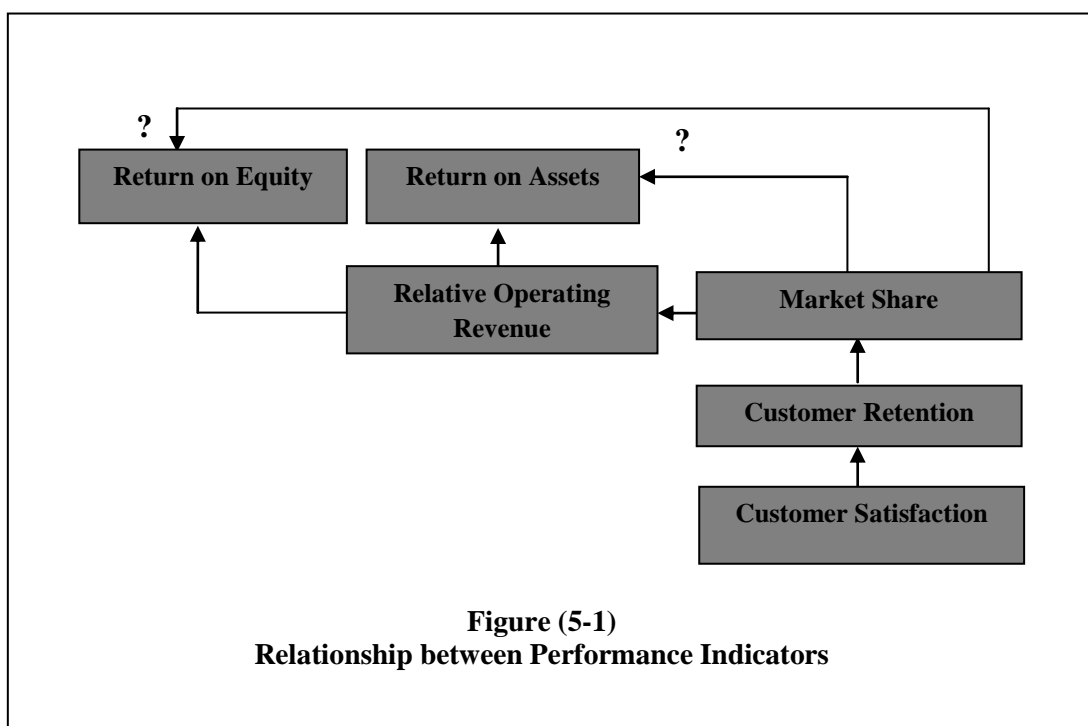


Figure (5-1)
Relationship between Performance Indicators

5-6-3 Constructing a Cost-oriented Typology of Traditional Banking Operations Strategy

5-6-3-1 Identifying the Relationship between Cost Capability and Performance Indicators

Positive and significant correlation between costs and profit (Badri *et al.* 2001).

5-6-3-2 Identifying the Relationship between Operational Actions and Cost Capability in Traditional Banking Operations

Centralised bank back-office activities will reduce costs significantly as a result of economies of scale (Chase & Tansik 1983; Hunter 1995; Metter & Vargas 2000; Safer 2006, Lavayssiere *et al.* 2008). Also, the coupling of front- and back-office activities may lead to reduced costs as a result of reducing idle time, thus reducing back-office costs (Metter & Vargas 2000).

Furthermore, restricting communications with back-office to formal forms and sending them electronically could reduce transaction time, thus increasing productivity and volume flexibility and reducing transaction costs (Metter & Vargas 2000). Having

the customer participate in the process could also keep the costs down (Larsson & Bowen 1989; Lavayssiere *et al.* 2008).

The use of information technology to conduct banking transactions will increase the productivity of employees since transaction time can be reduced (Morisi 1996; Power & Hahn 2004; Safer 2006). The client/server distribution system architecture will reduce transaction costs, since there will be no duplicated equipment or data entry (Harnis 2003; TIBCO 2006). The shared system will also reduce transaction costs as a result of reducing paper costs (Monahan 1998; Kaushal 2007).

The decoupling process with centralised back-office and highly specialised front-office and back-office employees could improve productivity, also, the coupled process with cross-trained employees could improve productivity (Metter & Vargas 2000).

5-6-3-3 Proposed Cost-oriented Traditional Banking Operations Strategy Typology

Figure (5-2) shows the proposed cost-oriented traditional banking operations strategy. It can be seen how the operational capabilities affected the costs capability, and how the costs capability affected the performance indicators of return on assets and equity. Furthermore, the actions required to achieve capabilities were linked with them, so these components form the cost-oriented traditional banking operations strategy typology.

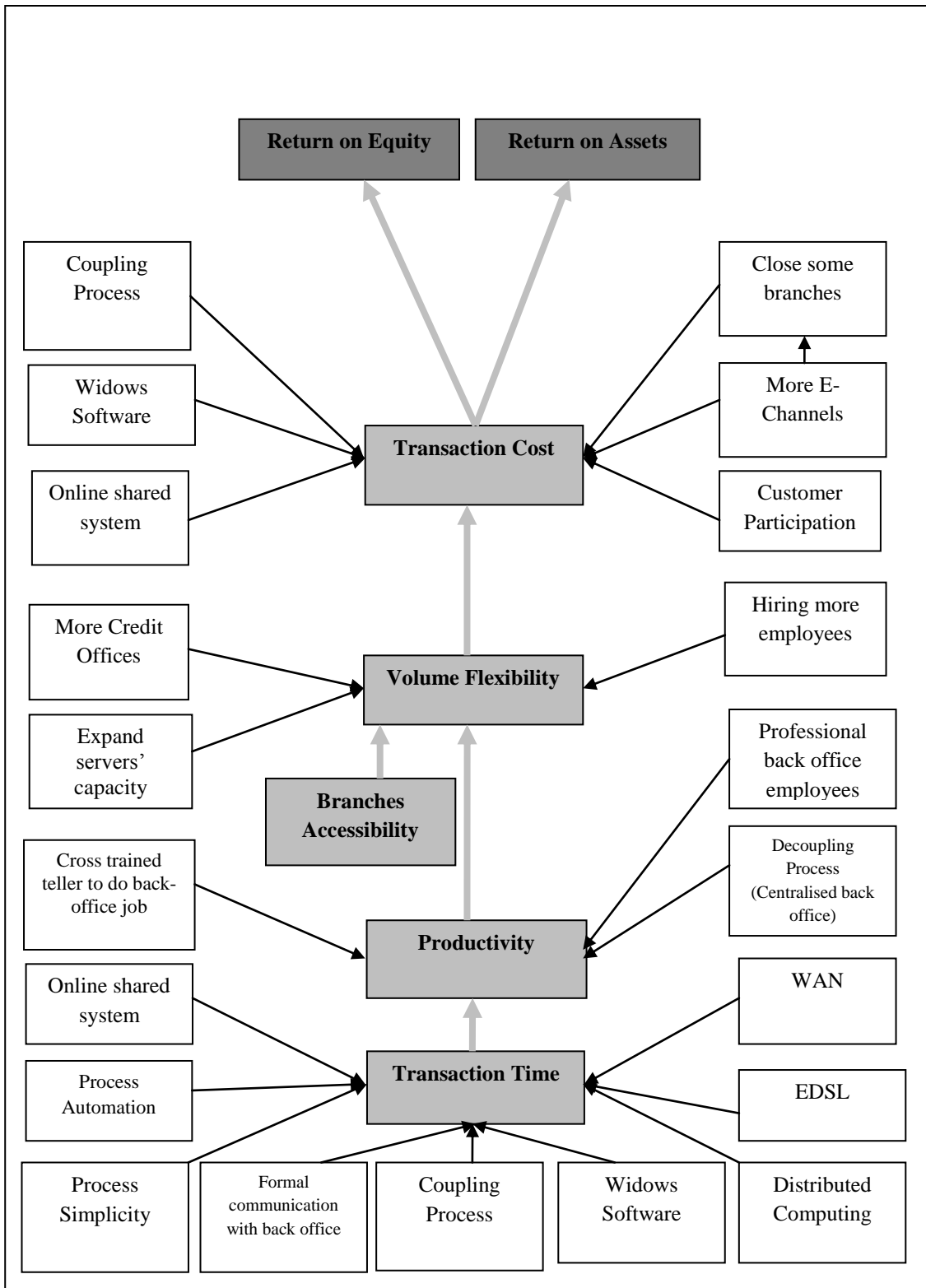


Figure (5-2)

Proposed Traditional Banking Cost-oriented Typology

5-6-4 Constructing a Cost-oriented Typology of Electronic Banking Operations Strategy

5-6-4-1 Identifying the Relationship between Operational Actions and Cost Capability of Electronic Banking Operations

Increasing the number of ATMs will reduce transaction costs (Lin *et al.* 2005) as a result of increasing the number of transactions processed. The use of Internet-based ATMs using TCP/IP or using EDSL ATMs will reduce transaction costs since there will be no dialling charges (Good *et al.* 2007).

Furthermore, the outsourcing of ATM replenishment by asking the merchant to load the machine will reduce the transaction costs since no specialised staff is required to manage the replenishment (Good *et al.* 2007). The use of wireless ATMs will lower transaction costs: overhead costs such as installation and maintenance of land-line will be saved since no cables are used (Kircher *et al.* 2008).

The use of IVR or DNI, which initially requires the use of a PBX telephone system to route the customer to specialised call agents, will reduce operating costs in comparison to using live agents to route the customer (Pinedo *et al.* 1998; Medcroft 2001). Also using IVR to run the transaction, and not just route calls or hold customers, will reduce transaction costs as a result of reducing the costs of human resources (Gans *et al.* 2003; Fluss 2005; Read 2005). Furthermore, the outsourcing of call centre services could reduce operating expenses (Krebsback 2004).

On the other hand, the use of PBX will reduce transaction costs, instead of paying the phone company for a separate line for every disk. Moreover, if the bank subscribes to a digital line which carries a large number of telephone calls (e.g. 24 calls) at the same time on a single connection, this will reduce the transaction costs (Medcroft 2001).

The use of CTI will reduce operating costs in terms of telecom usage costs (which is the second biggest expense in a call centre), since the call agent will spend less time with customers; also, this will increase call-agent productivity to deal with more customers during less time, reducing agent operating costs and the number of call agents (Sharp 2003)

Cross-trained call agents who are able to run all call centre transactions will reduce the transaction costs, but separating the call agents to deal with specific kinds of transactions will increase operating costs, since several independent call centres operate in parallel, which will lose economies of scale (Gans *et al.* 2003).

Locating the call centre in rural areas will reduce operating costs as a result of low real estate costs (Sharp 2003). Moreover, offshore call centres will reduce the transaction costs as a result of lower labour costs (Read 2005). The outsourcing of call centres will reduce capital costs (Read 2005), as will the outsourcing of mobile banking service.

5-6-4-2 Proposed Cost-oriented Electronic Banking Operations Strategy Typology

Figure (5-3) shows the proposed cost-oriented traditional banking operations strategy. It can be seen how the operational capabilities affect the cost capability, and how cost capability affects the performance indicators of return on assets and equity. Furthermore, the actions required to achieve capabilities were linked with them, so these components form the cost-oriented a traditional banking operations strategy typology.

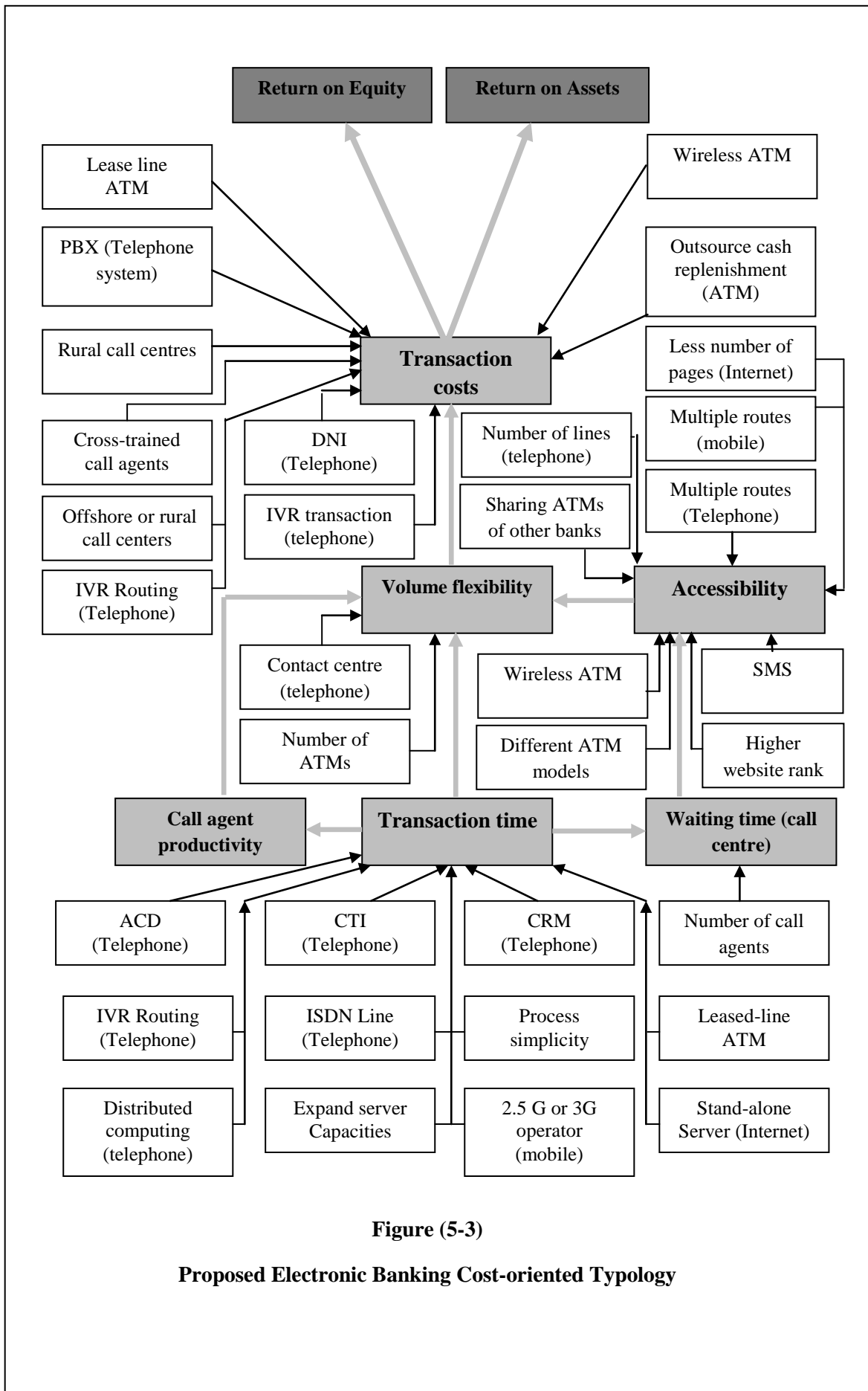


Figure (5-3)

Proposed Electronic Banking Cost-oriented Typology

5-6-5 Constructing a Differentiation Typology of Traditional Banking Operations Strategy

5-6-5-1 Identifying the Relationship between Differentiation Capability and Performance Indicators in Traditional Banking Operations Strategy

Figure (5-4) shows the relationship between operational capabilities and performance indicators. It can be seen that there is a direct positive significant relationship between product flexibility and customer satisfaction (Aranda 2003), and a positive significant relationship between manufacturing strategy flexibility and performance in terms of growth in ROA and growth in sales (Swamidass & Newell 1987).

Customer satisfaction could be affected by reliability, efficiency in terms of queuing time and speed (Bloemer *et al.* 1998), and perceived quality (Bloemer *et al.* 1998; Weinstein 2002; Liang & Wang 2004).

According to previous studies of customers selection criteria; the customers in different countries select a bank to deal with for the following reasons; convenient branches location, speed of transactions (Erol & El-Bdoar 1989; Erol *et al.* 1990; Kaynak *et al.* 1991; Kaynak & Kucukemiroglu 1992; Haron *et al.* 1994; Blankson *et al.* 2007), physical facility of branches (Kaynak & Kucukemiroglu 1992), confidentiality of transactions (Erol & El-Bdoar 1989; Erol *et al.* 1990), services or products provided and financial benefits (Kaynak & Kucukemiroglu 1992; Kennington *et al.* 1996, Almossawi 2001).

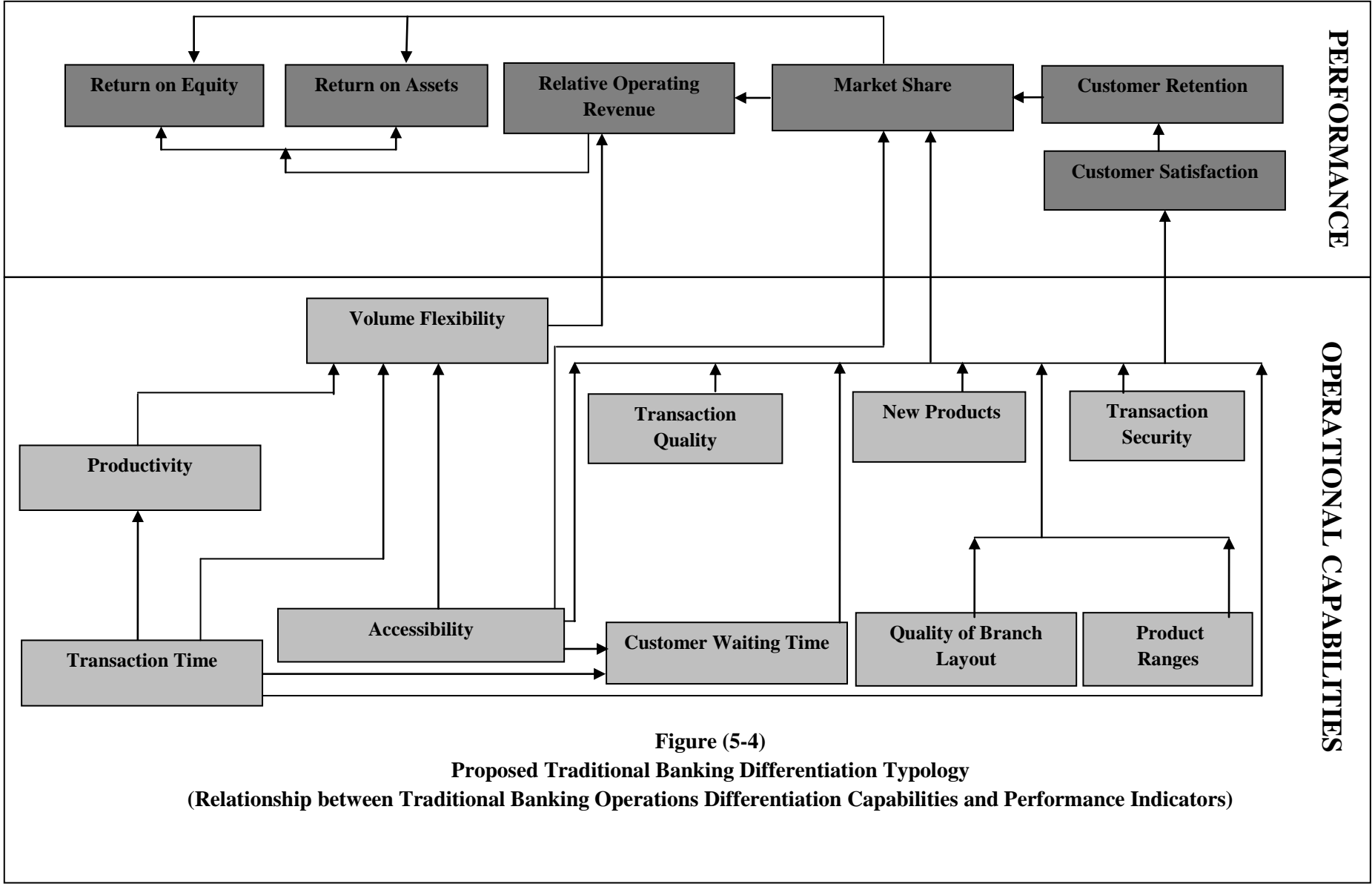


Figure (5-4)
Proposed Traditional Banking Differentiation Typology
 (Relationship between Traditional Banking Operations Differentiation Capabilities and Performance Indicators)

5-6-5-2 Identifying the Relationship between Differentiation Capability Actions in Traditional Banking Operations

1- Traditional Banking Transaction Time Strategy

Restricting communication with back-office to formal forms and sending them electronically could reduce transaction time (Larsson & Bowen 1989; Lavayssiere *et al.* 2008). Adopting intra-bank client-server systems using WAN or LAN and Windows software will increase processing speed, since current information is available in front of staff, which includes the real-time balance across the multiple channels, enabling the front office to act more quickly (Gardy & Chapman 1997; Monahan 1998; Harnis 2003; Brooke & Paige 2008). The use of ISDN communication protocols for transferring data will increase the transaction speed as a result of digital data transfer (Muller 2002).

2- Traditional Banking Customer Waiting Time Strategy

The reduction of customer waiting time could be achieved through chase demand capacity options, such as: having more employees, increasing overtime, using excess capacity, extending working hours, increasing the process routings or increasing the speed of transactions, expanding the branch network, and cross-training employees (Klassen & Rohleder 2001). This could also be achieved through level-capacity options, such as: informing or educating employees about the peak working hours of the branches, and educating customers about other alternatives to conducting the banking transactions (Klassen & Rohleder 2001).

3- Traditional Banking Volume Flexibility Strategy

The expansion of the branch network, especially in rural areas, will improve volume flexibility (Ghalib & Hailn 2008). Volume flexibility during the peak periods could be increased through chase demand – for example, employing more part-time or temporary

employees, overtimes, short-term excess capacities, improving process automation, increasing process routing, expanding servicing time, having more cross-trained employees, reducing transaction time, and simplifying the process (Klassen & Rohleder 2001).

Also, decoupling the process through pushing back-office functions to a centralised shared back office could increase volume flexibility. The job of back and front office is high standardised, and the communication between both offices is formalised by formal forms, and as result enhances the productivity of employees (Metters & Vagras 2000).

On the other hand, the coupling of the process with high discretion to front-line employees could increase volume flexibility, since delays arising from back-office functions would be eliminated. The number of employees in the front office should be large enough, and they should be cross-trained to do any job (Hunter & Hitt 1999; Metters & Vargas 2000).

4- Quality of Branch-layout Strategy

Improving the aesthetics (e.g. plants, pictures, colours etc.), internal convenience (e.g. air conditioning, central heating system, seats), external convenience (parking), and informational factors (e.g. brochures, customer service units, department signs, a host, information kiosks), and increasing self-service stations (e.g. ATMs, Internet banking stations) and the number of teller stations and credit offices, and improving branch security and safety (e.g. fire alarms, CCTV), will improve the quality of branch layout.

5- Branch Accessibility Strategy

Expanding the number of branches in urban, suburban and rural areas, and locating branches on different sites (e.g. shopping areas, business areas, hospitals, universities, malls, etc.) will increase branch availability.

6- New Products and Product Ranges Strategy

More products could be delivered if front office employees take on a sales role, as they work closely with customers and will have a better understanding of customer needs and wants (Lavayssiere *et al.* 2008). In order to introduce new products, the banks should have excess capacities which can be used for this purpose, such as excess capacity of branch servers (Ng *et al.* 1999)

7- Transaction Quality and Security Strategy

Better transaction quality requires that front-office employees have a high level of responsiveness and flexibility. The needs and wants of customers need to be known prior to customer interface, and the more the process is coupled the more knowledge front-office employees have about the customer requirements, and can thus better respond to them (Metters & Vargas 2000). Thus more discretion to front-office employees will allow them to solve problems with more immediacy (Hunter & Hitt 1999).

The increased adoption of quality-control competencies will reduce the number of transaction errors, since the errors can be detected and solved (Fitzsimmons & Fitzsimmons 2006). The availability of customer data in real time at the touch of a button for front-office employees about transactions conducted via other channels and the result of customer data mining will render the front office more able to provide more accurate and personalised transactions (TIBCO 2006).

Furthermore, the direct access of customer-service employees to banking transaction databases, and the ability to solve transaction errors upon the customer's request, will reduce transaction errors. Moreover, the availability of complaint systems and performance reports generated by the banking information system will also reduce banking transaction errors (Chu-Mei 2001).

The use of more data-integrity and risk-management competencies and increased use of the number of authentication layers to access the customer could increase the degree of confidentiality and security of banking transactions.

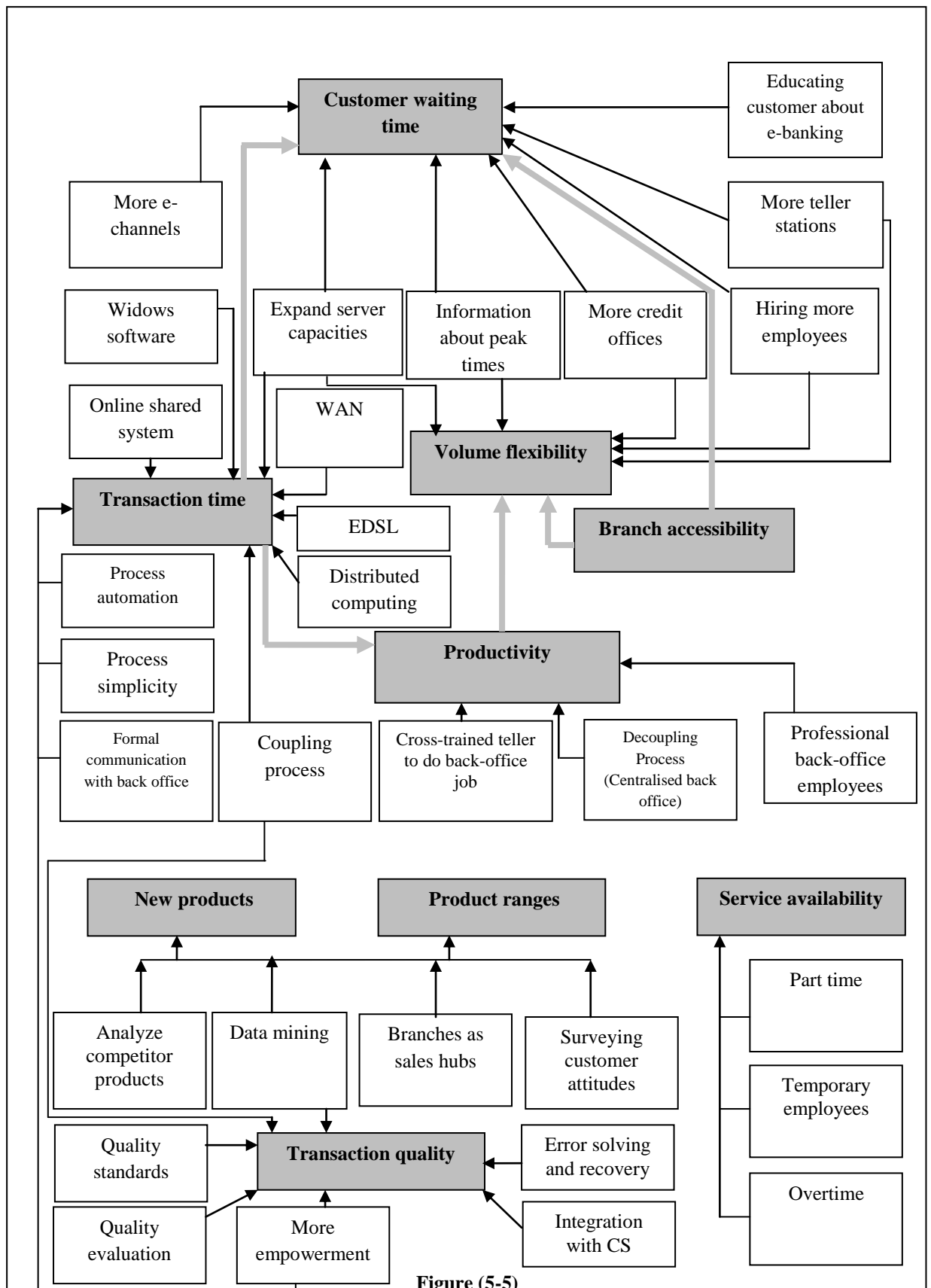
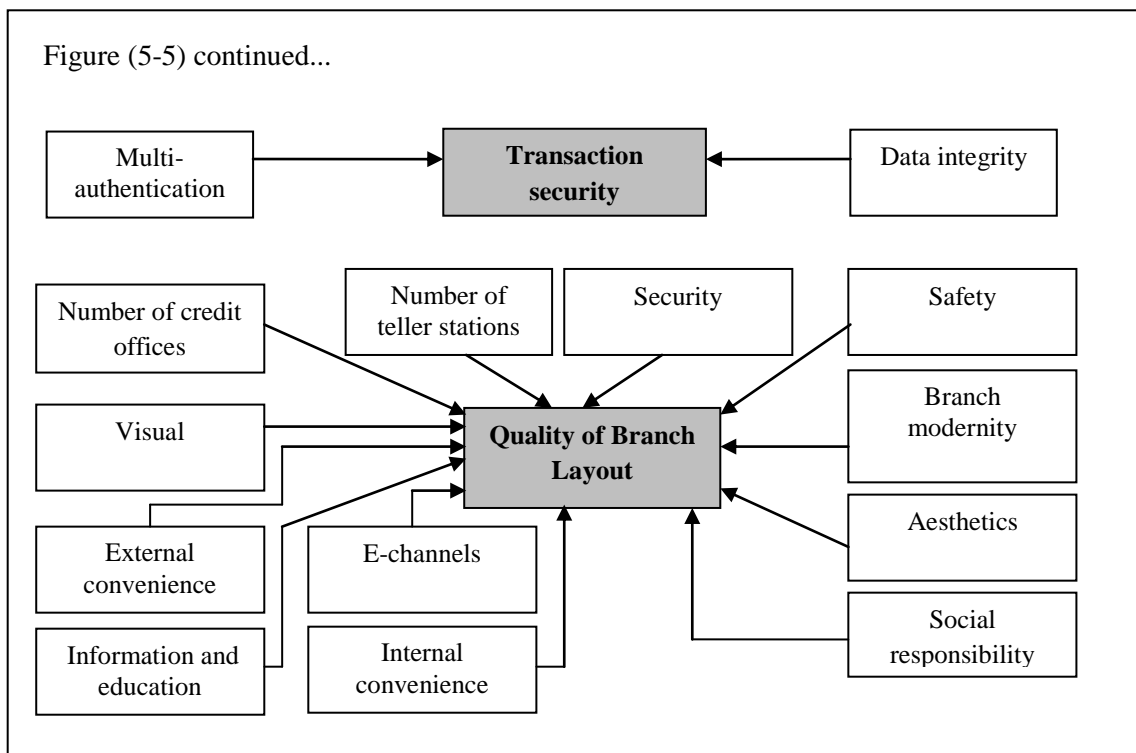


Figure (5-5)

Proposed Traditional Banking Differentiation Typology

(Relationship between Actions and Differentiation Capabilities of Traditional Banking)



5-6-6 Constructing a Differentiation Typology of Electronic Banking Operations Strategy

5-6-6-1 Identifying the Relationship between Differentiation Capability and Performance of Electronic Banking Operations

Figure (5-6) shows the relationship between operational capabilities and performance indicators; these relations were identified according to previous studies, which found that the perceived quality of electronic service encounters will impact the customer's loyalty positively, in turn impacting profitability positively too (Boyer *et al.* 2002).

Furthermore, electronic service encounter design in terms of functionality and usability will impact customer satisfaction and loyalty (Kenney 1999; Hiem *et al.* 2001b; Rowley 2006; Hiem & Field 2007). Also, according to a study conducted in the UAE, the convenience and security of Internet banking is strongly related to customer satisfaction (Awamleh & Frenandes 2005).

According to a study conducted in Hong Kong, the security and efficiency of Internet banking are significantly associated with future consumption behaviour (Siu

and Mao 2005); however, different channels will lead to different levels of customer satisfaction and loyalty (Rowley 2006).

Moreover, according to a survey study conducted in the USA, the customer's perceived service quality of ATMs in terms of ease of use and usefulness will impact customer attitudes positively, and the risks of online service quality impact customer attitudes. Customer attitude mediates the relationship between quality and customer intention to use ATMs and online banking (Curran & Meuter 2005).

According to a survey study conducted in Australia, customer satisfaction mediates the impact of automated service quality (in terms of web content, accuracy of online transaction, ease of use, provision of update information, and aesthetic and security) on financial performance (in terms of return on assets and return on equity) (Al-Hawari & Ward 2006).

The degree of call-centre accessibility in terms of customer waiting time is critical for customer retention and sales growth (Evenso *et al.* 1999); the better the perceived service quality of call centres, the more loyal the customer (Dean 2002).

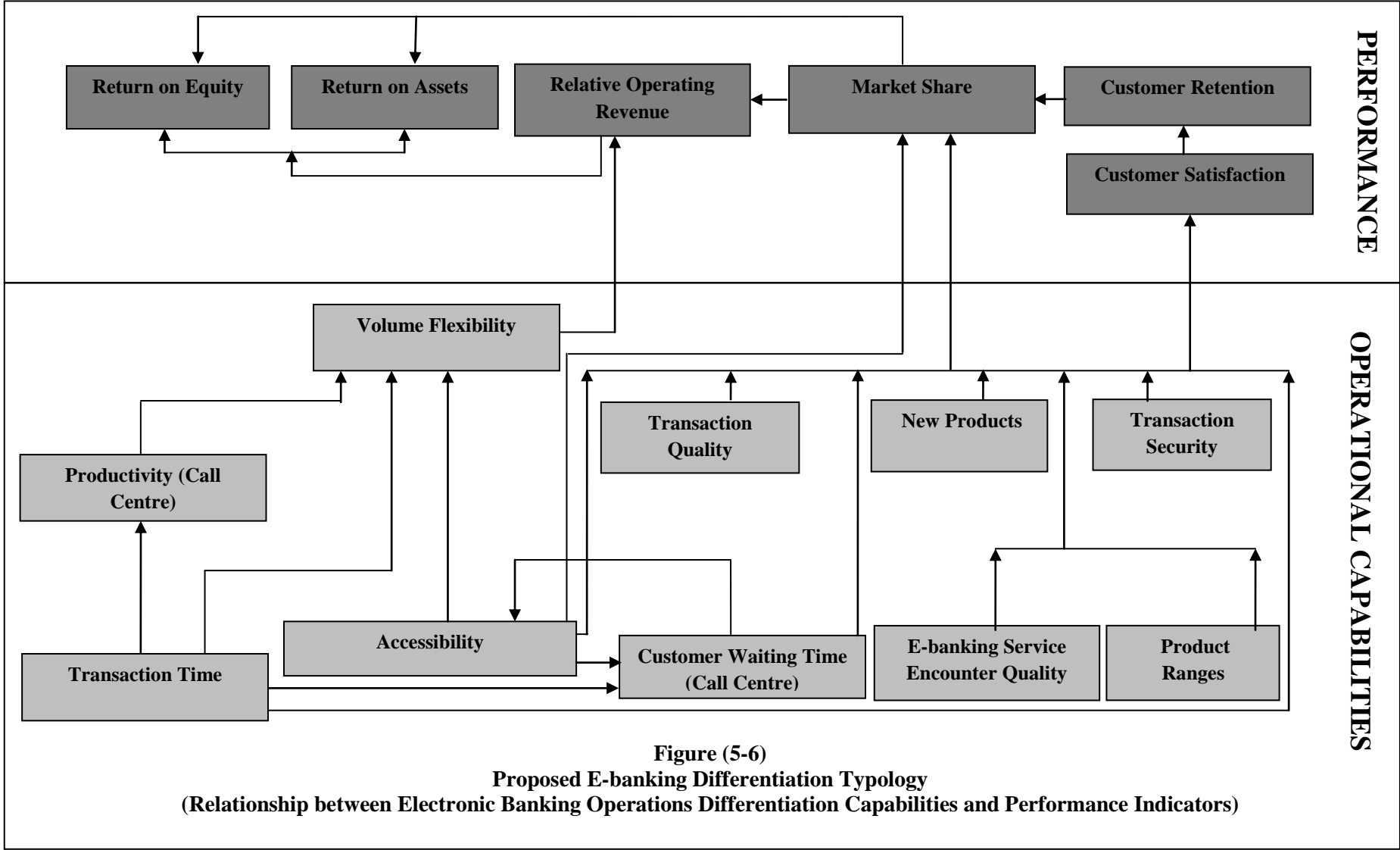


Figure (5-6)
Proposed E-banking Differentiation Typology
 (Relationship between Electronic Banking Operations Differentiation Capabilities and Performance Indicators)

5-6-6-2 Identifying the Relationship between Differentiation Capabilities and Electronic Banking Operational Actions

Figure (5-7) shows the relationship between e-banking differentiation capabilities and actions; these relationships were identified according to previous studies, and are reviewed in the following sections.

1- Electronic Banking Transaction Time Strategy

The use of stand-alone application servers for Internet banking will reduce transaction time, since this will reduce the load on the web server (Claessens *et al.* 2002). The use of leased-line ATMs will reduce transaction time in comparison with dial-up, since no establishment for calls is required and the line is digital (Shacklett 2000; Good *et al.* 2007).

The use of IVR and ACD systems to route the customer to the appropriate agent will allow the agent to provide services in minimum time (Pinedo *et al.* 1998). The use of computer telephone integration technology will also reduce transaction time, since the time that is wasted retrieving customer data by keying in the customer account number is eliminated (Sharp 2003; Fluss 2005).

The use of client/server distribution computing will reduce transaction time since a lot of application logics are available on the agent computer (Sharp 2003). Using more advanced data transfer protocols such as ISDN for telephone banking will increase the speed of transactions (Medcroft 2001), since the data is transferred in digital form.

The use of IVR will reduce transaction time, since the customer will not wait in queue for a person (Read 2005). In order to enhance the transaction speed the kind of bearer channel provided by mobile services should be more advanced, such as 2.5G, especially for Internet mobile banking (Mobey Forum Mobile Financial Service 2003),

and rewarding the agents based on average transaction time will reduce transaction time (Hash 2006).

Furthermore, expanding the application server capacity for e-banking will reduce transaction time, since the server will be able to deal with more transactions, and reducing the number of steps required to conduct electronic banking transaction will reduce the transaction time.

2- Electronic Banking New Services and Service Ranges

The use of stand-alone servers for running Internet-banking transactions will increase the probability of adding new services or products, since more server capacity will be available (Claessens *et al.* 2002). Also the use of Windows software will allow the ATM process to provide more advanced transactions such as automated envelope-free depositing and bill payment, and will enhance marketing capabilities (Kitten *et al.* 2008).

The subscription to a digital line which makes it possible to occupy a small portion of the bandwidth available for each channel (e.g. only 9 to 16 kilobits per second) will make the company able to offer advanced services such as DNIS and ANI (Medcroft 2001).

The kind of mobile network operator service will impact the advancement of services provided; the move from 1G to 3G will increase the range of services delivered, since 2G 2.5 and 3G are more able to transfer audio-video data. Furthermore the use of MMS will expand the services provided by push messaging, especially financial market information (Tiwari & Buse 2007). Providing the call centre with multi-channel contact points such as fax, e-mail and web-chat will increase the variety of services provided (Jack *et al.* 2006).

3- Electronic Banking Accessibility Strategy

In order to increase the accessibility of Internet banking, the download of the website in initial access should be faster, as well as the display between pages (Palmer 2002). Furthermore, accessibility will be improved by a higher search engine rank, as will site popularity through the number of internal and external links with the website (Miranda *et al.* 2006).

Density of ATMs in convenient locations with high people traffic will increase the accessibility of ATMs (Bickers 2002). Also the sharing of banks' ATMs with other banks and vice-versa will increase the ATM reach or service accessibility (Baker 1995; Kitten *et al.* 2007a).

The use of different models of ATMs will increase the availability of ATMs in different locations (Good *et al.* 2007), since each model is more appropriate to be located in a particular location. For example, a topper is more appropriate for on-premises locations over other models, and the island with canopy is more secure; also the free-standing topper is easier to relocate than other models (Kitten *et al.* 2007a). The use of wireless ATMs will allow the service to be placed anywhere without the limitation of landline infrastructures (Kircher *et al.* 2008).

The use of cross-training and leveraging the skills of call centre representatives to manage call centre capacity reduces the time required to answer customers, and using other technologies such as websites to interact with call centres will increase accessibility in terms of the number of calls received by the call centre (Jack *et al.* 2006).

Increasing the number of telephone trunk lines that connect with public-service telephone lines will increase the probability of the customer having access the call

centre, as will the use of CTI, since the customer waiting time will be decreased (Sharp 2003). The number of call agents should be increased, especially part-timers during peak demand periods (Gans *et al.* 2003).

4- Electronic Banking Volume Flexibility Strategy

The use of CRM tools that let the agents view on time the rules about how to deal better with customers will increase the productivity of call agents, and the use of IVR or DNI will increase the number of transactions since the agent will not spend time routing customers to the most appropriate agent; thus the productivity of the agent will be increased (Araya 2005).

5- Electronic Banking Service Encounter Strategy

The service encounter design for Internet banking in terms of navigation will allow the users to acquire more information they are seeking more easily (Palmer 2002; Hernandez-Ortega 2007), and improving interactivity through more ability to customise the site's look, feel and content, as well provide interaction with users, are very important (Agarwal & Venkatesh 2002; Palmer 2002).

The content quality which is related to the amount and variety of content, as well as the use of text, graphics and multi media and current and timely information will improve the service experience quality (Agarwal & Venkatesh 2002; Palmer 2002).

Improving the visibility of ATM screens (Thatcher *et al.* 2005), keeping the ATMs in more safe locations as in high traffic areas with adequate lighting and CCTV will improve the encounter quality (Kitten *et al.* 2007a), and the adoption of different models will improve the service experience, since each model is more appropriate to particular usage conditions (Kitten *et al.* 2007a).

The adoption of windows software for ATMs will improve the customer experience since they will experience the same graphics and channel messages as they experience through other channels such as Internet systems (Kitten *et al.* 2008), which is more attractive than traditional green text on black screen (Bickers 2007).

In order to improve the service encounter quality, the call agent should be trained on communication and personal skills, IT skills and telephone skills, and have online access to data mining results (Hash 2006; Jack *et al.* 2006).

6- Quality and Security of Electronic Banking Transactions

The same issues discussed in the transaction quality of traditional banking operations strategy typology could be adopted by all e-banking channels; moreover, the use of some technologies by telephone banking systems, such as software that records transaction speed and call agent action and records call, will reduce transaction errors (Feig 2004).

It is very important to use multifactor authentication layers and techniques for e-banking applications to reduce the risk of hacking (FFIEC 2001), and increased use of other techniques to protect confidentiality, integrity and repudiation will improve the security (Hutchinson and Warren 2003; Yibin 2003; Lee 2004).

The use of wired ATMs is more secured in comparison with wireless, since hackers can access wireless transactions online by using special mobile devices (Kircher *et al.* 2008). However, SMS application is less secured in comparison with mobile Internet banking (Infogile Technologies 2007; Peevers *et al.* 2008). The most secured application is SIM-based applications, since the customer prepares the transaction offline and encrypts the message before sending (Krugel 2007).

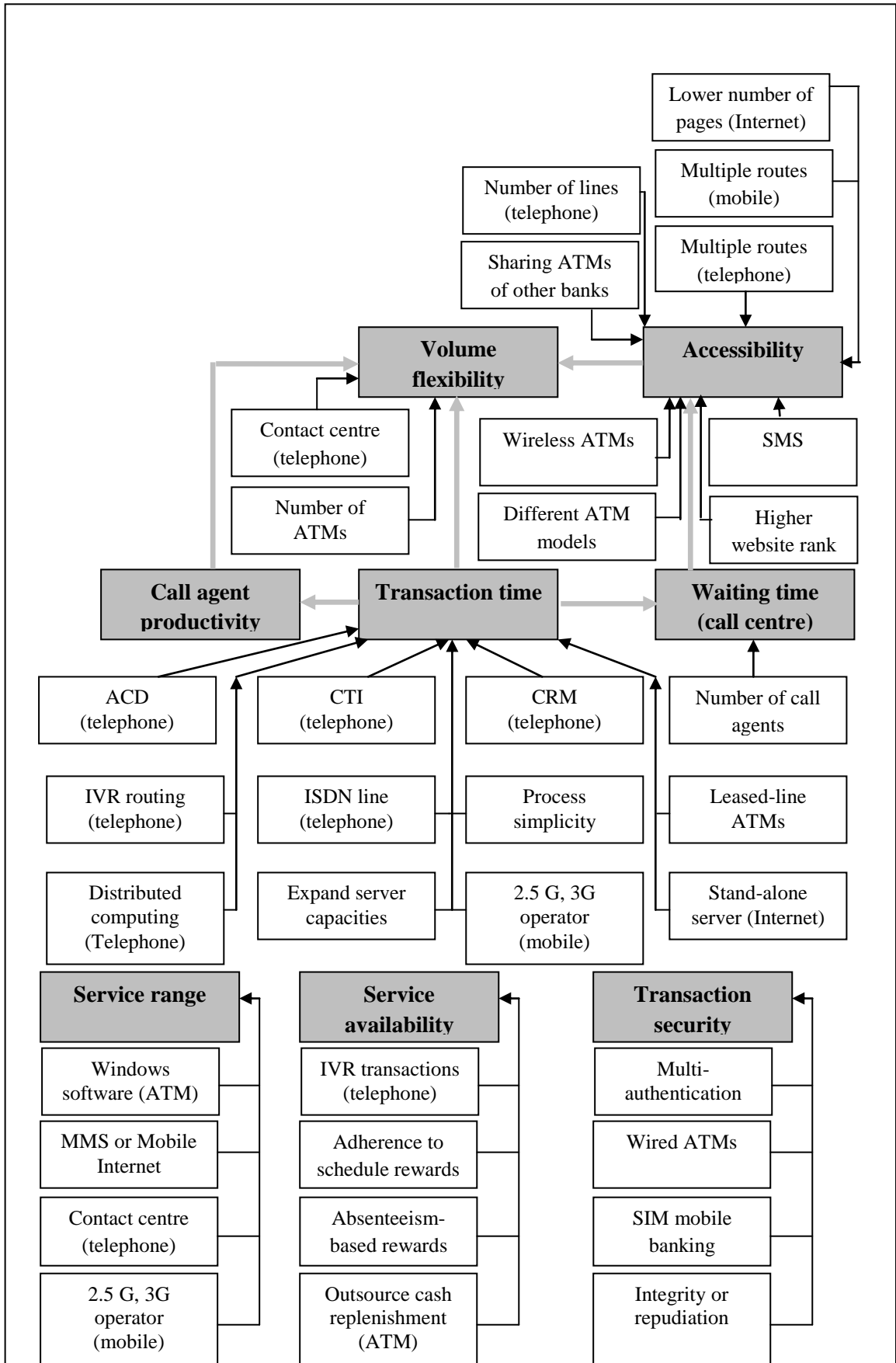
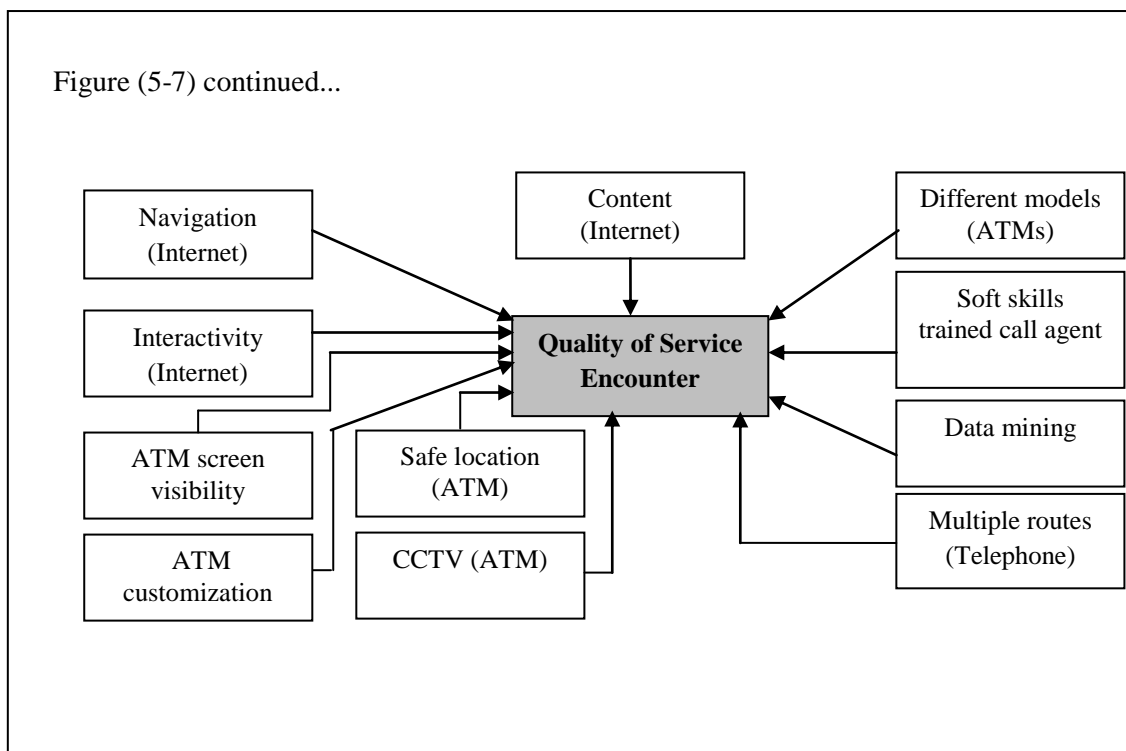


Figure (5-7)
Proposed E- Banking Differentiation Typology
(Relationship between Actions and Differentiation Capabilities of E-banking)



5-6-7 Some Remarks about the Typologies

According Lavyssiere *et al.* (2008) the typologies adopted by banks in different national contexts differ; for example, in France the adopted typology was the innovative product, while in the Netherland the adopted strategy was efficiency oriented; in Spain it was customer oriented, but in the UK it was product range.

On the other hand, the typologies adopted by banks in the same country can also differ. For example in Philippines the banks adopted different typologies, such as customer relations, service oriented, promotion strategy and rate (Chu-Mei 2001). In the USA different typologies were adopted by banks to run credit operations: cost leader, kiosk, focused professional, and personal service (Metters & Vargas 2000).

The best practices of operations strategies could change over time; according to Safer (2006), the banks have shifted from being product oriented towards being customer oriented in recent years to be more able to deal with increased competition.

Whilst the strategies of the past were overall cost leadership or differentiation, future direction should be more directed towards hybrid strategic options.

The banking sector adopted the efficiency approach during 1990s, and accordingly success during this period was determined by standardisation and centralization, which improved several attributes such as convenience, product selection and price, but its often adversely affected service level (Driscoll 1999); the main focus was on reducing costs and increasing the efficiency and speed of the process.

During the era of electronic banking the costs of banking services are more transparent to consumers; accordingly, the banks should focus on customer loyalty. The focus is not only to reduce costs or improve convenience but to manage the customer experience, which is the most important factor for success (Driscoll 1999; Hoek 2006).

5-7 Conclusion

The actions of banking operations strategies could be classified into: 1) process decoupling, 2) process simplicity, 3) process automation, 4) process routing, 5) branch layout, 6) location, 7) service encounter, 8) information system, 9) human resources competencies, and 10) quality control.

However, the operational competitive capabilities can be classified according to the following: 1) transaction time, 2) transaction costs, 3) transaction quality, 4) transaction security, 5) volume flexibility, 6) product range flexibility, 7) new product flexibility, 8) service availability, 9) accessibility, 10) electronic banking service encounter quality, and 10) the quality of branch layout.

Banking performance indicators can be classified into: 1) financial and 2) marketing indicators. The financial indicators include return on assets, return on equity,

and operations revenue to net income. The marketing indicators include market share, customer retention and customer satisfaction.

The capabilities, actions and performance indicators can be combined with each other to form patterns or typologies; these typologies can be classified into: 1) costs, 2) differentiation, and 3) hybrid. Therefore three proposed typologies were developed in this thesis, covering both traditional and electronic banking operations.

Chapter 6

Data Analysis: Competitive Position Analysis

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6-1 Introduction

Data analysis covered the last three phases of this research project, as presented in Figure (4-2). The data analysis was classified into three phases: the first was identifying best operational competitive capabilities, the second identifying the significant operational actions to achieve the best capabilities, and the third constructing patterns of best practices (best-practice prediction models).

Accordingly, the last three objectives were achieved by analysing the data. In this chapter the best practices are identified using the first approach of data analysis, competitive position analysis. This approach is a thirteen-stage process. The logic of each stage is reviewed and its relation with next stage is also discussed. Many examples were used to facilitate understanding of the analysis stages. The patterns of best practice are presented at the end of this chapter and are compared, and conclusions are reached accordingly.

6-2 Pre-data Analysis Step

Step 1: Preparing Questionnaires for Analysis

- 1- The questionnaires for each bank were grouped together and classified into e-banking and traditional banking questionnaires, then sub-classified into executive and non-executive questionnaires. The questionnaires of managers were numbered M1, M2, etc. – Mn (M = manager, n = serial number). Teller questionnaires were numbered as A1, A2 etc. – An (A = account, n = serial number). Credit employee questionnaires were numbered as L1, L2 etc. – Ln (L = loan, n = serial number). Branch manager questionnaires were numbered B1, B2, etc. – Bn (B = branch, n = serial number).

- 2- Questionnaire code variable scales; different codes were developed (*see* tables (4-5) to (4-14), Chapter 4).

Step 2: Data Entry and Aggregation

Since the number of respondents differs between different dimensions, and since the unit of analysis was the bank, the data was aggregated before starting the data analysis step. The data were aggregated according to unit of analysis, and a Microsoft Excel spreadsheet was used for this purpose. Each bank has a separate datasheet, and aggregation was carried out according to the following procedure:

- 1- Two Excel workbooks were opened for each bank (one for traditional banking and another for electronic banking). Each workbook was separated into different sheets, one for operational capabilities and one for each action and competency type. The capabilities sheets were classified into account and credit operational capabilities, and classified into ATM, Internet banking, mobile banking and telephone banking capabilities. Also each action sheet was separated into each channel's competencies and actions.
- 2- Computing the averages for every bank; the average of each capability and action.
- 3- Then, two new workbooks were opened, one for traditional and other for electronic banking, the averages of each bank were transferred to these workbook, so each worksheet had all banks averages. Each work book was classified to different sheets, each capability's channel and actions were in separate sheet.

Ethical issues of data entry: in order to protect the banks anonymity the banks were represented by alphabetic codes, further, in order to protect the confidentiality the data sheets were protected using security login password.

Step 3: Data Cleaning

The coding error and missing data were screened, to catch the data coding problems the summary of statistics was used, the maximum, minimum values were identified for the ratio and interval variables, however, for the nominal variable the frequencies showed the coding errors. On the other hand, the missing data, and the question answered by a wrong or inappropriate person were ignored.

Step 4: Reliability of Data

The reliability of data was evaluated through using multi-respondents viewpoints, so the traditional and electronic banking operations actions and capabilities were reported by different respondents. The standard deviation was the source of measuring the reliability of data, and was identified for each case (*see* Table (6-1)-(6-2)). The reliability of data was very high since the average standard deviation of all dimensions of traditional and electronic banking operations was 0.8 or less.

Table (6-1)

Standard Deviation of Traditional Banking Respondent Data

Code	Service delivery process	Design of branch layout	Transaction time	Customer waiting time	New product flexibility	Transaction security	Transaction quality	Service availability	Quality of branch layout
A	0.473	0.33	0.6	0.046	0.01	0.026	0.06	0	0.66
B	0.5	0.40	0.24	0.4	0.02	0	0.04	0	0.76
C	0.54	0.35	0.18	0.13	0.015	0.017	0.04	0.06	0.48
D	0.8	0.52	0.74	0.41	0.41	0.05	0.04	0.22	0.64
E	0.30	0.63	0.53	0.23	0.07	0.007	0.08	0.27	0.60
F	0.77	0.71	0.37	0.78	0.001	0.018	0.04	0.54	0.67
G	0.21	0.39	0.042	0.13	0.27	0	0.056	0	0.65
H	0.59	0.44	0.29	0.93	0.03	0.03	0.023	0.03	0.95
I	0.3	0.68	0.36	0.45	0.02	0.05	0.07	0.02	0.53
J	0.4	0.65	0.61	0.65	0.03	0	0.072	0.47	0.27
K	0.61	0.57	0.5	0.46	0.02	0.03	0.026	0.75	0.39
L	0.44	0.58	0.32	0.19	0.002	0	0	0	0.64
M	0.2	0.40	0.58	0.22	0.003	0.017	0.03	0	0.58
N	0.29	0.29	0.74	0.35	0.03	0.18	0.05	0	0.71
O	0.25	0.32	0.63	0.42	0.06	0.011	0.007	0.003	0.53
All	0.41	0.48	0.45	0.39	0.07	0.03	0.04	0.16	0.60

Table (6-2)

Standard Deviation of E-banking Respondent Data

Code	E-banking service delivery process	Service encounter design	Transaction time	Service accessibility	Service range flexibility	Transaction security	Transaction quality	Service availability	Service encounter quality
A	0.62	0.41	0.62	0.12	0.02	0	0.08	0.02	0.10
C	0.45	0.51	0.42	0.22	0.05	0	0.03	0.04	0.32
D	0.81	0.35	0.68	0.18	0.03	0.007	0.09	0.02	0.33
E	0.65	0.54	0.57	0.19	0.08	0	0.07	0	0.28
F	0.79	0.28	0.38	0.54	0.02	0	0.05	0	0.29
G	0.45	0.39	0.36	0.22	0.05	0	0.05	0	0.45
H	0.62	0.54	0.34	0.56	0.01	0	0.07	0	0.62
I	0.42	0.62	0.53	0.58	0.05	0.04	0.2	0.07	0.36
K	0.44	0.71	0.74	0.51	0.003	0.009	0.04	0	0.69
L	0.57	0.28	0.78	0.34	0.002	0	0	0	0.55
O	0.41	0.52	0.62	0.48	0.04	0.013	0.007	0.003	0.64
All	0.53	0.49	0.55	0.37	0.03	0.005	0.06	0.012	0.45

6-3 Response Rate and Missing Data

6-3-1 Response Rate According to Participating Banks

Table (6-3)

Response Rate According to Participating Banks

Channels	Traditional Banking		Electronic Banking			
	Account Operations	Credit Operations	ATM	Internet Banking	Telephone Banking	Mobile Banking
Total number of banks adopting the channel	15	15	14	13	10	12
Number of respondent banks	15	15	11	11	6	8
Percentage of respondent banks	100%	100%	85%	85%	60%	67%

Table (6-3) shows the number and percentage of participating banks, it can be seen that; all banks participated in traditional banking survey, however, 85% of banks participated in Internet banking and ATM survey, and the participating banks in telephone and mobile banking survey were 60% and 67% respectively.

The lower participation of e-banking survey did not impact data analysis since the data of each banking channel was analysed in separate of other channels, so the banks participated in each channel's survey were compared together, then the results were combined in the final step.

6-3-2 Response Rate According to Respondents

Table (6-4)

Response Rate According to Respondents

Bank Code	Channel	Traditional Banking						E-banking	
	Respondents	Teller	Credit Employee	Branch Manager	Account Operation Executive	Credit Operation Executive	Branch Management Executive	IT Executive or E-banking Manager	E-banking Technical
A	Number Percentage ⁴	34 67%	29 57%	40 78%	1 100%	1 100%	1 100%	1 100%	4 100%
B	Number Percentage	11 100%	11 100%	11 100%	1 100%	1 100%	1 100%	0 0%	0 0%
C	Number Percentage	20 63%	20 63%	32 100%	1 100%	1 100%	1 100%	1 100%	4 100%
D	Number Percentage	17 59%	19 66%	13 45%	1 100%	1 100%	1 100%	1 100%	3 100%
E	Number Percentage	6 86%	4 57%	5 71%	1 100%	1 100%	1 100%	1 100%	3 100%
F	Number Percentage	35 70%	35 70%	24 50%	1 100%	1 100%	1 100%	1 100%	4 100%
G	Number Percentage	26 81%	22 69%	20 63%	1 100%	1 100%	1 100%	1 100%	4 100%
H	Number Percentage	23 53%	22 51%	17 40%	1 100%	1 100%	1 100%	1 100%	3 100%
I	Number Percentage	7 58%	8 67%	7 70%	1 100%	1 100%	1 100%	1 100%	2 100%
J	Number Percentage	9 69%	8 62%	10 77%	1 100%	1 100%	1 100%	0 0%	0 0%
K	Number Percentage	22 76%	22 76%	20 69%	1 100%	1 100%	1 100%	1 100%	3 100%
L	Number Percentage	11 65%	10 59%	14 82%	1 100%	1 100%	1 100%	1 100%	2 100%
M	Number Percentage	8 53%	10 67%	8 53%	1 100%	1 100%	1 100%	----	----
N	Number Percentage	4 57%	6 86%	7 100%	1 100%	1 100%	1 100%	----	-----
O	Number Percentage	6 86%	7 100%	7 100%	1 100%	1 100%	1 100%	1 100%	3 100%
Total	Number Percentage	241 70%	236 68%	235 65%	15 100%	15 100%	15 100%	11 85%	32 65%

Table (6-4) shows the number and percentage of respondents, it can be seen that the average executive's response percentage for traditional banking was the highest with 100%; however, the response percentage of traditional banking non-managers was more than 60%, so the response rate of traditional banking survey was acceptable.

⁴ Percentage = number of respondents/number of surveyed.

The percentage of participating top executives of e-banking was 85%, and the percentage of technical professionals participated was 65%, so the percentage of response was acceptable.

6-3-3 Missing Data

Table (6-5)
Missing Data

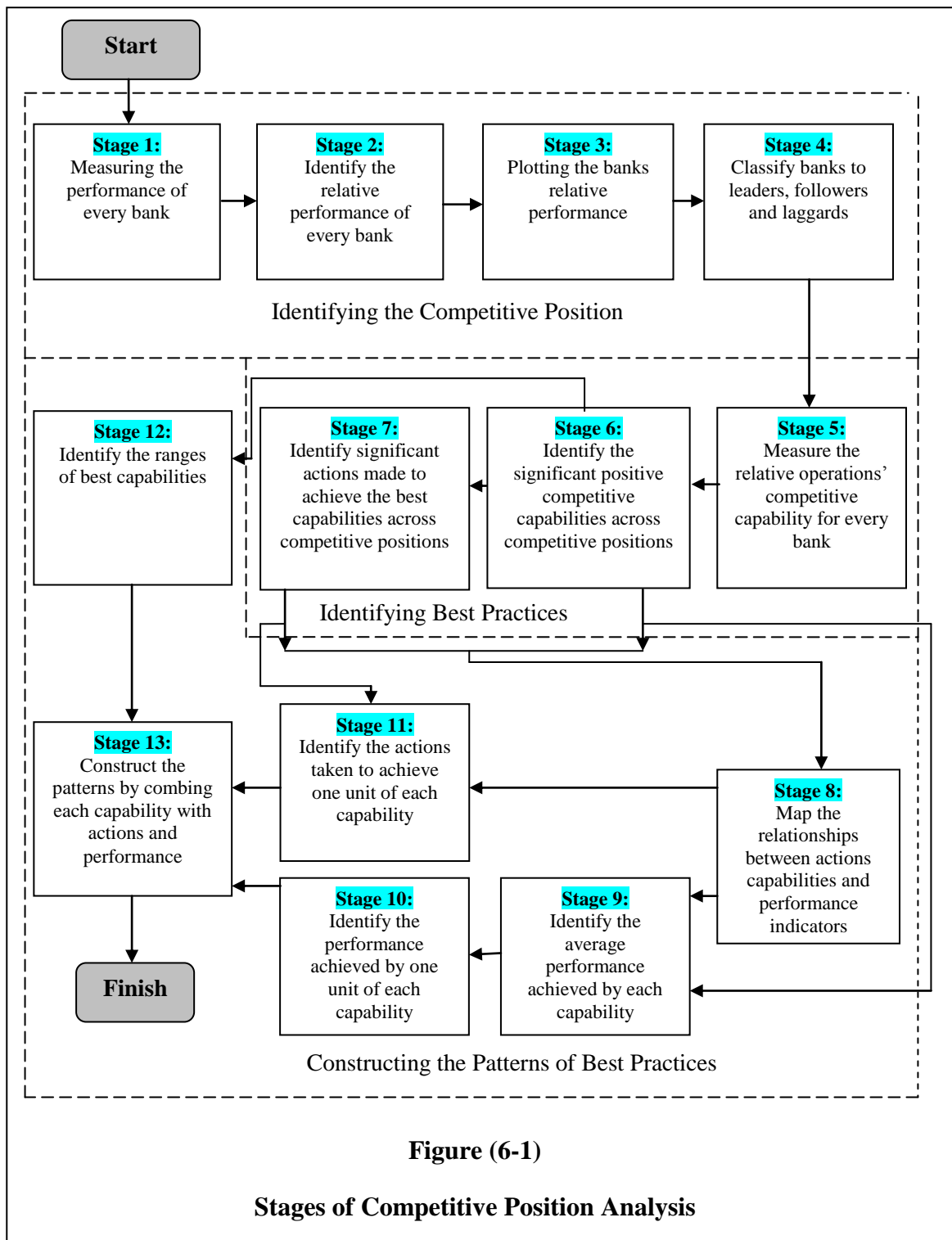
Missing data	Questionnaires			
	T1 (a)	T1 (b)	T4	E1
Number of customers	No response	No response		
Number of employees			2 banks respond	
Number of credit offices			2 banks respond	
Number of teller stations			2 banks respond	
Number of e-banking users				No response
E-banking customer satisfaction				No response

Table (6-5) shows the missing data, it can be seen that the missing data was related to number of customers, number of employees, number of credit offices, number of teller stations, number of e-banking users, and e-banking customer satisfaction. The number of customers was planned to be used for computing the account market share; this problem was solved by using alternative measures for market share, which are deposit market and loan market share; this data is available in annual reports.

The number of credit offices and teller stations annually were identified by using the data of questionnaire (T3), the average number of credit offices and teller stations in each period was identified and multiplied by the number of branches in each period, also the number of employees was estimated according to number of credit offices and tellers, one employee for each teller station and credit office.

However, the indicator of number of e-banking users was eliminated from analysis, but the indicator of e-banking customer satisfaction was substituted by the account customer satisfaction, since the users of e-banking are the deposit customers.

6-4 First Analysis Approach: Competitive Position Analysis



According to this analysis approach the best performing banks are assumed to have the best operational capabilities and actions, therefore banks are initially ranked according to their competitive position.

6-4-1 Identifying the Competitive Positions of Banks over the Period 1999–2008

The first four steps that presented in Figure (6-1) are the steps of identifying the banks' competitive position, under each step different analysis methods were used as following:

Stage 1: Measuring Bank performance

Measuring Financial Performance

Three financial indicators were traced to measure performance, these indices were; Return on Assets (ROA), Return on Equity (ROE), and Operating Revenue/Total Revenue, all data required to compute these indices were available in the annual reports.

Return on Assets (ROA): this indicator was chosen since it's one of the widely used profitability indicator in the banking sector (Uzelac and Sudarevic 2006), this was computed for each bank per year, then the average during each period was computed, the required data to compute ROA were:

- 1- The total assets; this figure was available in the annual report (balance sheet).
- 2- The net income; this figure was available in the annual report (income statement).

After collecting the previous data the ROA was computed by dividing total assets over net income as following:

$$\text{ROA} = (\text{net income} / \text{total assets}) \times 100\%.$$

➤ **Return on Equity (ROE):** this indicator was chosen since it's one of the widely used profitability indicator in the banking sector (Uzelac & Sudarevic 2006), this was computed for each bank per year, then the average during each period was computed, the required data to compute ROE were:

- 1- The total equity; this figure was available in the annual report (balance sheet).
- 2- The net income; this figure was available in the annual report (income statement).

After collecting the previous data the ROE was computed for each bank annually by dividing total equity over net income, the following equation was used:

$$\text{ROE} = (\text{Net income} / \text{total equity}) \times 100\%.$$

➤ **Ratio of Operating Revenue/Total Revenue:** the reason of choosing this index is the reflection of core operations income whether traditional or electronic, this indicator or ratio was computed for each bank per year, then the average during each period was computed, the required data to compute Operating Revenue/Total Revenue were:

- 1- The non-interest operating revenue, which was available in the annual report (Income Statement).
- 2- Total Revenue, which was available in the annual report (income statement).

The ratio was computed for each bank annually by dividing the operating revenue over total revenue as following.

$$(\text{Non-interest operating Revenue} / \text{total revenue}) \times 100\%.$$

Measuring Marketing Performance

Three marketing indicators were traced; the market share, customer satisfaction and customer retention.

- **Market Share (MS):** this indicator was traced since it was widely used in the previous studies, this indicator was computed for each bank per year, then the average during each period was computed, the data required to compute market share were; the amount of personal deposits and personal credit.

The procedure to compute this indicator was:

- 1- Compute the total personal deposits and credits in Jordan annually.
- 2- Compute each bank market share annually; the amount of deposits and credits of each bank divided over the total deposits and credit in Jordan, see equation bellow:

$$MS = \left(\frac{\text{Total amount of personal deposits or personal credit for bank (a)}}{\text{total personal deposits or personal credit provided in Jordan}} \right) \times 100\%$$

- 3- The average market share for each bank during each period was computed, then the average over all periods (for more details about study period see section (6-3-3-1)).

- **Customer Retention (CR):** this indicator was measured as following:

- 1- The percentage of customers who closed their saving and loan accounts at the end of each period.
- 2- The retention of traditional banking operations was computing by deducting the percentage of customers who closed their account from 100%.

- **Customer Retention (CR):** this indicator was measured as following:

- 1- The Executives were asked about the level of customers' satisfaction. They asked to identify the level of satisfaction according to records of banks' surveys.
- 2- The level satisfaction was identified according to five points Likert Scale.

Stage 2: Identifying the Relative Performance for Each Bank as Summarised in the Following Equations and Explanation: (see example (1) next page)

$$BRP = (\sum_{i1}^{in} RP_i) / N_{pi} \dots \dots \dots (1)$$

$$RP_i = (\sum_{t1}^{tn} RP_t) / N_p \dots \dots \dots (2)$$

$$RP_t = (P_x / BP) \dots \dots \dots (3)$$

BRP: Bank Relative Performance.

RP_i: Relative Performance according to performance indicator i.

RP_t: Relative Performance during the period t.

P_x: Performance of bank (X).

BP: best Performance Score.

N_{pi}: Number of performance indicators.

N_p: Number of Periods.

- 1- The relative performance of each bank according to each performance indicator during each period was identified by dividing the performance of each bank by the performance of the bank that had the best performance; this action was repeated for all performance indicators over the study period (equation 3).
- 2- Then, the overall relative performance according to each performance indicator of each bank was identified by summing the relative performance of each indicator during each period and dividing them by the number of periods (equation 2).
- 3- Next, the overall relative performance of each bank was identified by summing the overall relative performance of all indicators together, and dividing them over the number of performance indicators (equation 1).

This analysis approach assumes that all performance indicators are equal in their importance, so the indicators are not weighted as a result of the following reasons:

- 1- The majority of operations capabilities affect financial performance indicators indirectly through marketing indicators (customers' satisfaction, customers' retention, and market share), accordingly, the financial performance is mainly an outcome of marketing performance, so weighting the financial performance indicators more than market share or customers' satisfaction and retention would be miss-leading.
- 2- Weighting some performance indicators such as financial performance indicators more than marketing indicators (market share, customer satisfaction and retention) could be miss-leading since the results of financial performance are not only the outcomes of core operations, these indicators could be affected by other non-operational factors such as selling properties or gaining more interest income, so when it is weighted more than other indicators the banks' competitive position will be inaccurate since the aim of this study is to reflect the impact of operations' outcomes.
- 3- On the other hand, weighting marketing indicators more than financial indicators could be miss-leading since all business institutions seek to maximize profit.
- 4- Weighting market share more than customers' satisfaction and retention could be miss-leading since market share is an outcome of the behavior of current customers through satisfying and retaining them, and an outcome of attracting new customers.
- 5- No previous studies were founded that could provide a rational for weighting the indicators and it was beyond the scope of this research to conduct such a study.

Example 1: How to Measure Relative Performance

Identifying Relative Performance for Bank (A)

Performance indicator During	Performance	Step 1	Step 2
		Best performance	Relative performance Equation (3)
Return on Assets (ROA)			
1999-2000	0.011	0.018	$0.011/0.018=0.58$
2001-2003	0.0125	0.024	$0.0125/0.024=0.19$
2004-2006	0.0218	0.15	$0.0218/0.15=0.15$
2007-2008	0.027	0.034	$0.027/0.034=0.77$
Step 3: Relative (ROA) (Equation (2))			$(0.58+0.19+0.15+0.77)/4=0.43$
Return on Equity (ROE)			
1999-2000	0.06	0.2	$0.06/0.2=0.32$
2001-2003	0.08	0.26	$0.08/0.26=0.33$
2004-2006	0.15	0.38	$0.15/0.38=0.41$
2007-2008	0.22	0.29	$0.22/0.29=0.75$
Step 3: Relative (ROE) (Equation (2))			$(0.32+0.33+0.41+0.75)/4=0.45$
Operating Revenue/Total Revenue (OR/TR)			
1999-2000	0.19	0.51	$0.19/0.51=0.38$
2001-2003	0.36	0.66	$0.36/0.66=0.55$
2004-2006	0.48	0.65	$0.48/0.65=0.74$
2007-2008	0.61	0.61	$0.61/0.61=1.00$
Step 3: Relative (OR/TR) (Equation (2))			$(0.38+0.55+0.74+1.00)/4=0.67$
Market Share Deposit (MSD)			
1999-2000	0.22	0.22	$0.22/0.22=1.00$
2001-2003	0.45	0.45	$0.45/0.45=1.00$
2004-2006	0.26	0.26	$0.26/0.26=1.00$
2007-2008	0.20	0.20	$0.20/0.20=1.00$
Step 3: Relative (MSD) (Equation (2))			$(1.00+1.00+1.00+1.00)/4=1.00$
Market Share loans (MSL)			
1999-2000	0.14	0.21	$0.14/0.21=0.71$
2001-2003	0.19	0.19	$0.19/0.19=1.00$
2004-2006	0.20	0.20	$0.20/0.20=1.00$
2007-2008	0.28	0.28	$0.28/0.28=1.00$
Step 3: Relative (MSL) (Equation (2))			$(0.71+1.00+1.00+1.00)/4=0.93$
Customer Retention Deposits (CRD)			
1999-2000	0.99	0.99	$0.99/0.99=1.00$
2001-2003	0.98	0.99	$0.98/0.99=0.99$
2004-2006	0.98	0.99	$0.98/0.99=0.99$
2007-2008	0.98	1.00	$0.98/1.00=0.98$
Step 3: Relative (CRD) (Equation (2))			$(1.00+0.99+0.99+0.98)/4=0.99$
Customer Retention Loans (CSL)			
1999-2000	0.99	0.99	$0.99/0.99=1.00$
2001-2003	0.98	1.00	$0.98/1.00=0.99$
2004-2006	0.98	0.99	$0.98/0.99=0.99$
2007-2008	0.98	0.99	$0.98/0.99=0.99$
Step 3: Relative (CSL) (Equation (2))			$(1.00+0.99+0.99+0.99)/4=0.99$

Account Customer Satisfaction (ACS)			
1999-2000	4	5	4/5=0.80
2001-2003	5	5	5/5=1.00
2004-2006	4	5	4/5=0.80
2007-2008	4	5	4/5=0.80
Step 3: Relative (ACS) (Equation (2))			$(0.80+1.00+0.80+0.80)/4=$ 0.85
Credit Customer Satisfaction (CCS)			
1999-2000	4	5	4/5=0.80
2001-2003	5	5	5/5=1.00
2004-2006	4.5	5	4.5/5=0.9
2007-2008	4.5	5	4.5/5=0.9
Step 3: Relative (ACS) (Equation (2))			$(1.00+1.00+0.9+0.9)/4=$ 0.95

Step 4: Bank (A) Relative Performance = (Relative ROA + Relative ROE + Relative OR/TR +
 Relative MSD + Relative MSL + Relative CRD + Relative CRL + Relative CCS + Relative
 ACS)/9.....Equation (1)

Bank (A) Relative Performance =

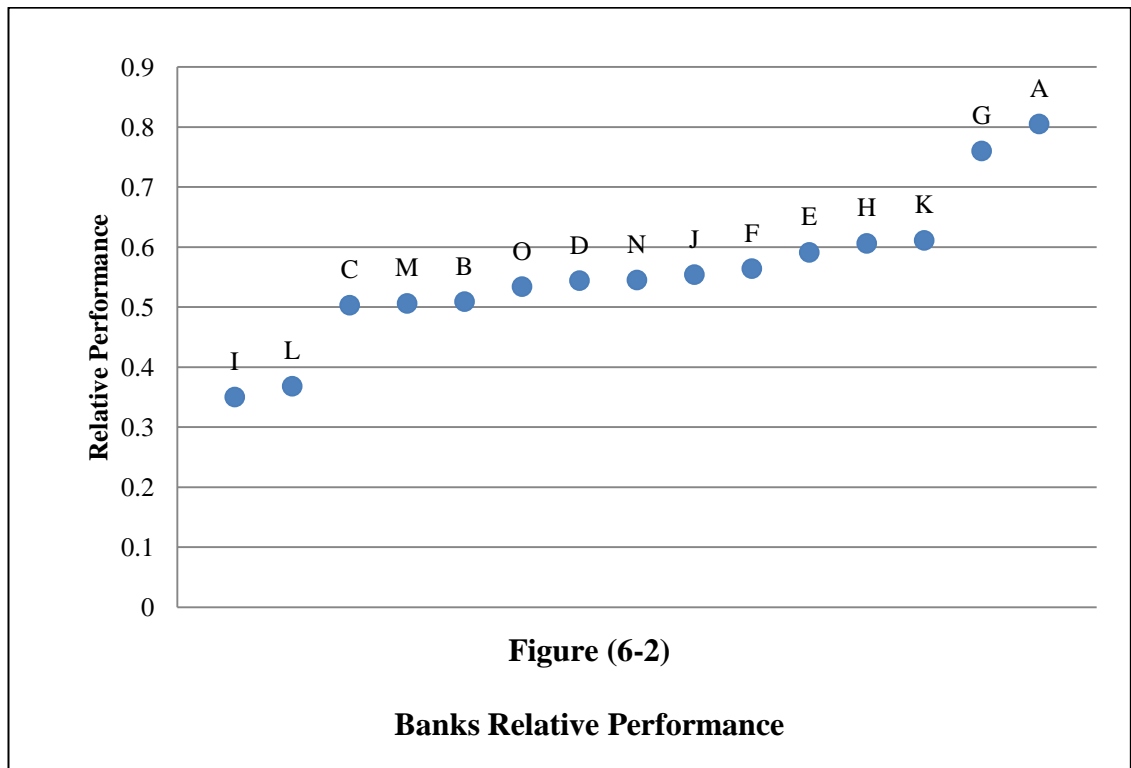
$$= (0.43+0.45+0.67+1.00+0.93+0.99+0.99+0.85+0.95)/9=$$

0.805

Relative Bank Performance over the Period 1999–2008

Bank Code	Relative Performance
A	0.805 ←
B	0.509
C	0.503
D	0.544
E	0.591
F	0.564
G	0.760
H	0.606
I	0.350
J	0.554
K	0.611
L	0.368
M	0.506
N	0.545
O	0.534

Stages 3 and 4: Plotting Relative Bank Performance and Classifying Banks into Leaders, Followers and Laggards



To plot the bank relative performance the banks were ranked from high to low in relation to performance, then a plotting chart was developed using a Microsoft Excel chart application. Figure (6-2) shows the plots of banks relative performance, it can be seen that, two banks achieved significant performance better than other banks, these two banks were in the right side of the figure these two banks were (A) and (G); these two banks were the leaders.

However, two banks achieved significant performance lower than other banks, these two banks were in the left side of the figure, these two banks were (I) and (L), these two banks were laggards, but, the remaining banks which were between the two extremes were followers, these banks were (C) (M) (B) (O) (D) (N) (J) (F) (E) (H) (K).

6-4-2 Identifying Best Practices over the Period 1999–2008

Stage 5: Measuring the Relative Operations Competitive Capabilities

After identifying the competitive positions, it is important to identify the capability scores that were achieved by each competitive position, in order to identify the capabilities that improved positively and significantly across competitive position (relative performance), so the best practices could be identified, the appropriate measure for the capabilities is the relative score since the bank's performance was measured by the relative score too.

Step 1: The average operational competitive capability scores were computed for every bank by computing the average score of respondent responses. The respondents' responses were collected using the questionnaires (for more details about these questionnaires *see* section (4-3-3-3)).

However some capabilities were computed using secondary sources. These capabilities were branch and ATM accessibility. The following equations were used to compute accessibility:

$$\mathbf{BUA_X = NBU_X / (NPU / 10,000) \dots \dots \dots (4)}$$

BUA_X: Branches Urban Accessibility for bank (X).

NBU_X: Number of branches in urban area for bank (X).

NPU: Number of people in urban area.

The previous equation shows how the branches accessibility in urban areas was computed, it can be seen that; the number of bank (X) branches in urban area was divided over the number of 10,000 people live in urban area, the reason behind using number of 10,000 people rather than 100,000 people or 1000,000 people was the number of population in Jordan which is small, so using such indicator is reasonable. The same equation was used to compute the branches suburban accessibility, and

branches rural accessibility, also the same equation was used to compute ATM urban, suburban and rural accessibility.

Step 2: The relative score of each capability for every bank was computed as summarised in the following equations; this procedure was the same as discussed in measuring the relative performance (*See Example (2) next page*).

$$RC_i = (\sum_{t=1}^{tn} RC_t) / N_p \dots\dots\dots(5)$$

$$RC_t = (C_x / BC) \dots\dots\dots(6)$$

RC_i: Relative Capability score according to indicator i.

RC_t: Relative Capability during the period t.

C_x: Capability Score for bank (X).

BC: Best capability Score

N_p: Number of Periods.

- 1- The relative capability score for every bank according to each capability indicator during each period was identified by dividing the score of each bank over the best capability score; this action was repeated for all capability indicators over the study period (equation 6).
- 2- Then, the overall relative capability score according to each capability indicator of each bank was identified by summing the relative score of each indicator during each period and divides them over the number of periods (equation 5).

Example 2: How to Measure Relative Capability

Identifying Relative Account Volume Flexibility for bank (B)

Account Volume Flexibility During	Account Volume Flexibility for bank (B)	Step 1	Step 2
		Best Volume Flexibility	Relative Volume Flexibility Equation (6)
1999-2000	55,000	279,000	55,000/279,000= 0.197
2001-2003	55,000	441,600	55,000/441,600= 0.125
2004-2006	84,000	537,600	84,000/537,600=0.156
2007-2008	128,000	720,000	128,000/720,000=0.177
Step 3: Relative Volume Flexibility (Equation (5))			(0.197+0.125+0.156+0.177)/4= 0.1639

Stage 6: Identifying Best Operations Competitive Capabilities across Competitive Positions

Definition: Significant positive improved capability when moved from laggards to followers and from followers to leaders, so the difference in competitive position between banks is determined by these capabilities, and these significant capabilities led to positive changes in competitive-position performance.

According to the previous definition the following procedures were followed:

Step 1: The average relative operations capability of each capability indicator for every competitive position was identified as following: (*see example (3) next page*)

$$CPRC_i = (\sum_{x=1}^N RC_x) / N \dots \dots \dots (7)$$

CPRC_i: Competitive Position Relative Capability according to indicator (i).

RC_x: Relative Capability for bank (X).

N: Number of banks in each position.

Example 3: How to Measure Relative Competitive Capabilities for each Competitive Position

Identifying Relative Account Transaction Time for Leaders

Leader (A) Relative Account Transaction Time	Leader (G) Relative Account Transaction Time	Leader Relative Transaction Time (equation(7))
0.699	0.88	$(0.699+0.88)/2=0.78$

Step 2: Identify the significant capabilities across positions; these were identified using Kruskal Wallis-H test this test was used since the data is not normally distributed, and the sample is too small.

The significant level was identified as following:

- 1- $P \leq 0.05$: no significant capabilities across competitive position.
- 2- $P \leq 0.1$: one significant operations capability across competitive positions which is account transaction time.
- 3- $P \leq 0.2$: four significant traditional banking capabilities were identified and two significant e-banking capabilities.
- 4- $P \leq 0.3$: the majority of capabilities were significant.

Accordingly, the significant level was $P \leq 0.2$

Table (6-6)

Significant Operations Competitive Capabilities across Positions

Capabilities	Relative score: leaders	Relative score: followers	Relative score: laggards	Kruskal Wallis H Test	Differences between positions	
					Leaders compared with followers and laggards	Followers compared with laggards
Traditional Banking						
Account Transaction Time	78%	55%	48%	Chi 5.614 Sig. 0.06	+24.04% -3.08 minutes	+7% -1.87 minutes
Branch Urban Accessibility	72%	28%	23%	Chi 3.505 Sig. 0.173	+44.81% +1.78 branches/10,000 people	+5% +0.22 branches/10,000 people
Number of Branch Sites	75%	37%	28%	Chi 1.696 Sig. 0.146	+41.21% +3 new sites	+9% +1 new site
Credit New Products	25%	13%	0	Chi 3.749 Sig. 0.153	+14% +4 new products	+13% +1 new product
Electronic Banking						
Internet Banking Transaction Time	53%	0.7%	4%	Chi 3.384 Sig. 0.184	+51.61% -166.80 seconds	-----
Call Centre Volume Flexibility	100%	71%	----	Chi 1.8 Sig. 0.180	+54% +349 transactions	-----

Table (6-7)

Differences in Performance Indicators across Competitive Positions

Performance Indicators	Leaders compared with Followers and Laggards	Followers Compared Laggards
Return on Assets	+1.32%	+1.64%
Return on equity	+7.9%	+9.83%
Operating Revenue	+5.7%	+1.6%
Deposits Market share	+13.36%	+3.27%
Loans Market Share	+8.6%	+1.6%
Account Customer satisfaction	+9.4%	+6.6%
Credit Customer Satisfaction	+11%	+2.4%
Account customer Retention	+3%	+10%
Credit Customer Retention	+4%	+10%

Table (6-6) shows the significant operations capabilities across positions, it can be seen that; all capabilities were significant at $p < 0.2$ except account transaction time, which was significant at $p < 0.1$, the significant traditional banking operational capabilities were; transaction time, branch urban accessibility, number of branch sites and number of new credit products. The significant electronic banking operational capabilities were; Internet banking transaction time, and call centre volume flexibility; no significant.

Table (6-7) shows the actual change in performance indicators across competitive positions, it can be seen that; all performance indicators were improved across competitive positions, so the significant change in operations capabilities affected the performance indicators, accordingly, the significant operations competitive capabilities are best capabilities.

It can be seen also, leader banks achieved better change in all performance indicators in comparison with followers and laggards more than followers compared with laggards except in return on assets, return on equity and deposits and credit customer retention.

Stage 7: Identifying Significant Operations Actions Made to Achieve Best Operations Competitive Capabilities

After identifying the best operations competitive capabilities, the question is; what were the significant operations actions (service delivery process actions, capacity management actions, facility layout actions, and location actions) made to achieve the best operations competitive capabilities?, the answer of this question is important to identify the best actions, since the best are those positively affected with best capabilities.

In order to identify these actions the following actions were made:

Step 1: Measuring the Relative Action Score for -Every Competitive Position

- The average operations actions score were computed for every bank by computing the average score of respondent responses; the respondents' responses were collected using the questionnaires (for more details about these questionnaires see section (4-3-3-3)).
- The relative score of each action and for every bank was computed as summarised in the following equations; this procedure was the same as discussed in measuring the relative capability (*See Example (4) next page*).

$$RAO_i = (\sum_{t=1}^{tn} RAO_t) / N_p \dots\dots\dots(8)$$

$$RAO_t = (AO_x / BAO) \dots\dots\dots(9)$$

RAO_i: Relative Action score according to indicator i.

RAO_t: Relative Action during the period t.

AO_x: Action Score for bank (X).

BAO: Best Action Score

N_p: Number of Periods.

- 1- The relative action score for every bank according to each action indicator during each period was identified by dividing the score of each bank over the best action score; this was repeated for all actions over the study period (equation 9).
- 2- Then, the overall relative action score according to each action indicator of each bank was identified by summing the relative score of each indicator during each period and divides them over the number of periods (equation 8).

Example 4: How to Measure the Relative Action Score

Identifying the Relative Open account Process Simplicity Score for bank (A)

Open account Process simplicity during		Step 1	Step 2
	Open account Process simplicity for bank (A)	Best open account process simplicity	Relative Open account process simplicity Equation (9)
1999-2000	3	3	3/3=1.00
2001-2003	3	3	3/3=1.00
2004-2006	3	2	2/3= 0.667
2007-2008	3	2	2/3=0.667
Step 3: Relative process Simplicity (Equation (8))			(1.00+1.00+0.667+0.667)/4= 0.833

- The average relative action score of each action indicator for every competitive position was identified as following:

$$CPRAO_i = (\sum_{x=1}^n RAO_x) / N \dots \dots \dots (10)$$

CPRAO_i: Competitive Position Relative Action score according to indicator (i).

RAO_x: Relative Action score for bank (X).

N: Number of banks in each position.

Step 2: Identifying Significant Actions across Positions

Definition: Significant positive improved actions are identified by a move from laggards to followers and from followers to leaders, so the difference in competitive capabilities across positions is determined by these actions. The significant actions across positions were identified using Kruskal Wallis-H test.

Table (6-8) shows the operational actions identified as significant across positions, it can be seen that; all the identified actions were significant at p<0.05 except account

process simplicity, branch urban accessibility and number of branches in different sites, which were significant at $p < 0.2$.

The significant traditional banking operations actions were;

- Account process simplicity, adopting of WAN and advancement of communication with back office all of these actions affect the reduction of account transaction time.
- Hiring more tellers and credit employees was required to open more branches in urban.
- The numbers of branches in different sites affects the number of branch sites.
- Credit market acuity affected the number of new credit products.

The significant electronic banking operations actions were;

- Run Internet banking on a separate server which affected the reduction of Internet banking transaction time.
- Number of telephone banking trunk line, advancement of telephone banking operator system, expand telephone banking server capacity and level the capacity of telephone banking, all of these which affect the increase of call centres volume flexibility.

Table (6-8)

Significant Operations Actions across Positions

Actions	Leaders' Relative Score	Followers' Relative Score	Laggards' Relative Score	Kruskal Wallis H test	Differences across Positions	
					Leaders compared with Followers and Laggards	Followers Compared with Laggards
Actions Taken to Reduce Account Transaction Time						
Account Process Simplicity	86%	79%	70%	Chi 1.01 Sig. 0.137	+8.9% -1 step	+9% -1 step
Adopting of WAN	65%	60%	53%	Chi 41.34 Sig. 0.000	+6% +1: WAN between branches	+7% +1: WAN with head office
Advancement of Communication with back office	66%	55%	31%	Chi 26.93 Sig. 0.000	+15% +2: E-network	+24% +1: FAX
Actions Taken to Increase Branch site Accessibility						
Number of branches in different sites	69%	26%	18%	Chi 2.37 Sig. 0.166	+51.5% +3 branches	+8% +5 branches
Actions Taken to Increase Branch Urban Accessibility						
Number of tellers	82%	32%	23%	Chi 207 Sig. 0.000	+50% +98 tellers	+9% +18 tellers
Number of credit employees	63%	27%	17%	Chi 217 Sig. 0.000	+36% +61 employees	+10% +16 employees
Actions Taken to Increase Number of Credit Products						
Credit Market Acuity	72%	70%	60%	Chi 66.21 Sig. 0.000	+3% +3:	+10%
Actions Taken to Reduce Internet Banking Transaction Time						
Run Internet banking in a separate server	100%	21%	0%	Chi 24.24 Sig. 0.000	+79% +1: separate server	----
Actions Taken to Increase Call Centre Volume Flexibility						
Number of telephone banking trunk lines	60%	33%	----	Chi 7.5 Sig. 0.01	+27% +8 lines	----
Expand telephone banking server capacity	15%	0%	----	Chi 3.15 Sig. 0.04	+15%	----
Adopt more advanced telephone banking operating system	50%	0%	---	Chi 3.15 Sig. 0.04	+50% PBX system	----
Level telephone banking capacity	72%	64%	----	Chi 20.79 Sig. 0.01	+8% +3: adopt data mining and evaluate competitors products	----

6-4-3 Constructing Patterns of Best Practices in Traditional and Electronic Banking Operations Strategy

The best practices patterns are the models that identify the relationship between the best actions, best operations competitive capabilities and performance, so the decision-makers and researchers can use these models to predict the changes in operational actions and performance as a result of changes in operational capabilities. The patterns were constructed by using six-stage process as presented in the next pages.

Stage 8: Map the relationship between actions, capabilities, and performance indicators

The maps were developed depending on the conceptual models developed in Chapter 5 (see example (5))

Example (5): Mapping the relationship between action capabilities and performance indicators

Table (6-9)

Theoretical Relationships between Significant Operations Capabilities and Performance Indicators

Factors Directly Affecting Market Share	Factors Directly Affecting Customer Retention	Factors Directly Affecting Operating Revenue	Factors Directly affecting Return on Assets and Return on Equity
Account Transaction time Branch urban accessibility Number of branch sites Internet banking transaction time Customer retention New credit products	Customer Satisfaction	Market share Call centre volume flexibility	Market share Operating revenue

Table (6-9) shows the relationships between significant operational capabilities and performance indicators, these relations were identified by revising the conceptual patterns that constructed in (Chapter 5), after identifying the relations, these relations can be mapped.

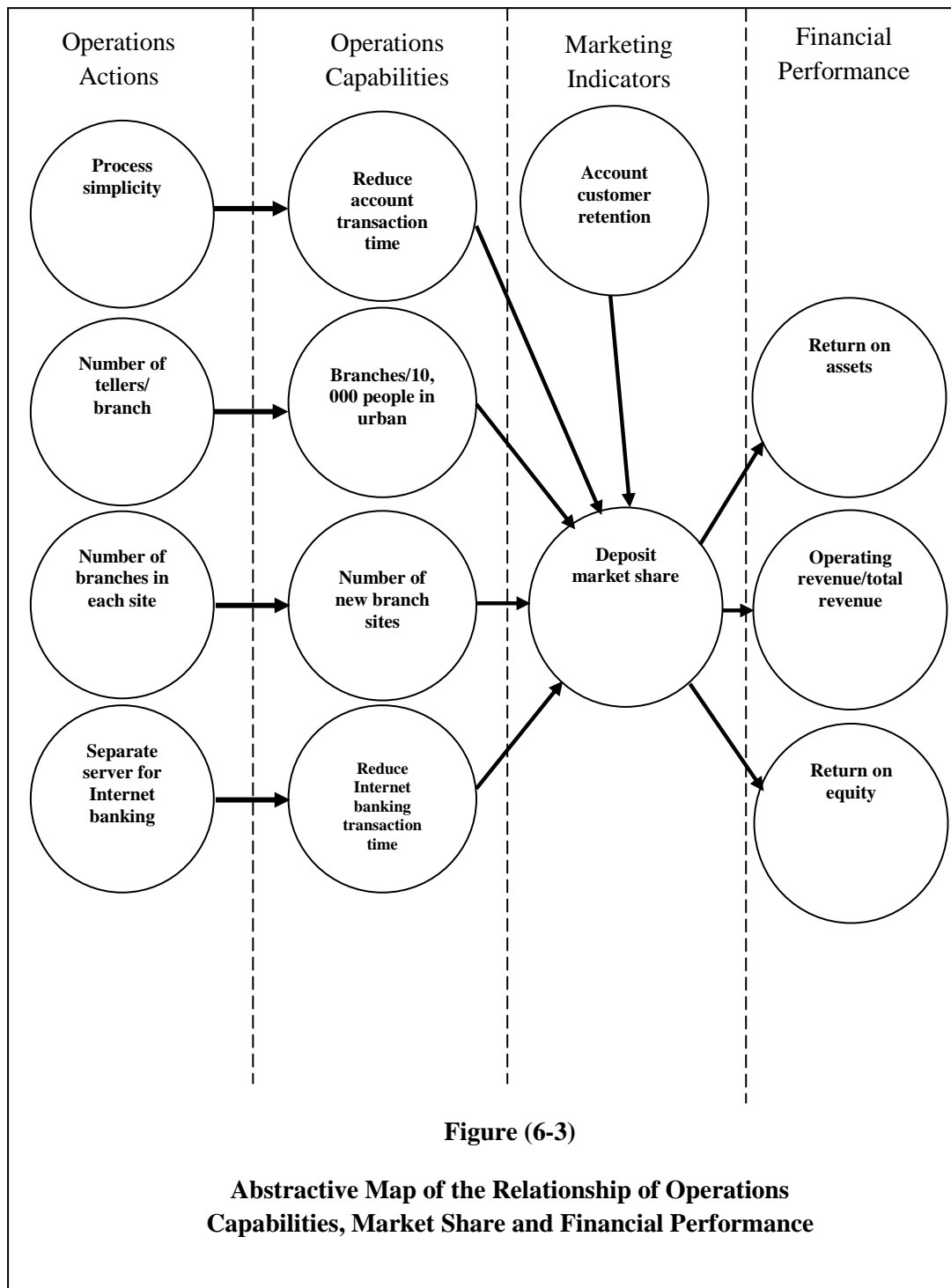


Figure (6-3) shows an abstractive map of the relationship between operations capabilities, market share and financial performance indicators. Identifying the relations or the direction of impact helps in identifying how to compute the impact of operations changes on performance, in the previous figure, reduce account transaction time, branches urban accessibility, number of new credit products, reduce Internet banking transaction time, number of branches sites, and customer retention affected the market

share directly, so first the impact of each unit of previous capabilities and customer retention on market share should be identified.

Then, the impact of market share on financial performance indicators should be identified, then, the impact operational capabilities on financial performance was computed by multiplying the change in market share per one unit of capabilities by the change in financial performance per one unit of change in market share.

Stage 9: Identify the average performance achieved by each operations capability
(see example (6))

Example (6): How to identify the average market share achieved by each Operations Capability.

A- Identifying the average market share achieved by every competitive position

Identify the average market share achieved by leaders compared with followers and laggards, and average market share achieved by followers compared with laggards as presented in the following table.

Competitive Positions	Market share	Market share of Leaders-followers and laggards	Market share of Followers - laggards
Leader	17.9%	$17.9-4.95= +13.36\%$	
Follower	5.1%		$5.1-1.8= +3.3$
Laggards	1.80%		
Followers and laggards	4.95%		

B- Identifying the average market share achieved by every operational capability and for every competitive position

Step B1: Identify the relative impact of each operations competitive capability on market share.

1- Identify the differences in relative score of operational capabilities of leaders in comparison with followers and laggards, and followers compared with laggards as presented in the following table.

Competitive positions	1	2	3	4	5	Total Relative =1+2+3+4+5
	Account Transaction time	Branches urban accessibility	Number of branch sites	Internet banking transaction time	Account customer retention	
Leader minus followers and laggards	+24%	+44.81%	+41.21%	+51.63%	+4%	165.74
Follower minus laggards	+7.87%	+5.63%	+18.83%	----	9.61	42.43%

2- Divide the differences relative score of operational capabilities on the total relative scores as presented in the following table, the result is the relative impact of each capability on market share.

$24/165.74$

Competitive positions	Account Transaction Time	Branches urban accessibility	Number of branch sites	Internet banking transaction time	Account Customer retention
Leader minus followers and laggards	0.145	0.27	0.25	0.31	0.02
Follower minus laggards	0.24	0.17	0.58	----	0.23

Step B2: Identify the average market share achieved by each capability; this was made by multiply the relative impact of each capability by the market share achieved by competitive position in comparison with lower competitive position.

$0.145\% \times 13.36^*$

	Account Transaction Time	Branches urban accessibility	Number of branch sites	Internet banking transaction time	Account Customer retention
Leader minus followers and laggards	+2%	+3.61%	+3.32%	+4.17%	0.32%
Followers minus laggards	+1.19%	+0.84%	+2.871%	-----	0.74%

*13.36 was identified in step (A) in the previous page

Stage 10: Identify the impact of each unit of operations capability on performance

Indicators (see example (7))

Example (7): How to identify the impact of each unit of operations capability on market share

A- Identify the differences in operational capabilities across competitive positions, in the following table the branches urban accessibility achieved by leaders in comparison with followers and laggards.

	Number of branches/10,000 people in urban
Leader minus followers and laggards	+1.78 branches/10,000 people

B- Divide the average market share by the operational capabilities and divide the market share by average financial performance achieved (operating revenue, return on assets, and return on equity) for every competitive position.

competitive positions	Deposits market share per branches/10,000 people	Operating revenue per 1% of deposits market share	Return on equity per 1% of deposits market share	Return on assets per 1% of deposits market share
Leader minus followers and laggards	$3.61/1.78=$ 2%	$1.92/13.36=$ 0.14%	$1.87/13.36=$ 0.14%	$0.31/13.36=$ 0.02%

C- Multiply the deposits market share per branch/10,000 people by the performance per 1% of deposits market share for every competitive position.

	Deposits market share per branches/10,000 people	Operating revenue per branch/10,000 people	Return on equity per branch/10,000 people	Return on assets per branch/10,000 people
Leader minus followers and laggards	2%	0.14% X 2% = 0.28%	0.14% X 2% = 0.28%	0.02% X 2% = 0.04%

Stage 11: Identify the actions required to achieve one unit of each capability (*see example (8)*)

Example (8): How to identify the number of tellers should be hired to achieve urban accessibility by 1 branch/10,000 people

Divide the number of hired tellers urban by the number of branches opened in urban sites across competitive position.

	A	B	C= A/B
	Number of hired tellers	Number of branches opened in urban	Number of tellers required to achieve 1 branches/10,000 people
Leaders minus followers and laggards	+98 tellers	+28 branches	98 / 28 = 4 tellers/branch

Stage 12: Identify the ranges of best capabilities (see example (9))

The use of one unit of operational capabilities makes decision-makers more able to make decisions, so they can predict performance simply by multiplying the units of capabilities with performance, or predict the capabilities by multiplying the actions per unit with operational capabilities. Per unit of the capability scores were used since the capabilities are the link between actions and performance, so using per unit of capabilities facilitates predication.

Example (9): Ranges of branches urban accessibility

Ranges of branches urban accessibility

Minimum	Competitive Position's branches urban accessibility	Maximum
1 branches/10,000 people<	Leaders	$\leq 2.76/10,000$ branches people
0.59 branch/10,000 people<	Followers	≤ 1 branch/10,000 people

Stage 13: Construct the patterns by combining each capability with actions and performance (see next sections)

- 1- Each capability was presented by a box; this box was classified horizontally to rows; each row represents a range of capability.
- 2- Each action affected a capability was presented by a box; this box was classified horizontally to rows; each row represents a range of capability. The number in the box is the action score required to achieve one unit of capability.
- 3- Each performance indicator was presented by a box; this box was classified horizontally to rows; each row represents a range of capability. The number in the box is the performance achieved by one unit of capability.
- 4- The boxes were interlined together the same as identified in the abstractive maps developed in stage: 9 by using arrows.

6-5 Patterns of Best Practices in Traditional Banking Operations Strategies

Four best practices of traditional banking operations strategy were adopted by banks in Jordan during the period (1999-2008), these practices were; branches urban accessibility strategy, branches sites accessibility strategy, account transaction time strategy, and new credit products strategy.

The general pattern of best practices of traditional banking in Jordan was differentiation, in the following sections the pattern of each best practice was presented, in each pattern the actions required to achieve each unit of operational capabilities were presented, also the impact of each unit of capabilities on performance were presented.

6-5-1 Branches Urban Accessibility Strategy

Figure (6-4) and (6-5) shows the branches urban accessibility strategy, this strategy was one of the best practices adopted by banks in Jordan during the period (1999-2008), it can be seen that in Figure (6-4); the branches urban accessibility affected the account operations (route: 1) and credit operations (route: 2).

Two ranges of branches urban accessibility were adopted by banks in Jordan, the first range was more than 1 branch/10,000 people and less than or equal 2.76 branches/10,000 people, the second range was more than or equal 0.59 branch per 10,000 people and less than or equal 1 branches per 10,000 people.

1 branch/10,000 people in urban areas of first ranges of accessibility required hiring 4 tellers and 3 credit employees, but, 1 branch/10,000 people of the second range of accessibility required hiring 2 tellers and 3 credit employees, the banks of the first range of accessibility achieved better operating revenue/total revenue, credit market share and credit customer satisfaction per branch/10,000 people. Thus the more urban branch accessibility the more operating revenue and credit market share per branch/10,000 people.

However, the second range of accessibility achieved better performance in terms of return on equity and assets, also better credit and account customer satisfaction, and better account customer retention, so the lower branches urban accessibility the better return on equity and assets per branch/10,000 people.

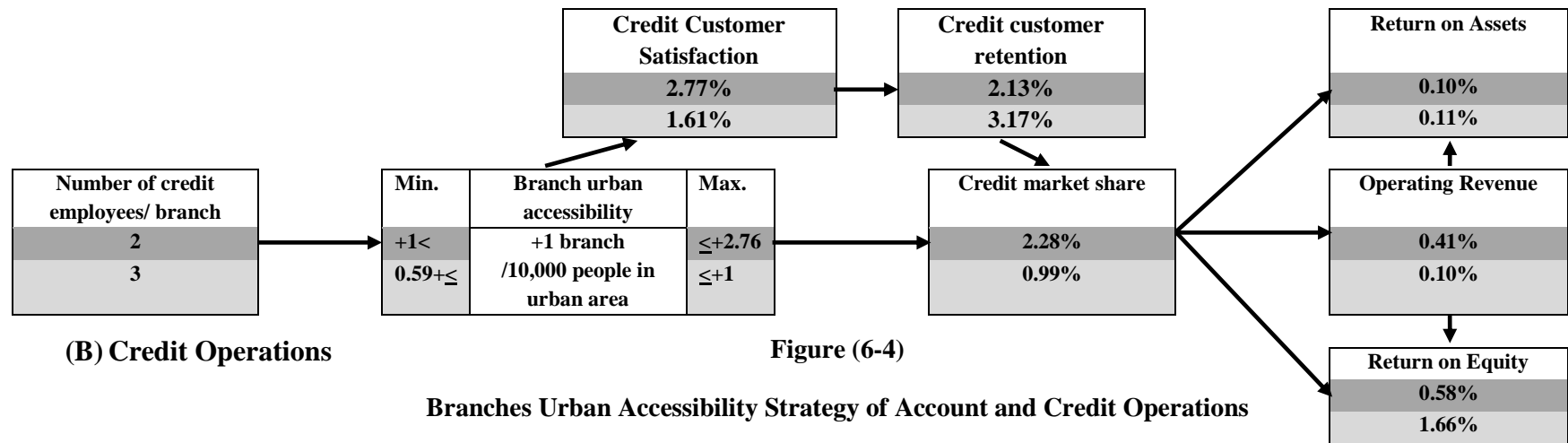
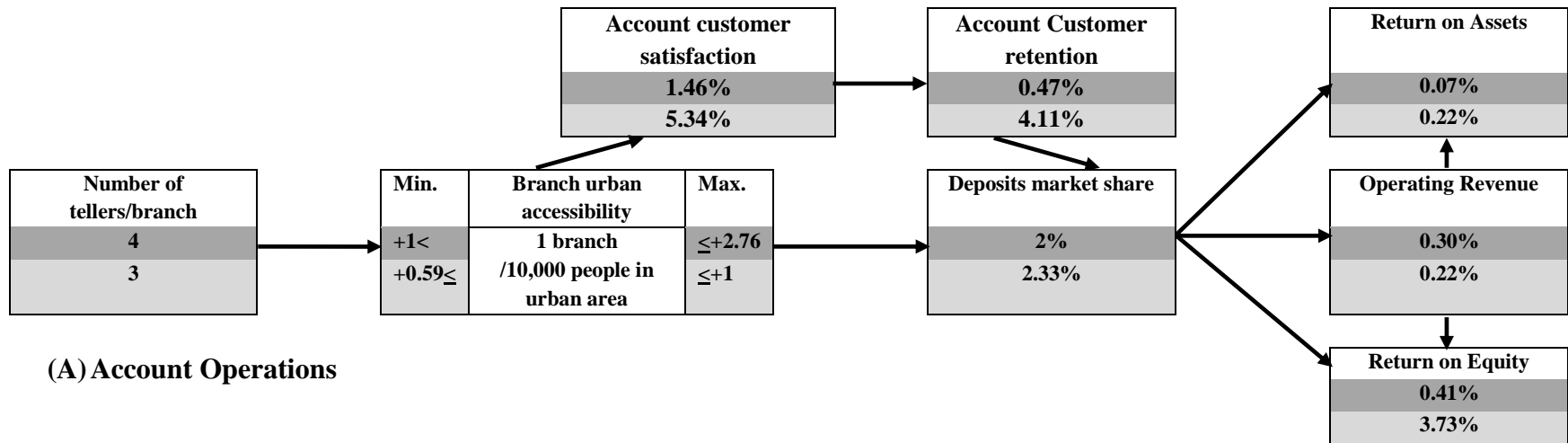


Figure (6-4)

Branches Urban Accessibility Strategy of Account and Credit Operations

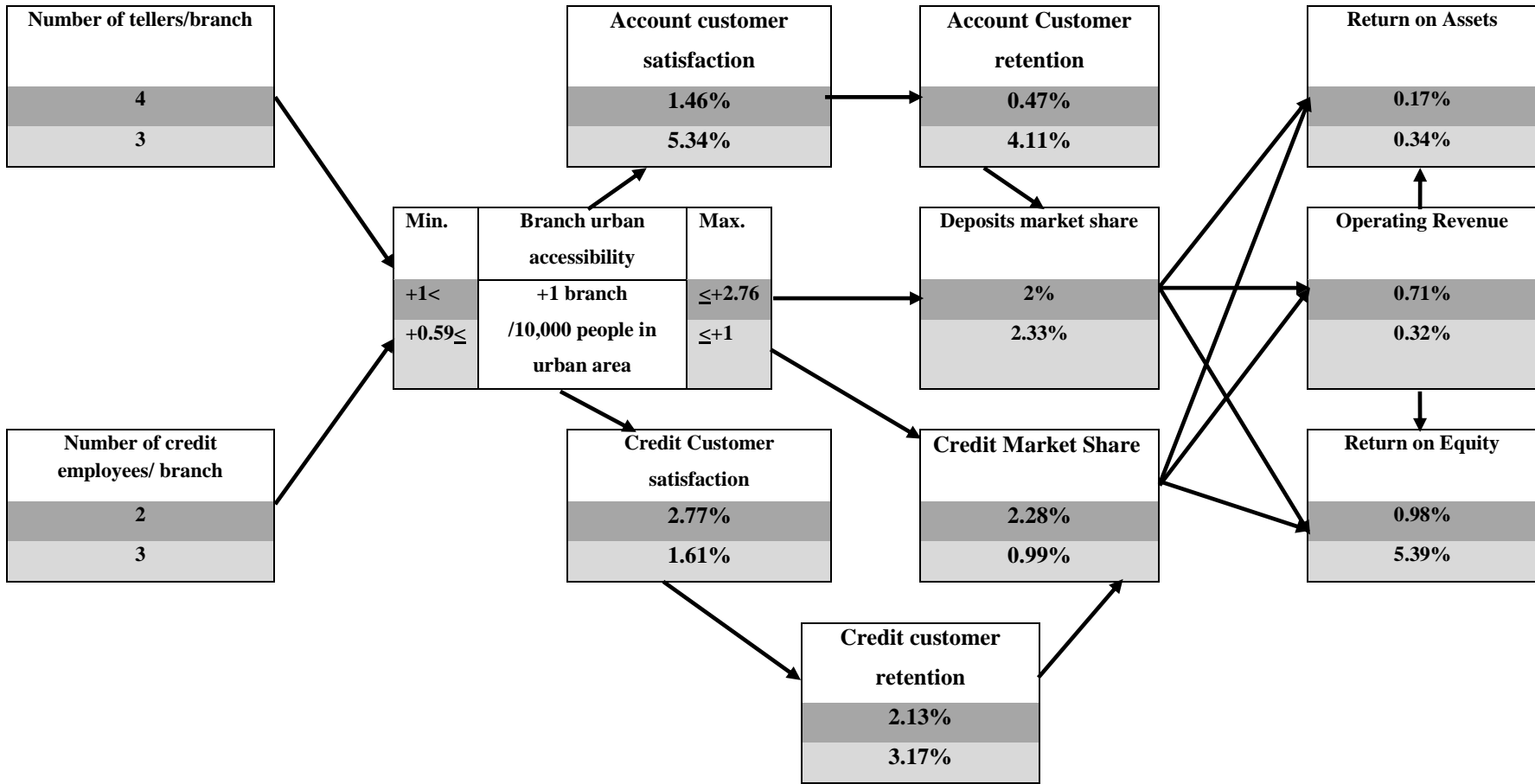


Figure (6-5)

Overall Branches Urban Accessibility Strategy

6-5-2 Branches Sites Accessibility Strategy

Figure (6-6) and (6-7) show the branches sites accessibility strategy, this strategy was one of the best practices adopted by banks in Jordan during the period (1999-2008), it can be seen that in Figure (6-6) that; the branches site accessibility affected the account operations (route: 1) and credit operations (route: 2).

Two options of branches sites accessibility were adopted by banks in Jordan, the first option was open branches in malls and universities sites, and the second was open branches in industrial zones and business sites, the number of branches opened in malls was 2, but 1 branch opened in universities, however, 4 branches opened in business areas and 1 branch in industrial zones.

The contribution of each site in performance differs, the contribution on malls branches was 67%, universities 35%, however, 80% for branches in business areas and 20% for branches in industrial zones. The performance presented in the figure is the total performance achieved by all sites of each level.

The banks of the first level of branches sites accessibility achieved better performance in terms of operating revenue/total revenue of account and credit operations, the deposits market share, credit market share, credit customer satisfaction, and return on equity of account operations, but the banks of the second level achieved better performance in terms of return on assets of account and credit operations, account customer satisfaction, and account and credit customer retention.

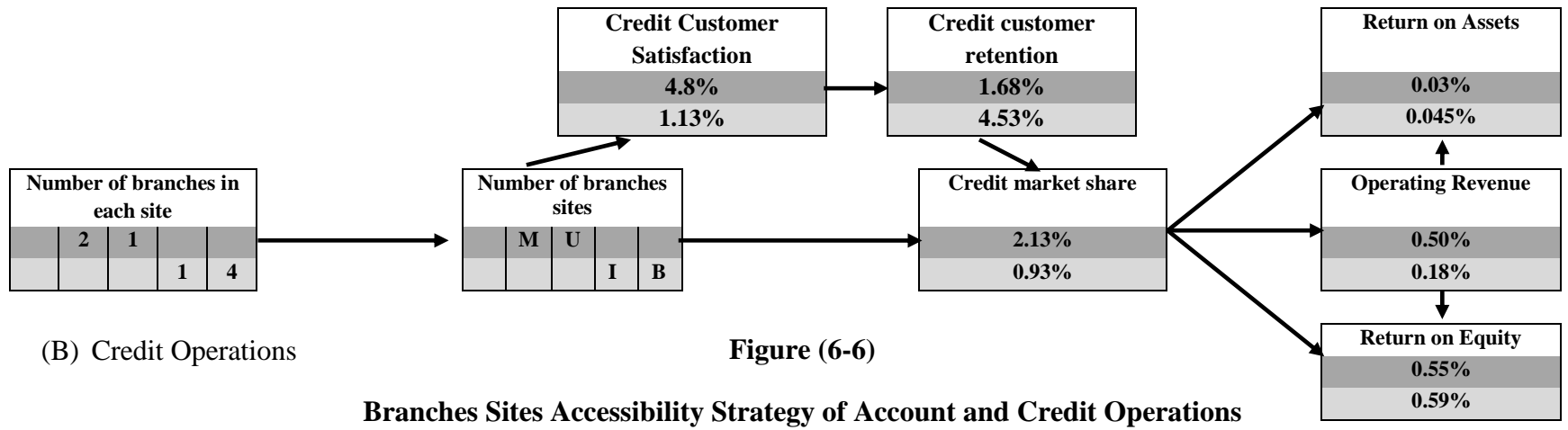
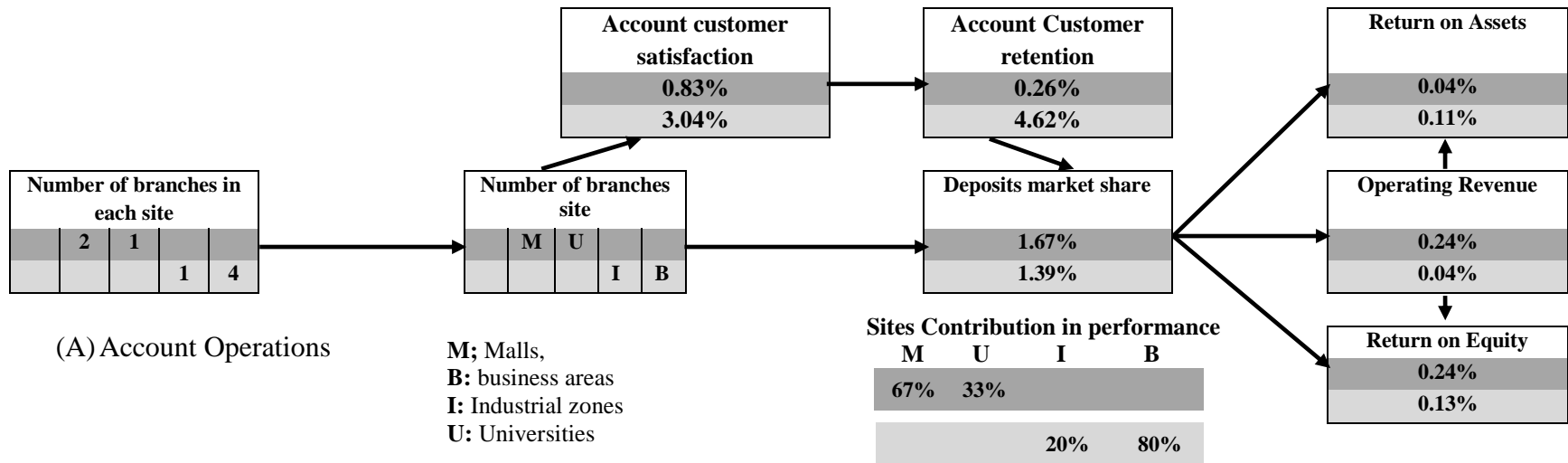


Figure (6-6)
Branches Sites Accessibility Strategy of Account and Credit Operations

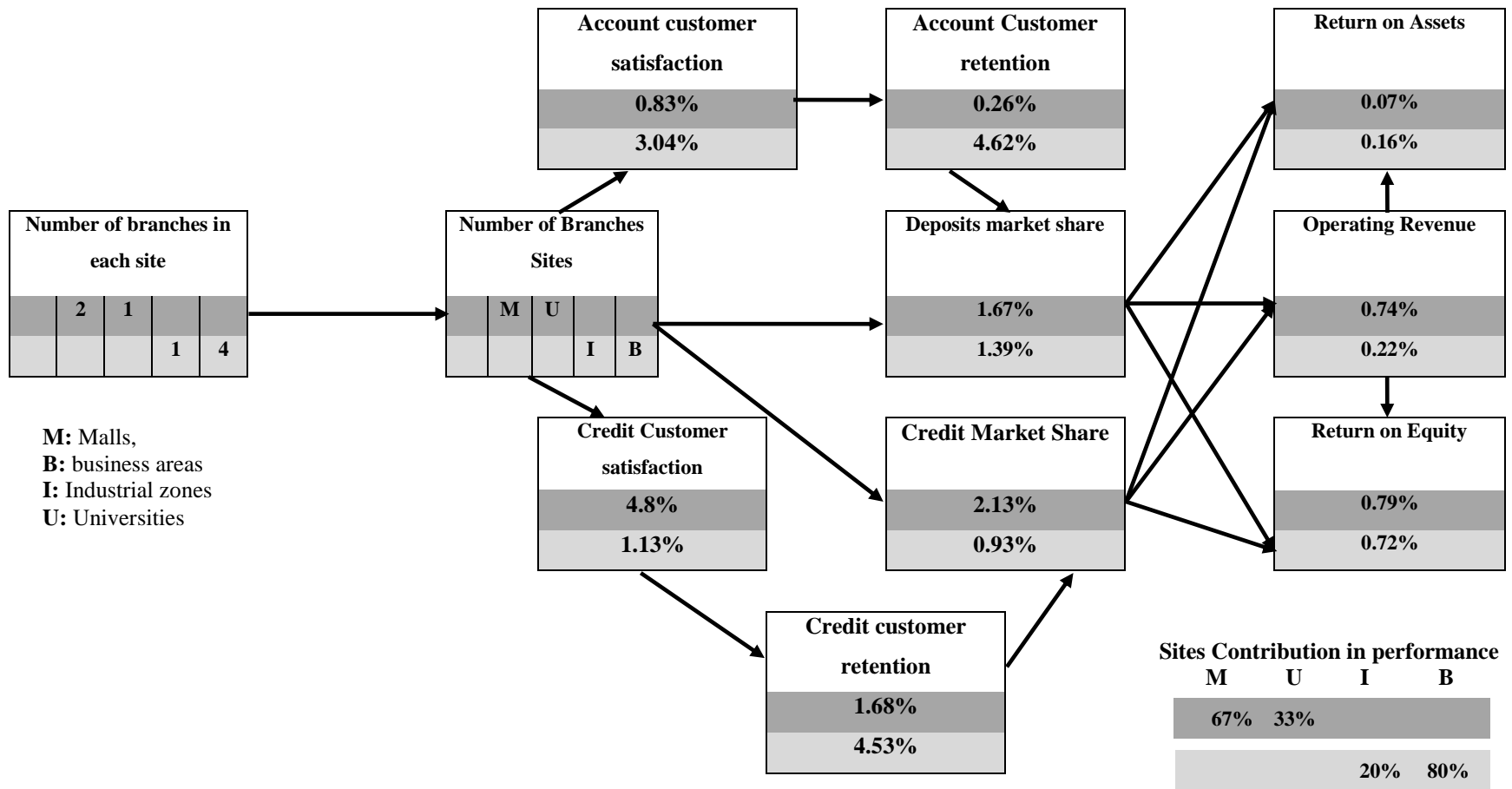


Figure (6-7)

Overall Branches Sites Accessibility Strategy

6-5-3 Account Transaction Time Strategy

Figure (6-8) shows the account transaction time strategy, this strategy was one of the best practices adopted by banks in Jordan during the period (1999-2008), it can be seen that; two ranges of account transaction time were adopted by banks in Jordan, the first range was less than 3.35 minutes and more than or equal 2.60 minutes per transaction on average, the second range was less than 4.32 minutes and more than or equal 3.92 minutes per transaction on average.

Each minute less than the minimum limit of the first range required simplifying the transaction process by 0.33 steps and within the first range of transaction time the banks adopted WAN for communication with head office and for communication between branches and used e-network for communication with back office.

Each minute less than the minimum limit of the second range required simplifying the transaction process by 0.53 steps, also, within the second range the banks adopted WAN for communication with head office and used fax for the communication with back office.

Conducting the transactions by one minute less than the first range led to better the deposits market share and operating revenue in comparison with the second range, but Conduct the transactions by less one minute of the first range led to better return on assets, return on equity and account customer retention in comparison with first range.

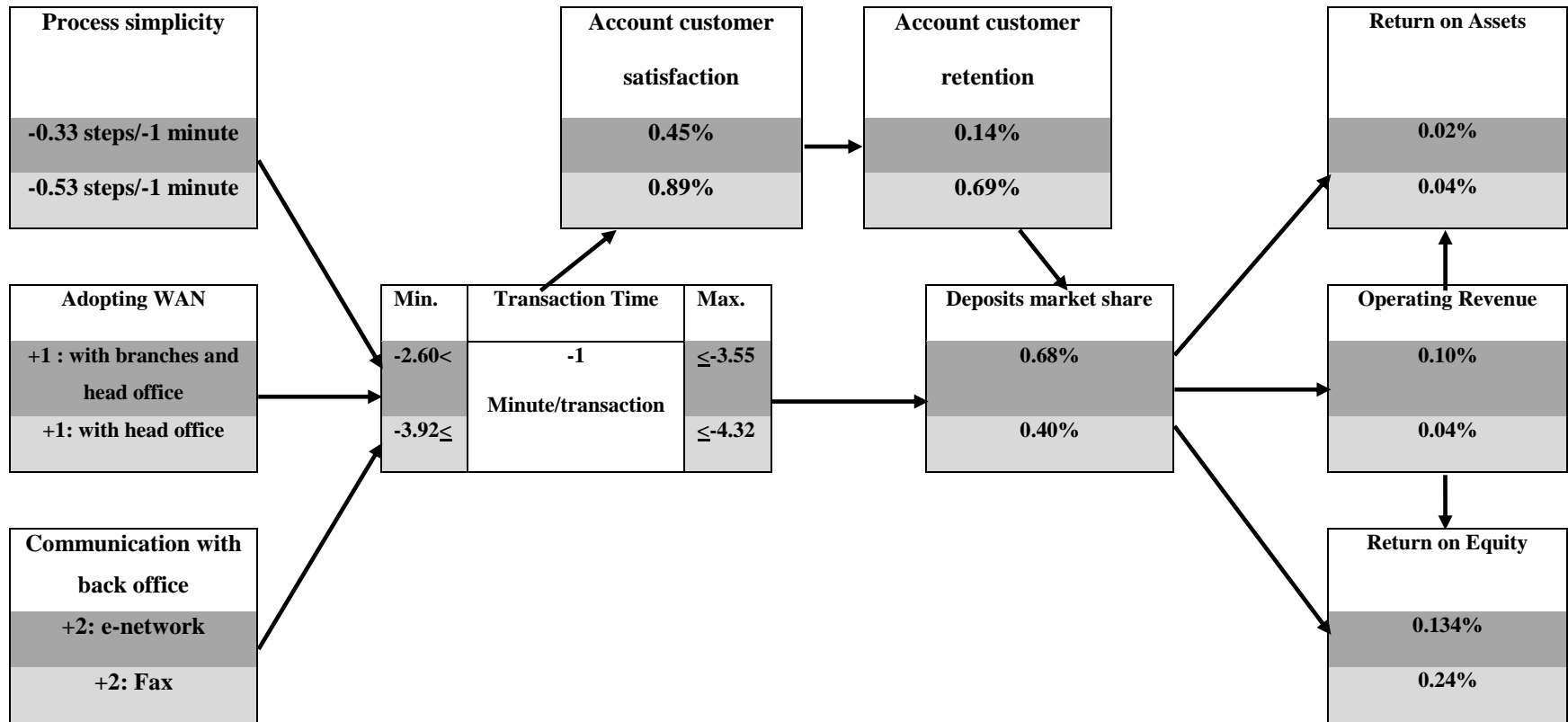


Figure (6-8)

Account Transaction Time Strategy

6-5-4 New Credit Product Flexibility Strategy

Figure (6-9) shows the credit new product flexibility strategy, this strategy was one of the best practices adopted by banks in Jordan during the period (1999-2008), it can be seen that; two ranges of new credit products were adopted by banks in Jordan, the first range was less than or equal 3 new product and more than 4 new products, the second range was less than or equal 1 products and equal 3 products.

Each new product provided by the banks within the first range achieved better operating revenue, and credit market share, but the banks of the second range achieved better return on assets, return on equity, credit customer retention and satisfaction.

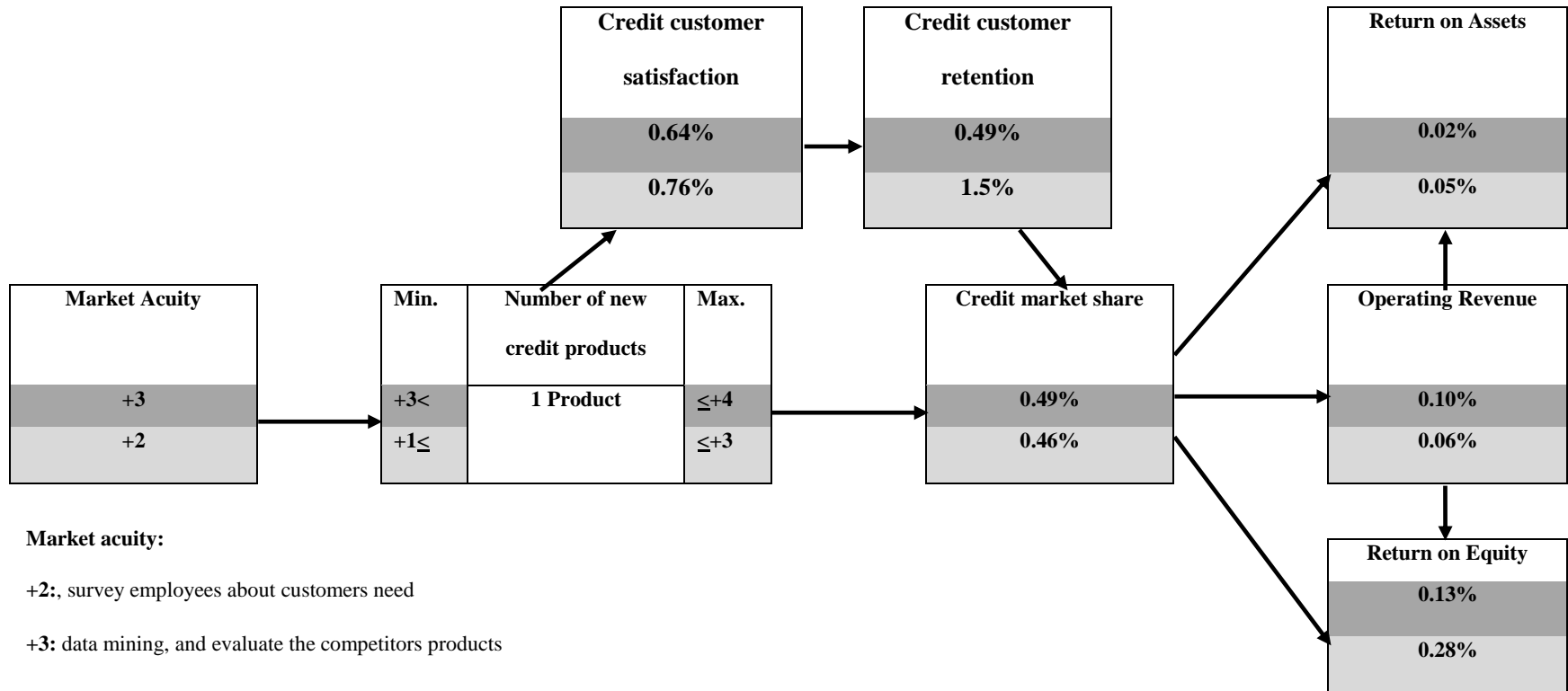


Figure (6-9)

New Credit Product Flexibility Strategy

6-6 Patterns of Best Practice in Electronic Banking Operations Strategies

Two best practices of electronic banking operations strategy were adopted by banks in Jordan during the period (1999-2008), these practices were; Internet banking transaction time strategy and telephone banking volume flexibility strategy, so the general pattern of best practices of electronic banking in Jordan was differentiation, in the following sections the pattern of each best practice was presented, in each pattern the actions required to achieve each unit of operational capabilities were presented, also the impact of each unit of capabilities on performance were presented.

6-6-1 Internet Banking Transaction Time Strategy

Figure (6-10) shows Internet banking transaction time strategy, this strategy was one of the best practices adopted by banks in Jordan during the period (1999-2008), it can be seen that; this best practice was adopted within one range only, more than or equal 63 seconds and less than or equal 84, in order to reduce the transaction time the transactions were processed on a separate server for Internet banking from website server.

The reduction in Internet banking transaction time increased the deposits market share, and improved the deposit customer satisfaction and retention, the increase in deposits market share increased return on assets, return on equity and operating revenue.

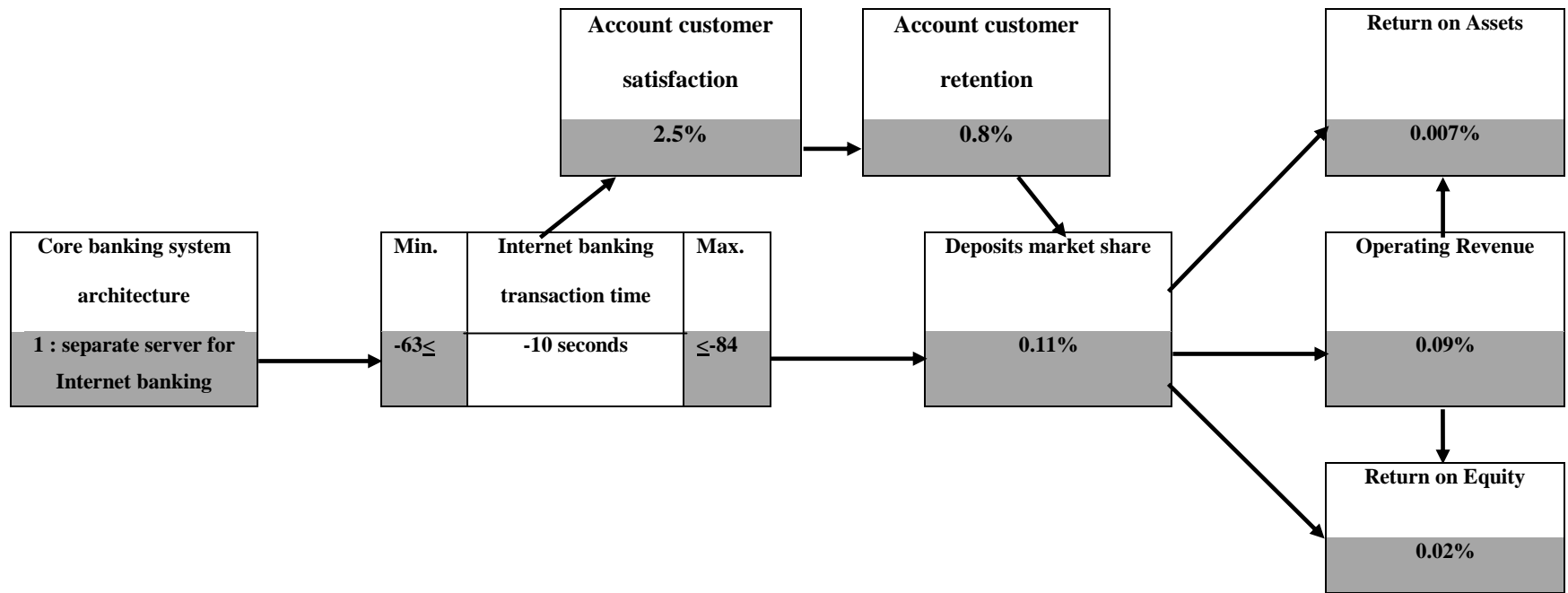
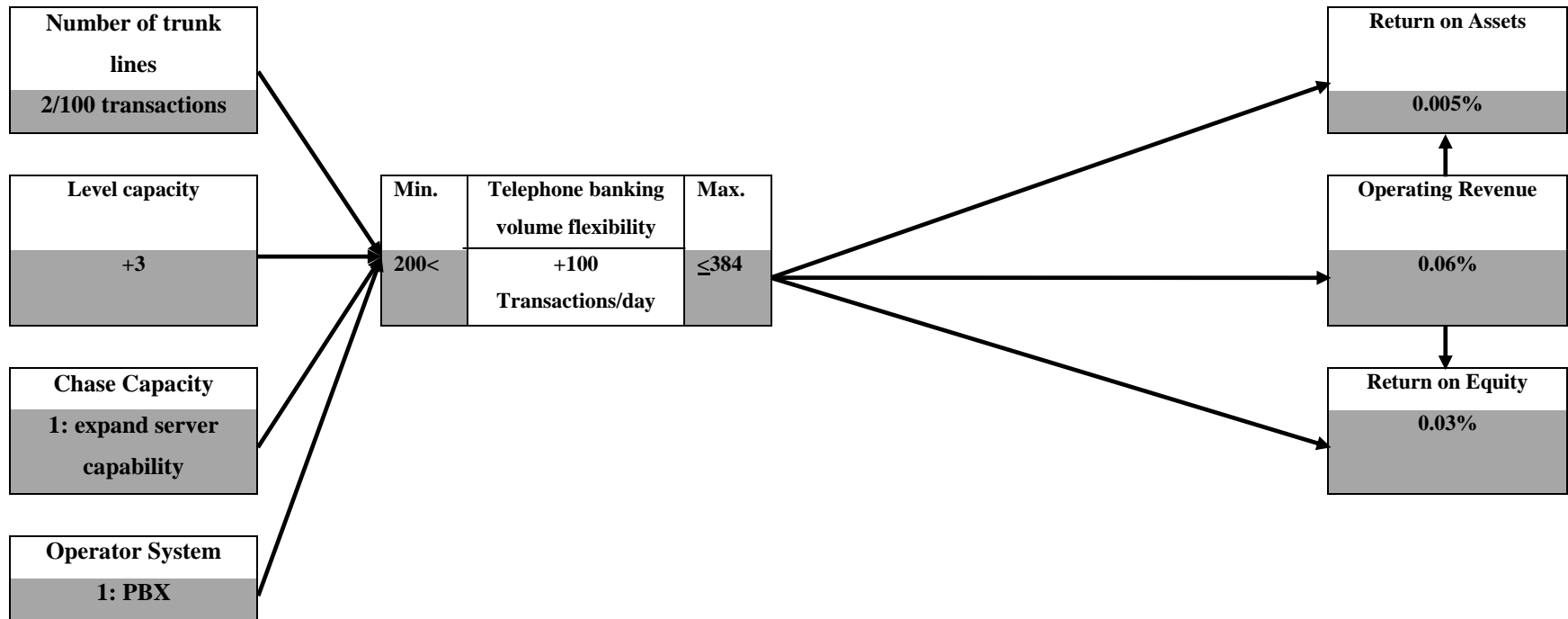


Figure (6-10)

Internet Banking Transaction Time Strategy

6-6-2 Telephone Banking Volume Flexibility Strategy

Figure (6-11) shows the telephone banking volume flexibility strategy, this strategy was one of the best practices adopted by banks in Jordan during the period (1999-2008), it can be seen that; one ranges of telephone banking volume flexibility was adopted by banks in Jordan, this range was more than or equal 200 transactions per day and less than or equal 384 transactions. To adopt this range of best practice, the servers capacity should be expanded, adopting PBX telephone operator system and using 1 telephone trunks per 100 transactions. The increase in volume flexibility increased return on assets, return on equity and operating revenue.



Level capacity

+3: inform customers about peak times

Figure (6-11)

Telephone Banking Volume Flexibility Strategy

6-7 Maximum Financial Returns Achieved by Each Pattern of Best Practice in Banking Operations Strategies

Table (6-10) shows the maximum financial returns that can be achieved by adopting the maximum best practice, it can be seen that; the maximum total financial returns of traditional banking was significantly more than electronic banking, the maximum total return on equity of traditional banking was more than e-banking by 8.31%, the maximum total return on assets of traditional banking was more than e-banking by 0.74% and the maximum operating revenue/total revenue of traditional banking was more than e-banking by 2.46%.

The maximum achieved returns in both type of operations were ordered from high to low; return on equity, operating revenue/total revenue and return on assets, moreover, the best return on equity, assets and operating revenue were achieved by branches urban accessibility strategy pattern, the least return on equity, assets and operating revenue/total revenue was achieved by telephone banking volume flexibility. Internet banking was better than telephone banking pattern in all financial indicators.

Table (6-10)

The Maximum Financial Returns of each Strategy Pattern

Financial Returns	Traditional Banking Operations Strategy Patterns					Electronic Banking Operations Strategy Patterns		
	Branches urban accessibility	Branches sites accessibility	Account transaction time	Loans new products flexibility	Total returns	Internet banking transaction time	Telephone banking volume flexibility strategy	Total returns
Return on equity	5.39% (1)	1.35% (2)	1.04% (3)	0.78% (4)	8.6%	0.17% (5)	0.12% (6)	0.29%
Maximum best practice	SR: 1 branches/10,000 people	SR: 2 Sites (industrial zones and business sites)	SR:-4.32 minutes/transac tion	SR: 3 products		-84 seconds/transaction	384 transactions/day	
Return on assets	0.34% (1)	0.16% (3)	0.17% (2)	0.15% (4)	0.82%	0.06% (5)	0.019% (6)	0.079%
Maximum best practice	SR; 1 branches/10,000 people	FR: 2 Sites (industrial zones and business sites)	SR:-4.32 minutes	SR: 3 products		-84 seconds/transaction	384 transactions/day	
Operation revenue/total revenue	1.95% (1)	0.74% (3)	0.36% (5)	0.40% (4)	3.45%	0.76% (2)	0.23% (6)	0.99%
Maximum best practice	FR: 2.76 branches/10,000 people	FR: 2 Sites (Malls and Universities sites)	FR:-3.55 minutes/transac tion	FR: 4 products		-84 seconds/transaction	384 transactions/day	

FR: First Range (Leaders' range)

SR: Second Range (Followers' range)

6-8 Conclusion

In this chapter the first analysis approach was used to identify the best practices; according to this approach; the best performed banks are those have the best operational capabilities and actions, accordingly, the following actions were made to;

- Banks were ranked according to competitive position.
- The significant operational competitive capabilities and actions required to achieve the capabilities across competitive positions were identified.
- Then the patterns of best practices were constructed; these patterns are prediction models that used by managers to make decisions and used by researchers to predict the relations between operational actions, capabilities and performance.

Four best-practice patterns of traditional banking operations strategy were constructed; these patterns were;

- Branches urban accessibility strategy; this pattern affected account and credit operations, and two significant ranges were reported. According to this pattern, the better range of accessibility led to better operating revenue, the loans market share, the lower range of accessibility led to better return on assets and equity.
- Branches sites accessibility strategy: this pattern affected account and credit operations, also two significant options were adopted. According to this pattern; open branches in malls and universities increased operating revenue of account and credit operations, and returns on equity of account operations more than opening branches in the industrial zones and business areas. Open branches in industrial zones and business areas achieved significantly better return on assets of account operations.

- Account transaction time strategy: two significant ranges of account transaction time were adopted by banks in Jordan. According to this pattern the better range led to better return on assets and equity, but the other range led to better operating revenue. Reduce account transaction time required adopting of WAN, and simplify the account transaction process.
- New credit products strategy: two significant ranges of new credit products were adopted by banks in Jordan. According to this pattern, the adoption of data mining and evaluate the competitors' products let the bank able to add more new credit products. The more new credit products offered with the better range the better the operating revenue, but lower return on assets and equity.
- Accordingly, the general pattern of best practices of traditional banking in Jordan was differentiation.

Two best practices of electronic banking operations strategy were constructed:

- Internet banking transaction time strategy: one significant range of reducing Internet banking transaction time was adopted by banks in Jordan. According to this pattern; the reduction in Internet banking transaction time increased the deposit market share, and improved the deposit customer satisfaction and retention. The increase in deposits market share increased return on assets, return on equity and operating revenue. The use of stand-alone application servers for Internet banking reduced the transaction time
- Telephone banking volume flexibility strategy: one significant range of telephone banking volume flexibility range was adopted by banks in Jordan. According to this pattern; the increase of volume flexibility was as a result of increase number of telephone trunk lines, expand the telephone banking server

capacity, inform customers about peak working time of call centre and using PBX telephone operator system.

The increase of telephone banking volume flexibility increased the financial returns in terms of return on assets, return on equity and operating revenue.

Chapter 7

Data Analysis: Cluster Analysis

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7-1 Introduction

Chapter 6 presented the pattern of best practices (best-practice prediction models) using competitive position analysis. This chapter presents the patterns of best practices (best-practice prediction models) using different analysis approach (cluster analysis).

Cluster analysis used different logic which based on change in operational capabilities, performance and actions during period, rather than compare relative improvement in performance, capabilities and actions across competitive position. Accordingly, the purpose of this chapter is to see how different analysis approach can generate different prediction models, which improve understanding of the best practices.

Cluster analysis an eleven-stage process, the logic of each stage discussed and its relation with next stage discussed too, further a lot of examples were used to facilitate understanding the analysis stage. The patterns of best practices were presented at the end of this chapter, these patterns were compared and conclusions were reached in accordance.

7-2 Second Analysis Approach: Cluster Analysis

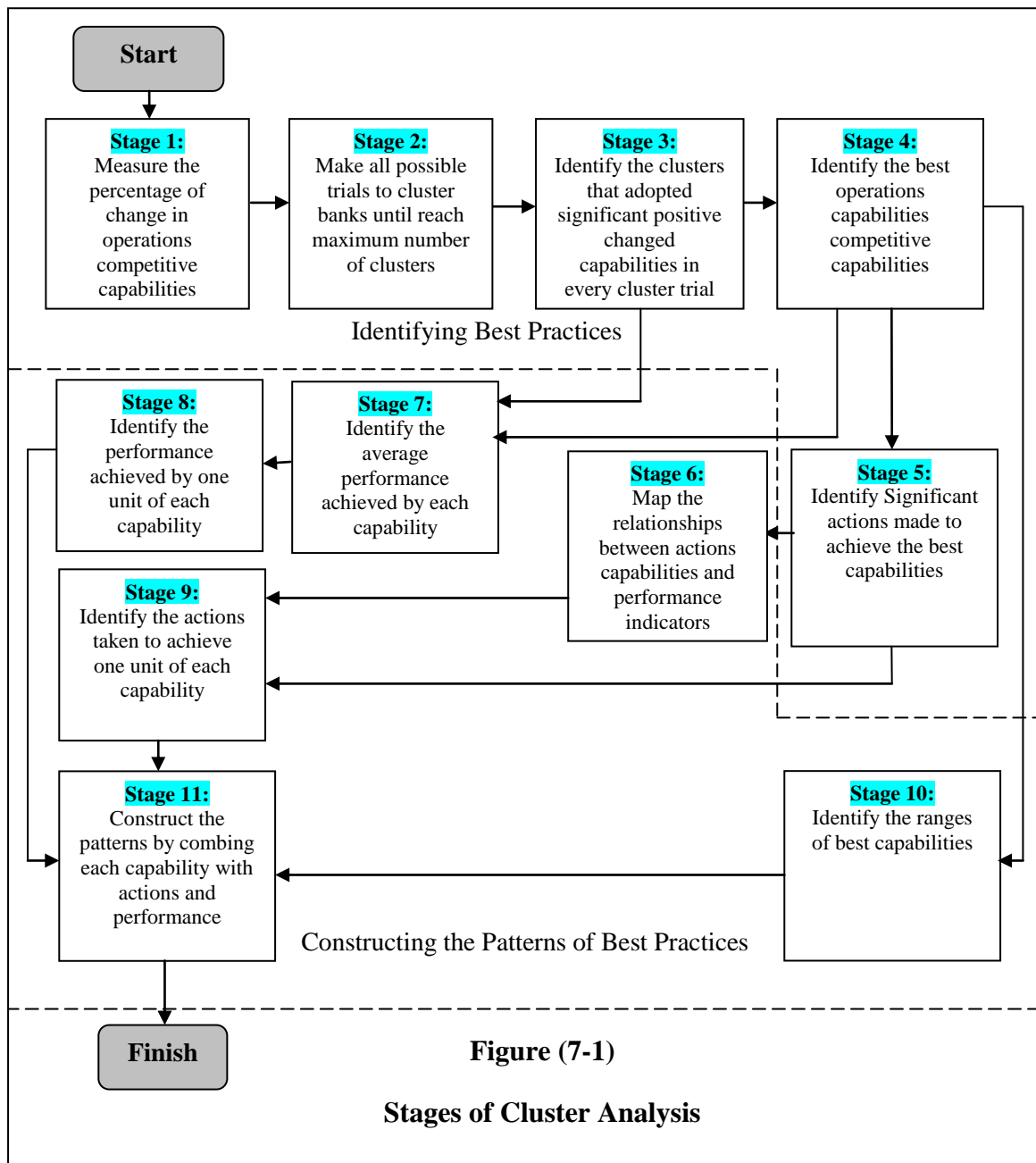


Figure (7-1)

Stages of Cluster Analysis

According to this analysis approach the best practices of operations strategy are those determine the best changes in banks' performance, so the best changed capabilities and its related actions that let banks to achieve best positive change in performance are the best practices, accordingly, it is very important to identify the changes in banks' operational capabilities, actions and performance in order to identify the best operational capabilities and actions.

Table (7-1)

Differences between Analysis Approaches

Differences' Dimensions	Competitive Position	Cluster
Best practice definition	Significant positive capabilities and actions of leaders in comparison with followers and laggards, and best capabilities and actions of followers in comparison with laggards.	Significant positive changed capabilities and actions of clusters that best performed in comparison with other clusters.
Time analysis	Relative score during each period, then, identify the average relative score over the study period.	Change during each period in comparison with previous, then, sum the changes during the study periods and divide the result over the last period performance.
Grouping base	Relative performance over the period 1999–2008.	Percentage of change in operational capabilities during the period 1999–2008.
Number of groups	Pre-identified (3 groups); leaders, followers, laggards	Not identified and required made different grouping trials.

Table (7-1) shows the differences between two analysis approaches; it can be seen that the differences between these approaches are summarised in the following issues: the definition of best practices, time analysis, grouping base and number of groups, so the first approach define the best practices as significant positive actions and capabilities of leaders in comparison with followers and laggards and the best actions and capabilities of followers in comparison with laggards, however, according to cluster analysis, the best practices are the significant positive changed capabilities and actions of best performed cluster in comparison with others.

According to competitive position analysis the relative score during each period was measured then the average relative score over the study period was computed; however, according to cluster analysis the percentage of change during each period was identified in comparison with previous period, then the results were summed together.

The grouping base of competitive position analysis was the relative performance, however, the grouping base of cluster analysis was the percentage of change in capabilities, further, the number of groups of competitive position analysis pre-identified, which were three; leaders, followers and laggards, however, the number of groups of cluster analysis not-identified, which required made different clustering trials.

7-2-1 Identifying Best Practices over the Period 1999–2008

Stage 1: Measure the Percentage of Change in Operations Competitive Capabilities

The percentage of change was used instead of actual scores of change, since the scales of capabilities differs, some of them were time as transaction time, others were currency unit as transaction cost, others were number of branches per 10,000 people as branches accessibility, so adopting cluster analysis technique requires standardizing the scales of study dimensions (Everitt *et al.* 2001), accordingly, the scales was standardised using percentage of change during the study period instead of actual scores.

Step 1: The average operational competitive capability score were computed for every bank by computing the average score of respondents' responses; the respondents' responses were collected using the questionnaires (for more details about these questionnaires see section (4-3-3-3)).

Step 2: The percentage of change in each capability for every bank was computed as following:

- 1- Identifying the change in each capability score for every bank as summarised in the following equations (*see* example (1) next page):

$$CCS_x = (\sum_{P1}^{Pn} CCS_{px}) \dots \dots \dots (11)$$

$$CCS_{PX} = (CS_{P2} - CS_{P1}) \dots \dots \dots (12)$$

CCS_x: Change in Capability (X) Score.

CCS_{PX}: Change in Capability during period (X)

CS_{P1}: Capability Score during first period.

CS_{P2}: Capability Score during second period.

- a- The change in the score of capability during each period and for every banks was identified by subtract the score of the period from the previous one, this was made to have more accurate trace of changes especially if a combination of negative and positive numbers is traced (equation (12)).
- b- Then the changes of all periods were summed together which generated the change in indicator score during study period (1999-2008) (equation (11)).

Example 1: How to Measure Change in Capabilities during the Study Period

Identifying the Change of bank (A)'s Account Volume Flexibility

	Periods	Bank (A)'s Account volume flexibility	Change during the each period (Equation (12))
P1	1999-2000	279,000 transactions	-----
P2	2001-2003	441,600	(P2-P1) (441,600-279,000)= 162,600
P3	2004-2006	537,600	(P3-P2) (537,600-441,600)= 96,000
P4	2007-2008	720,000	(P4-P3) (720,000-537,600)= 182,400
Change in account volume flexibility during (1999-2008)....equation (11)			162,600+96,000+182,400= 441,000

- 2- identify the percentage of change in each indicator for each bank during the period (1999-2008); the following equation was used for this purpose (*see* Example (2) next page):

$$PCCS_x = ((\sum_{p1}^{pn} CCS_{px}) / CS_{(2007-2008)}) \times 100\% \dots\dots\dots (13)$$

PCCS_x: Percentage of change in Capability (X)

CCS_{px}: Change in Capability Score during period (X)

CS₍₂₀₀₇₋₂₀₀₈₎: Capability Score during period (2007-2008).

Example 2: How to Measure the Percentage of Change in Capabilities during the Study Period

Percentage of account volume flexibility for bank (A)

(1) Change in volume flexibility during (1999-2008) from example (1)	(2) Volume flexibility during (2007-2008)	(1)/(2) The percentage of change in volume flexibility during the period (1999-2008).....equation (13)
441,000	720,000	$(441,000/720,000) \times 100\% = 61.25\%$

Stage 2: Make all possible trials to Cluster banks Until Reach maximum number of clusters

The banks were clustered to different number of clusters until reach the maximum possible number, this was for the purpose to identify which capabilities were shared between different clustering trials in order to identify the ranges of best operational capabilities and actions that were made, further, this was made since the optimal number of clusters was impossible to identify.

K-Means Cluster analysis method was used since this method classifies the banks to clear list according to specific centre, it minimise within cluster variance, as reassignment continue until every case is assigned to the cluster, further, with respect to outliers, this approach appears to be more robust than hierarchal, also, least affected by irrelevant attributes (Harrison, 1995), also, the researcher can try different number of clusters. The data were processed using SPSS 17.

The maximum number of clusters reached was nine clusters, at the tenth trial a message generated was not enough cases to perform cluster analysis; accordingly, the banks were clustered from two to nine clusters.

Step 3: Identify the clusters of each clustering trial that significantly best adopted capabilities

Significant clusters are those achieved the highest percentage of change in operational capabilities in comparison with other clusters in the same clustering trials, the significant operational capabilities across clusters were identified using the Kruskal Wallis H test since the sample size is small and the data is not normally distributed.

The significant operational capabilities were found in two clusters trial, three clusters trial, four clusters trial and six clusters trial; following is the summary of these trials' significant capabilities.

Two Clusters trial:

Table (7-2)

Significant Operations Capabilities of Two Clusters Trial

Cluster	Cluster's membership	Significant capabilities in comparison with other clusters	Cluster mean (Average % of change)	Kruskal Wallis H test Chi-square sig.
Cluster (1)	A, C, D, E, F, IM, N, O	Loan Approval Cost.	56.89	4.286 0.038
Cluster (2)	B, G, J, K, L, H	Account Customer Waiting time.	324.67	9.621 0.002
		Account transaction cost.	118.41	9.069 0.003
		Percentage of branches in Different Sites	30.5	3.581 0.058
		ATM Suburban Accessibility.	59.23	5.686 0.017
		Number of ATM Sites.	50.37	7.333 0.007

Table (7-2) shows the significant operational capabilities adopted by each cluster of two clusters trials, it can be seen that; only one operations competitive capability was significantly adopted by the first cluster, it was loan's approval cost, however, the significant capabilities adopted by the second cluster were; three traditional banking operational capabilities which were; account customer waiting time, account transaction time, and percentage of branches in different sites, also, two significant e-banking operational capabilities which were; ATM suburban accessibility and number of ATM sites.

Three Clusters Trial:

Table (7-3)

Significant Operations Capabilities of Three Clusters Trial

Cluster	Cluster's membership	Significant Capabilities in comparison with other clusters	Cluster Mean (Average % of change)	Kruskal Wallis H test Chi-Square Sig.
Cluster (1)	B, G, H, J, L	Account Customer Waiting Time	360.58	5.45 0.07
Cluster (2)	A, E, N, I, K, M, O	No significant capabilities	-----	-----
Cluster (3)	D, F, N	Percentage of branches in different sites.	40.49	6.095 0.047
		Branch Layout Quality.	25.31	7.680 0.021

Table (7-3) shows the significant operational capabilities adopted by each cluster of three cluster trials, it can be seen that; only one operational competitive capability was significantly adopted by the first cluster, it was account customer waiting time, however, no significant capabilities were adopted by the second cluster, the significant capabilities adopted by the third cluster were; percentage of branches in different sites, and branches layout quality, but no significant e-banking operational capabilities were adopted.

Four Clusters Trial:

Table (7-4)

Significant Operations Capabilities of Four Cluster Trials

Cluster	Cluster's membership	Significant Capabilities in comparison with other clusters	Cluster Mean (Average % of change)	Kruskal Wallis H test Chi-Square Sig.
Cluster (1)	L	Percentage of branches in different sites	63	6.629 0.085
Cluster (2)	B, F, K, H	No significant capabilities	-----	-----
Cluster (3)	A, D, C, E, I, M, N, O	Credit customer waiting time.	154.91	9.332 0.025
		Loans Approval Cost.	62	8.144 0.043
Cluster (4)	G, J	Account Customer waiting time.	369	9.443 0.024
		Account Transaction Cost.	181.75	7.666 0.053

Table (7-4) shows the significant operational capabilities adopted by each cluster of four cluster trials, it can be seen that; only one operations competitive capability was significantly adopted by the first cluster, it was percentage of branches in different sites, however, no significant capabilities were adopted by the second cluster, the significant capabilities adopted by the third cluster were; credit customer waiting time and loan approval cost.

The significant capabilities were adopted by the fourth cluster were; account customer waiting time and account transaction cost, but no significant e-banking operational capabilities were adopted.

Six Clusters Trial:

Table (7-5)

Significant Operations Capabilities of Six Clusters Trial

Cluster	Cluster's membership	Significant Capabilities in comparison with other clusters	Cluster Mean (Average % of change)	Kruskal Wallis Chi-Square Sig.
Cluster (1)	A, K	New loan credit products.	35	10.459 0.06
Cluster (2)	C, E, I, M	No significant capabilities	-----	-----
Cluster (3)	D, F, N	No significant capabilities	-----	-----
Cluster (4)	G, J	Account Customer waiting time.	369	11.18 0.048
		Account Productivity.	65.5	9.727 0.083
Cluster (5)	B, H	Credit customer waiting time.	297.89	10.119 0.072
Cluster (6)	L	Percentage of branches in different sites	62.5	6.629 0.085

Table (7-5) shows the significant operational capabilities adopted by each cluster of six cluster trials, it can be seen that; only one operations competitive capability was significantly adopted by the first cluster, it was loans new credit products, however, no significant capabilities were adopted by the second and third cluster, the significant capabilities were adopted by the fourth cluster were; account customer waiting time and account productivity.

The significant capability were adopted by the fifth cluster was; loan customer waiting time, but the significant capabilities by the sixth cluster was; percentage of branches in different sites, however, no significant e-banking operational capabilities were adopted.

Step 4: Identifying the best Operations Competitive capabilities

Definition: those that best adopted by a cluster in comparison with other clusters and led to best change in performance.

According to previous definition, the following actions were made to identify the best operational capabilities:

1: Measure the actual change in performance indicators for every bank during the period (1999-2008), the following equation was used for this purpose (*see* example (3) next page):

$$CPS_x = (\sum_{P1}^{Pn} CPS_{px}).....(14)$$

$$CPS_{PX} = (PS_{P2} - PS_{P1}).....(15)$$

CPS_x: Change in Performance (X) Score.

CPS_{PX}: Change in Performance during period (X)

PS_{P1}: Performance Score during first period.

PS_{P2}: Performance Score during second period.

- a- The change in the score of performance indicator during each period and for every banks was identified by subtract the score of the period from the previous one (equation (15)).
- b- Then the changes of all periods were summed together which generated the change in indicator score during study period (1999–2008) (equation (14)).

Example 3: How to Measure the Change in Performance Indicator during the Study Period

Identifying the Change of bank's (A) Return on Assets

	Periods	Leader (A) Return on Assets	Change during the each period (Equation (15))
P1	1999–2000	0.011	-----
P2	2001–2003	0.012	(P2-P1) 0.002
P3	2004–2006	0.029	(P3-P2) 0.009
P4	2007–2008	0.026	(P4-P3) 0.004
Change in return on assets during (1999-2008)....equation (14)			0.002+0.009+0.004 0.015

2: Measure the average actual change in performance indicators for every cluster of each cluster trials during the period (1999–2008), the following equation was used for this purpose (*see* example (4) next page):

$$CPSC_x = (\sum_{X1}^{Xn} CPS_x).....(16)$$

CPSC_x: Change in Performance Score for Cluster (X).

CPS_x: Change in Performance Score for bank (X).

Example 4: How to Measure the Change in Performance Indicators for every Cluster of each Cluster trial.

Identifying the Average Return on Equity for every cluster of Two Cluster trials

From example (3)

Cluster (1) Membership	Percentage of change in Return on Equity for cluster (1)	Cluster (2)	Percentage of change in Return on Equity for cluster (2)
A	15.58825	B	-3.34148
C	19.78102	G	9.314722
D	14.23884	J	4.201636
E	0.100514	K	4.60838
F	-1.15	L	24.70034
I	35.09187	H	5.719894
M	4.226342		
N	-1.60765		
O	7.458977		
Average return on equity for every cluster....equation (16)	$(15.59+19.78+14.24+0.100-1.15+35.09+4.23-1.61+7.46)/9=$ 10.41424		7.533916

3: the best operational competitive capabilities of each cluster trials can be identified, these capabilities were the significant best adopted by the cluster that achieved best change in performance indicators in comparison with other clusters:

Best Operations Competitive Capabilities of Two Clusters Trial:

Table (7-6) shows the best operations competitive capabilities adopted by each cluster, it can be seen that the best operations competitive capabilities of each cluster were those achieved best change in performance indicator, the first cluster capability participated in achieving best return on equity in comparison with second cluster.

However, the second cluster capabilities participated in achieving best performance in return on assets, operating revenue, account and credit customer satisfaction, and account and credit customer retention, so all capabilities of second cluster were best capabilities.

The amount of performance that achieved by best operational capabilities of every cluster was the differences between two clusters, since the change in performance was the function of all changed capabilities of every cluster, but best capabilities participated by the amount of difference in comparison with other clusters, so the best capability of best cluster participated by about +2.88% of return on equity.

However, the best capabilities of the second cluster participated by about +0.56% of return on assets, +4.23% of operating revenue, +4.67% of account customer retention, +13% of account customer satisfaction, and +13% of credit customer satisfaction, and +4.67% of loan customer retention.

Table (7-6)

Best Operations Competitive Capabilities of Two Clusters Trial

Cluster	Significant Operations Capabilities adopted by every cluster	Actual Change in performance Indicators for Every Cluster								
		Return on Equity	Return on Assets	Operating Revenue/ Total revenue	Deposit market share	Loan market share	Account customers satisfaction	Credit customers satisfaction	Account customers Retention	Credit customers Retention
Cluster (1)	Loan Approval Cost**	10.41%*	1.07%	2.94%	-0.92%	3.33%*	20%	27%	0.17%	-0.17%
Cluster (2)	Account Customer Waiting time**	7.54%	1.63%*	7.17%*	0%	0%	33%*	40%*	4.83%*	4.67%*
	Account transaction cost**									
	Percentage of branches in Different Sites**									
	ATM Suburban Accessibility**									
	Number of ATM Sites**									
	Cluster (1)-Cluster (2)	+2.88%				+3.53				
	Cluster (2)-Cluster (1)		+0.56%	+4.23%			+13%	+13%	+4.67%	+4.83%

*Best Performance

**Best Operations Capabilities

Best Operations Competitive Capabilities of Three Clusters Trial:

Table (7-7) shows the best operations competitive capabilities adopted by every cluster of three cluster trials, it can be seen that; the best operations competitive capabilities of each cluster were those achieved best change in performance indicator, the first and third clusters were adopted the best operations capability, the first cluster's capability participated in achieving best return on assets, operating revenue/total revenue, and customer retention deposits in comparison with the second cluster.

However, the third cluster's capabilities participated in achieving best return on equity, deposit market share, loan market share, and account customer satisfaction, so all capabilities of third cluster were best capabilities.

The best operations capability of the first cluster participated by about +1.07% of return on assets, +4.27% of operating revenue/total revenue, and +4.72% of the account customer retention, however, the third cluster participated by about +4.27% of return on equity, +6.12% of the deposits market share, +3.80% of the loans market share, and +12.75% of account customer satisfaction.

Table (7-7)

Best Operations Competitive Capabilities of Three Clusters Trial

Cluster	Significant Operational capabilities adopted by every cluster	Actual Change in performance Indicators for Every Cluster								
		Return on Equity	Return on Assets	Operating Revenue/ Total revenue	Deposits market share	Loans market share	Account customers satisfaction	Credit customers satisfaction	Account customers Retention	Credit customers Retention
Cluster (1)	Account Customer waiting time**	8.12%	1.74%*	9.15%*	-0.63%	-1.87%	32%	2%	5.4%*	5.2%*
Cluster (2)	No-significant capabilities	2.03%	1.07%	3.97%	-1.41%	-0.25%	22.5%	41.25%*	0.69%	0.56%
Cluster (3)	Percentage of branches in Different Sites** Branches Layout Quality**	9.34%*	0.28%	5.80%	5.10%*	2.75%*	40%*	33.33%	0.67%	1%
	Cluster (1) - Average of remaining clusters		+1.07	+4.27					+4.72	
	Cluster (3) - Average of remaining clusters	+4.27%			+6.12	+3.80	+12.75			

*Best Performance

**Best Operations Capabilities

Best Operations Competitive Capabilities of Four Clusters Trial:

Table (7-8) shows the best operation's competitive capabilities adopted by every cluster of four cluster trials, it can be seen that; the best operations competitive capabilities of each cluster were those achieved the best change in performance indicators, the first and fourth cluster adopted the best operations capability, however, the second cluster not adopted any significant capabilities and the capabilities of third clusters did not achieve any best change in any performance indicator.

The first cluster's capability participated in achieving best return on assets, return on equity, account customer satisfaction, and account and credit customer retention in comparison with remaining clusters, however, one capability of the third cluster's capabilities participated in achieving best operating revenue.

The best operational capability of the first cluster participated by about +9.03% of return on equity, +3.87% of return on assets, +13.33% of the account customer satisfaction, +18.77% of account customer retention, and +19.02% of credit customer retention.

Table (7-8)

Best Operations Competitive Capabilities of Four Clusters Trial

Cluster	Significant Operational capabilities adopted by every cluster	Actual Change in performance Indicators for Every Cluster								
		Return on Equity	Return on Assets	Operating Revenue/ Total revenue	Deposits market share	Loans market share	Account customers satisfaction	Credit customers satisfaction	Account customers Retention	Credit customers Retention
Cluster (1)	Percentage of branches in Different Sites**	15.7%*	4.86%*	1.12%	0%	2.65%	40%*	40%	20%*	20%*
Cluster (2)	No-significant capabilities	1.46%	0.79%	1.03%	0.86%*	-11.14%	30%	20%	1%	1.25%
Cluster (3)	Credit customer waiting time Loan approval cost	11.86%	1.08%	5.93%	-2.65%	2.65%	20%	32.17%	0.19%	-0.31%
Cluster (4)	Account Customer waiting time Account transaction cost	6.67%	1.37%	8.43%*	0.36%	3.69%*	30%	50%*	2.5%	2%
	Cluster (1) - Average of remaining clusters	+9.03%	+3.87%				+13.33%		+18.77%	+19.02

*Best Performance

**Best Operations Capabilities

Best Operations Competitive Capabilities of Six Clusters Trial

Table (7-9) shows the best operational competitive capabilities adopted by every cluster of six cluster trials. It can be seen that the best operational competitive capabilities of each cluster were those achieved the best change in performance indicators, only the sixth cluster adopted the best operations capability.

The sixth cluster's capability participated in achieving best return on assets, return on equity, account customer satisfaction, and account and credit customer retention in comparison with remaining clusters, however, .

The best operational capability of the first cluster participated by about +8.83% of return on equity, +3.67% of return on assets, +15% of the account customer satisfaction, +19.30% of account customer retention and credit customer retention by +19.32%.

Table (7-9)

Best Operations Competitive Capabilities of Six Clusters Trial

Cluster	Significant Operational capabilities adopted by every cluster	Actual Change in performance Indicators for Every Cluster								
		Return on Equity	Return on Assets	Operating Revenue/ Total revenue	Deposits market share	Loans market share	Account customers satisfaction	Credit customers satisfaction	Account customers Retention	Credit customers Retention
Cluster (1)	Credit new Products	10.09%	1.33%	19.55%	-4.61%	0.99%	20%	25%	0.25%	0.25%
Cluster (2)	No-significant capabilities	14.80%	1.44%	5.78%	-2.52%	-0.11%	25%	43%	0.75%	-0.5%
Cluster (3)	No-significant capabilities	3.83%	0.73%	-9.10%	1.99%*	5.27%*	20%	13%	0%	0.67%
Cluster (4)	Account Customer waiting time	6.67%	1.37%	8.43%	0.36%	3.69%	30%	50%*	2.5%	2%
Cluster (5)	Credit Customer Waiting time	1.19%	0.54%	13.88%	-0.90%	2.78%	30%	30%	1	1
Cluster (6)	Percentage of branches in Different Sites**	15.7%*	4.86%*	1.12%	0%	2.65%	40%*	40%	20%*	20%*
	Cluster (6) - Average of remaining clusters	+8.38%	+3.67%				+15%		+19.3%	+19.32

*Best Performance

**Best Operations Capabilities

Fourth: Identifying the best Operations Competitive capabilities across all

Cluster trials:

The following actions were made:

➤ **Actions were made for every clusters adopted the best operations capabilities in every clustering trial: (see example (5))**

- 1- Identify the difference in percentage of change in every capability of best cluster in comparison with remaining clusters.
- 2- Sum the results of step 1.
- 3- Divide the difference in percentage of change of every capability over the result of step 2, the result was the relative percentage of change of every capability in comparison with others, this result was important to identify the relative impact of each capability on change in performance.
- 4- Multiply the result of step 3 by the best performance achieved by every cluster, the result was the relative total performance achieved by every best operation's capability in comparison with others.

➤ **Actions were made across clustering trial:**

- 1- The clusters across clustering trial that adopted the same best operational capabilities were put together in a table included the following information:
(see Table (7-10))
 - a- The best operational capabilities cluster membership.
 - b- The range of actual change in operational capabilities.
 - c- The actual change in performance indicators as a result of best operational capabilities.
- 2- If best capability were adopted by different clustering trial, but the cluster membership was the same, then, any clustering trial could be chosen since the

same banks are the best and in all clustering trails it adopted the same actions (if the person is conservative then he can choose the trail that led to lower change in financial performance, but if he is optimistic, then he can choose the trial led to higher financial performance).

However, if the best capability was adopted by different clustering trial, and the cluster membership was different, also the ranges of best capabilities are different, then all trials will be chosen. If the ranges of best capabilities are the same, then any trial could be chosen.

Example 5: How to identify the total performance was achieved by each best operations capability of every clustering trial:

Total performance achieved by each best capability of the second cluster of two cluster trials:

Best Capabilities	Difference in Percentage of change Step 1:	Step 3: Relative	Step 4: Total Performance Achieved by each Best Capability				
			Return on assets	Operating revenue/total revenue	Account Customer Satisfaction	Loans Customer satisfaction	Loans Customer Retention
Account customers waiting time	342.67-83.23=259.44	259.44/457.50 0.5671	0.567X0.56 0.317	0.567X4.23 2.40	0.567X13 7.37	6.447427	2.316114
Account transaction cost	116.41-19.66=96.75	96.75/457.50 0.211	0.224	1.692	5.2	5.2	1.868
percentage of branches in different sites	30.5-11.80=18.70	18.70/457.50 0.041	0.034224	0.258511	0.794477	0.794477	0.285401
ATM suburban accessibility	59.23-24.209=35.021	35.021/457.50 0.055	0.084503	0.638298	1.961672	1.961672	0.704693
number of ATM sites	50.37-2.78=47.59	47.59/457.50 0.10402	0.064738	0.489	1.502837	1.502837	0.539865
	Step 2: (259.44+96.75+18.70+35.021+47.5) = 457.50						

Best Performance Achieved by cluster	0.56	4.23	13	13	4.67
Performance Indicator	Return on assets	Operating revenue/total revenue	Account Customer Satisfaction	Loans Customer satisfaction	Loans Customer Retention

Table (7-10) shows the best operational capabilities were adopted across cluster trials, it can be seen that; some of these capabilities were adopted by different cluster trials as account customer waiting time, and percentage of branches in different sites, however, branches layout quality was adopted by 3 cluster trials, and the remaining capabilities were adopted by 2 cluster trials.

Account customer waiting time was adopted by two and three cluster trials, the cluster membership was the same, but the trial of 2 clusters achieved lower performance in return on assets, operating revenue, and account customer satisfaction in comparison with 3 clusters trial, accordingly, the significant actions that made by the banks of 2 cluster trials were traced since conservative rule is adopted by this research project.

Percentages of branches in different sites was adopted by two, three, four and six cluster trials, the cluster membership was different in all trials except 4 and 6 trial, the trail number 6 was chosen. So the actions were made by banks in 2, 3 and 6 clustering trial were traced.

Accordingly, the best changed traditional banking operational competitive capabilities that adopted by banks in Jordan during the period (1999–2008) were; account transaction time, percentage of branches in different sites, branches layout quality, account transaction cost, credit transaction cost, so two general patterns were adopted cost pattern and differentiation pattern.

However, the best changed electronic banking operational competitive capabilities that adopted by banks in Jordan during the period (1999–2008) were; ATM suburban accessibility, and number of ATM sites, but no significant changed capabilities were achieved in Internet banking, mobile banking and telephone banking.

Table (7-10)

Best Operations Competitive Capabilities across Cluster Trials

Best Operations capabilities	Best Cluster's membership	Cluster trials	Kruskal Wallis H test		Total Actual Change in Performance as a result of Best Operations Capabilities (Best cluster's performance – remaining clusters' performance)						
			Chi-Square	Sig.	Return on Equity	Return on Assets	Operating revenue/total revenue	Account Customer satisfaction	Account Customer Retention	Deposits market share	Loans market share
Traditional Banking Operations capabilities											
Account Customer waiting time	B, G, H, J, K, L	2 Clusters	9.621	0.002	----	+0.28%	+2.1%	+6.45%	+2.31%	----	----
	B, G, H, J, L	3 Clusters	5.45	0.07	----	+1.07%	+4.27%	---	+4.72%	----	----
Percentage of branches in different sites	B, G, H, J, K, L D, F, N L L	2 Clusters	3.381	0.058	----	+0.03%	+0.26%	+0.79%	+0.29%	----	----
		3 Clusters	6.095	0.047	+2.65%	----	----	+7.91%	----	+3.79%	+2.36%
		4 Clusters	6.629	0.085	+9.03%	+3.87%	----	+13.33%	+18.77%	+19.02	----
		6 Clusters	6.629	0.085	+8.83%	+3.76%	----	+15%	+19.3%	+19.32	----
Branches Layout Quality	D, F, N	3 Clusters	7.680	0.021	+1.62%	----	----	+4.84%	----	+2.33%	+1.44%
Account Transaction Cost	B, G, H, J, K, L	2 clusters	9.069	0.003	----	+0.22%	----	----	----	----	----
Credit Transaction cost	A, C, D, E, F, I, M, N, O	2 Clusters	4.286	0.038	+2.88%	----	----	----	----	----	----
Electronic Banking Operations capabilities											
ATM suburban Accessibility	B, G, H, J, K, L	2 Clusters	5.686	0.017	----	+0.08%	+0.64%	+1.96%	+0.70%	----	----
Number of ATM Sites	B, G, H, J, K, L	2 Clusters	7.333	0.007	----	+0.06%	+0.49%	+1.50%	+0.53%	----	----

Step 5: Identifying the Significant Actions Made to Achieve the best Operations Competitive Capabilities

Definition: Significant positive improved actions of the cluster that best adopted the operational capabilities in comparison with other clusters.

To identify the significant actions made, the following actions were made:

1: identify the actions that made by every bank by revising the managers questionnaires (T1 (a), T1 (b), T4, E1).

2: identify the change in each action score during the study period, the scores were identified by revising the responses of non-managers, then the changes were identified using the following equation: (*see example (6)*)

$$CAS_x = (\sum_{P1}^{Pn} CAS_{px}) \dots \dots \dots (17)$$

$$CAS_{px} = (AS_{p2} - AS_{p1}) \dots \dots \dots (18)$$

CAS_x: Change in Action (X) Score.

CAS_{px}: Change in Action during period (X)

AS_{p1}: Action Score during first period.

AS_{p2}: Action Score during second period.

a- The change in the action scores during each period and for every bank was identified by subtracting the score of the period from the previous one (equation (18)).

c- Then the changes of all periods were summed together which generated the change in action score during study period (1999–2008) (equation (17)).

3: identify significant actions made using the Kruskal Wallis H test; the significant level that used was $p \leq 0.2$.

Significant Actions Made to Reduce Account Customer Waiting Time

Table (7-11)

Significant Actions Made to Reduce Account Customer Waiting Time

Action	Two Cluster trials		Kruskal Wallis H test Chi-Square P-Value	Change in best cluster in comparison with others
	Change during (1999-2008)			
	Cluster 1	Cluster 2*		
Increase in the number of teller stations/branch	+0 teller stations/branch	+1 teller station/branch	7.8 0.005	+1 teller station/branch

* Best cluster in operation's capability

Table (7-11) shows the significant action made to reduce customer waiting time, it can be seen that the significant action that made to reduce account customer waiting time was increase the number of teller stations per branch, the second cluster achieved the best change in reducing customer waiting time as a result of increasing the number of teller stations/branch by 1 station.

Significant Actions Made to Increase Branches Sites Accessibility:

Table (7-12) shows the significant action made to increase branches site accessibility, it can be seen that; the significant actions that made were; open branches in shopping areas, malls, universities business areas and hospitals, the significant actions of two cluster trials were made by the second cluster, the banks of this cluster opened branches in shopping area, malls, universities, business areas and hospitals, but the largest number of branches were opened in shopping area.

The significant actions of three cluster trials were made by the third cluster, the banks of this cluster opened branches in shopping area, universities and business areas, but the largest number of branches were opened in shopping area, the significant actions

of six cluster trials were made by the sixth cluster, the banks of this cluster opened branches in shopping area, the number of branches were more two and three cluster trials.

Table (7-12)

Significant Actions Made to Increase Branches Sites Accessibility

Actions	Two cluster trials			Three cluster trials				Six cluster trials						
	Change during (1999-2008)			Change during (1999-2008)				Change during (1999-2008)						
	Cluster 1	Cluster 2*	Chi. P-value	Cluster 1	Cluster 2	Cluster 3*	Chi. P-value	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6*	Chi. P-value
Number of branches in Shopping	+6	+7 +1 more	0.59 0.11	+6	+4	+13 +3 more	1.12 0.10	+8	+3	+3	+2	+6	+16 +11 more	4.43 0.05
Number of branches in Malls	+0	+1 +1 more	44.72 0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Number of branches in Business	+2	+3 +1 more	31.42 0.000	+3	+1	+5 +3 more	25.14 0.000	-----	-----	-----	-----	-----	-----	-----
Number of branches in Hospitals	+0	+1 +1 more	44.55 0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

* Best cluster in Operations Capability.

----- Actions not adopted

Significant Actions Made to Improve Branches Layout Quality:

Table (7-13)

Significant Actions Made to Improve Branch Layout Quality

Actions	Three Clusters trial			Kruskal Wallis H test Chi-Square P-Value	Change in best cluster in comparison with others
	Change during (1999-2008)				
	Cluster 1	Cluster 2	Cluster 3*		
Isolating branches	0	0	+1	45.62 0.000	+1
External Convenience (Parking)	0	0	+1	46.05 0.000	+1
Aesthetic (Plants and pictures)	0	0	+1	46.05 0.000	+1

* Best Cluster in Operations Capability

Table (7-13) shows the significant action made to improve branch layout quality, it can be seen that the significant actions that made were; isolating branches, add parking, and improve the aesthetic of branches, the third cluster achieved the best change in branches layout quality as a result of making all previous actions.

Significant Actions Made to Reduce Account Transaction Cost:

Table (7-14)

Significant Actions made to Reduce Account Transaction Cost

Actions	Two Cluster trials		Kruskal Wallis H test Chi-Square P-Value	Change in best cluster in comparison with others
	Change during (1999-2008)			
	Cluster 1	Cluster 2*		
Number of ATMs	+17	+42	10.60 0.009	+25 ATMs

* Best Cluster in Operations Capability

Table (7-14) shows the significant action made to reduce account transaction costs; it can be seen that the significant action that was made was number of ATMs. The second cluster that best reduced the transaction time was the best increase in the number of ATMs by 42 ATMs.

Significant Actions Made to Reduce Loan Approval Cost

Table (7-15)

Significant Actions Made to Reduce Loan Approval Cost

Action	Two Cluster trials		Kruskal Wallis H test Chi-Square P-Value	Change in best cluster in comparison with others
	Change in during (1999–2008)			
	Cluster 1*	Cluster 2		
Online Integration with Head office	+2 to be direct integrated with head office	+0	41.81 0.000	+2

* Best Cluster in Operations Capability

Table (7-15) shows the significant action made to reduce loan approval cost, it can be seen that; the significant action that made was online integration with head office, the first cluster that best reduced the approval cost achieved also the best change in integrating the branches with head office, so the actions were made in branches transferred directly to the head office online.

Significant Actions Made to Increase ATM Sites Accessibility

Table (7-16)

Significant Actions Made to Increase ATM Sites Accessibility

Action	Two Cluster trials		Kruskal Wallis H test Chi-Square P-Value	Change in best cluster in comparison with others
	Change during (1999-2008)			
	Cluster 1	Cluster 2*		
Add ATMs in Business area	+4	+7	24.42 0.000	+3 ATMs
Add ATMs in Universities	+0	+2	30.29 0.000	+2
Add ATMs in Hotels	+0	+1	30.97 0.000	+1
Add ATMs in Hospitals	+0	+1	29.017 0.000	+1

* Best Cluster in Operations Capability

Table (7-16) shows the significant action made to increase ATM sites accessibility, it can be seen that; the significant action that made were add ATMs in shopping area, business area, universities, hotels, and hospitals, the second cluster that achieved the best change in accessibility, achieved the best increase in the number of ATMs in all sites, but the most increase in the number of ATMs was in shopping area.

7-2-2 Constructing Patterns of Best Practices in Traditional and Electronic Banking Operations Strategies

Best-practices patterns are prediction models that identify the relationship between the best actions, best operations competitive capabilities and performance, so the decision-maker can use this model to identify what are the actions required to achieve particular changes in operational capabilities and predict the impact on performance indicators. The procedure of constructing the patterns were the same as discussed in previous analysis approach (*see* section 6-4-3, Chapter 6).

7-3 Patterns of Best Practices in Traditional Banking Operations Strategies

Five best practices of traditional banking operations strategy were adopted by banks in Jordan during the period (1999–2008), these practices were; account customer waiting time, account transaction cost, credit approval cost, branches site accessibility and branches layout quality

The general pattern of best practices of traditional banking in Jordan was hybrid of differentiation and cost, in the following sections the pattern of each best practice was presented, in each pattern the actions required to achieve each unit (s) of operational capabilities were presented, also the impact of each unit (s) of capabilities on performance were presented.

7-3-1 Account Customer Waiting Time Strategy

Figure (7-2) shows account customer waiting time strategy pattern, this strategy was one of the best practices adopted by banks in Jordan during the period (1999–2008), it can be seen that; one range of reducing waiting time was adopted, which was reducing waiting time by more than or equal 0.40 minutes and less than or equal 12 minutes.

Ten minutes reduction in account customer waiting was as a result of add one teller station, each ten minutes reduction in account customer waiting time increased account customer satisfaction by 1.3%, account customer retention by 0.45%; also, this led to increase operating revenue/total revenue by 1.13% and increased return on assets by 0.15%.

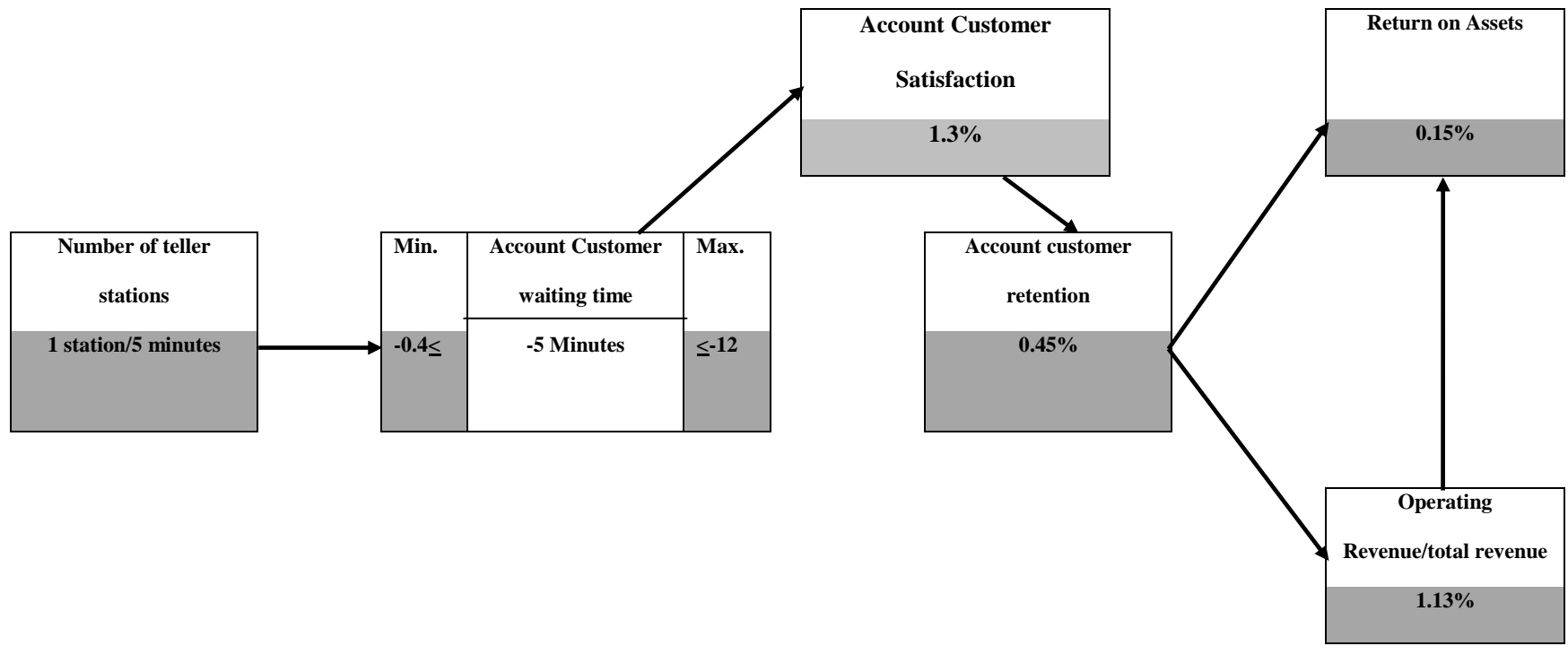


Figure (7-2)
Account Customer Waiting Time Strategy

7-3-2 Branches Sites Accessibility Strategy (Percentage of sites Covered):

Figure (7-3) and (7-4) show the branches sites accessibility strategy, this strategy was one of the best practices adopted by banks in Jordan during the period (1999–2008), according to this strategy the banks add more branches to cover more sites, it can be seen that in Figure (7-3); the branches site accessibility affected the account operations (route: 1) and credit operations (route: 2).

Three ranges of branches site accessibility were adopted by banks in Jordan, the first range was add branches to cover more shopping area within the range more than 1% of shopping sites and less than 10%, also, covered more than 1% of malls to less than or equal 50%, covered more than 10% of business sites and less than or equal 16%, and covers more than 1% of hospitals and less than or equal 10%.

However, the second range covered more than 10% of shopping sites and less than or equal 22.5%, also, covers more than 1% of business sites and less than or equal 10%, but the last range covered 10% of shopping sites, the contribution of covering each 10% sites of first range led to increase in account customer satisfaction by 1.8%, also, account customer retention by 0.59%, increase in operation revenue by 0.10%, and return on assets by 0.015%.

Further, the contribution of covering each 10% sites of the second range led to increase customer satisfaction by 1.18%, the deposits market share by 0.05%, the loans market share by 1.75%, and return on equity by 3.1%, but the contribution of covering each 10% sites of the third range led to increase account customer satisfaction by 15%, account customer retention by 19.3%, deposit market share by 19.32%, return on assets by 3.76% and return on equity by 8.83%.

The contribution of each sites in performance differs, add more branches in shopping area contributed by 13%, malls sites contributed by 35%, business sites contributed by 18%, and hospitals contributed by 35%, the shopping sites of the second range contributed by 38% and each remaining site contributed by 31%, but the shopping site of the last range contributed by 100% in performance. Accordingly, concentrating more branches in shopping site led to better the financial return in terms of return on equity and assets, however, covering more sites led to better operating revenue.

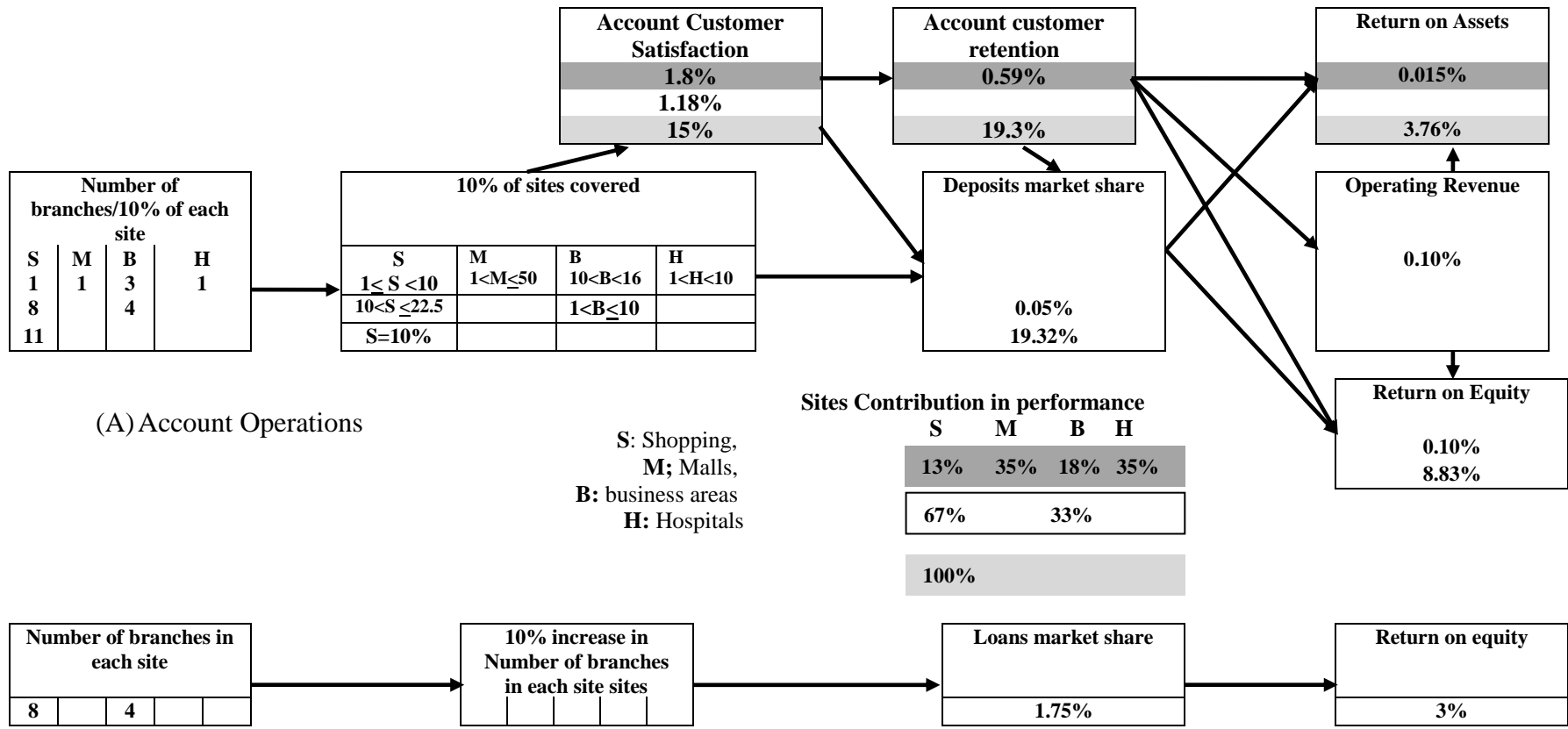
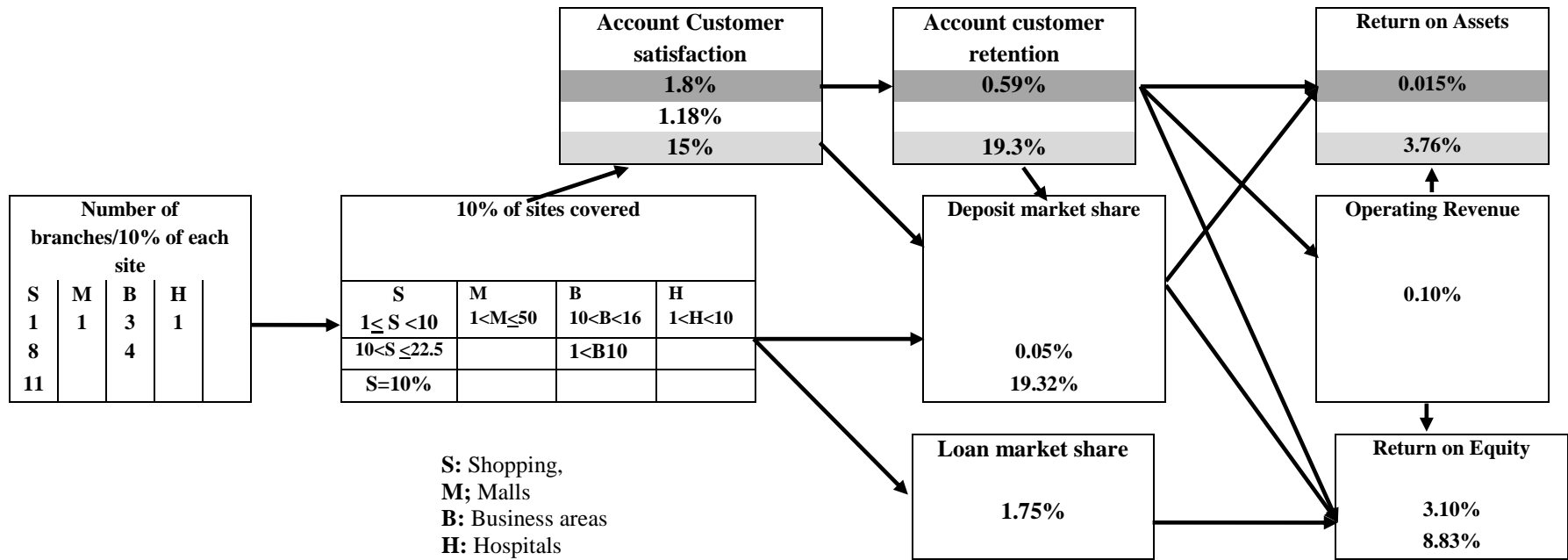


Figure (7-3)

Branches Sites accessibility Strategy of Account and Credit Operations



Sites Contribution in performance

S	M	B	H
13%	35%	18%	35%
67%		33%	
100%			

Figure (7-4)

Overall Branches Sites accessibility Strategy

7-3-3 Transaction Cost Strategy

Figure (7-5) shows transaction cost strategy pattern, this strategy was one of the best practices adopted by banks in Jordan during the period (1999–2008), it can be seen that; this strategy was adopted for both account and credit operations, one range of best practices was adopted, for account operations the reduction in transaction cost was more than JD. 0.2 and less than or equal JD. 0.4, however, the reduction of credit approval cost was more than or equal JD. 2.5 and less than or equal JD. 17.5.

Each JD. 0.1 of account transaction costs was as a result of add 8 ATMs, and led to increase return on assets by 0.39%, however, within the range of loan approval costs the reduction of approval cost was as a result of online integration with head office, further, each JD. 10 reduction of approval cost increase return on equity by 1.53%.

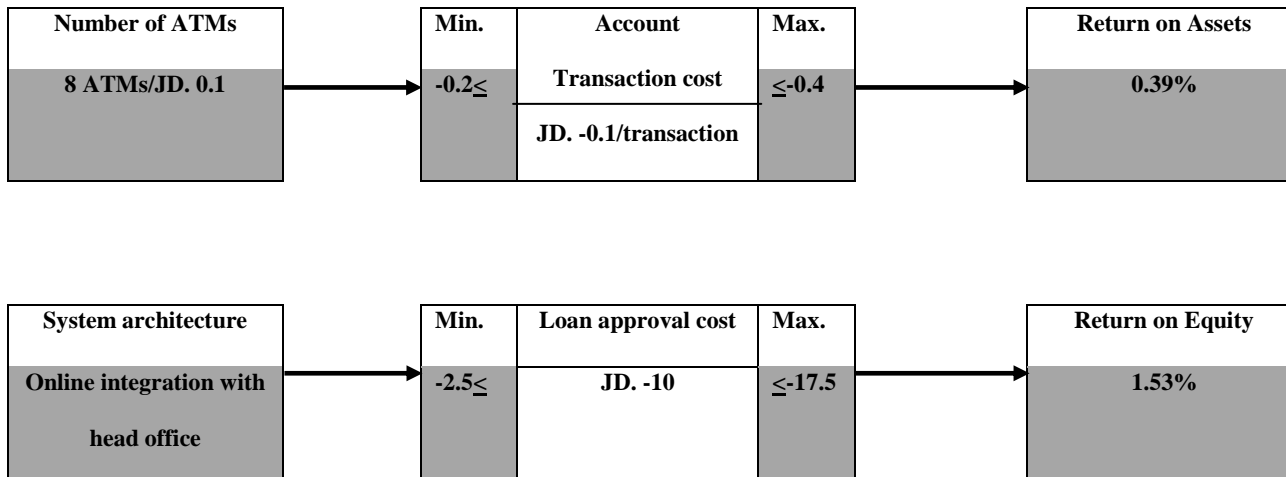


Figure (7-5)
Transaction Cost Strategy

7-3-4 Branch Layout Quality Strategy

Figure (7-6) shows branch layout quality strategy pattern, this strategy was one of the best practices adopted by banks in Jordan during the period (1999–2008), it can be seen that; one rang of improving branch layout quality was adopted, which was improve quality by more than or equal 20% and less than or equal 41%.

The improvement of layout quality was as a result add parking outside the branches, improve the aesthetic of branches and isolate branches, each 10% improvement if quality improved account customer satisfaction by 1.18% and the deposits market share by 2%, which increased return on equity by 0.91%, also, this led to increase the loans market share by 0.29% and return on equity by 0.32%.

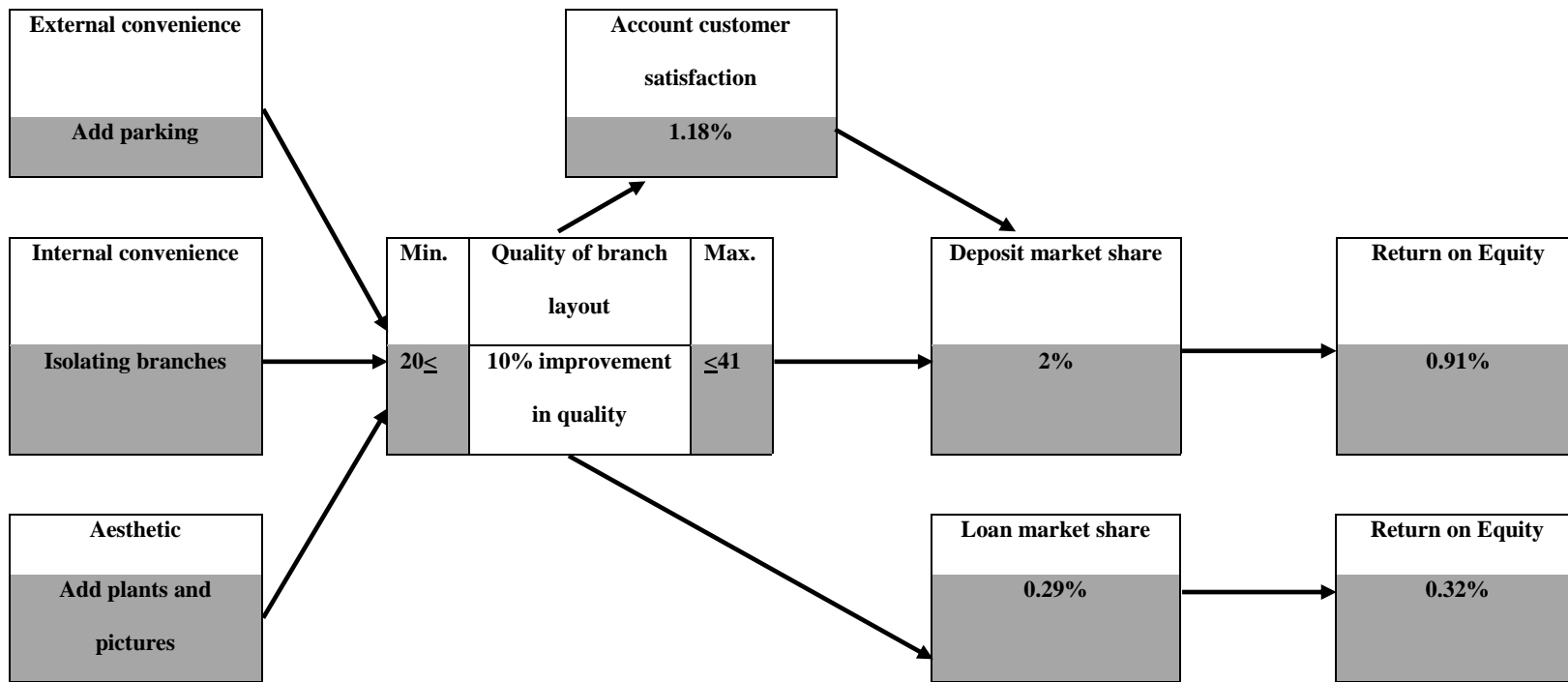


Figure (7-6)

Branch Layout Quality Strategy

7-4 Patterns of Best Practice in Electronic Banking Operations Strategies

Two best practices of electronic banking operations strategy were adopted by banks in Jordan during the period (1999–2008), these practices were; ATM suburban accessibility and ATM site accessibility, no significant operations strategy of mobile of telephone banking operations strategy were adopted by banks in Jordan, the general pattern of best practices was differentiation.

The following sections presented the pattern of each best practice, in each pattern the actions required to achieve each unit of operational capabilities were presented, also the impact of each unit of capabilities on performance were presented.

7-4-1 ATM Sub-urban Accessibility Strategy

Figure (7-7) shows ATM suburban accessibility strategy pattern, this strategy was one of the best practices adopted by banks in Jordan during the period (1999–2008), it can be seen that; one rang of reducing waiting time was adopted, which was increase ATMs by more than or equal 4 ATMs per 10,000 in suburban areas and less than or equal 7 ATMs per 10,000 people. This led to increase customer satisfaction by 0.19% and customer retention by 0.07%, further, return on assets increased by 0.02%.

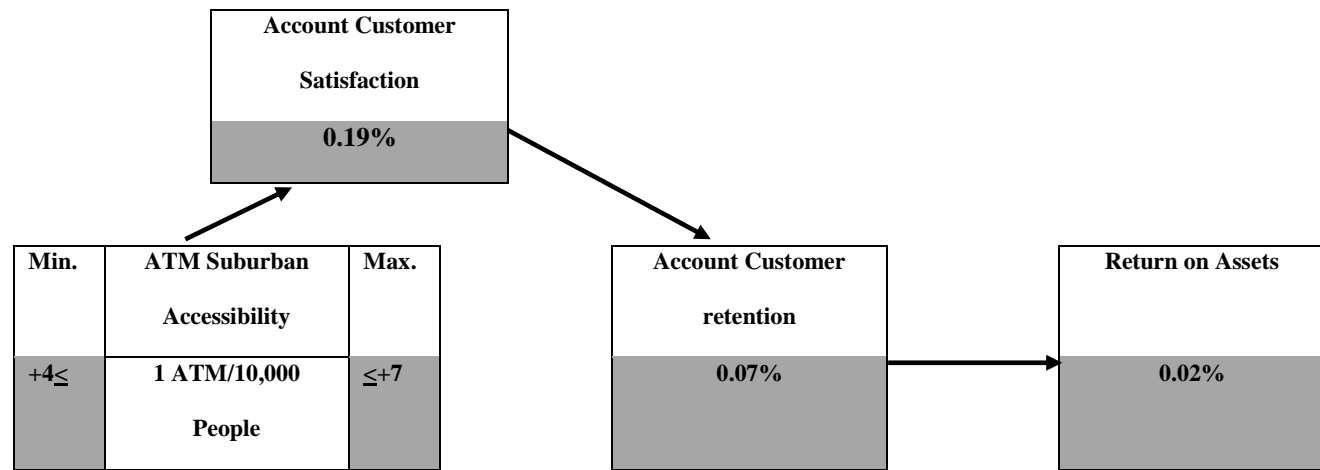


Figure (7-7)
ATM suburban Accessibility Strategy

7-4-2 ATM Sites Accessibility Strategy:

Figure (7-8) shows ATM sites accessibility strategy pattern, this strategy was one of the best practices adopted by banks in Jordan during the period (1999-2008), it can be seen that; one rang of ATM site accessibility was adopted; more than or equal 3 sites and less than or equal 4 sites. The number of ATMs add in business area was 3, also 2 in universities, 1 in hospitals and 1 in hotels.

The contribution of each site in performance differs, the contribution of ATMs in business sites was 43%, but the contribution of ATMs in universities was 29%, 14% was the contribution of ATMs in hospitals and 14% the contribution of ATMs in hotels, the total contribution of add ATMs in all of previous sites in operating revenue was 0.30%, and 0.08% in return on assets, further, the customers satisfaction increased by 0.33% and customer retention increased by 0.12%.

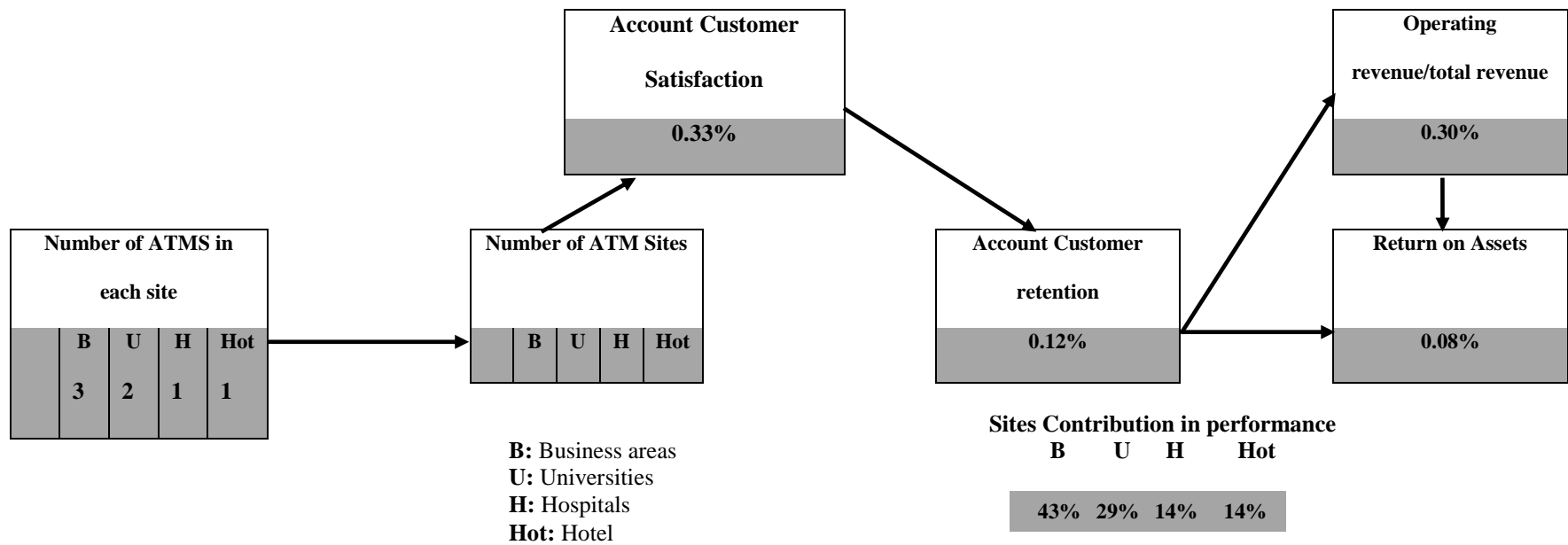


Figure (7-8)

ATM Sites Accessibility Strategy

7-5 The Maximum Financial Returns Achieved by Each Pattern of Best Practices in Banking Operations Strategies

Table (7-17) shows the maximum financial returns that achieved by adopting the maximum best practice, it can be seen that; the maximum total financial returns of traditional banking was significantly more than electronic banking, the maximum total return on equity of traditional banking was more than e-banking by 16.47%, the total maximum return on assets of traditional banking was more than e-banking by 5.40% and the maximum operating revenue/total revenue of traditional banking was more than e-banking by 2.51%.

The maximum return on equity and was achieved by locating braches in 10% of shopping sites, however, the maximum operating revenue/total revenue was achieved by reducing account customer waiting time by 12 minutes.

The rank of the patterns according to maximum financial return from low to high was as following, according to return on equity the rank was; branches site accessibility, branches layout quality loans transaction and ATM suburban accessibility.

However, the rank according to return on assets was; Branches site accessibility, account transaction cost, account customers waiting time, ATM suburban accessibility, and ATM site accessibility. The rank according to operating revenue/total revenue was as following; account customer waiting time, ATM sites accessibility, and branches site accessibility

Table (7-17)

Maximum Financial Returns of Each Strategy Pattern

Financial Returns	Traditional Banking Operations Strategy Patterns						Electronic Banking Operations Strategy Patterns		
	Account Customer waiting time	Branch site accessibility	Account transaction costs	Loan approval costs	Quality of branch layout	Total returns	ATM suburban accessibility	ATM site accessibility	Total returns
Return on equity		8.83% (1)		2.68% (3)	5.1% (2)	16.61%	0.14% (4)		0.14%
Maximum best practice		10% of shopping sites		JD. -17.5	41%		7ATMs /10,000 people		
Return on assets	0.36% (3)	3.76% (1)	1.50% (2)			5.62%	0.14% (4)	0.08% (5)	0.22%
Maximum best practice	-12 minutes	10% of shopping sites	JD. -0.4				7 ATMs/10,000 people	4 sites	
Operation revenue/total revenue	2.71% (1)	0.10% (3)				2.81%		0.30% (2)	0.30%
Maximum best practice	-12 minutes							4 sites	

7-6 Conclusion

In this chapter the second analysis approach was used to identify the best practices; according to this approach; the banks that achieved the best change in performance during a period are those achieved the best change in operational capabilities and actions, accordingly, the following actions were made to;

- Banks were clustered using different clustering trial according to change in operational capabilities until reach the maximum number of clusters.
- The significant clustering trials were identified; these have clusters that achieved significant change in operational capabilities in each clustering trials and achieved better change in performance in comparison with the remaining clusters were identified (these clusters are the best clusters).
- Next, identify the significant actions the best clusters have.
- Then the patterns of best practices were constructed; these patterns are prediction models that used by managers to make decisions and used by researchers to predict the relations between operational actions, capabilities and performance.

Four best-practice patterns of traditional banking operations strategy were constructed; these patterns were;

- Account customer waiting time strategy: one significant range of account customer waiting time was adopted by banks in Jordan. The reduction of waiting time was as a result of adding more teller stations. The reduction in account customer waiting time affected the account customer retention. Retain more customers increased the operating revenue and return on assets.

- Branches site accessibility: Three significant options of percentage of branch sites covered were adopted by banks in Jordan. Covering more sites (shopping, malls, business, and hospitals), increased the operating revenue significantly better than covering more percentages of two sites (shopping and business sites) and one site percentage (shopping). Concentrating more branches in shopping site led to better the financial return in terms of return on equity and assets.
- Transaction cost strategy: This strategy was adopted by account and credit operations. One significant range was adopted. The reduction of account transaction cost increased return on assets, but reduction of loan approval costs increased return on equity. The reduction of account transaction cost was as a result of using more ATMs. The reduction of loans approval cost as a result of using online shared system.
- Branches Layout Quality Strategy: This strategy affected account and credit operations. One significant range was adopted by banks in Jordan. The improvement in the branches layout quality affected the market share of deposits and loans, and customer satisfaction. The change in the deposits market share was significantly more than the loans market share. The change in return of equity as a result of change in account market share was more than the change in return on equity as a result of change in loans market share.

Two best-practice patterns of electronic banking operations strategy were constructed; these patterns were;

- ATM suburban accessibility and site accessibility strategy: one significant range of ATM urban accessibility and one significant option of ATM site accessibility were adopted by banks in Jordan. Increased ATM suburban accessibility, and

increase ATM site accessibility improved account customer satisfaction and retention. Increased account customer satisfaction and retention increased operating revenue and return on assets.

Chapter 8

Developing a Decision Support System

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8-1 Introduction

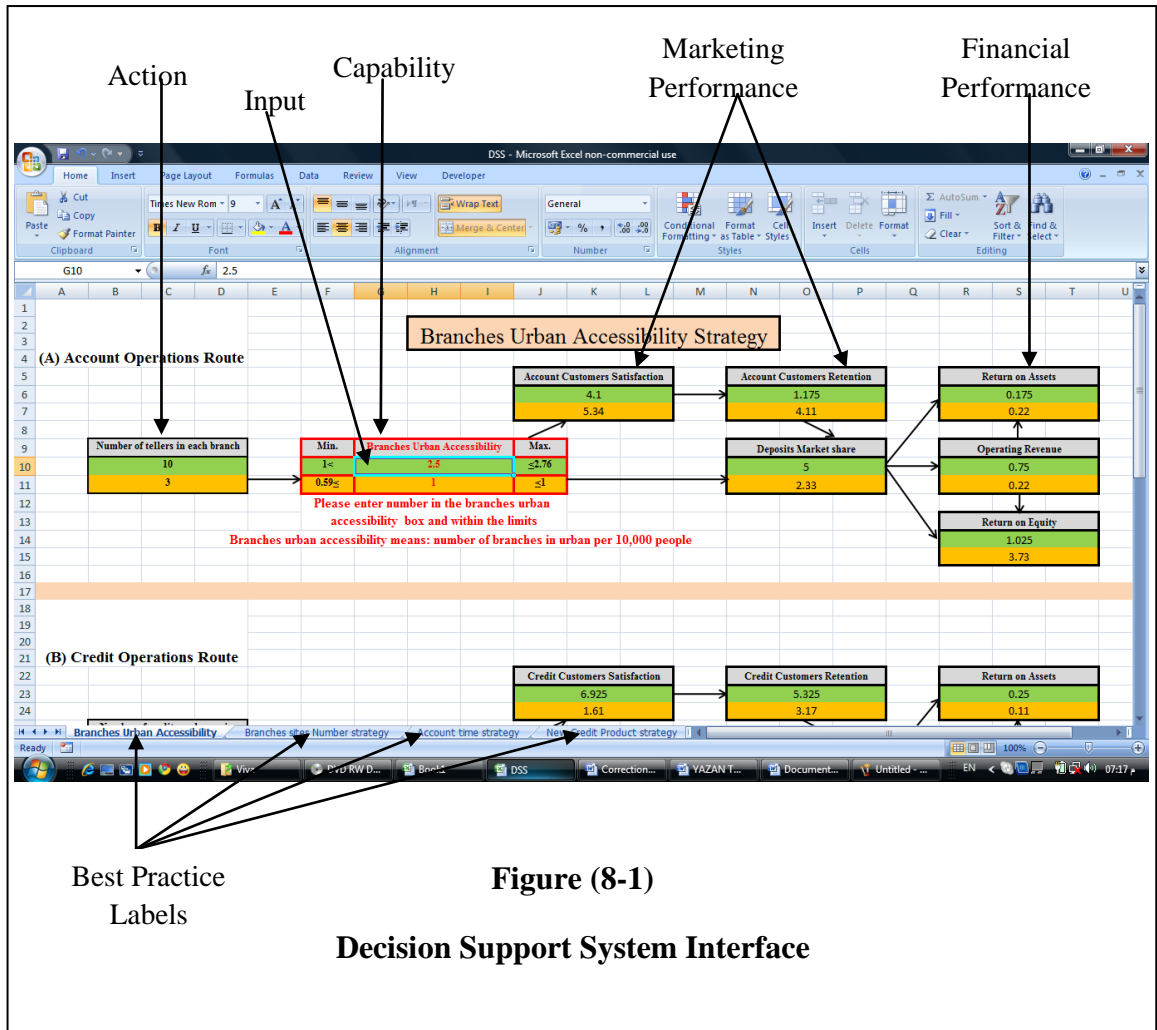
In this chapter a decision support system (DSS) was developed from the predication models of both analysis approaches. This chapter discussed the reason behind combining the models of analysis approached together in one DSS, further, how DSS was developed, and how to use DSS.

8-2 Reasons for Combining the Best-practices Prediction Models of Both Analysis Approaches in a Decision Support System

Each analysis approach generated different patterns in comparison with other, this was as a result of different viewpoint in dealing with data, these two approaches analyse the best practice from two viewpoints that complete each other using the same data, the study of best practices could be identified by reporting the practices that improve the competitive position, this was achieved in the first analysis approach, or reporting the practices that impact the best positive change in performance during a period of time, this was achieved in the second analysis approach.

Further, the patterns of best practices were constructed using the same logic and the number of best practices generated from both analysis approaches is reasonable in comparison with the initial number of traced capabilities and actions. Accordingly, the prediction models of both analysis approaches could be combined together in one DSS.

8-3 How the Decision-support System was Developed



Since the best practices were adopted within ranges so it is difficult for the decision-maker to predict the change in performance and actions should be made to achieve a particular capability, further, it is difficult for researcher to predict the change in performance and actions required, so DSS was developed for the purpose to help the decision-makers and researcher alike. Following sections explain how DSS was developed.

1- Choosing the Software

This application was developed using Microsoft Excel, this software was chosen since it is spread sheets application that allows developing mathematical equations, further, this software is end user software so the majority of people can deal with it easily.

2- Developing the Decision Support System Interface

Step 1: Microsoft Excel Workbook could be classified to numerous work sheets, so the workbook was classified to different worksheets; each one was customised for each best-practice prediction model and labelled by the title of the best-practice prediction model. In the bottom of the workbook of Figure (8-1) there are sheet labels; as it can be seen, these labels are the best-practice prediction model titles. The labels help the user choose the pattern to make predictions.

Step 2: The map of each pattern was developed, so the actions, capabilities and performance indicators were presented by boxes, each box was labelled by the action, capability or performance label, and each box was coloured by different colours reflect the ranges of best practice. The majority of best-practice models were classified to three maps; one for account operation, other for credit operations and the third was overall pattern. In Figure (8-1) it can be seen how actions, capabilities and performance indicators were presented, it can be seen that how each box was coloured by different colours reflect the ranges of best practices, and how the sheets was separated to different maps reflect the routes of best practices.

Step 3: Verify the inputs; the inputs of each pattern were the cell of operational capabilities ranges, the inputs were verified using red colour labels, also under the box a statement that keep the attention of user was written using red colour.

Figure (8-1) shows that the branches urban accessibility was labelled by a red colour, and under this capability box a statement coloured by a red colour was written.

3- Program the worksheets

The input was the operational capabilities, the impact of each unit of operations capability was identified in the analysis chapters (Chapter 6 & 7), in accordance the performance indicators and operational actions were programmed to change as a result of change in operational capability per unit, so in each cell of performance indicators and actions a function was developed by multiplying the cell of capability by the performance or action per unit.

8-4 How to use the Decision Support System

- 1- Click on DSS excel icon on the attached CD.
- 2- The best-practice pattern's interface will appear, the worksheets were labelled, these labels are the best-practice prediction model labels, please choose the best-practice prediction model you are interested in by click on the label, now you can see the best-practice prediction model interface, in each sheet three sub-interfaces appear; account, credit and both.
- 3- In each prediction model's sheet, there is a box labelled by a red colour, this is the operational capabilities, within the capability box there is cells coloured by different colours, these cells are the inputs, please put in each cell a number within the limits (the limits of each cell are in the right and left hand side of the cell), so the predicted performance to achieve and the predicted actions required to realise the capabilities are generated.

8-5 Conclusion

The best-practice prediction models were used to develop a decision support system, the system was developed for the purpose to help decision-makers and researchers to make the prediction since the best practices were adopted within different ranges. Microsoft Excel application software was used to develop the system, a separate sheet for each best-practice prediction model was identified, also interface was developed for each prediction model, and the worksheets of each best-practice prediction model were programmed. The user can use the system by run the attached CD; he/she can choose the pattern to make prediction by clicking on sheet labels, then, the prediction could be made by put a number in capability cells and within limits.

Chapter 9

Discussion

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9-1 Introduction

This chapter discuss the results of data analysis chapters, the discussion was for each best-practice pattern, the relationship between performance indicators, the relationship between operational capabilities and performance, and between actions and capabilities were discussed. Further, the national and institutional competencies required to achieve each pattern were identified, and how the banks in different regions of developing countries could benefit from these patterns was discussed.

9-2 First Analysis Approach: Competitive Position Analysis

9-2-1 Banks' Competitive Positions

All local banks in Jordan were classified according to their competitive position, so in this study clearer competitive positions of banks were presented in comparison with previous studies as the study of Frei *et al.* (1998), Lavayssiere *et al.* (2008), Power and Hahn (2004) and Matters and Vargas (2000), these studies presented the leaders banks only, so the operations strategy patterns of leader banks was analysed only.

On the other hand, in this study the banks' competitive positions were identified using multi-performance factors as; ROA, ROE, OR/TR, market share, customer satisfaction and retention, so identifying the banks' positions was more accurate in comparison with previous studies as the study of Lavayassiere *et al.* (2008) which used a ratio of income to cost only.

9-2-2 Identifying Best Practices

The best practices (best operational capabilities and related actions) were identified by comparing the relative performance, capabilities and actions across competitive positions, the previous studies of banking operations studies as the study of Frei *et al.* (1998), Lavayassiere *et al.* (2008) focused on reporting the practices of leaders without comparing the practices across competitive positions, such comparison could improve the accuracy of the reported best practices.

Moreover, the data related to capabilities and competencies were surveyed through reporting the opinion of different employees in the bank, the top managers, and non managers (tellers, credit employee and technical specialists in IT department), however, other studies as Metter and Vargas (2000) and Power and Hahn (2004) surveyed the opinion of managers, the multi-respondents viewpoint increased the reliability of data.

Furthermore, this study traced the actions, capabilities and competencies over ten years, however, other studies as Mortia and Flyun (1997), Metter and Vargas (2000), Ulusoy and Ikiz (2001), Ven landeghem and Peroons (2001), Power and Hahn (2004), Laugen *et al.* (2005), and Quesada-Poneda *et al.* (2007) adopted snap shot study, so time series study improved the accuracy of reported best practices.

Table (6-6) showed the best operational capabilities across competitive positions, leaders achieved the better change in comparison with followers and laggards, and followers achieved better change in comparison with laggards, this is logical since the better the position the more financial resources available to invest in operational capabilities, two of the traditional banking capabilities were related to branches accessibility, this indicates that the branches are still the main channel of banking in developing economies like Jordan.

9-2-3 Patterns of Best Practices in Traditional Banking Operations Strategies

9-2-3-1 Branches Urban Accessibility Strategy

Figure (6-4) shows that; the increase of account and loans market share affected the improvement of financial performance; this result is consistent with the previous studies as the study of Lavayssiere *et al.* (2008) and Venkatarum and Prescott (1990), the increase of the loan market share improved the financial performance, since more approved loans increased the interests were paid by customers so more returns available, further more account market share more deposits available, so more returns.

The account market share for both ranges of branches urban accessibility was very close, but the loans market share of first range was significantly better than the second range, which indicates that the market share of loans is more sensitive to increase of branches urban accessibility than account market share, since the loans transactions are mainly processed in the branches but the account transactions could be processed by e-banking channels.

The realised financial performance in terms operating revenue of the first range was better than the second range, this is logical since the first range had better accessibility which attracted more credit customers, however, the banks of the second range achieved better return on assets and equity, this is logical since less branches accessibility reduced the operating expenses so more income and better returns in accordance, also less branches accessibility led to less assets and better return on assets in accordance, moreover the profitability ratios as return on assets and equity are affected by other non-core operating factors as discussed by Hallowell (1996).

The realised customer satisfaction affected the customer retention; this result is consistent with previous studies as study of Bloemer *et al.* (1998), Weinstein (2002) and Chen and Chang (2006), this relationship is logical.

Further, it can be seen that the change in account customers satisfaction, and account and credit retention of the second range was better than the first range, since the banks of the first range are leaders and those banks are already have wider branches urban accessibility, but the banks of the second range are followers and those banks had lower accessibility in comparison with leaders so the change in accessibility affected the customer satisfaction and retention more significantly.

Table (6-10) shows the maximum financial returns achieved by the patterns of best practice of the first analysis approach; the best returns were achieved by the branch urban accessibility, which indicates the branches are still the main channel of banking in Jordan, according to previous studies as the study of Erol *et al.* (1989) and Erol *et al.* (1990) the customers in Jordan prioritises branches accessibility, so the banks should continue concern about this channel.

Open branches in urban areas is justified, since the majority of people in Jordan live in urban areas, the number of people live in urban areas represents 67% of people in Jordan as reported by Department of Statistics (2009).

Expanding the branches network requires hiring more employees, enough financial resources, and professional team to plan the branch locations, in Jordan a lot of qualified and well educated employees are available in comparison with other developing countries according to UNDP (2008), further, the majority of banks in Jordan have a specialised unit in the headquarter in branches management, one of the main responsibilities of this unit is to plan the branches location.

The banks in the developing countries could benefit from branches urban accessibility strategy pattern, however, the success of this pattern depends on the availability of the required competencies that discussed earlier, the banks in East Asia, South Asia, and Sub-Saharan Africa have lower than average branches accessibility in developing countries per 10,000 people, the average is 6.69/10,000 people, the accessibility in East Asia is 5.22, South Asia 3.56, and 2.96 in Sub-Saharan Africa as reported by Beck *et al.* (2007).

Furthermore the customers in these regions prioritise the convenient branch location as the Malaysian Customers as reported by Wel and Nor (2003), also customers in Taiwan as reported by Blankson *et al.* (2007), furthermore, the banks in previous regions especially in South Asia are concentrated in urban areas.

The banks in East Asia, South Asia and Middle East had lower than the average ROA in developing countries, it was 1.77 2.83 and 1.77 respectively, however, the average was 4.19, but the Sub-Saharan Africa banks had more than average 4.81 as reported by Micco *et al.* (2006), however, the education index in East Asia was more than the average in developing countries, it was 0.84, but the South Asia and Sub-Saharan Africa had lower than the average, it was 0.60 and 0.57 respectively as reported by UNDP (2007).

According to previous data about the competencies in developing-country regions, the reasons behind lower accessibility of branches in East Asia was lower financial resources in comparison with average returns in developing countries, but his region had more educated people, so in order to increase the accessibility the banks in this region should overcome this drawback, this could be through more expanding of other investment.

However, the reasons behind lower accessibility of branches in South Asia was lower financial resources in comparison with average returns in developing countries, and lower number of educated people in comparison with other developing countries, so in order to increase the accessibility the banks in this region should overcome these drawback, the increase of educated people is out of control, since it is a national competency, but the banks in these regions could invest more in training to overcome this, however, more financial resources could be available through more expanding of other investments.

However, the reasons behind lower accessibility of branches in Sub-Saharan Africa lower number of educated people in comparison with other developing countries, but the banks in this region had financial resources more than the average, increase the number of educated people is out of control, since the banks had enough financial resources the banks could invest more in training, or the foreign banks could hire from their home country.

9-2-3-2 Branches Sites Accessibility

Figure (6-6) shows that the increase of deposits and loans market shares affected the improvement of financial performance; this result is consistent with the previous studies as the study of Lavayssiere *et al.* (2008) and Venkatarum and Prescott (1990), the increase of the loans market share improved the financial performance, since more approved loans increased the interests were paid by customers so more returns available, further more account market share more deposits available, so more returns.

The deposits and loans market share for first accessibility option was significantly better than the second options, since the branches of the first option were opened in malls and universities, but the branches of the second option were opened in the industrial zones and business areas, the majority of the customers of the first

option's sites are retail customers, but the customers of the second option sites are corporate customers.

The change in operating revenue of account and credit operations and return on equity of account operations of the first option was better the second option, this is logical since the change of market share of the first option was better than the second option, however, the second option achieved significantly better return on assets of account operations better than first option, this could be the deposits amount of customers in industrial zones and business areas are more than customers in malls and universities.

However, the change in return on assets and equity of credit operations of both options was very close; this indicates that the credit operations less affected by these two indicators, further, the profitability ratios as return on assets and equity are affected by other non-core operating factors as discussed by Hallowell (1996). The realised customer satisfaction affected the customer retention; this result is consistent with previous studies as study of Bloemer *et al.* (1998), Weinstein (2002) and Chen and Chang (2006), this relationship is logical.

Table (6-10) shows the maximum financial returns achieved by all patterns of the first analysis approach, it can be seen that; this pattern second ranked in return on equity after branches urban accessibility, this indicates the customers in Jordan prioritise the branches sites accessibility and branches are still main channel of banking.

The direction of the banks towards opening more branches in malls, universities, industrial zones and business areas is logical. During the previous five years, the number of malls in Jordan increased significantly, from 3 at the beginning of 2000 to 25 by the end of 2008. Furthermore the number of industrial zones increased by 2 during last years (JIEC 2010), so opening more branches in these sites was logical. However,

the number of universities in Jordan increased by 4 universities during the period 2000 to 2006 (Ministry of Education, 2006).

According to Boufaounou (1995), the branches location decision should be according to professional and commercial character of population, so locating branches in the previous sites is logical since the majority of people in Jordan prefer to use cash rather than cards, and in all previous sites the cash is required.

Expanding the branches network as discussed earlier requires hiring more employees, enough financial resources, and professional team to plan the branch locations, in Jordan a lot of qualified and well educated employees are available in comparison with other developing countries according to UNDP (2008).

Further, the majority of banks in Jordan have a specialised unit in the headquarter in branches management, one of the main responsibilities of this unit is to plan the branches location, the benefits of banks in other developing countries regions depends on the availability of competencies required to achieve this (*see previous section*).

9-2-3-3 Account Transaction Time Strategy

Figure (6-8) shows that; the increase of the deposits market share affected the improvement of financial performance; this result is consistent with the previous studies as the study of Lavayssiere *et al.* (2008) and Venkatarum and Prescott (1990), the increase of more account market share increase deposits available, so more money available for further investments, so better returns in accordance.

The realised customer satisfaction affected the customer retention; this result is consistent with previous studies as study of Bloemer *et al.* (1998), Weinstein (2002) and Chen and Chang (2006), this relationship is logical. The change in customer satisfaction

and retention of the second range was better than the first, this is logical since the second range was wider than the first.

The change in operating revenue of the first range was better than the second, this is justified since the change in market share of the banks of the first range more than the second, however, the returns on assets and equity of the first range was lower than the second, this is related to more investing in e-networks for the communication between branches and between front and back offices, the operating of these networks requires more operating expenses as maintenance, so less returns in accordance.

Table (6-10) shows the maximum returns achieved by all patterns, it can be seen that; this pattern achieved the second ranked return on assets, and third ranked in return on equity, which indicates that this capability is one of the high successes capability in Jordan, also the customers in Jordan prioritise transaction speed as reported by previous studies as the study of Erol & El-Bdoar (1989) and Erol *et al.* (1990).

It can be seen that the reduction of transaction time was as a result of simplifying the transaction process, this is logical, adopting of WAN for communication between branches and between branches and headquarter, since the transfer of digital data is done faster so the actions finish during less time.

The process redesign or simplify the process requires as reported by Broadent and Butler (2007) professionals (consultant) in business process design, those consultants could be internal or external, accordingly, highly skilled and experienced people are required to run this process.

According to Jordan consultancy Association (2010), the number of registered consultation companies in Jordan is 150. There are also many individual consultants, and both provide business consultancy services. Moreover, installing WAN requires a

combination of technology infrastructure as; particular wires capable for data transfer, and server, further, specialised technicians in networks to install and maintain these technologies, Jordan is one of the leading countries in terms of technology diffusion as reported by UNDP (2007).

The number of IT specialists in Jordan reached 3,711 in 2007 and the number of IT consultation companies that provided IT solutions in Jordan increased to 110, (Information Technology Association 2007), so Jordan has the required competencies. Furthermore, the majority of banks in Jordan have a specialised unit in information technology with qualified technicians.

The customers in Middle East and North Africa prioritises the transaction speed as reported by Hegazy (1995) in Egypt, also in Kuwait and Saudi Arabia as reported by Metwally (1996), further, the customers in East Asia prioritises this as reported by Haron *et al.* (1994) in Malaysia, the same was for the customers in East Europe and Central Asia as reported by Kennington *et al.* (1996) in Poland and Kayrak *et al.* (1991) in Turkey.

Accordingly, the banks in developing countries should focus on the competencies required to redesign the transaction process, the consultancy services are well developed in all developing countries except Sub-Saharan Africa, further, the competencies required to adopt WAN are available in the majority of developing countries.

The countries of Asia as; India, Thailand, Malaysia, Philippines, and in other Latin America countries as; Brazil, Mexico, and Colombia produced a lot of small computers and micro-electronics, further, a lot of experiences are available in these countries as India (UN 2002), accordingly, the countries in all developing regions except Sub-Saharan Africa could reduce account transaction time.

9-2-3-4 New Credit Products Flexibility Strategy

Figure (6-9) shows that; the increase of loans market share affected the improvement of financial performance; this result is consistent with the previous studies as the study of Lavayssiere *et al.* (2008) and Venkatarum and Prescott (1990), the increase of the loan market share improved the financial performance, since more approved loans increased the interests were paid by customers so more returns available.

Both ranges of credit new products achieved very close change in market share, this as a result of narrower range of the first range (more than 3 and less than or equal 4 products), this range achieved better operating revenue in comparison with the second range as a result of more products offered, but achieved lower return on assets and equity as a result of more expenses paid to adopt data mining and evaluate competitors' products.

The realised customer satisfaction affected the customer retention; this result is consistent with previous studies as study of Bloemer *et al.* (1998), Weinstein (2002) and Chen and Chang (2006), this relationship is logical. The change in customer satisfaction and retention of the second range (more than or equal 1 and less than or equal 3 products) was better than the first, this is logical since the second range was wider than the first.

Table (6-10) shows the maximum financial returns of strategy patterns, it can be seen that the credit new product flexibility was the fourth in the returns achieved, which occupied the last rank of traditional banking patterns, this is logical, according to Lavayssiere *et al.* (2008), the bank products are more standardised, so the competition on products is less effective in comparison with other operational capabilities, further, the previous studies of customer priorities did not report priority of customers towards new products.

The adoption of this strategy requires good marketing competencies, so the bank should have professional marketing staff to analyse the customers' wants and needs, the majority of banks in Jordan have a professional unit in marketing, further, a lot of universities in Jordan provide high degrees in marketing, further, a lot of professional training provided by consultants in Jordan.

On the other hand, the success of this strategy requires adopting of data mining, Jordan as discussed earlier occupied a good competitive position in information technology competency, so a lot of banks adopted data mining during the period (1999–2008). The banks in all developing countries could benefit from this strategy except the Sub-Saharan Africa region, which had the least literacy rate, further IT infrastructure of these region is not well developed as discussed in the previous sections.

9-2-4 Patterns of Best Practice in Electronic Banking Operations Strategies

9-2-4-1 Internet Banking Transaction Time Strategy

Figure (6-10) shows that; the increase of the deposits market share affected the improvement of financial performance; this result is consistent with the previous studies as the study of Lavayssiere *et al.* (2008) and Venkatarum and Prescott (1990), the increase of more account market share increase deposits available, so more money available for further investments, so better returns in accordance.

The realised customer satisfaction affected the customer retention; this result is consistent with previous studies as study of Bloemer *et al.* (1998), Weinstein (2002) and Chen and Chang (2006), this relationship is logical. Table (6-10) shows the maximum financial returns, this strategy patterns achieved the fifth rank in return on assets and equity and the second in terms of operating revenue, the laggard rank in return on equity and assets which is logical since limited users of Internet banking.

The use of stand-alone applications server for Internet banking reduced the transaction time, since this reduced the load on the web server as discussed by Claessens *et al.* (2002). The success of banks in Jordan in adopting this strategy was a result of a leading position in IT infrastructures (*see* previous discussions).

Accordingly, the success of banks in other developing countries in adopting this strategy depends on the availability of IT competencies, no evidence available in the literature about the prioritising of customers in developing countries for the Internet banking transaction speed, the majority of studies reported security, usability, functionality.

The countries of Asia as; India, Thailand, Malaysia, Philippines, and in other Latin America countries as; Brazil, Mexico, and Colombia produced a lot of small computers and micro-electronics, further, a lot of experiences are available in these countries as India (UN 2002; Agrawal 2008), accordingly, the countries in all developing regions except Sub-Saharan Africa could reduce Internet banking transaction time.

9-2-4-2 Telephone Banking Volume Flexibility Strategy

The increase of volume flexibility improved financial performance since more transactions processed more money could be processed, which increased returns in accordance, the change in operating revenue was more than return on assets and equity as a result of investing in new operating system (PBX) and run more than one telephone line which increase operating revenues and reduce returns in accordance.

Table (6-10) shows the maximum returns achieved by patterns, it can be seen that this pattern was the last ranked in all financial indicators, this as a result of low adopting of e-banking by customers in Jordan, further, this returns of this pattern were

less than Internet banking as a result of more operating expenses to run telephone lines and maintain servers, and telephone operator system.

Increasing the number of telephone trunks lines that connected with public service telephone line will increase the probability of the customer to access the call centre as discussed by Sharp (2003), so more transactions could be processed. Expand the application server capacity of telephone banking reduced the transaction time, since the server was able to deal with more transactions, inform customers about peak time reduce transaction time since fewer customers occupy the telephone line during peak time.

The use of PBX system allows banks to adopt IVR (interactive voice response system), DNI (dialled number identification) which increased the number of transactions since the less time to route customer to most appropriate agent, so the productivity of the agents increased as discussed by Avaya (2005).

Jordan has higher diffusion of telephone line in comparison with other countries in the Middle East and North Africa Region as reported by UNDP (2007), the telephone service is widely available over all the country, further, Jordan has a leading position in IT as discussed earlier.

The banks in other developing countries regions could benefit from this strategy but this depends on the competencies available, the land line telephone service's diffusion in Middle East, South Asia and Sub-Saharan Africa is lower than the average in the developing countries, it was 106/10,000 people in Middle East, 51/10,000 in South Asia and 17/10,000 people in Sub-Saharan Africa, however, the land line telephone service's diffusion in Latin America and central and East Europe is more than average as reported by UNDP (2007).

However, accordingly to information technology competencies; all developing-country regions have good IT competencies as discussed earlier except sub-Saharan Africa. In accordance the regions that could benefit more than other regions are; Latin America and Caribbean and Central and East Europe.

9-2-5 Maximum Financial Returns of Best Practices Patterns of First Analysis Approach

The maximum financial returns were computed without take in consideration the growth of electronic banking or traditional banking during the study period, if the growth is known, the manager will have better insight about how much to invest in electronic or traditional banking.

9-3 Second Analysis Approach: Cluster Analysis

Previous studies of best practices in banking operations strategy as the study of Frei *et al.* (1998), Lavayssiere *et al.* (2008), Power and Hahn (2004) and Matters and Vargas (2000) used one analysis approach, which was close to competitive position analysis that discussed previously.

The use of cluster analysis in this study was for the purpose to deal with data using different logic, this analysis overcome the drawbacks in previous studies using change in operations actions, capabilities and performance over an extended period of time (1999–2008), the discussion focused on the patterns of best practices.

9-3-1 Patterns of Best Practices in Traditional Banking Operations Strategy

9-3-1-1 Account Customer Waiting Time Strategy

Figure (7-2) shows the account customer waiting time strategy, it can be seen that; the reduction in account customer waiting time affected the account customer satisfaction

and retention, which indicates that the customers in Jordan prioritise this capability, the customers in Jordan prioritise reducing waiting time, according to previous studies as the study of Erol & El-Bdoar (1989) and Erol *et al.* (1990) the customers in Jordan prioritise transaction speed.

Retain more customers increased the operating revenue and return on assets, this is logical, since retain more customers reduce other expenses as promotion, further, the retained customers could attract new customers through positive word of mouth, however, increase operating revenue increased return on assets and this relation is logical since more revenue available more net income and more returns in accordance.

Table (7-17) shows the maximum financial returns achieved by operations strategy patterns reported by the second analysis approach, reducing account customer waiting time achieved the best operating revenue/total revenue, this indicates that the customers in Jordan are more sensitive to reducing waiting time, but this pattern was third ranked in return on assets, this is logical since reducing customers waiting time required add more teller stations which required more operating and capital expenses.

The reduction of customer waiting time as required more stations to serve more customers, the increase in the number of teller stations let increase the number of customers served, so less waiting time in accordance, add more stations require more financial resources since more spending on IT infra-structure,

Further, requires more employees to run these stations, so more qualified candidates should be available in the labour market, further, the human resource unit should be able to select the capable employees and let them available in the right time. As discussed earlier Jordan has a leading position in IT infrastructure and competencies, further, Jordan has a leading position in literacy so the required competencies are

available, so the benefits of other developing countries from this strategy depends in the availability of the previous competencies.

The countries of Asia as; India, Thailand, Malaysia, Philippines, and in other Latin America countries as; Brazil, Mexico, and Colombia produced a lot of small computers and micro-electronics, further, a lot of experiences are available in these countries as India (UN 2002; Agrawal 2008), accordingly, the countries in all developing regions except Sub-Saharan Africa could reduce Internet banking transaction time.

However, the education index of East Asia, Central and East Europe and Latin America and Caribbean is more than the average in developing countries, it was 0.84, 0.84, 0.94 respectively, but the South Asia and Sub-Saharan Africa Middle East and South Asia had lower than the average, it was 0.57, 0.69, and 0.60 respectively as reported by UNDP (2007), accordingly, the regions that could benefit more than others from this pattern are; East Asia, Central and East Europe, and Latin America and Caribbean.

9-3-1-2 Branches Sites Accessibility Strategy

Figure (7-3) shows the branch site accessibility strategy pattern, it can be seen that; loans and deposits market share affected return on equity, this relation is logical since increase loans and deposits the bank acquired increased the interest paid by credit customers, and cash available from deposits to borrow credit customers, or for further investments.

Further, it can be seen that; the account customer retention affected operating revenue, return on assets and return on equity, since more account customers kept by bank the more cash available for further investments whether for borrowing credit customers, and for further investments.

The realised customer satisfaction affected the customer retention; this result is consistent with previous studies as study of Bloemer *et al.* (1998), Weinstein (2002) and Chen and Chang (2006), this relationship is logical.

It can be seen that; covering percentages of more sites (shopping, malls, business, and hospitals), increased the operating revenue significantly better than covering more percentages of two sites (shopping and business sites) and one site percentage (shopping), this relation is logical since more retained customers.

However, covering more sites not led to best change in return on assets and equity, since the profitability ratios as return on assets and equity are affected by other non-core operating factors as discussed by Hallowell (1996).

The direction of the banks towards opening more branches in malls, universities, industrial zones, and business areas is logical, during the last five years, the number of malls in Jordan increased significantly, from 3 malls at the beginning of 2000 to reach 25 malls at the end of 2008, further the number of industrial zones increased by 2 during last years (JIEC 2010), so opening more branches in these sites is logical.

According to Boufaounou (1995), the branches location decision should be according to professional and commercial character of population, so locating branches in the previous sites is logical since the majority of people in Jordan prefer to use cash rather than cards, and in all previous sites the cash is required.

Expanding the branches network as discussed earlier requires hiring more employees, enough financial resources, and professional team to plan the branch locations, in Jordan a lot of qualified and well educated employees are available in comparison with other developing countries according to UNDP (2007).

Further, the majority of banks in Jordan have a specialised unit in the headquarter in branches management, one of the main responsibilities of this unit is to plan the branches location, the benefits of banks in other developing countries regions depends on the availability of competencies required to achieve this (*see* section (9-2-3-1)).

9-3-1-3 Transaction Cost Strategy

Figure (7-5) shows the transaction cost strategy pattern, it can be seen that; the reduction of account transaction cost affected return on assets, and this logically since less cost increase the income available so more returns available, no best change in return on equity, this could be related to non-operations factors, since the profitability indices are affected by non-operational factors as discussed by Hallowell (1996).

The figure shows that, the reduction of loan approval costs affected return on equity, this is logical as discussed earlier, since more income available and more returns available in accordance, no best change in return on assets, this could related to non-operations factors as discussed earlier.

Table (7-17) shows the maximum returns of strategy patterns, account transaction cost strategy achieved the first rank in return on assets, however, the loan approval costs strategy was third ranked in return on equity, this is logical since the number of account transactions is significantly more than loans, so more returns achieved by account operations, on the other hand, the first rank in return on assets was achieved by account operations is logical since the reduction of account transaction cost affect the financial performance directly.

The reduction of account transaction cost was as a result of using more ATMs, the use of different routes in the branches as ATMs will reduce the transaction cost since the number of employees will reduce as discussed by Morisi (1996), however, the

loans approval cost was reduced as a result of using online shared system, shared system reduced transaction cost as a result of reducing the paper cost as reported by Monahan (1998) and Kaushal (2007).

The success of reducing account transaction cost depends on the availability of financial resources to install more ATMs, also good diffusion of telephone line service, Jordan as disused earlier has leading position in Middle East and North Africa in telephone land line diffusion as reported by UNDP (2008). The success of reducing loan approval costs depends on the availability of financial resources to install this system, further, IT technical to install and program the system, as discussed earlier Jordan has a leading position in IT.

On the other hand, the data about the transaction cost in developing countries is limited, the transaction cost in India was USD 1.11 as reported by Sachan and Ali (2006), but no data about the loans approval cost in developing countries, so the adoption of this strategy by developing countries depends on the availability of the competencies.

The countries of Asia as; India, Thailand, Malaysia, Philippines, and in other Latin America countries as; Brazil, Mexico, and Colombia produced a lot of small computers and micro-electronics, further, a lot of experiences are available in these countries as India (UN 2002; Agwaral 2008), accordingly, the countries in all developing regions except Sub-Saharan Africa could reduce loan approval cost.

The land line telephone service's diffusion in Middle East, South Asia and Sub-Saharan Africa is lower than the average in the developing countries, it was 106/10,000 people in Middle East, 51/10,000 in South Asia and 17/10,000 people in Sub-Saharan Africa, however, the land line telephone service's diffusion in Latin America and central and East Europe is more than average as reported by UNDP (2007), accordingly,

the banks in East and Central Europe and Latin America could benefit from the account transaction cost more than other regions.

9-3-1-4 Branches Layout Quality Strategy

Figure (7-6) shows the branches layout quality strategy, it can be seen that; the improvement in the branches layout quality affected the market share of deposits and loans, and customer satisfaction, this is logical since the customers of banks interact directly with the service escape, so their impressions about the service escape will impact new customers and impact the existing customer satisfaction and retention.

It can be seen that, the change in the deposits market share was significantly more than loans market share, since the account customers interact more frequently with branches in comparison with credit customers, also, they use more branch facilities. The change in market share affected return on equity, however, the change in return of equity as a result of change in account market share was more than the change in return on equity as a result of change in loans market share, since the change in the deposits market share was more than the loans market share.

Table (7-17) shows the maximum returns of strategy patterns, branches layout quality strategy achieved the second rank in return on equity, which indicate that the improvement in this capability has a reasonable impact on performance, but no change was reported in return on assets, this could be as a result of impact non-operating data on return on assets as discussed by Hallowell (1996), also, no significant change was achieved in operating revenue, this could be as a result of capital investment in branches layout.

It can be seen also, the factors that improved layout quality were; add parking, isolating branches, and add planets and pictures, parking is very important since the majority of banks branches in Jordan located in shopping sites, these sites are too

crowd, so it is not easy to find a park, the banks isolated branches since the majority of branches located in shopping areas which are too crowd, so isolating branches is a priority.

The improvement of branches layout requires financial resources, and professional people in planning layout, the majority of banks in Jordan have a professional unit in branches management which is responsible about managing branches layout.

Accordingly, the other developing countries could benefit from this strategy pattern if they have the required competencies, no data available about branches layout quality in developing countries, further, no reported customer priorities of branches layout quality.

9-3-2 Patterns of Best Practice in Electronic Banking Operations Strategy

9-3-2-1 ATM Suburban Accessibility and ATM Sites Accessibility Strategy

Figure (7-7) shows ATM suburban accessibility strategy; however, Figure (7-8) shows ATM sites accessibility strategy, it can be seen that the customer retention affected the return on assets and operating revenue, this is logical, since more ATMs available in different sites and in suburban allowed customers to have cash easily when it is required, so customers were more satisfied and keep their accounts, and more returns were generated since more deposits were kept by banks.

Table (7-17) shows the maximum return achieved by the patterns on the second analysis approach, it can be seen that; both strategies of ATMs were last ranked in terms of return on assets, as a result of limited users of e-banking channels in Jordan.

The direction towards add more ATM in new sites as the majority of competing banks have ATM on the branch walls in shopping sites only, so expanding the sites

accessibility is an advantage, further, add more ATMs in suburban is logical, since the majority of competing banks have ATM in urban areas, and 26% of people in Jordan live in suburban area as reported by Department of Statistics (2009).

The direction of banks to add more ATMs in universities is logical since the number of universities increased during the period (1999–2005) by 8 universities (Ministry of High Education 2006), also, add more ATMs in hospitals was as a result of increase number of hospitals, the number of hospitals increased by 16 during the period (2000-2006) (Ministry of Health 2006), also add more ATMs in hotels was as a result of increased number of hotels during the period (1999-2006) by 16 hotels (Ministry of Tourism 2006).

Expand ATMs accessibility in different sites requires using different ATM models, since each model is appropriate to particular site as discussed by Kitten *et al.* (2007a), so the bank should have enough financial resources to purchase these models, further, it should have expert people to plan the locations since this decision is costly, moreover, expanding the accessibility requires the availability of telephone service especially for off-premises ATMs.

Jordan has higher diffusion of telephone line in comparison with other countries in the Middle East and North Africa Region as reported by UNDP (2008), the telephone service is widely available over all the country; moreover, the locations of ATMs are planned by a professional team in the branches management unit.

On the other hand, the banks in Middle East region and South Asia have the lower than the average ATM accessibility per 10,000 people, the accessibility of ATM in Middle East is 6.58, but in South Asia it is 1.09 (UNDP 2007), also the customers in these regions prioritise ATM accessibility as the customers in Kuwait as reported by El-Haddad and Almahameed (1992), further, in some countries as South Africa the

customers have the problem of inconvenient location of ATMs as reported by Roger *et al.* (1996) and Thatcher *et al.* (2005).

The land line telephone service's diffusion in Middle East, South Asia and Sub-Saharan Africa is lower than the average in the developing countries, it was 106/10,000 people in Middle East, 51/10,000 in South Asia and 17/10,000 people in Sub-Saharan Africa, however, the land line telephone service's diffusion in Latin America and central and East Europe is more than average as reported by UNDP (2007).

Accordingly, the reason behind the lower accessibility of ATMs in Middle East, South Asia, and inappropriate location of ATMs in South Africa was the low diffusion of landline service in these regions in comparison with other developing countries regions, accordingly, the banks in these regions could benefit from this strategy using wireless ATMs technology, as the banks can acquire this technology and operate it. However, the banks in East and Central Europe and Latin America and Caribbean can benefit from this strategy as the diffusion of land line service is more than the average of other developing countries.

9-3-3 Maximum Financial Returns of Best-practices Patterns of Second Analysis Approach

The maximum financial returns were computed without take in consideration the growth of electronic banking or traditional banking during the study period, if the growth is known, the manager will have better insight about how much to invest in electronic or traditional banking.

Chapter 10

Conclusions, Applications and Future Research

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10-1 Conclusions

10-1-1 Conclusions of First Analysis Approach's Best-practices Patterns

According to results of competitive position analysis four best practices of traditional banking operations strategy were adopted by banks in Jordan during the period (1999–2008), these practices were; branches urban accessibility strategy, branches sites accessibility strategy, account transaction time strategy, and credit new products strategy, so the general pattern of best practices of traditional banking in Jordan was differentiation.

Two best practices of electronic banking operations strategy were adopted by banks in Jordan during the period (1999–2008); these practices were Internet banking transaction time strategy and telephone banking volume flexibility strategy, so the general pattern of best practices of electronic banking in Jordan was differentiation.

Branches Urban Accessibility Strategy

- Branches urban accessibility strategy affected account and credit operations.
Two significant ranges of branches urban accessibility strategy were adopted, the first one was ($0.59/10,000 \text{ people} \leq \text{accessibility} \leq 1$), but the second range was ($1 < \text{accessibility} \leq 2.76$) each range achieved different ranges of performance.
- The better range of branches urban accessibility led to better operating revenue, as a result of attracting more credit customers, but the lower range of branches urban accessibility led to better return on equity and assets, since less branches accessibility reduced the operating expenses so more income and better returns in accordance.
- The account market share for both ranges of branches urban accessibility was very close.

- The better the branches urban accessibility the better the loans market share, which indicates that the market share of loans is more sensitive to increase of branches urban accessibility than account market share, since the loans transactions are mainly processed in the branches but the account transactions could be processed by e-banking channels.
- Opening more branches in urban areas in Jordan is justified, since 67% of people in Jordan live in urban areas.
- This pattern was first ranked in terms of maximum financial returns in comparison with other patterns.

Branches Sites Accessibility Strategy (number of branches sites)

- Number of branches sites strategy affected account and credit operations. Two significant options of branches site accessibility strategy were adopted; the first option was open branches in malls and universities and the second open branches in industrial zones and business sites.
- Opening branches in malls and universities increased the deposits and loans market share more than opening branches in the industrial zones and business areas, since the majority of the customers in malls and universities sites are retail customers.
- Opening branches in malls and universities increased operating revenue of account and credit operations, and returns on equity of account operations more than opening branches in the industrial zones and business areas, since the increase of market share of banks opened branches in malls and universities was better.
- Open branches in industrial zones and business areas achieved significantly better return on assets of account operations better than open branches in malls

and universities, since the deposits amount of customers in industrial zones and business areas are more than customers in malls and universities.

- Open branches in malls, and universities, or in industrial zones and business areas led to close change in return on assets and equity of credit operations.
- Opening more branches in previous sites is logical since the number of malls, universities, business sites and industrial zones increased significantly in Jordan.

Account Transaction Time Strategy

- Two significant ranges of account transaction time were adopted by banks in Jordan, the first range was reduce transaction time by less than 3.35 minutes and more than or equal 2.60 minutes per transaction on average, the second range was reduce transaction time by less than 4.32 minutes and more than or equal 3.92 minutes per transaction on average.
- The change in operating revenue of the first range was better than the second, and this is justified since the change in market share of the banks of the first range more than the second.
- The reduction of transaction time was as a result of simplifying the transaction process, this is logical, adopting of WAN for communication between branches and between branches and headquarter, since the transfer of digital data is done faster so the actions finish during less time.
- The more investing in e-networks for communication between branches and between front and back office to reduce the account transaction time, the less returns on assets and equity, since the operating of these networks requires more operating expenses as maintenance, so less returns in accordance.

New Credit Products Flexibility Strategy

- Two significant ranges of new credit products were adopted by banks in Jordan, the first range was more than 3 new product and less than or equal 4 new products, the second range was more than or equal 1 products and less than or equal 3 products.
- The adoption of data mining and evaluate the competitors' products let the bank able to add more new credit products, as a result of better tracing of customers' wants.
- The more new credit products offered within the first range the better the operating revenue.
- The more new credit products offered within the second range, the better return on assets and equity as a result of fewer expenses paid to adopt data mining and evaluate competitors' products.
- The wider the range of new credit products offered the better the customer satisfaction and retention.
- The new credit product flexibility was ranked the fourth in terms of maximum financial returns achieved, which occupied the last rank of traditional banking patterns, this is logical, since the bank products are more standardised, so the competition on products is less effective in comparison with other operational capabilities.

Internet Banking Transaction Time Strategy

- One significant range of reducing Internet banking transaction time was adopted by banks in Jordan, it was reduce transaction time by more than or equal 63 seconds, and less than or equal 84 seconds.

- The reduction in Internet banking transaction time increased the deposit market share, and improved the deposit customer satisfaction and retention.
- The increase in deposits market share increased return on assets, return on equity and operating revenue.
- The use of stand-alone applications server for Internet banking reduced the transaction time; since this reduced the load on the web server.
- This strategy patterns achieved the fifth rank in terms of maximum return on assets and equity in comparison with other strategy patterns, the laggard rank in return on equity and assets is logical since limited users of Internet banking.

Telephone Banking Volume Flexibility Strategy

- One significant range of telephone banking volume flexibility range was adopted by banks in Jordan, this range was increase the number of transactions processed by more than or equal 200 transactions per day, and less than or equal 384 transactions per day.
- The increase of volume flexibility was as a result of increase number of telephone trunk lines, expand the telephone banking server capacity, inform customers about peak working time of call centre and using PBX telephone operator system.
- Increasing the number of telephone trunks lines that connected with public service telephone line will increase the probability of the customer to access the call centre, so more transactions could be processed.
- Expand the application server capacity of telephone banking reduced the transaction time, since the server was able to deal with more transactions.
- Inform customers about peak time reduce transaction time since fewer customers occupy the telephone line during peak time.

- The use of PBX system allows banks to adopt IVR (interactive voice response system), DNI (dialled number identification) which increased the number of transactions since the less time to route customer to most appropriate agent, so the productivity of the agents increased.
- The increase of telephone banking volume flexibility increased the financial returns in terms of return on assets, return on equity and operating revenue.
- The increase in operating revenue was more than return on assets and equity, this was as a result of investing in new operating system (PBX) and run more than one telephone line which increase operating revenues, and reduce returns in accordance.

10-1-2 Conclusions of Second Analysis Approach's Best-practices Patterns

According to results of the cluster analysis approach, five best practices of traditional banking operations strategy were adopted by banks in Jordan during the period (1999–2008), these practices were; account customer waiting time, branches sites accessibility strategy (percentage of sites covered), account transaction cost strategy, credit approval cost strategy, and branches layout quality, so the general pattern of best practices of traditional banking in Jordan was hybrid of differentiation and cost.

Two best practices of electronic banking operations strategy were adopted by banks in Jordan during the period (1999–2008), these practices were; ATM suburban accessibility strategy and ATM site accessibility, so the general pattern of best practices of electronic banking in Jordan was differentiation.

Account Customer Waiting Time Strategy

- One significant range of account customer waiting time was adopted by banks in Jordan, this range was more than or equal 0.48 minutes, and less than or equal 12 minutes.
- The reduction of waiting time was as a result of adding more teller stations, the increase in the number of teller stations increase the number of customers served, so less waiting time in accordance.
- The reduction in account customer waiting time affected the account customer retention, retain more customers increased the operating revenue and return on assets.
- Reducing account customer waiting time achieved the first rank in maximum operating revenue/total revenue in comparison with other patterns, but third ranked in terms of return on assets.

Branches Sites Accessibility Strategy (Percentage of Sites Covered)

- Three significant options of percentage of branch sites covered were adopted by banks in Jordan, the first was covering more percentage of shopping sites only, the second was cover more percentage of shopping and business sites and the third was covering more percentage of shopping sites, business sites, malls sites and hospitals sites.
- The direction towards opening branches in the previous sites is logical, since the number of shopping sites, business sites, malls sites and hospitals sites increased significantly in Jordan.
- Covering more sites (shopping, malls, business, and hospitals), increased the operating revenue significantly better than covering more percentages of two

sites (shopping and business sites) and one site percentage (shopping), this relation is logical since more retained customers.

- Concentrating more branches in shopping site led to better the financial return in terms of return on equity and assets.

Transaction Cost Strategy

- This strategy was adopted by account and credit operations.
- One significant range was adopted; the range of account operations was reducing transaction cost by more than JD. 0.2 and less than or equal JD. 0.4, however, the range of credit approval cost was reducing the cost by more than or equal JD. 2.5 and less than or equal JD. 17.5.
- The reduction of account transaction cost increased return on assets, but reduction of loan approval costs increased return on equity, this relation is logical since reducing the cost increased the net income and more returns in accordance.
- The reduction of account transaction cost was as a result of using more ATMs, the use of different routes in the branches as ATMs will reduce the transaction cost since the number of employees will reduce.
- The reduction of loans approval cost as a result of using online shared system, shared system reduced transaction cost as a result of reducing the paper cost.

Branches Layout Quality Strategy

- This strategy affected account and credit operations.
- One significant range was adopted by banks in Jordan, this was improve quality by more than or equal 20% and less than or equal 41%.

- The improvement in the branches layout quality affected the market share of deposits and loans, and customer satisfaction.
- The change in the deposits market share was significantly more than loans market share, since the account customers interact more frequently with branches in comparison with credit customers; also, they use more branch facilities.
- The change in return of equity as a result of change in account market share was more than the change in return on equity as a result of change in loans market share, since the change in the deposits market share was more than the loans market share.
- The change in return of equity as a result of change in account market share was more than the change in return on equity as a result of change in loans market share, since the change in the deposits market share was more than the loans market share.

ATM Suburban Accessibility and Sites Accessibility Strategy

- One significant range of ATM Suburban accessibility strategy was adopted by banks in Jordan, this range was more than or equal 4 ATM/10,000 people and less than or equal 7 ATMs/10,000 people.
- One significant option of ATMs site accessibility strategy was adopted by banks in Jordan, this option was add ATMs in business sites, universities, hotels and hospitals.
- Add more ATMs in suburban is logical, since the majority of competing banks have ATM in urban areas, so suburban areas are less covered by ATM service despite 26% of people in Jordan live in suburban area.

- Add more ATMs in different sites is reasonable since the majority of banks have ATMs in shopping areas, so covering other sites is competitive advantage, further, the number of business sites, universities, hotels and hospitals increased significantly in Jordan.
- Increased ATM suburban accessibility, and increase ATM site accessibility improved account customer satisfaction and retention.
- Increased account customer satisfaction and retention increased operating revenue and return on assets.

10-2 Academic Applications

The academic applications could be classified to methodological and conceptual.

10-2-1 Methodological Applications

This study tried to overcome the methodological drawbacks of the previous studies that reported the best banking operations strategy practices, these drawbacks were; limited performance indicators used to identify the competitive positions and measure performance, ambiguous methodology in defining the competitive positions, snap shot investigation, limited respondents viewpoints, reporting each case in isolation of others, the focus on the leaders' practices, adopting one analysis approach, and not developed practical prediction's models.

Proposed Methodology to Identify Competitive Positions

The first limitation was overcome by identifying the widely used performance indicators in banking sector, these indicators were identified through revising the previous studies, then, the measures of these indicators were identified too, the competitive position was identified by following three steps methodology; started by

measuring the relative performance, plotting the banks relative performance and then classify the banks to leaders, followers and laggards (*see* section (6-4-1) Chapter 6).

Proposed Time Series Methodology

The second limitation was overcome by adopting time series study methodology, the study period was classified to four time intervals that defined according to mid-term strategy periods, the time intervals were identified after revising the annual reports (*see* section (4-3-3-1) Chapter 4).

Proposed Multi-respondent Viewpoints

The third drawback was overcome using multi-respondents viewpoints, accordingly, the respondents were classified to managers and non-managers, the managers were asked about actions made to achieve particular capabilities, however, non-managers were asked to evaluate the competencies mainly, accordingly, different questionnaires were used to collect the data that could be used by other researchers (*see* Table (4-1) and (4-2) Chapter 4).

Propose a Methodology to Identify Best Practices across Banks

The fourth limitation was overcome by classifying the banks to three groups; leaders, followers and laggards, then leaders were compared with followers and laggard, however, followers were compared with laggard group, the comparison covered the performance, capabilities and actions (*see* section (6-4-2) Chapter 6).

Also, the fourth limitation was overcome using cluster analysis technique; the banks were clustered according to percentage of change in operations competitive capabilities, then, each cluster in each clustering trial compared with the remaining to

identify the clusters that best adopted operational capabilities (*see* Chapter 7 Step 1 to 5).

Two Proposed Approaches to Analysis

The fifth limitation was overcome by adopting two methods of analysis; these two approaches analyse the best practice from two viewpoints that complete each other using the same data, the study of best practices could be by reporting the practices that improve the competitive position, this was achieved in the first analysis approach (competitive position analysis), or reporting the practices that impact the best positive change in performance during a period of time, this was achieved in the second analysis approach (cluster analysis).

Proposed Methodology to Develop Practical Prediction Models

Four logical steps methodology was used to construct the prediction models (*see* section (6-4-2) Chapter 6):

- 1- Map the relationships between actions, capabilities and performance indicators, for this purpose the conceptual models developed in Chapter 5 were revised.
- 2- The impact of each unit of operational capabilities on performance indicators and the actions required to achieve one unit of each capability were computed.
- 3- The ranges of best-practice operational capabilities (minimum and maximum) were identified.
- 4- Develop DSS for prediction models using Microsoft Excel Worksheets Application to facilitate making prediction by decision-makers and researcher alike (*see* Chapter 8).

10-2-2 Conceptual Applications

Developed Proposed Typologies of Banking Operations Strategy

Typologies of traditional and electronic banking operations strategy were developed in Chapter 5; these typologies identified the relationship between actions, capabilities and performance, these frameworks could help the researchers in future who are interested in banking operations strategy.

Developed Practical Prediction Models (Best-practices Patterns)

Twelve practical prediction models could be used by the researcher to predict the impact of operations change in operational capabilities in performance indicators, and the actions required to achieve the capabilities, so they can have better understanding of the behaviour of significant operational capabilities and actions in developing economies.

The researcher can use DSS that developed in this thesis, to see the impact of change in capabilities on performance and actions, so they can generate some propositions about the best practices of traditional and electronic banking operations strategies to conduct researches in other developing-country contexts and develop base theory in accordance.

10-3 Practical Applications

In this section different applications were recommended for banks in Jordan and developing economies, these applications were developed according to the analysis results and the discussion. The applications for banks in developing economies were recommended for each region.

10-3-1 Applications for Banks in Jordan

- The adoption of particular best-practice pattern depends on the competencies the bank have, and the existing strategy it has, for example; if the bank has a wide branches and ATM accessibility and has excess financial resources; the banks can benefit from all remaining strategy patterns.
- On the other hand, if the bank has enough financial resources, also, its branches and ATMs accessibility is limited, the banks can benefit from all strategy patterns.
- On the other hand, if the bank has limited financial resources, these banks could invest in introducing more credit products, or other e-banking strategies except ATM.
- However, if the bank has high branches in urban areas, but limited branches site accessibility, competitive ATM suburban accessibility, and enough financial resources, the bank could open more branches in different sites, reduce transaction time or customer waiting time, reduce transaction time, improve branch layout quality, reduce Internet banking transaction time, increase telephone banking volume flexibility, and add ATMs in different sites.

10-3-2 Applications for Banks in Central Europe and Latin America

The banks in these regions as discussed in the previous chapter have large branches and ATM accessibility which is more than the average in developing countries, so it is more recommended for banks in these regions to focus on other strategy patterns rather than accessibility.

Reduce Account Transaction Time and Customer Waiting Time

No data available about bank transaction time and customer waiting time in Central Europe and Latin America in the literature, but the previous studies reported that; the

customers in these regions prioritise the transaction time and waiting time, further, the competencies required to reduce transaction time as; IT infrastructure and consultancy service are available in these regions, further, the competencies required to reduce customer waiting time are available in these regions as educated people and financial resources.

Offer New Credit Products

No data available about new credit products in Central and East Europe and Latin America in literature, however, these regions are leaders in IT infrastructure and education index is more than average in developing countries, so the banks in these regions can adopt new credit products.

Reduce Internet Banking Transaction Time

No data available about Internet banking transaction time in Central and East Europe and Latin America in literature, however, these regions are leaders in IT infrastructure, so the banks in these regions can adopt Internet banking transaction time strategy.

Expand Telephone Banking Volume and Flexibility

No data available about telephone banking volume flexibility in Central and East Europe and Latin America in literature, however, these regions are leaders in IT infrastructure, have a diffusion of telephone line more than average of developing countries, so the banks in these regions can adopt telephone banking volume flexibility strategy.

Reduce Transaction Costs

No data available about account transaction costs and loans approval costs in Central and East Europe and Latin America in literature, however, these regions are leaders in

IT infrastructure, have a diffusion of telephone line more than average of developing countries, so the banks in these regions can adopt transaction cost strategy.

Improve Quality of Branch Layout

No data available about branches layout quality in Central and East Europe and Latin America in literature, however, the banks in these regions have more than the average financial returns in developing countries, so the banks in these regions can adopt branches layout quality strategy.

10-3-3 Applications for Banks in Middle East and North Africa

The banks in this region as discussed in the previous chapter have large branches accessibility, which is more than the average in developing countries, so it is more recommended for banks in these regions to focus on other capabilities rather than accessibility, further, the banks in these regions had lower than the average ATM accessibility in developing countries, since the diffusion of telephone line in this region is lower than the average in developing countries.

Accordingly, it is recommended for the banks in this region to adopt the same strategies recommended for banks in Central and East Europe and Latin America, but the banks in this region should focus on expand ATM accessibility, so it is recommended to high expand ATMs site accessibility using wireless ATMs.

10-3-4 Applications for Banks in East Asia and South Asia

Expand Branches Accessibility

The banks in East and South Asia have lower branches accessibility in comparison with other developing countries regions, despite the customers in this region prioritise the accessibility, the reason behind lower accessibility was lower financial resources in

comparison with average returns in developing countries, however, East Asia region has educated people more than average in developing countries.

The education index in South Asia region is less than the average in developing countries, accordingly so in order to increase the accessibility the banks in both regions can overcome the low financial resources barrier by expanding of other investment. However, the banks in South Asia can overcome the low education index through invest more in training.

Reduce Account Transaction Time and Account Customer Waiting Time

No data about banks' account transaction time and customer waiting time in East and South Asia available in the literature, but the customers in these regions as reported in previous studies prioritise the transaction time; these regions are leaders in IT infrastructure, so the banks in these regions could adopt account transaction time strategy.

Offer New Credit Products

No data available about new credit products in East and South Asia in literature, however, these regions are leaders in IT infrastructure and education index of East Asia is more than average in developing countries, so the banks in these regions can adopt new credit products.

Reduce Internet Banking Transaction Time

No data available about Internet banking transaction time in East and South Asia in literature, however, these regions are leaders in IT infrastructure, so the banks in these regions can adopt Internet banking transaction time strategy.

Expand ATM Accessibility

South Asia region's banks have lower than the average ATM accessibility per 10,000 people in developing countries, the reason behind lower accessibility was lower than the average telephone line diffusion in developing countries, however, the banks in this region can benefit from ATM suburban accessibility, and branch site accessibility strategy through using wireless ATMs.

10-3-5 Applications for Banks in Sub-Saharan Africa

Expand Branch Accessibility

The banks in Sub-Saharan Africa have lower branches accessibility in comparison with other developing countries regions, despite the customers in this region prioritise the accessibility, the reason behind lower accessibility lower education index than the average of developing countries, so to benefit from the branches urban accessibility strategies, the banks in this region should invest more in training, or the foreign banks could recruit employees from their home country.

Expand ATM Accessibility

Sub-Saharan Africa region's banks have lower than the average ATM accessibility per 10,000 people in developing countries, in some countries as South Africa the customers have the problem of inconvenient location of ATMs, the reason behind lower accessibility was lower than the average telephone line diffusion in developing countries, however, the banks in this region can benefit from ATM suburban accessibility, and branch site accessibility strategy through using wireless ATMs.

10-4 Future Research

The prediction models developed reflect the practices in Jordan which were reported for a small sample size, so the prediction models developed in this research project are still indicative models. Their validity could be examined by conducting further researches in other developing countries that have larger sample size to have more valid reported best practices, so high level statistical approaches as regression analysis could be used in combination with the methodology developed in this research project to have more accurate prediction models, the result of regression (b-value) could be used to predict the impact of independent on dependent by multiplying this value by the actual performance achieved.

Jordan is one of the average developing countries in its economic characteristics, human development index, and IT development which is far away from extreme countries as least developing countries, and distinguished from in transition countries, so the bank practices in Jordan could be a guide for the majority of developing countries' banks, but the reported best practices in developing countries could be more valid if cross countries or regions were surveyed, so the practices in each country could be identified, then the best practices could be ranked according to number of countries that share these practices. Next these shared practices between regions could be used in the next research stage to construct a cross regions or countries prediction model.

Or the countries that have close practices will be grouped together, then, the prediction models (strategy patterns) of each countries group will be developed. Or the countries could be represented as clusters with similar characteristics related to banking infrastructure, then, the shared best practices between countries in the same cluster could be identified.

As a result of small number of banks surveyed in this research project it was impossible to investigated the impact of banks' characteristics on the adopted best practices, so in future some organizational characteristics as banks' size, age, culture characteristics, ownership (private domestic, private foreign, public owned)...etc. could be examined to identify the effective context for best practices.

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Appendix

Data Collection Instruments

Traditional Banking Questionnaires.....	-385-
Questionnaire (T1 (a)).....	- 385 -
Questionnaire (T1 (b)).....	- 399 -
Questionnaire (T2 (a)).....	- 413 -
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Questionnaire (T3)	- 431 -
Questionnaire (T4)	- 436 -
Electronic Banking Questionnaires.....	-444-
Questionnaire (E1)	- 444 -
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Questionnaire (E3).....	-471-
Questionnaire (E4).....	-474 -
Questionnaire (E6)	- 481 -
Questionnaire (E7)	- 492 -

Questionnaire (T1 (a))



Dear Sir or Madam, The Manager of personal account operations.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project. If you would like a copy of the research projects to thank you for your cooperation; I can provide you with a detailed report about your bank and a summary of the research conclusions. I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

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Questionnaire #: T1A

Bank Code:..... (for the researcher use).

This questionnaire is concerned with identifying the performance indicators of retail banking account operations and the actions taken to improve performance. This questionnaire is divided to twelve sections and each section is divided to sub-sections. Each section is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 15-20 minutes.

Please keep in your mind the following definitions:

Traditional Banking: the banking services provided via banks' branches.

Electronic banking: the banking services provided via ATM, website, mobile phone, and call centers.

First sections: personal account transactions' time

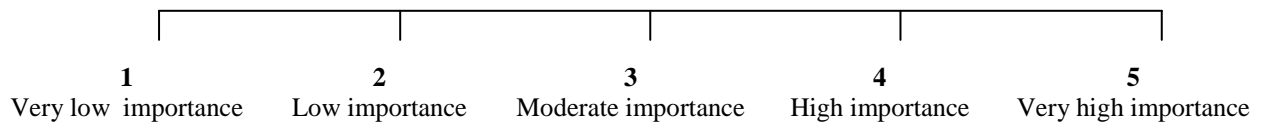
1-1 Did your bank concern about reducing the duration of personal account transaction time during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 1-7

If you answered yes to the above question, please indicate for each period below and each account transactions the importance of the duration of transaction time. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



Banking Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Opening accounts (e.g. current, saving, investment).				
Withdrawing and depositing.				
Fund transfer (internal, external).				
Account enquiry (statement or balance).				

1-2 Please put in the box of each period the average transaction time that your bank planned to achieve.

Banking Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Opening accounts (e.g. current, saving, investment).				
Withdrawing and depositing.				
Fund transfer (internal, external).				
Account enquiry (statement or balance).				

1-3 Please identify the average percentage of customers who were served within the planned time.

1999-2000	2001-2003	2004-2006	2007-2008

1-4 Please identify which of the following actions were taken by your bank to reduce the average transactions time. Please put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Process redesign of personal account transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve the information and communication technology of personal account process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-5 If the process had been redesigned, please identify which if the following actions were taken. Please put the sign (X) if the change was adopted. If not go to 1-6.

	1999-2000	2001-2003	2004-2006	2007-2008
Allow the customer conduct some account transactions' actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to the back account office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train tellers to replace the back office account employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train back office account employees to replace the tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link branches to a shared centralized back office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the communication with back account office to formal forms only.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow the tellers to make decisions (e.g. change interest or adjust entry).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Assign back-office tasks to specialized employees

Reduce the number of account transactions' process steps.

1-6 If the information and communication technology of personal account process was improved, please identify which if the following technologies had been adopted. Please put the sign (X) if the technology was adopted. If not go to second section.

	1999-2000	2001-2003	2004-2006	2007-2008
Increase the number of account transactions processed via computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the account transactions take place in each branch and send consolidated reports to regional/head office at the end of each day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the account actions take place online in a shared system between numerous branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link sub-branches with main branches online	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link branches together online.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link tellers with back offices online.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install faster communication transmission technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change tellers' terminals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install new operating software on tellers' system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand the current account servers capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use excess capacity of account information system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install new account information system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-7 Please put in the box of each period the average transaction time in your bank.

Banking Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Opening accounts (e.g. current, saving, investment).				
Withdrawing and depositing.				
Fund transfer (internal, external).				
Account enquiry (statement or balance).				

Second section: account customer's waiting time:

2-1 Did your bank concern about reducing the duration of waiting time of personal account customers during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 2-5

If you answered yes to the above question, please indicate for each period below the importance of duration of waiting time. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

2-2 Please indicate the average personal account customer's waiting time that your bank planned to achieve.

1999-2000	2001-2003	2004-2006	2007-2008

2-3 Please identify the actions that your bank took to reduce the waiting time. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Reduce the average account transaction time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the capacity of the branches operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inform personal account customers about the peak working hours.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct personal account customers toward using e-banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adopting more e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2-4 If the capacity was expanded; please identify which of the following actions was taken. Please put in the box sing (X), if not go to 2-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Hiring more tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extend the branches' working hours per day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activate the inactive teller stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(2-4) continue next page

Use the excess capacity of account servers.

Add new teller stations.

2-5 Please indicate the average personal account customer's waiting time in your bank.

1999-2000	2001-2003	2004-2006	2007-2008

Third section: Volume flexibility and productivity

3-1 Did your bank concern about increasing the number of account transaction processed per month during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 3-5

If you answered yes to the above question, please indicate for each period below the importance to increase the number of account transactions per month. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

3-2 Please put in the box of each period the average number of personal account transactions per month that your bank planned to achieve.

1999-2000	2001-2003	2004-2006	2007-2008

3-3 Please identify which of the following actions were taken to increase the number of account transactions processed. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Reduce the personal account transaction time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand the branches capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide account customers with prizes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of customer accounts by offering incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow customer services to conduct enquiries with personal account customer over telephone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3-4 If the capacity was expanded; please identify which of the following actions were taken. Please put in the box sing (X), if not go to 3-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Hiring more tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extend the branches' working hours per day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activate the inactive teller stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use the excess capacity of personal account servers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add new teller stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3-5 Please put in the box of each period the average number of personal account transactions per month that your bank achieved.

1999-2000	2001-2003	2004-2006	2007-2008

3-6 Please put in the box of each period the average number of personal account transactions were processed by each teller per month.

1999-2000	2001-2003	2004-2006	2007-2008

Fourth section: new service flexibility

4-1 Did your bank concern about increasing the number of new personal account services during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 4-6

If you answered yes to the above question, please indicate for each period below the importance to increase the number of personal account services. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

4-2 Did your bank concern about reducing the length of time to add new personal account services?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 4-4

If you answered yes to the above question, please indicate for each period below the importance of time to add new personal account services. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

4-3 Please identify the average time to add the new service that your bank planned and the actual time achieved.

	1999-2000	2001-2003	2004-2006	2007-2008
Planned				
Actual				

4-4 Please put in the box of each period the average number of new account services that your bank planned to add.

1999-2000	2001-2003	2004-2006	2007-2008

4-5 Please identify which of the following actions had been adopted to add new service. Please put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Evaluate the quality of personal account services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask personal account customers regularly about the future services they want.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate the personal account services provided by competitors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The use of professional account service designers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooperation between personal account	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(4-5) continue next page

service designers and other departments.

Automate the design process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyze the personal account customer's database.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change the role of teller's stations also to be sales hub.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask tellers to define customers' preferences.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the financial resources to develop the new personal account services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4-6 Please put in the box of each period the average number of account services that your bank provided.

1999-2000	2001-2003	2004-2006	2007-2008

Firth section: account transactions' operating costs

5-1 Did your bank concern about reducing the operating cost per account transactions during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 5-5

If you answered yes to the above question, please indicate for each period below the importance of reducing the operating cost per transactions. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

5-2 Please indicate average percentage of reduction in operating per account transaction that your bank planned to achieve.

1999-2000	2001-2003	2004-2006	2007-2008

5-3 Please identify which of the following actions were taken by your bank to reduce the bank branches' operations costs. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Adopt more e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct personal account customers toward using- e-banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of full time tellers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(5-3) continue next page

Hire more part time tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of transactions processed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Redesign the personal account process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of personal account action processed via computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close some branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relocate some branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Merge some branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5-4 If the process had been redesigned, please identify which if the following actions were taken. Please put the sign (X) if the action was taken. If not go to 5-5. If you answered this section in 1-5 please leave it.

	1999-2000	2001-2003	2004-2006	2007-2008
Let the personal account customer conduct some process actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to the teller.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to the back office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the teller able to make decisions (e.g. change interest or adjust entry).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Share a centralized personal account back office with numerous branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign back-office tasks to specialized employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of personal account process steps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5-5 Please put in the box of each period the average cost per personal account transaction in your bank.

1999-2000	2001-2003	2004-2006	2007-2008

Sixth section: account customers' confidentiality and security

6-1 Did any of your personal account customers complain about breaches of confidentiality or security during the period 1999-2008? Please put sign (X) in the suitable box below.

Yes

No

If no please go to 6-2

If you answered yes for the question above; please identify the proportion for each period.

1999-2000	2001-2003	2004-2006	2007-2008

6-2 Please identify which of the following actions was taken by your bank to improve the security and confidentiality. Please put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Increase the number of authentication layers of personal customers' account	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use more authentication methods of personal customer account.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control data integrity and risk of personal account system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the space between teller stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-3 If increasing the number of authentication layer was adopted. Identify the number of layers had been added. If not go to 6-4.

	1999-2000	2001-2003	2004-2006	2007-2008
One layer added	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Two layers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Three layers or more	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-4 If using more authentication methods was adopted. Please identify which of following layers added. If not go to section 6-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Password or PIN for teller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific teller knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer account number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The teller ID card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer debit or ATM card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-5 If improvements to data integrity and security were important by our bank; please identify which of the following actions was adopted. If adopted please put the sing (X) in the box of each period. If not go to tenth section.

	1999-2000	2001-2003	2004-2006	2007-2008
Using more data integrity technologies for personal account system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for data integrity technologies for personal account system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check for personal account system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop or update written procedures for personal account operations security, data backup.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee to evaluate and plan personal account operational risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(6-5) continue next page

Train the tellers on the security procedures.

Develop or update written security measures for the personal account system.

Let the personal account information system able to recover the power outage.

Seventh section: Quality control

7-1 Did your bank concern about reducing the number of account transactions' errors during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 7-3

If you answered yes to the above question, please indicate for each period below the importance of the reducing the number of account transaction' errors s. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

7-2 Please identify the average proportion of account transactions errors that occurred during each period.

1999-2000	2001-2003	2004-2006	2007-2008

7-3 Was the quality of personal account operations evaluated regularly by your bank for the period 1999-2008?, please put the sign (X) in the suitable box below.

Yes

No

If no please go to eighth section

if your answer to the previous question is yes, please identify which of the following actions were taken. Put sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Ask the customers to evaluate the quality of account transactions regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the personal account computer system generate operating performance reports (e.g, the transaction time, percentage and types of errors).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop standards for the account transactions operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compare the actual personal account operations' performance with the standard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(7-3) continue next page

Using statistical control charts to identify out of control of account processes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop personal account claiming system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup the account transactions at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup the account transactions at the end of working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup the account transactions online during the transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7-4 If errors in personal account operations occurred, please identify which of the following actions were taken to deal with. Put in the box of each period the sing (X).

	1999-2000	2001-2003	2004-2006	2007-2008
Let the personal account information system able to recover transactions errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the tellers able to deal with customer account complaints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hire professional team to handle personal account services' complaints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Eighth section: customer satisfaction and retention

8-1 Was personal account customer satisfaction a performance indicator to your bank for the period 1999-2008?, please put the sign (X) in the suitable box.

Yes

No

If no please go to 8-2

If you answered yes to the above question, please indicate for each period below the degree of customer satisfaction. Please put a number in the box using a scale of 1-5; where 1 is very low and 5 is very high.

1	2	3	4	5
Very low	Low	Moderate	High	Very high

1999-2000	2001-2003	2004-2006	2007-2008

8-2 Please identify the percentage of personal account customers who closed their accounts, put in the box of each period the average percentage.

1999-2000	2001-2003	2004-2006	2007-2008

Thanks for your cooperation.

Would you like to have a detailed report about your bank and a summary of the research conclusions?

Yes

No

Please identify the followings:

Your Job Title:.....

Your experience in banking sector.....

Your experience in the banks that you are working in now.....

Questionnaire (T1 (b))



Dear Sir or Madam, The Manager of Personal Credit Operations.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project. If you would like a copy of the research projects to thank you for your cooperation; I can provide you with a detailed report about your bank and a summary of the research conclusions. I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

Yazan Migdadi

Ph.D. Candidate

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E-Mail: Y.K.A.migdadi@bradford.ac.uk

Telephone: ++44 1274 497891

Questionnaire #: T1B
Bank Code:..... (for the researcher use).

This questionnaire is concerned with identifying the performance indicators of retail banking credit operations and the actions taken to improve performance. This questionnaire is divided to ten sections and each section is divided to sub-sections. Each section is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 15-20 minutes.

Please keep in your mind the following definitions:

Traditional Banking: the banking services provided via banks' branches.
Electronic banking: the banking services provided via ATM, website, mobile phone, and call centers.

First section: loan approval time

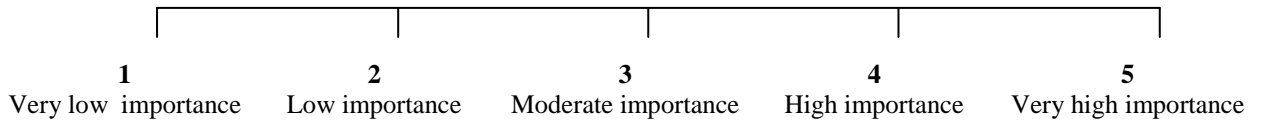
1-2 Did your bank concern about reducing the duration of time to approval the personal loan (finance) during 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 1-7

If you answered yes to the above question, please indicate for each period below and each loan type (financing type) how importance you consent the approval time to be. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



Type of loan	1999-2000	2001-2003	2004-2006	2007-2008
Approve home or real estate loans (home or real estate financing in Islamic banks).				
Approve car loans (car financing whether by using direct investment or Murabaha in Islamic banks).				
Approve personal loans against salary transfer (financing by using Mudaraba or Murabaha in Islamic banks).				

1-3 Please indicate for each period the average approval time that your bank planned to achieve for each loan type.

Type of loan	1999-2000	2001-2003	2004-2006	2007-2008
Approve home or real estate loans (home or real estate financing in Islamic banks).				
Approve car loans (car financing whether by using direct investment or Murabaha in Islamic banks).				
Approve personal loans against salary transfer (financing by using Mudaraba or Murabaha in Islamic banks).				

1-4 Please identify the average percentage of customers who were served within the planned time for each period.

1999-2000	2001-2003	2004-2006	2007-2008

1-5 Please identify which of the following actions were taken by your bank to reduce the average approval time of personal loan. Please put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Process redesign of personal loan approval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve the information and communication technology of personal loan process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-6 If the process had been redesigned, please identify which if the following actions were taken. Please put the sign (X) if the change was adopted. If not go to 1-6.

	1999-2000	2001-2003	2004-2006	2007-2008
Let the customer conduct some credit approval actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to the front office credit employee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to the back credit office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train front office credit employees to replace the back office credit employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train back office credit employees to replace the front office credit employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link branches to a shared centralized back office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the communication with back account office to formal forms only.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow the front office credit employee to make decisions (e.g. change interest or adjust entry).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repeat the credit approval steps without return back to the initial step.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of credit approval process steps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-7 If the information and communication technology of personal credit process was improved, please identify which if the following technologies were adopted. Please put the sign (X) if the technology was adopted. If not go to 1-7.

	1999-2000	2001-2003	2004-2006	2007-2008
Increase the number of approval actions processed via computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the approval actions to take place in the each branch system and its consolidated and sent to regional/head office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the approval actions to take place online in a shared system between numerous branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link sub-branches with main branches online	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link branches together online.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Link front credit office with back offices online.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install faster communication carrier technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change credit employees' terminals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install new operating software on credit employees' system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand the current credit servers capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use excess capacity of credit information system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install new credit information system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-8 Please indicate for each period the average approval time for each loan type.

Type of loan	1999-2000	2001-2003	2004-2006	2007-2008
Approve home or real estate loans (home or real estate financing in Islamic banks).				
Approve car loans (car financing whether by using direct investment or Murabaha in Islamic banks).				
Approve personal loans against salary transfer (financing by using Mudaraba or Murabaha in Islamic banks).				

Second section: credit customer waiting time

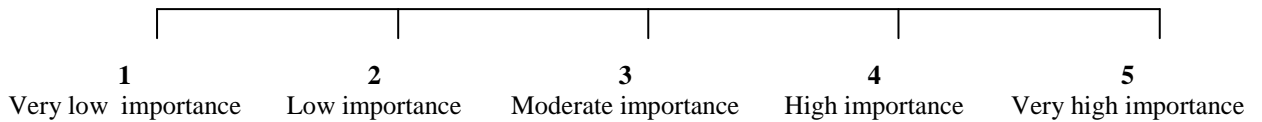
2-6 Did your bank concern about reducing the personal credit (finance) customer’s waiting time before conduct the credit meeting during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 2-5

If you answered yes to the above question, please indicate for each period below how importance you consent the waiting time to be. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



1999-2000	2001-2003	2004-2006	2007-2008

2-7 Please indicate the average personal credit (credit) customer’s waiting time that your bank planned to achieve.

1999-2000	2001-2003	2004-2006	2007-2008

2-8 Please identify the actions that your bank took to reduce the personal credit (finance) customer’s waiting time. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Reduce the average credit (finance) meeting time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the capacity of the credit (finance) operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inform customers about the peak working hours of credit (finance) offices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct customers toward using e-banking to approve loans (finances).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adopting more e-banking channels to approve loans (finances).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2-9 If the capacity had been expanded; please identify which of the following actions were taken. Please put in the box sing (X), if not go to 2-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Hiring more personal credit employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extend the personal credit offices' working hours per day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activate the inactive personal credit offices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use the excess capacity of personal credit process servers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add new personal credit offices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2-10 Please indicate the average personal credit customer's waiting time before conduct the credit (finance) meeting.

1999-2000	2001-2003	2004-2006	2007-2008

Third section: Volume Flexibility and Productivity

3-7 Did your bank concern about increasing the number of loans (finances) approved per month during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 3-5

If you answered yes to the above question, please indicate for each period below the importance to increase the number of loans (finances) approved per month. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

3-8 Please put in the box of each period the average number of personal loans (finances) that your bank planned to approve each month.

1999-2000	2001-2003	2004-2006	2007-2008

3-9 Please identify which of the following actions were taken to increase the number of loans (finances) approved. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Reduce the personal credit (finance) approval time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand the capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of customer accounts by offering incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the personal loans' (finances) interest rate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow customer services to conduct enquire with personal credit (finance) customer over telephone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3-10 If the capacity had been expanded; please identify which of the following actions were made. Please put in the box of each period the sing (X), if not go to 3-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Hiring more credit employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extend the credit offices' working hours per day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activate the inactive credit offices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use the excess capacity of credit transactions' servers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add new credit offices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3-11 Please put in the box of each period the average number of personal loans (finances) that your bank approved each month.

1999-2000	2001-2003	2004-2006	2007-2008

3-12 Please put in the box of each period the average number of personal loans (finances) that approved by each credit employee per month.

1999-2000	2001-2003	2004-2006	2007-2008

Fourth section: credit products flexibility

4-7 Did your bank concern about increasing the number of new personal credit (financing) products during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 4-6

If you answered yes to the above question, please indicate for each period below the importance to increase the number of personal credit (financing) products. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

4-8 Did your bank concern about reducing the time required to add new personal credit (financing) products during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 4-4

If you answered yes to the above question, please indicate for each period below the importance of time to add new personal credit products. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high important.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

4-9 Please identify the average time to add the new products that your bank planned to achieve and the actual time.

	1999-2000	2001-2003	2004-2006	2007-2008
Planned				
Actual				

4-10 Please put in the box of each period the average number of new personal loan products that your bank planned to add.

1999-2000	2001-2003	2004-2006	2007-2008

4-11 If adding new personal credit (finance) products was important, please identify which of the following actions were taken to identify or improve the new credit products. Please put in the box of each period the sign (X) if the action was adopted. If add new products was not important please go to 4-6.

	1999-2000	2001-2003	2004-2006	2007-2008
Evaluate the quality of personal credit services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask personal credit customers regularly about the future products they want.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate the personal credit (finance) services provided by competitors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The use of professional credit (finance) service designers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooperation between credit (finance) service designers and other departments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automate the personal credit (finance) service design process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyze the personal credit (finance) customer database by customer relations to define customers' preferences.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change the role of personal credit (finance) offices also to be a sales hub.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask front office credit (finance) employees to define customers' preferences.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the financial resources to develop the new personal credit (finance) products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4-12 Please put in the box of each period the average number of personal loan products that your bank provided.

1999-2000	2001-2003	2004-2006	2007-2008

Fifth section: personal credit operating costs

5-1 Did your bank concern about reducing the operating cost per personal credit (finance) approved during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 5-5

If you answered yes to the above question, please indicate for each period below the importance of reducing the operating cost per personal credit (finance) transaction. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

	1	2	3	4	5
	Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

5-2 Please indicate average percentage of cost reduction per credit (finance) transaction that your bank planned.

1999-2000	2001-2003	2004-2006	2007-2008

5-3 Please identify which of the following actions were taken by your bank to reduce the operations costs. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Adopt more e-banking channels to conduct credit services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Direct credit customers toward using- e-banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of full time personal credit employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hire more part time personal credit employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Redesign the personal credit approval process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of approval actions processed by computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close some branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relocate some branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Merge some branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5-4 If the process was redesigned, please identify which if the following actions were taken. Please put the sign (X). If not go to 6-5 section. If you answered this section before in 1-5 please leave it and go to 5-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Let the customer conduct some personal credit process actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to the front office personal credit employee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to the back credit office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the front office credit employee able to make decisions (e.g. change interest or adjust entry).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Share a centralized back office with credit offices in numerous branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repeated steps of credit approval process without return back to the initial step.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of personal credit process steps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5-5 Please indicate average cost per credit (finance) transaction in your bank.

1999-2000	2001-2003	2004-2006	2007-2008

Sixth section: credit account's security and confidentiality

6-1 Did any of your credit customers complain about breaches of confidentiality or security during the period 1999-2008? Please put sign (X) in the suitable box below.

Yes

No

If no please go to 6-2

If you answered yes for the question above; please identify the proportion for each period.

1999-2000	2001-2003	2004-2006	2007-2008

6-2 Please identify which of the following actions were taken by your bank to improve the security and confidentiality. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Increase the number of authentication layers of personal credit customers' account	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use more authentication methods of personal credit customer account.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(6-2) continue next page.....

Control data integrity and risk of credit operations.

Conduct all meeting in closed credit office.

6-3 If increasing the number of authentication layer was adopted. Identify the number of layers added by put sign (X) in the box of each period. If not go to 6-4.

	1999-2000	2001-2003	2004-2006	2007-2008
One layer added	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Two layers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Three layers or more	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-4 If using more authentication methods was adopted. Please identify which of following layers added by putting the sign (X) in the box of each period. If not go to section 6-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Password or PIN for credit employee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific credit employees' knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The personal customer credit account number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The credit employee ID card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-5 If control data integrity and banking risk was adopted by our bank; please identify which of the following actions was taken. If taken please put the sing (X) in the box of each period. If not go to seventh section.

	1999-2000	2001-2003	2004-2006	2007-2008
Using more data integrity technologies for credit systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for data integrity technologies for credit systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check for credit system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop or update Written procedures for credit operations security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee to evaluate and plan credit risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train credit employees on how to follow written procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop or update Written security measures for the credit systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the personal credit information system able to recover the power outage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Seventh section: quality control

7-1 did your bank concern about reducing the number of credit transactions' errors during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 7-2

If you answered yes to the above question, please indicate for each period below the importance of the reducing the number of account transaction' errors. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

7-2 Please identify the average proportion of account transactions errors that occurred during each period.

1999-2000	2001-2003	2004-2006	2007-2008

7-3 Was the quality of personal credit operations evaluated regularly by your bank for the period 1999-2008?, please put the sign (X) in the suitable box below.

Yes

No

If no please go to eighth section

7-4 if your answer to the previous question is yes, please identify which of the following actions were taken. Put sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Ask the customers to evaluate the quality of credit services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the personal credit computer system able to generate operating performance reports (e.g, the approval time, percentage of errors).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compare the actual personal credit operations' performance with the planned.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using statistical control charts to identify out of control of control credit operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop personal credit claiming system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup the credit transactions at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup the credit transactions at the end of working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Backup the credit transaction online.

7-5 If negative personal credit operations occurred, please identify which of the following actions was taken to deal with. Put in the box of each period the sign (X).

	1999-2000	2001-2003	2004-2006	2007-2008
Let the personal credit information system able to recover the errors of processing transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the front office credit employees able to deal with credit customers complaints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hire professional team to handle credit services' complaints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Eighth section: personal credit customers' satisfaction and retention.

8-1 Was personal credit customer satisfaction a performance indicator to your bank in the period 1999-2008?, please put the sign (X) in the suitable box.

Yes

No

If no please go to 8-2

If you answered yes to the above question, please indicate for each period below the degree of customer satisfaction. Please put a number in the box using a scale of 1-5; where 1 is very low and 5 is very high.

1 Very low	2 Low	3 Moderate	4 High	5 Very high

8-2 Please identify the percentage of personal credit customers who closed their accounts, put in the box of each period the average percentage.

1999-2000	2001-2003	2004-2006	2007-2008

Thanks for your cooperation.

Would you like to have a detailed report about your bank and a summary of the research conclusions?

Yes

No

Please identify the followings:

Your Job Title:.....

Your experience in banking sector.....

Your experience in the banks that you are working in now.....

Questionnaire (T2 (a))



Dear Sir or Madam, Teller employee.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project, I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

Yazan Migdadi

Ph.D. Candidate

Bradford University, School of Management

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E-Mail: Y.K.A.migdadi@bradford.ac.uk

Telephone: ++44 1274 497891

Questionnaire #: T2 (a)
Bank Code:..... (for the researcher use).

This questionnaire is concerned with identifying the process design of account transactions. This questionnaire is divided to two sections; the first section includes 23 items, so you can take a break any time. The time required to complete the questionnaire is between 15-20 minutes.

Please keep in your mind the following definitions:

Traditional Banking: the banking services provided via banks' branches.

Electronic banking: the banking services provided via ATM, website, mobile phone, and call centers.

First Section:

1- Please identify the average number of steps required to conduct the following transactions during each periods.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Open account (saving, current and investment)				
Fund transfer (internet and external)				
Deposit or withdrawing				
Account enquiry (balance and statement)				

2- Were the previous transactions fully computerized during all periods?

Yes

No

If yes please go to 3

If you answered to the above question no, please identify the number of computerized steps for each of the following transactions during each period.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Open account (saving, current and investment)				
Fund transfer (internet and external)				
Deposit or withdrawing				
Account enquiry (balance and statement)				

3- Did other staff perform some of the previous transactions stages during the period 1999-2008?, please put the sing (X) in the suitable box.

Yes

No

If no please go to 8

3 continue next page.....

If answered to the above question yes; please identify the average number of steps that were conducted by the other staff for each of the following transactions during each period.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Open account (saving, current and investment)				
Fund transfer (internet and external)				
Deposit or withdrawing				
Account enquiry (balance and statement)				

4-Please identify which of the following staff participated in the transactions. Put in the box of each period the letter that represents the staff you can choose more than one option.

A	B	C
Branch manager	Professional staff in the branch	Professional team in centralized office shared between numerous branches

1999-2000	2001-2003	2004-2006	2007-2008

5-Was the communication with other staff according to standardized form for any of the following periods?, please put the sign (X) if yes.

1999-2000	2001-2003	2004-2006	2007-2008

6-Please identify which of the following communication channels was used to transfer forms to other staff. Put in the box of each period the letter that represents the channel you can choose more than one options.

A	B	C	D
Post	Fax	e-mail	Electronic network

1999-2000	2001-2003	2004-2006	2007-2008

7-Did the customer conduct any of the account transactions' actions during the period 1999-2008?. Please put the sign (X) in the suitable box.

Yes

No

If no please go to 9

If you answered Yes to the above question; please identify which of the following transactions the customer participate in. put the sign (X) in the box of each transaction during each period.

7 continue next page.....

	1999-2000	2001-2003	2004-2006	2007-2008
Open account (saving, current and investment)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fund transfer (internet and external)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deposit or withdrawing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Account enquiry (balance and statement)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8-Please identify which of the followings describe the customer role in the account transactions. Put the sing (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Fill applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct other actions (please identify bellow)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....				
.....				

9-Please identify which of the following action s you did. Put Sing (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Promote and sell bank products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solve specific type of errors such as adjusting entry without intervening of branch manager.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Make decision of interest rate provided to personal customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace the personal credit employee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace the back office account's employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10- Please identify the length of time the customer's wait before the transactions. Put the time in the box of each period

1999-2000	2001-2003	2004-2006	2007-2008

11- Please identify the time was required to conduct the following account transactions during each period. Put in the box of each period the time was required.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Open account (saving, current and investment)				
Fund transfer (internet and external)				
Deposit or withdrawing				
Account enquiry (balance and statement)				

12- Please identify the working time, days and weeks in your bank during the following periods.

	1999-2000	2001-2003	2004-2006	2007-2008
Working time				
Working days				
Working weeks				

13- Please identify the number of authentication layers that you should follow before access the customer account. Put the number in the box of each period

1999-2000	2001-2003	2004-2006	2007-2008

14- Please identify which of the following authentication methods were adopted by your bank's personal account system. Put the sign (X) if the method was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Password or PIN for teller.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific teller knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer account number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The teller ID card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15- Please identify the percentage of customers who claimed for bleaching their confidentiality. Put the percentage in the box of each period.

1999-2000	2001-2003	2004-2006	2007-2008

16- Please identify which of the followings represents how the personal account transactions were processed on computer system. Put in the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Single PC is available in your branch for processing of various important functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The account transactions were processed in the branch computer system and consolidated and sent electronically to regional/head office at the end of the each day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The account transactions were processed online in a shared system between numerous branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17- Please identify which of the following information technologies were used by your bank's traditional banking system; please put the sign (X) in the box of each period if the technology was used.

	1999-2000	2001-2003	2004-2006	2007-2008
The tellers' employees in your bank were equipped with personal computer (keyboard, case, and screen).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The tellers' employees in your bank were equipped with terminals (keyboard and screen).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The software system used to process account transaction is under Windows.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The software used to process account transaction is OS/2 (black and green screens requires data entry by using keyboard).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The branches tellers were interlinked with each other by using electronic network.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The branches tellers were interlinked with headquarter by using electronic network.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The electronic network was dial up line (using telephone line, which requires dialing number to connect).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The electronic network was Lease line EDSN (high speed communication network available 24 hrs online).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18- Please identify which of the followings represents how traditional banking system of your bank integrated with other e-banking channels. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Personal account system of branches is independent form e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any personal account transactions conducted via branches can be made available in real time by other e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You were able to retrieve on time data about the personal account transactions done through e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the customer starts some account transactions via branch, he can complete them via e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19- Please identify the role of customer service and relations management staff in your bank. Put the sign (X) in the box of each period of the role was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Retrieve all personal account transactions history conducted via branches to answer customer's questions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retrieve all personal account transactions history conducted via branches to resolving issues with customer such as solving errors modify or cancel service subscription	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyze the personal account transactions data to create rules or guides about how to deal with customers or improve service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Represents the results of analysis of the personal customers' transactions on the front tellers' terminals or PCs during the transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20- Please identify which of the following data integrity technologies or actions were adopted by your bank. Put the sign (X) in the box of each period if it was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Using advanced personal account data integrity technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular system and network configuration review for personal account system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for personal account data integrity technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check for personal account system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recover the power outage that causes the branches banking server to damage, or server become un-available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written procedures for personal account system's security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train tellers about the security, backup or update procedures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee for evaluating and planning personal account transactions risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21- Please identify which of the following quality control practices were adopted by your bank's personal account system. Put sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The personal account customers were asked to evaluate the quality of services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The personal account system generated a report which includes the average transaction time, the percentage of transaction errors, the number of transactions processed ...etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The performance indices of personal account system were compared with planned indicators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The statistical data were analyzed by using statistical quality charts to identify the out of control points.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of personal account complaining system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal account information system was able to recover transactions errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal account transactions were backed up at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal account transactions were backed up at the end of each working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal account transactions were backed up on line in the time of transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22- Please identify the percentage of errors in the account transactions that processed in your branch. Put the percentage in each box of each period.

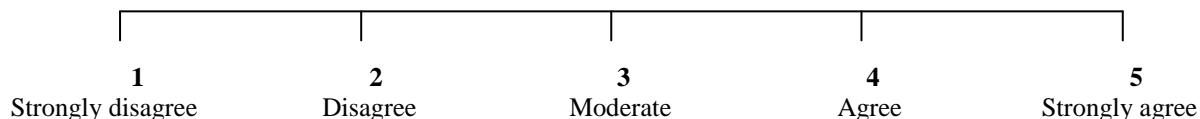
1999-2000	2001-2003	2004-2006	2007-2008

23- Please identify the number of new account products that provided by your bank in each period. Please put the number in each box of each period.

1999-2000	2001-2003	2004-2006	2007-2008

Second Section:

Please identify to what extent you are agree about the following aspects related to the branch you are working for each period. Put in the box of each period the number that represents the degree from the following scale.



Performance indicators	1999-2000	2001-2003	2004-2006	2007-2008
The branch comfort in term of branches' heating system, veneration system, availability of sets..etc)				
The branches' aesthetic, to look like more modern.				
Focus on the social responsibility in the branches' design as the concern of availability of free community halls, the using if sun lighting, using recycled floor rubber..etc).				
The branch lighting adequacy.				
The branch design is fashionable.				
High availability of electronic devices available in the branch (as ATM, internet Kiosks, free telephone to conduct telephone banking)				
The branch is secure.				
The informational role in the branch is adequate (e.g. using more leaflets and brochures, the availability of greeting meters, electronic and traditional signs...etc)				
The customer privacy in the branch is high (e.g. increase the space between tellers' work stations).				
The branch space size is adequate.				

Please identify the followings

Your job title.....

Your experience.....

Your experience in the current enterprise.....

Questionnaire (T2 (b))



Dear Sir or Madam, The Personal Credit Employee.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project, I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

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Telephone: ++44 1274 497891

Questionnaire #: T2 (b)
Bank Code:..... (for the researcher use).

This questionnaire is concerned with identifying the process design of credit transactions. This questionnaire is divided to two sections, the first section includes 23 items, so you can take a break any time. The time required to complete the questionnaire is between 15-20 minutes.

Please keep in your mind the following definitions:

Traditional Banking: the banking services provided via banks' branches.

Electronic banking: the banking services provided via ATM, website, mobile phone, and call centers.

First Section:

1- Please identify the average number of steps required to conduct the following transactions during each periods.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Approve home loans.				
Approve car loans.				
Approve salary loans.				

2- Were the previous transactions fully computerized during all periods?

Yes

No

If yes please go to 3

If you answered to the above question no, please identify the number of computerized steps for each of the following transactions during each period.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Approve home loans.				
Approve car loans.				
Approve salary loans.				

3- Did other staff perform some of the previous transactions stages during the period 1999-2008?, please put the sing (X) in the suitable box.

Yes

No

If no please go to 8

If answered to the above question yes; please identify the average number of steps that were conducted by the other staff for each of the following transactions during each period.

3 continue next page.....

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Approve home loans.				
Approve car loans.				
Approve salary loans.				

4-Please identify which of the following staff participated in the transactions. Put in the box of each period the letter that represents the staff you can choose more than one option.

A	B	C
Branch manager	Professional staff in the branch	Professional team in centralized office shared between numerous branches

1999-2000	2001-2003	2004-2006	2007-2008

5-Was the communication with other staff according to standardized form for any of the following periods?, please put the sign (X) if yes.

1999-2000	2001-2003	2004-2006	2007-2008

6-Please identify which of the following communication channels was used to transfer forms to other staff. Put in the box of each period the letter that represents the channel you can choose more than one options.

A	B	C	D
Post	Fax	e-mail	Electronic network

1999-2000	2001-2003	2004-2006	2007-2008

7-Did the customer conduct any of the credit transactions actions during the period 1999-2008?. Please put the sign (X) in the suitable box.

Yes

No

If no please go to 9

If you answered Yes to the above question; please identify which of the following transactions the customer participate in. put the sign (X) in the box of each transaction during each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Approve home loans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Approve car loans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Approve salary loans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Approve consumer loans.

8-Please identify which of the followings describe the customer role in the credit transactions. Put the sing (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Fill applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct other actions (please identify bellow)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

.....

9-Please identify which of the following action s you did. Put Sing (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Promote and sell bank products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solve specific type of errors such as adjusting entry without intervening of branch manager.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Make decision of interest rate provided to personal customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace the personal teller employee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace the back office credit employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10- Please identify the identify the length of time the customer’s wait before making the credit meeting . Put the time in the box of each period

1999-2000	2001-2003	2004-2006	2007-2008

11- Please identify the time was required to approve the following loans during each period. Put in the box of each period the time was required.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Approve home loans.				
Approve car loans.				
Approve salary loans.				

12- Please identify the working time, days and weeks in your bank during the following periods.

	1999-2000	2001-2003	2004-2006	2007-2008
Working time				
Working days				
Working weeks				

13- Please identify the number of authentication layers that you should follow before access the customer account. Put the number in the box of each period

1999-2000	2001-2003	2004-2006	2007-2008

14- Please identify which of the following authentication methods were adopted by your bank's personal account system. Put the sign (X) if the method was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Password or PIN for teller.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific teller knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer account number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The teller ID card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15- Please identify the percentage of customers who claimed for bleaching their confidentiality. Put the percentage in the box of each period.

1999-2000	2001-2003	2004-2006	2007-2008

16- Please identify which of the followings represents how the personal credit transactions were processed on computer system. Put in the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Single PC is available in your branch for processing of various important functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The credit transactions were processed in the branch computer system and consolidated and sent electronically to regional/head office at the end of the each day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The credit transactions were processed online in a shared system between numerous branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17- Please identify which of the following information technologies were used by your bank's traditional banking system; please put the sign (X) in the box of each period if the technology was used.

	1999-2000	2001-2003	2004-2006	2007-2008
The front office credit employees in your bank were equipped with personal computer (keyboard, case, and screen).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The front office credit employees in your bank were equipped with terminals (keyboard and screen).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17 continue next page.....

The software system used to process credit transaction is under Windows.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The software used to process credit transaction is OS/2 (black and green screens requires data entry by using keyboard).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The branches credit offices were interlinked with each other by using electronic network.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The branches credit offices were interlinked with headquarter by using electronic network.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The electronic network was dial up line (using telephone line, which requires dialing number to connect).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The electronic network was Lease line EDSN (high speed communication network available 24 hrs online).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18- Please identify which of the followings represents how traditional banking system of your bank integrated with other e-banking channels. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Personal credit system of branches is independent form e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any personal credit transactions conducted via branches can be made available in real time by other e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You were able to retrieve on time data about the personal credit transactions done through e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the customer starts some credit transactions via branch, he can complete them via e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19- Please identify the role of customer service and relations management staff in your bank. Put the sign (X) in the box of each period of the role was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Retrieve all personal credit transactions history conducted via branches to answer customer's questions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retrieve all personal credit transactions history conducted via branches to resolving issues with customer such as solving errors modify or cancel service subscription	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19 continue next page.....

Analyze the personal credit transactions data to create rules or guides about how to deal with customers or improve service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Represents the results of analysis of the personal customers' transactions on the front office credit employee's terminals or PCs during the transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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20- Please identify which of the following data integrity technologies or actions were adopted by your bank. Put the sign (X) in the box of each period if it was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Using advanced personal credit data integrity technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular system and network configuration review for personal credit system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for personal credit data integrity technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check for personal credit system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recover the power outage that causes the branches banking server to damage, or server become un-available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written procedures for personal credit system's security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train front personal credit employees about the security, backup or update procedures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee for evaluating and planning personal credit transactions risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21- Please identify which of the following quality control practices were adopted by your bank's personal account system. Put sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The personal credit customers were asked to evaluate the quality of services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The personal credit system generated a report which includes the average transaction time, the percentage of transaction errors, the number of transactions processed ...etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21 continue next page.....

The performance indices of personal credit system were compared with planned indicators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The statistical data were analyzed by using statistical quality charts to identify the out of control points.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of personal credit complaining system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal credit information system was able to recover transactions errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal account transactions were backed up at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal account transactions were backed up at the end of each working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal account transactions were backed up on line in the time of transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22- Please identify the percentage of errors in the approved loans that processed in your branch. Put the percentage in each box of each period.

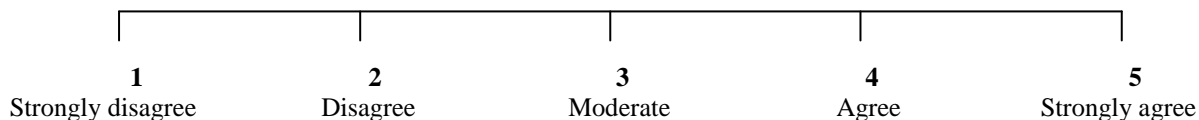
1999-2000	2001-2003	2004-2006	2007-2008

23- Please identify the number of new credit products that provided by your bank in each period. Please put the number in each box of each period.

1999-2000	2001-2003	2004-2006	2007-2008

Second Section:

Please identify to what extent you are agree about the following aspects related to the branch you are working for each period. Put in the box of each period the number that represents the degree from the following scale.



Performance indicators	1999-2000	2001-2003	2004-2006	2007-2008
The branch comfort in term of branches' heating system, veneration system, availability of sets..etc)				
The branches' aesthetic, to look like more modern.				
Focus on the social responsibility in the branches' design as the concern of availability of free community halls, the using if sun lighting, using recycled floor rubber..etc).				
The branch lighting adequacy.				
The branch design is fashionable.				
High availability of electronic devices available in the branch (as ATM, internet Kiosks, free telephone to conduct telephone banking)				
The branch is secure.				
The informational role in the branch is adequate (e.g. using more leaflets and brochures, the availability of greeting meters, electronic and traditional signs...etc)				
The customer privacy in the branch is high (e.g. increase the space between tellers' work stations).				
The branch space size is adequate.				

Please identify the followings

Your job title.....

Your experience.....

Your experience in the current enterprise.....

Questionnaire (T3)



Dear Sir or Madam, The Branch Manager.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project, I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

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E-Mail: Y.K.A.migdadi@bradford.ac.uk

Telephone: ++44 1274 497891

Questionnaire #: T3
Bank Code:..... (for the researcher use).

This questionnaire is concerned with identifying the branches design. This questionnaire is divided to eleven items. Each item is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 10-15 minutes.

1- Please identify the availability of followings available in your branch, please put in the box of each period the sign (X) if the design option is available.

	1999-2000	2001-2003	2004-2006	2007-2008
The branch has widows to outside	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The tellers' stations are the in front of branch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lights over the branch's teller stations directly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The branch is separated to different departments as individual services, corporate, and SMEs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
customer service unit in the branch,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2- Please identify which of the following colors were used in your branch during the following periods. Put the sing (X) if the color was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Warm colors (shades of orange and red.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cool colors (shades of green and blue).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Subdued colors (grayed or neutral).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3- Please identify which of the followings were available in your branch to improve the customers' comfort. Put the sign (X) if the factor was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The branch is isolated from outside crowd	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air conditions in the branch entrance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air condition in the front hall of the teller stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air conditions in the teller stations and other back offices in the branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air conditions in the credit offices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural ventilation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Central heating system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermostat to remote the heating system in the branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3 Continue next page.....

Seats which customers can use for rest in the front of teller stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of VIP room, which includes comfortable chairs, TV screen used to run promotions or to conduct stock exchange.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Desks to sign checks or deposits slips near the tellers' counter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Care parking in the front of branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4- Please identify which of the following were available in your branch to improve the branches' aesthetic. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
The branch's floor is carpeted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plants or pictures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hard service area as ceramic is used in the front of tellers area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5- Please identify which of the followings were available in your branches to protect security. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
CCTV in the branch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The fire and theft alarms in the entrance of branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The fire and theft alarms in the halls in front of teller stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The fire and thefts alarms in the branch offices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CCTV and security alarms are connected to the early warning system and relevant security departments in Jordan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CCTV outside the branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6- Please identify which of the following were available in your branch to improve the social responsibility of your branch. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Solar panels to convert sunlight to energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water collected from branch's roof to flush toilets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recycled rubber floor is used in the teller area of branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6 Continue next page.....

Changed colors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Children's' playing area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Free community meeting area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The majority of walls in the branch were glassed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7- How many times your branch redesigned during each period?. Please put in the box of each period the number

1999-2000	2001-2003	2004-2006	2007-2008

8- Please identify which of the followings were available in your branch to provide customer with better information about the branches services and products. Put in the box of each period the sign (X) if adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Departments' title signs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of departments' directions signs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tellers' stations' titles and numbers signs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The signs used are digital.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The signs used are written on boards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promotional signs, posters and leaflets in the entrance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of promotional signs posters and leaflets in the hall of tellers' stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TV screen for promotional purposes in the hall of tellers' stations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The branch's employees were wearing uniforms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The branch's employees were wearing name bags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information Kiosk in the entrance of branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meter/greater station staff who help or direct customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9- Please identify which of the following e-banking facilities were available in your branch. Please put the sign (X) in the box of each period if the facility was available.

	1999-2000	2001-2003	2004-2006	2007-2008
Wireless laptop area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet cafe'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATMs kiosks in the branch's wall.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATMs kiosks inside the branch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10- Please identify which of the following type teller stations were adopted, please put the sing (X) in the box of each period if the type of station is used.

	1999-2000	2001-2003	2004-2006	2007-2008
The teller station used is stand-up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The teller station used is seated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The teller station used is open teller tower.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11- Please identify the number of tellers' stations and credit offices available in your branch. Put the number in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Teller stations				
Credit offices				

Please identify the followings

Your experience.....

Your experience in the current enterprise.....

Questionnaire (T4)



Dear Sir or Madam, The manager of Branches Management.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project. If you would like a copy of the research projects to thank you for your cooperation; I can provide you with a detailed report about your bank and a summary of the research conclusions. I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

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Telephone: ++44 1274 497891

Questionnaire #: T4
Bank Code:..... (for the researcher use).

This questionnaire is concerned with identifying the strategic branches strategic decisions were taken by branches management unit. This questionnaire is divided to fourth sections and each section is divided to sub-sections. Each section is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 10-15 minutes.

First section: services availability

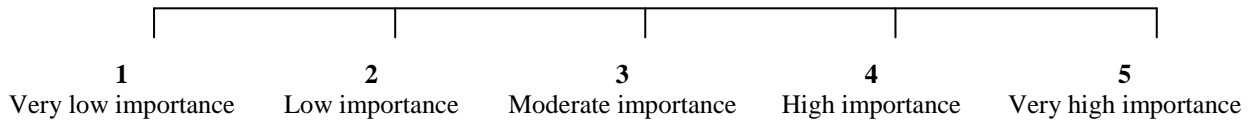
1-1 Did your bank concern about extending the tellers working hours per day and working days per week during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 1-3

If you answered yes to the above question, please indicate for each period below the importance of extending the tellers' working hours, days and weeks. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



1999-2000	2001-2003	2004-2006	2007-2008

1-2 Please identify which of the following actions were taken by your bank to extend tellers working hours days and weeks. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Recruit more full time tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recruit more part time tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the use of tellers' overtime.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve personal account process automation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train personal credit employee to replace tellers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-3 Please identify the followings for each period.

Performance indicators	1999-2000	2001-2003	2004-2006	2007-2008
The number of teller's working hours per day				
The number of teller's working days per week.				
The number of working weeks per year.				

1-4 Did your bank concern about extending the credit (finance) offices working hours per day and working days per week during the period 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 1-6

If you answered yes to the above question, please indicate for each period below the importance of extending the credit (finance) offices working hours, days and weeks. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

	1	2	3	4	5
	Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

1-5 Please identify which of the following actions were taken by your bank to extend banking working hours days and weeks. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Recruit more full time personal credit (finance) employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recruit more part time personal credit (finance) employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the use of credit (finance) employees' overtime.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve personal credit (finance) process automation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train the tellers to replace personal credit (finance) employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-6 Please identify the followings for each period.

Performance indicators	1999-2000	2001-2003	2004-2006	2007-2008
The number of credit (finance) offices' working hours per day				
The number of credit (finance) offices' working days per week.				
The number of working weeks per year.				

Second section: service accessibility

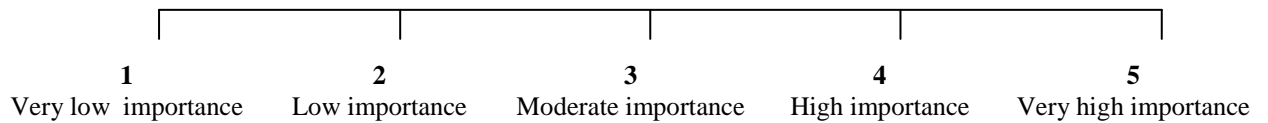
2-1 Did your bank concern about expanding the size of branches network in the following areas during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 2-2

If you answered yes to the above question, please indicate for each period below the importance of expanding the branches network. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



	1999-2000	2001-2003	2004-2006	2007-2008
Urban areas				
Sub-urban				
Rural				

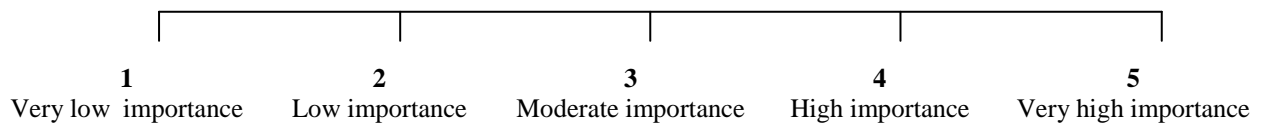
2-2 Did your bank concern about expanding the size of branches network in the following site locations in each area during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 2-5

If you answered yes to the above question, please indicate for each period below the importance of expanding the branches network. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



Site location	1999-2000	2001-2003	2004-2006	2007-2008
Shopping areas or malls.				
Universities.				
High ways.				
Business complex.				
Sub-urban.				
Hospitals.				

2-3 Please put in the box of each period the average number of branches that your bank planned to add.

1999-2000	2001-2003	2004-2006	2007-2008

2-4 Please identify which of the following actions was taken by your bank to expand the branches network. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Open new branches in rural areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches in urban areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches in town centers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches in sub-urban.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches in universities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches in malls and shopping areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches in hospitals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open new branches in business areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2-5 Did your bank concern about shrinking the size of branches network in the following areas during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to third section

If you answered yes to the above question, please indicate for each period below the importance of shrinking the branches network. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

	1999-2000	2001-2003	2004-2006	2007-2008
Urban areas				
Sub-urban				
Rural				

2-6 Please put in the box of each period the average number of branches that your bank planned to close.

1999-2000	2001-2003	2004-2006	2007-2008

2-7 Please identify which of the following actions was taken by your bank to shrink the branches network. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Close branches in rural areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close branches in urban areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close branches in town centers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close branches in sub-urban.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close branches in universities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close branches in malls and shopping areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close branches in hospitals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Close branches in business areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Third section: quality of branches layout:

3-1 Did your bank concern about improving the branches layout during the period 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to fourth section

If you answered yes to the above question, please indicate for each period below the importance of improving the branches layout. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

3-2 Please put in the box of each period the average number of your bank's branches planned to redesign and the number had been redesigned.

	1999-2000	2001-2003	2004-2006	2007-2008
Planned				
Actual				

3-3 Please identify which of the following actions were taken during each period to improve the branches design. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Increase the branch conformability (e.g. improve the branches' heating system, ventilations system, availability of sets..etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve the branches' aesthetic, to look more modern.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Focus on the social responsibility in the branches' design (e.g. the availability of free community halls, the using if sun lighting, using recycled floor rubber..etc).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the branch lighting adequacy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve the branch design regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of electronic banking devices available in the branch (e.g. ATM, internet Kiosks, free telephone to conduct telephone banking)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve the branch security.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve the informational role in the branch (e.g. using more leaflets and brochures, the availability of greeting meters, electronic and traditional signs...etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the customer privacy in the branch (e.g. increase the space between tellers' work stations).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the branch space size.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of tellers stations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add different types of tellers stations (e.g. stand up, seated, tower)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add more credit offices in the branch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fourth section: capacity indicators

4-1 Please identify the average number of tellers employees were employed in your bank for each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Full time teller				
Part time tellers				

4-2 Please identify the average overtime tellers' working hours per month for each of the following period.

1999-2000	2001-2003	2004-2006	2007-2008

4-3 Please identify the average total number of teller stations in each branch and the active number in each branch during each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Total number				
Active				

4-4 Please identify the average number of credit employees were employed in your bank for each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Full time				
Part time				

4-5 Please identify the average overtime credit employees' working hours per month for each of the following period.

1999-2000	2001-2003	2004-2006	2007-2008

4-6 Please identify the average total number of credit offices in each branch and the active number in each branch during each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Total number				
Active				

Please identify the followings:

Your Job Title:.....

Your experience in banking sector:.....

Your experience in the banks that you are working in now:.....

Questionnaire (E1)



Dear Sir or Madam, The Manager of IT.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project. If you would like a copy of the research projects to thank you for your cooperation; I can provide you with a detailed report about your bank and a summary of the research conclusions. I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

Yazan Migdadi

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E-Mail: Y.K.A.migdadi@bradford.ac.uk

Telephone: ++44 1274 497891

Questionnaire #: E1
Bank Code:..... (For the researcher use).

This questionnaire is concerned with identifying the performance indicators of personal electronic banking operations and the actions taken to improve performance. This questionnaire is divided to ten sections and each section is divided to sub-sections. Each section is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 15-20 minutes.

Please keep in your mind the following definitions:

Electronic banking: the banking services provided via ATM, website, mobile phone, and call centers.
Mobile banking: the banking service provided via mobile phone device whether SMS banking or mobile internet banking.
Telephone banking: the banking services provided via land line phone whether interactive voice response or call center agents.
Internet banking: the banking services provided via bank website.
ATM: the banking services provided via ATM kiosks.

First section: The speed of e-banking services

1-1 Did your bank concern about the duration of transaction time for any of the e-banking channels that were adopted by your bank during the period 1999-2008?. Please put the sign (X) in the suitable box.

Yes

No

If no please go to 1-7

If you answered yes to the above please indicate for each period below and each e-banking channel adopted the importance of the duration of transaction time. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

	1	2	3	4	5
	Very low importance	Low importance	Moderate importance	High importance	Very high importance

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

1-2 Please put in the box of each period and for each e-banking channel the average transaction time that your bank planned to achieve.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

1-3 Please identify the average percentage of customers who were served within the planned time.

1999-2000	2001-2003	2004-2006	2007-2008

1-4 Please identify which of the following actions were made by your bank to reduce the transaction time. Put the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Transactions' process redesign.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve the information and communication technology for e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extend the capacity of e-banking channel.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inform customer about the peak operating time of e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-5 If the process was redesigned, please identify which of the following actions were taken. Please put the sign (X) if the change was adopted. If not go to 1-6.

	1999-2000	2001-2003	2004-2006	2007-2008
Let the customer conduct more transactions' actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assign more tasks to operators (e.g. call center agent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the specialization of services provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repeat the transactions' steps without return back to the initial step.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of transactions' process steps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the customer service and relations management able to answer and solve e-banking customer enquiries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let all e-banking channels share a centralized database.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-6 If the information and communication technology for e-banking was improved. Please identify which of the following technologies were adopted. Put the sign (X) in the box of each period if the technology was adopted. If no action was made please go to 1-7

	1999-2000	2001-2003	2004-2006	2007-2008
Replace the communication transfer channel with more speed channel as digital channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace the operating software of the e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Replace the servers of e-banking with more advanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1-6 continue next page

Replace the kiosks of e-banking (e.g. ATM)

Replace the operating system of channels (e.g. telephone operator or computer system architecture).

1-7 Please put in the box of each period and for each e-banking channel was adopted by your bank the average transaction time.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

Second section: E-banking volume flexibility

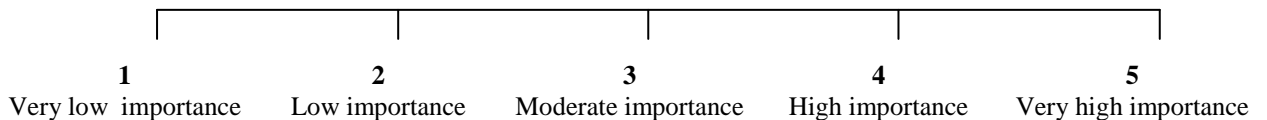
2-1 Did your bank concern about increasing the number of transaction processed for any of the e-banking channels that were adopted by your bank during the period 1999-2008?. Please put the sign (X) in the suitable box.

Yes

No

If no please go to 2-5

If you answered yes to the above please indicate for each period below and each e-banking channel adopted the importance of increasing the number of transactions processed. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

2-2 Please put in the box of each period and each e-banking channel was adopted by your bank the number of transactions each month that your bank planned to achieve.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

2-3 Please identify which of the following actions were taken to increase the number of account transactions processed. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Reduce e-banking transaction time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand e-banking capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the customer services able to conduct enquire with e-banking customers over telephone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educate customers about the e-banking channels and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add more e-banking kiosks (e.g. ATM kiosks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2-4 If the capacity was expanded; please identify which of the following actions were taken. Please put in the box sing (X), if not go to 2-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Hiring more e-banking operators (e.g. telephone banking agents)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extend e-banking channels operating hours per day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adopt more new e-banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide same e-banking channel via different path (e.g. provide SMS and mobile internet banking, call centers and interactive voice response).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interlink your e-banking channels with other banks (e.g. sharing ATMs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use the excess capacity of e-banking channels servers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2-5 Please put in the box of each period and each e-banking channel was adopted by your bank the number of transactions each month that your bank planned to achieve.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

Third section: e-banking service range flexibility

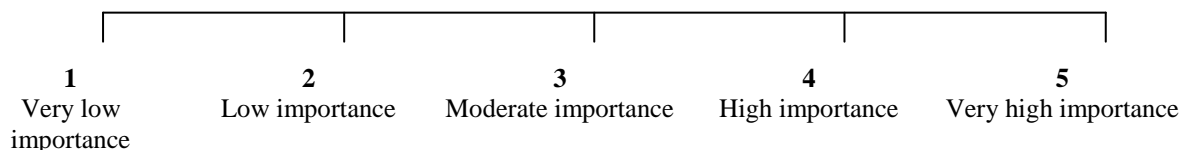
3-1 Did your bank concern about increasing the number of new personal account services provided via any of e-banking channels that were adopted by your bank during 1999-2008?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 3-6

If you answered yes to the above question, please indicate for each period below the importance to increase the number of personal account services. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

3-2 Was the length of time to add new personal account services via any of e-banking channels that were adopted by your bank a performance indicator?, Please put sign (X) in the suitable box.

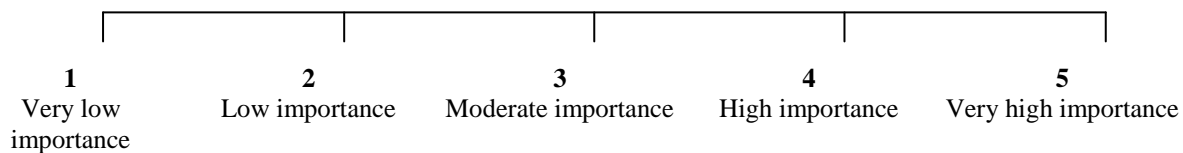
Yes

No

If no please go to 3-4

(3-2) continue next page.....

If you answered yes to the above question, please indicate for each period below the importance of time to add new personal account services. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

3-3 Please identify the average time to add the new service that your bank planned and the actual time achieved.

e-banking channel		1999-2000	2001-2003	2004-2006	2007-2008
ATM	Planned				
	Actual				
Internet Banking	Planned				
	Actual				
Telephone Banking	Planned				
	Actual				
Mobile Banking	Planned				
	Actual				

3-4 Please put in the box of each period the average number of new account services that your bank planned to add via each e-banking channel was adopted by your bank.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

3-5 Please identify which of the following actions had been adopted to add new service. Please put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Evaluate the quality of e-banking services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask e-banking customers regularly about the future services they want.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate the e-banking services provided by competitors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of professional in e-banking design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automate the e-banking design process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyze e-banking customer's database.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the financial resources to develop the new e-services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3-6 Please put in the box of each period the average number of account services that your bank provided via each e-banking channel was adopted by your bank.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

Fourth section: E-banking services' availability

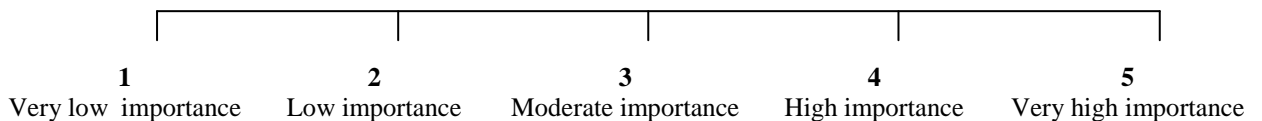
4-1 Did your bank concern about extending the operating hours per day and working days per week of any e-banking channels that were adopted by your bank during the period (1999-2008)?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 4-3

If you answered yes to the above question, please indicate for each period and e-banking channel below the importance of extending the operating hours and days. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				

Internet Banking				
Telephone Banking				
Mobile Banking				

4-2 Please identify which of the following actions were taken by your bank to extend e-banking operating hours and days. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Recruit more full time e-banking operators (e.g. full time call center agents).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recruit more part time e-banking operators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the use of e-banking operators' overtime.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide same e-banking channel via different path (e.g. provide SMS and mobile internet banking, call centers and interactive voice response).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interlink your e-banking channels with other banks (e.g. sharing ATMs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extend the capacity e-banking channels servers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use the excess capacity e-banking channels servers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4-3 Please identify the number of operating hours per day for each e-banking channel were adopted by your bank during each period.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

4-4 Please identify the number of operating days per week for each e-banking channel was adopted by your bank during each period.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

Fifth section: e-banking operating costs

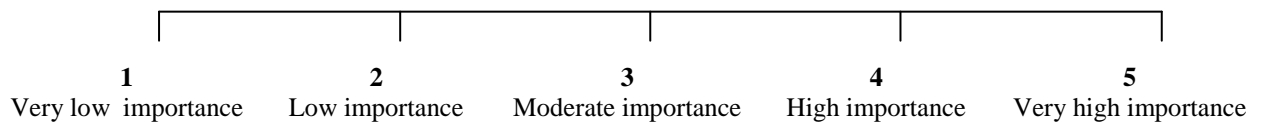
5-1 Did your bank concern about reducing the operating cost per e-banking transaction for any of e-banking channels were adopted by your bank during any of the following periods?, Please put sign (X) in the suitable box.

Yes

No

If no please go to 5-4

If you answered yes to the above question, please indicate for each period below the importance of reducing the operating cost per e-banking transactions for each e-banking channel was adopted by your bank. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

5-2 Please indicate average percentage of cost reduction per e-banking transaction that your bank planned to achieve for each e-banking channel adopted by your bank.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

5-3 Please identify which of the following actions were taken by your bank to reduce the e-banking operations costs per transactions. Please put in the box of each period the sign (X) if the action was taken.

	1999-2000	2001-2003	2004-2006	2007-2008
Increase the number of e-banking transactions processed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of full time e-banking operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hire more part time e-banking operators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Redesign e-banking process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terminate some e-banking kiosk (e.g. terminate ATM kiosks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relocate some e-banking kiosks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outsource e-banking operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5-4 Please indicate average cost per e-banking transaction for each e-banking channel adopted by your bank.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

Sixth section: E-banking customers' confidentiality and security

6-1 Did any of your e-banking customers complain about breaches of confidentiality or security during the period 1999-2008? Please put sign (X) in the suitable box below.

Yes

No

If no please go to 6-2

If you answered yes for the question above; please identify the proportion for each period and each e-banking channel.

e-banking channels	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Mobile banking				
Internet banking				
Telephone banking				

6-2 Please identify which of the following actions were taken by your bank to improve the security and confidentiality of e-banking. Please put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Increase the number of authentication layers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use more authentication methods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control data integrity and risk of e-banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install CCTV in e-banking kiosks area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Locate e-banking kiosks in secure locations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-3 If increasing the number of authentication layer was adopted. Identify the number of layers had been added. If not go to 6-4.

	1999-2000	2001-2003	2004-2006	2007-2008
One layer added	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Two layers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Three layers or more	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-4 If using more authentication methods was adopted. Please identify which of following layers added. If not go to section 6-5.

	1999-2000	2001-2003	2004-2006	2007-2008
Something e-banking customers know (e.g. Password, ID, question, image...etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Something e-banking customer has (e.g. smart card)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Something e-banking customer is (e.g. finger print, face geometrics, user's voice...etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6-5 If control data integrity and risk was adopted by our bank; please identify which of the following actions was adopted. If adopted please put the sing (X) in the box of each period. If not go to tenth section.

	1999-2000	2001-2003	2004-2006	2007-2008
Using more data integrity technologies for e-banking (firewalls and SSL).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for data integrity technologies of e-banking system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check for e-banking channel.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop or update Written procedures for e-banking operations security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train the operators of e-banking on the written procedures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee to evaluate and plan e-banking risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the e-banking information system able to recover the power outage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide the customers with clear instructions about how to conduct secure e-banking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide customers with free-downloaded software as anti-virus and firewalls down loaded on customer's PCs or mobile devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encrypt all messages or instructions send from customers to the system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Send alert message to the customers after conducting e-banking transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Seventh section: E-banking Quality control

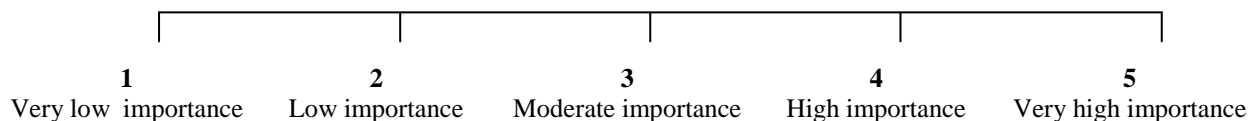
7-1 Was the number of e-banking transactions' errors a performance indicator in your bank for any of e-banking channels were adopted by your bank during 1999-2008?. Please put sign (X) in the suitable box.

Yes

No

If no please go to 7-5

If you answered yes to the above question, please indicate for each period below the importance of the reducing the number of e-banking transaction' errors for each e-banking channel. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

7-2 Was the quality of e-banking operations evaluated regularly by your bank during 1999-2008?, please put the sign (X) in the suitable box below.

Yes

No

If no please go to eighth section

If your answer to the previous question is yes, please identify which of the following actions were taken. Put sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Ask the customers to evaluate the quality of e-banking regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the e-banking system generate operating performance reports (e.g. the transaction time, percentage and types of errors).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop standards for e-banking operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compare the actual e-banking operations' performance with the standard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using statistical control charts to identify out of control of e-banking transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop e-banking claiming system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup e-banking transactions at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup e-banking transactions at the end of working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backup e-banking transactions online during the transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7-4 If errors in e-banking operations occurred, please identify which of the following actions were taken to deal with. Put in the box of each period the sing (X).

	1999-2000	2001-2003	2004-2006	2007-2008
Let the e-banking information system recover any transactions' errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let e-banking information system recover the wrong command sent by customers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the e-banking operators (e.g. call center agents) able to deal with e-banking complaints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hire professional team to handle e-banking services' complaints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7-5 Please identify the average proportion of e-banking transactions errors that occurred in each e-banking channel was adopted by your bank during each period.

e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Telephone Banking				
Mobile Banking				

Eighth section: E-banking services encounter quality:

8-1 Did your bank concern about improving the customers' perceived quality of e-banking encounter (e.g. website design, mobile or ATM screen design) during 1999-2008?, Please put sign (X) in the suitable box.

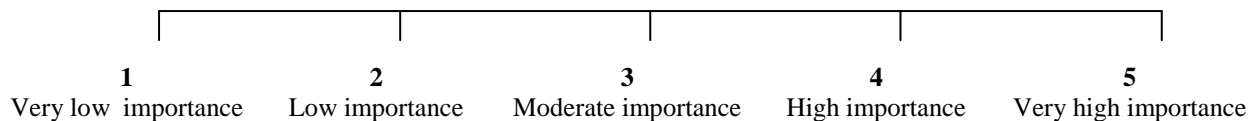
Yes

No

If no please go to ninth section

(8-1) continue next page.....

If you answered yes to the above question, please indicate for each period below the importance of improving the perceived quality of e-banking encounter for e-banking channels were adopted by your bank. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



e-banking channel	1999-2000	2001-2003	2004-2006	2007-2008
ATM				
Internet Banking				
Mobile Banking				
Telephone Banking				

8-2 Please identify which of the following actions were made to improve the e-banking encounter quality. Put the sign (X) in the box of each period of the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Give clear instructions and simple interface.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let the customer change the language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use attractive interface colors for website, or ATM screen or mobile internet banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of key clicks to conduct the service via internet banking or interactive voice response.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the time required to download the home page of internet banking or receiving reply to SMS banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the number of internet banking and mobile banking pages to reach log in.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using audio-visual content of internet banking or mobile internet banking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Train call center agents to treat customers better (e.g. use the customer first name)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of services provided via e-banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ninth section: E-banking accessibility:

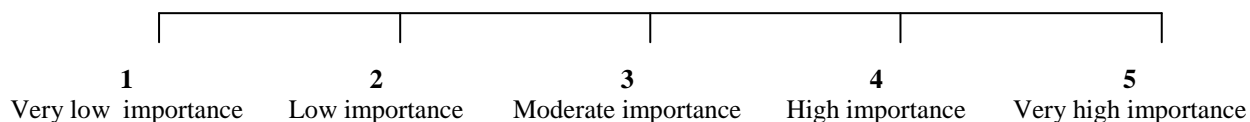
9-1 Did your bank concern about increasing the number of e-banking channels during the period 1999-2008?. Please put the sign (X) in the suitable box.

Yes

No

If no please go to 9-3

If you answered yes to the above question, please indicate for each period below the importance of adding new e-banking channel. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



1999-2000	2001-2003	2004-2006	2007-2008

9-2 Please identify the number of e-banking channels that your bank planned to add in each period.

1999-2000	2001-2003	2004-2006	2007-2008

9-3 Please identify the number of e-banking channels that your bank had in each period.

1999-2000	2001-2003	2004-2006	2007-2008

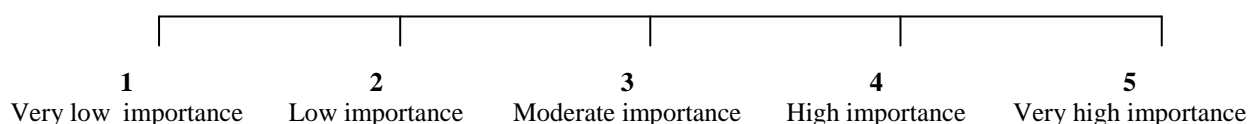
9-4 Did your bank concern about expanding the size of ATM network during the period 1999-2008?, please put the sign (X) in the suitable box below.

Yes

No

If no please go to 9-5

If you answered yes to the above question, please indicate for each period below the importance of expanding the ATM network. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.



1999-2000	2001-2003	2004-2006	2007-2008

9-5 Please put in the box of each period the average number of ATM kiosks that your bank planned to add.

1999-2000	2001-2003	2004-2006	2007-2008

9-6 Please identify which of the following actions were made to expand ATM network. Put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Place more ATM kiosks in urban, town and rural.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Place more ATM kiosks in premises (inside the branches)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Place more ATMs out premises whether attached in branches' walls, or in other sites as shopping areas, retail stores, business complex...etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interlink ATM system of your bank with other banks' ATM system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use different models of ATMs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9-7 Did your bank concern about improving the rank and speed of website during the period 1999-2008?, please put the sign (X) in the suitable box below.

Yes

No

If no please go to 9-10

If you answered yes to the above question, please indicate for each period below the importance of website rank and speed. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

9-8 Please put in the box of each period the planned rank and speed of your bank website.

	1999-2000	2001-2003	2004-2006	2007-2008
Website rank				
Website download speed				

9-9 Please identify which of the following actions were made to increase the size and rank of bank website. Put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Upgrade the bank's website ranks in popular search engines as Google or Yahoo.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the bank's website size.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
keep the website server independent from the internet banking applications server.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand the web server capacity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9-10 Please put in the box of each period the rank and speed of your bank website.

	1999-2000	2001-2003	2004-2006	2007-2008
Website rank				
Website download speed				

9-11 Did your bank concern about reducing the percentage of telephone banking customers who abandon during 1999-2008? Please put the sign (X) in the suitable box below.

Yes

No

If no please go to 9-14

If you answered yes to the above question, please indicate for each period below the importance of reducing the abandon percentage. Please put a number in the box using a scale of 1-5; where 1 is very low importance and 5 is very high importance.

1	2	3	4	5
Very low importance	Low importance	Moderate importance	High importance	Very high importance

1999-2000	2001-2003	2004-2006	2007-2008

9-12 Please put in the box of each period the average percentage of abandon calls that your bank planned to reduced.

1999-2000	2001-2003	2004-2006	2007-2008

9-13 Please identify which of the following actions were made to reduce the percentage of abundant calls. Put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Let customer access telephone banking service via interactive voice and call centre agents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Route customer to specialized call agent automatically.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(9-13) continue next page.....

Adopt computer telephone integration technology.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Install advanced telephone technology system as PBX.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of telephone banking lines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Subscribe with digital telephone line service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of services provided via interactive voice response.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9-14 Please put in the box of each period the average percentage of abandon calls.

1999-2000	2001-2003	2004-2006	2007-2008

Tenth section: E-banking Customer satisfaction and retention

10-1 Please indicate for each period below the degree of customer satisfaction. Please put a number in the box using a scale of 1-5; where 1 is very low and 5 is very high.

1	2	3	4	5
Very low	Low	Moderate	High	Very high

1999-2000	2001-2003	2004-2006	2007-2008

10-2 Please identify the average percentage of personal customers who used any of e-banking channels during 1999-2008. put in the box of each period the average percentage.

1999-2000	2001-2003	2004-2006	2007-2008

10-3 Please identify the average number of e-banking users during 1999-2008. Put in the box of each period the average number.

1999-2000	2001-2003	2004-2006	2007-2008

Thanks for your cooperation.

Would you like to have a detailed report about your bank and a summary of the research conclusions?

Yes No

Please identify the followings:

Your job title:.....

You experience.....

Your experience in the current enterprise.....

Questionnaire (E2)



Dear Sir or Madam, The specialist in internet banking operations,

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project, I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

Yazan Migdadi

Ph.D. Candidate

Bradford University, School of Management

Emm Lane, Bradford, West Yorkshire, BD9 4JL.

E-Mail: Y.K.A.migdadi@bradford.ac.uk

Telephone: ++44 1274 497891

Questionnaire #: E2
Bank Code:..... (For the researcher use).

This questionnaire is concerned with identifying the internet banking process design and capacity management. This questionnaire is divided to eighteen sections; each section is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 10-15 minutes.

- 1- When did your bank start the adopting of internet banking?.....
- 2- Please identify which of the following transactions conducted via your bank website. Start from the period that your bank started adopting internet banking. Please put in the box of each period the sign (X) if the transaction was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Fund transfer (internet and external)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Account enquiry (balance and statement)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activate or deactivate debit or credit card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying bills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic Loan application form.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic form of opening new account.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic debit or credit card application.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brokerage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tax payment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Convenient service as mobile top-up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 3- Please in the box of each period and for each banking transactions provided via your bank website the average number of steps the customer should follow to conduct the banking transaction.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Fund transfer (internet and external) after log in				
Account enquiry (balance and statement) after login				
Activate or deactivate debit or credit card.				
Paying bills.				

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Fill the electronic form of opening new account.				
Fill the electronic form of new loan account.				
Fill the electronic form of debit of credit application.				

- 4- Please identify the average time required to conduct the internet banking transactions for each period that your bank provided internet banking during it.

1999-2000	2001-2003	2004-2006	2007-2008

- 5- Please put in the box of each period the average number of the banking transactions processed each month via your bank website. Start from the period that your bank started adopting internet banking.

1999-2000	2001-2003	2004-2006	2007-2008

- 6- Please put in the box of each period the number of hours per day and days per week the internet banking was available in each period. Start from the period that your bank started adopting internet banking.

	1999-2000	2001-2003	2004-2006	2007-2008
Number of hours per day.				
Number of days per week.				

- 7- Please identify how internet banking transactions were processed in the servers. Put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The customer's request will be stored on the host-server or e-purse which will be transferred later to the core banking system to be processed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer's request will be submitted to core banking system via financial switch to be processed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 8- Please identify which of the followings represents how internet banking system of your bank was integrated with other e-banking channels. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Internet banking system was independent from banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any transactions conducted via internet can be made available in real time by other banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 9- Please identify the number of internet banking authentication layers that your customer will follow before the login, please put in the box of each period the letter that represents the number of layers.

1999-2000	2001-2003	2004-2006	2007-2008

- 10- Please identify which of the following authentication technologies were adopted by your bank's internet banking system, please put sign (X) in the box each period if the technology was adopted.

	1999- 2000	2001-2003	2004-2006	2007-2008
Password or PIN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific customer knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer must select images from a pool of images	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
USB token is a device that plugged directly into the customer's computer's USB port, which stores digital certificates that can be used in a public key infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
password generator which is a device that generate one time password (OTP), which generated on the screen after entering the password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smart card which can be inserted into a compatible reader attached with the user computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finger print Scanner attached with the user computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special camera attached with the user computer to scan face geometrics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recorded user's voice on a USB which installed to the user computer for authorization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scanner attached with the user's computer, which used to scan the finger and hand geometry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special camera attached with the user computer used to scan Iris.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special camera attached with the user computer used to scan retinal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special technology used to record the key typing pattern of the user which used to trace the key stork pattern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
One time password scratch card	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10 Continue next page.....

Sending the fund transfer request or purchase authentication by telephone, e-mail, fax, when the proper response is recorded then the transaction is consumed

The IP address recognition or geographic region

The customer will choose a symbol form a pool of symbols, which will appear on the corner of the internet banking interface to protect customer against phishing.

11- Please put in the box of each period the proportion of your internet banking customers who complain about breaches of confidentiality or security.

1999-2000	2001-2003	2004-2006	2007-2008

12- Please identify the role of customer service and relations management staff in your bank. Put the sign (X) in the box of each period of the role was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Retrieve internet banking transactions history to answer customer's questions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retrieve all internet transactions history to resolving issues with customer as solving errors modify or cancel service subscription	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyze the internet banking transactions data to create rules or guides about internet banking services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13- Please identify which of the following actions or technologies were adopted by your bank's internet banking system; please put the sign (X) in the box of each period if it was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Using secure socket layer (SSL) in internet banking system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using of fire walls to protect internet banking system against hackers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular system and network configuration review for internet banking system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular review for security and functionality of the internet banking system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for firewalls and antivirus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide customers with free-downloaded software as anti-virus and firewalls.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written procedures for internet banking security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee for evaluating and planning e-banking risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13 Continue next page.....

Provide the customers with clear instructions about how to conduct secure internet banking transactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The data transferred were encrypted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital notary is used by internet banking system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital signature is used by internet banking system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using unique session ID number for tracking the transactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sending alert message to customer after conducting internet banking transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14- Please put in the box of each period the average number of internet banking transactions errors.

1999-2000	2001-2003	2004-2006	2007-2008

15- Please identify which of the following quality control practices were adopted by your bank's internet banking system. Put sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The internet banking customers were asked to evaluate the quality of branches' services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The internet banking system was generated a report includes the average transaction time, the percentage of transaction errors, the number of transactions processed ...etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The performance indices of internet banking system were compared with planned indicators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The statistical data were analyzed by using statistical quality charts to identify the out of control transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of internet banking complaining system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet banking system was able to recover transactions errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet banking transactions were backed up at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet banking transactions were backed up at the end of each working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet banking transactions were backed up on line in the time of transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16- Please identify which of the following capacity management actions were adopted by your bank internet banking system; please put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The internet banking transactions are handled via web server.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The internet banking transactions are handled via standalone server.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using leaflets, brochures and other media to educate customer about different services provided through internet banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using excess capacity on internet banking server.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17- Please identify the average number of transactions could be processed by the internet banking server.

1999-2000	2001-2003	2004-2006	2007-2008

18- Please identify which of the followings operate your bank internet banking service. Put in the box of each period sign (X) for the operator.

	1999-2000	2001-2003	2004-2006	2007-2008
Professional employees from inside the bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional employees from outside the bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The host server for your bank's website and internet banking is owned by other firms or institution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The host server for your bank's website and internet banking is owned by your bank.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please identify the followings

Your job title.....

Your experience.....

Your experience in the current enterprise.....



Questionnaire (E3)

Bank Code:..... (For the researcher use).

1- The Functionality of websites: (the website archive will be viewed from: www. Archive.org.)

	1999- 2000	2001- 2003	2004- 2006	2007- 2008
Transactional				
Open account application	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access account through balance or statement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debit or credit card application	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debit or credit card activation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open loan account	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Funds transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bill payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The using of e-cash to conduct retail banking transactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Convenient services as mobile phone top up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brokerage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tax payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informational				
Electronic brochures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General bank information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Products/Services information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Branch location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promotional information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General enquires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Specific enquires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Users feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FAQ (Frequently Asked Questions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contact telephone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contact address	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contact E-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search engine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reports download.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recruitment forms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Links to other sites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use some customized resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use some subscription options.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discussion group.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relational				
e-mail services provided on the web to customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Devising tools as loans or investment calculators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video conferencing or online communication.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2- The features of bank's website (the website archive will be accessed via: www.archive.org):

	1999- 2000	2001- 2003	2004- 2006	2007- 2008
Navigation				
Compatibility or the ability to access via widely used explorers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Permanent site menu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Home buttons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Labels on the pages of the web site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Translation of the web site into different languages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search for the keywords	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal web site links in new windows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Back to top button	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Breadcrumbs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tutorial documents (or demonstrations)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customization				
The availability of web customization tolls on the web; (e.g. colors customization).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Content				
The use of text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The use of graphics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The use of multi media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The number times the website was updated each year (this can be identified form: www.archive.org)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accessibility				
Size of home page	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of page to reach the internet banking section login	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The size of these pages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The number of external and internal links	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3- Identify the perceived quality of the service encounter according to the following scale:

1	2	3	4	5
Very low	low	moderate	High	Very high

	1999-2000	2001-2003	2004-2006	2007-2008
Easy to Navigate through website				
Clean, organized, easy-to-navigate pages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clear indication of site's contents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educational/training value.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to access website				
Speed to download home page, low congestion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speed to display between pages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy access to customer inquiry mechanism/home page throughout site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to find the website through popular search engine as google.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Website Content				
Attractive, compelling audio-visual elements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up-to-date information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clearly written, easy to understand, and well-organized content.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informational value.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Website customization				
The customized of website interface design by the end user (e.g. customizing colours..etc).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The ability to change the website language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Website functionality				
Customer inquiry mechanism/customer service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to e-mail firm from the site and responsiveness of reply	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Channel support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Real-time online interactive elements (i.e., chat rooms)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to conduct online service via website	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Questionnaire (E4)



Dear Sir or Madam, The specialist in ATM operations.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project, I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

Yazan Migdadi

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Telephone: ++44 1274 497891

Questionnaire #: E4
Bank Code:..... (For the researcher use).

This questionnaire is concerned with identifying ATM transactions process design and capacity management. This questionnaire is divided to fourteenth items; each item is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 10-15 minutes.

1- When did your bank start the adopting of ATM system?.....

2- Please identify which of the following transactions processed via your bank ATM. Put in the box of each period Sign (X) if the transaction was processed.

	2000-1999	2003-2001	2006-2004	2008-2007
Account enquiry (balance and statement)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cash withdraw	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cash -depositing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fund transfer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic Loan application form.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bill payments.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3- Please identify the average number of steps required to conduct the following ATM transactions by your bank system for each period.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Account enquiry (balance and statement)				
Cash withdraw				
Cash deposit.				
Fund transfer.				
Electronic Loan application form.				
Bill payments.				

4- Please put in the box of each period that your bank adopted ATM the average time was required to conduct the banking transactions via ATM.

1999-2000	2001-2003	2004-2006	2007-2008

5- Please put in the box of each period the average number of the previous banking transactions processed each month via your bank ATM.

1999-2000	2001-2003	2004-2006	2007-2008

6- Please put in the box of each period the number of hours per day and days per week the ATM was available in each period. Start from the period that your bank started adopting internet banking.

	1999-2000	2001-2003	2004-2006	2007-2008
Number of hours per day.				
Number of days per week.				

7- Please put in the box of each period the number of ATM system authentication layers that your customer will follow before conduct the transactions.

1999-2000	2001-2003	2004-2006	2007-2008

8- Please identify which of the following authentication technologies were adopted by your bank's internet banking system, please put sign (X) in the box each period if the technology was adopted.

	1999- 2000	2001-2003	2004-2006	2007-2008
Password or PIN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific customer knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finger print Scanner attached with ATMs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special camera attached with ATMS to scan face geometrics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special camera attached with ATMS to scan Iris.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special technology used to record the key typing pattern of the use to trace the key stork pattern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9- Please identify which of the following actions or technologies were adopted by your bank's ATM banking system; please put the sign (X) in the box of each period if it was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Using secure socket layer (SSL) in ATM system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using of fire walls to protect ATM system against hackers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular system and network configuration review for ATM system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular review for security and functionality of ATM system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for firewalls and antivirus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written procedures for ATM security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The data transferred were encrypted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee for evaluating and planning e-banking risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sending alert message to customer after conducting ATM transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using spot lights in the area surrounds the ATM kiosks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using closed circuit television cameras to monitor ATM users and areas around.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10- Please put in the box of each period the proportion of your ATM customers who complain about breaches of confidentiality or security.

1999-2000	2001-2003	2004-2006	2007-2008

11- Please identify which of the followings represents how ATM system of your bank was integrated with other e-banking channels. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
ATM system was independent from banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any transactions conducted via ATM can be made available in real time by other banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12- Please identify the role of customer service and relations management staff in your bank. Put the sign (X) in the box of each period of the role was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Retrieve ATM transactions history to answer customer's questions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retrieve ATM transactions history to resolving issues with customer such as solving errors modify or cancel service subscription	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyze ATM transactions data to create rules or guides about internet banking services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13- Please identify which of the following quality control practices were adopted by your bank's ATM system. Put sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
ATM customers were asked to evaluate the quality of branches' services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM system was generated a report including the average transaction time, the percentage of transaction errors, the number of transactions processed ...etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The performance indices of ATM system were compared with planned indicators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The statistical data were analyzed by using statistical quality charts to identify the out of control transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of ATM complaining system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM system was able to recover transactions errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM transactions were backed up at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM transactions were backed up at the end of each working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM transactions were backed up on line in the time of transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14- Please put in the box of each period the average number of ATM transactions errors.

1999-2000	2001-2003	2004-2006	2007-2008

15- Please identify the design of ATM interface design features from the followings; please put the sign (X) in the box of each period if the feature was available.

	1999-2000	2001-2003	2004-2006	2007-2008
The ATM screen is colored.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The ATM is black screen in green text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The ability to change the interface language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM screens can run advertisements about the bank's products during processing the transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The ability to identify the locations of other ATMs or branches via ATMs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item (15) continue next page.....

Advices about the minimum amount of cash to keep in order having higher interest rate or for not charges after conducting the transaction.

ATM provides the users the contacts details of bank headquarter or customer server.

16- Please identify the percentage of your bank ATMs using windows software and that using OS/2, please put the average percentage in the box of each period.

Type of ATM software	1999-2000	2001-2003	2004-2006	2007-2008
OS/2				
Windows				

17- Please identify which of the following capacity management action for your bank ATM system were adopted. Please put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The bank's staffs replenish ATMs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outsourced the cash replenishment of ATM kiosks (e.g. retile shops owner will replenish the kiosks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the capacity of ATM application server.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using leaflets, brochures and other media to inform customer about different services provided through ATMs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using leaflets, brochures and other media to inform customer about different locations of ATMs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inform customers about the peak and low demand periods of ATMs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATMs' network of your bank is connected with other bank ATM network in Jordan via JONET.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18- Please identify the percentage of the following types of ATMs used in your bank, please put in the box of each period the average percentage.

Type of ATM	1999-2000	2001-2003	2004-2006	2007-2008
Wired dial-up ATM.				
Wired lease line (EDSN) ATM.				
Wireless ATM.				

19- Please put in the box of each period the average number of ATM transactions that could be processed by ATM server during a minute.

1999-2000	2001-2003	2004-2006	2007-2008

20- Please identify the percentage of the following models of ATMs used in your banks, please put in the box of each period the average percentage.

ATM's Models	1999-2000	2001-2003	2004-2006	2007-2008
Outdoor island with canopy				
Outdoor building				
Graphic wrap				
Wall ATM				
Drive-up ATM				
Free standing enclosure				
Lobby ATMs				

Please identify the followings

Your job title.....

Your experience.....

Your experience in the current enterprise.

Questionnaire (E6)



Dear Sir or Madam, The Specialist in telephone banking operations.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project, I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

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Telephone: ++44 1274 497891

Questionnaire #: E6
Bank code:..... (for the researcher use)

This questionnaire is concerned with identifying the telephone banking process design, capacity management, location and operations outsourcing. This questionnaire is divided to 28 items; each item is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 15-20 minutes.

Please keep in your mind the following definitions:

Interactive voice response system (IVR): the telephone banking service requires from the customer to use their telephone key boards to conduct the banking transactions without interaction with live agents.

Call center service: is the banking service that provided to customer through agent.

1- Did your bank adopt interactive voice response at any time during 1999-2008?. Put the sign (X) in the suitable box.

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
Please identify when.....	If no please go to 5

If you answered yes to the above question please identify which of the following services available to the customer. Put the sign (X) in the box of each period if the service was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Conduct some banking transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Choose the call agent he would like to contact according to agent specialization or language or both.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leave voice message to the call agent to contact the customer later.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2- Please identify which of the following banking transactions could be conducted by using interactive voice response.

	1999-2000	2001-2003	2004-2006	2007-2008
Account enquiry (e.g. balance, last transactions).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fund transfer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request debit or credit card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activate or deactivate the debit or credit cards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request cheque book.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request statement to be received by fax, e-mail, or post.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 3- For each of the previous transactions please identify the number of steps the customer should follow. Put the average number in the box of each period.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Account enquiry (e.g. balance, last transactions).				
Fund transfer.				
Request debit or credit card.				
Activate or deactivate the debit or credit cards.				
Request cheque book.				
Request statement to be received by fax, e-mail, or post.				

- 4- Please put in the box of each period that your bank adopted interactive voice response service (IVR) the average time was required to conduct the banking transactions via IVR.

1999-2000	2001-2003	2004-2006	2007-2008

- 5- Did any errors occur in the banking transactions processed via interactive voice response system?

Yes

No

If no please go to 6

If you answered to the previous question yes, please identify the proportion of errors for each period that your bank was adopted IVR.

1999-2000	2001-2003	2004-2006	2007-2008

- 6- Did your bank adopt call center service at any time during 1999-2008?. Put the sign (X) in the suitable box.

Yes

Please identify when.....

No

If no please go to 21

- 7- Please identify how the customer could reach the call center for each of the following periods.

	1999-2000	2001-2003	2004-2006	2007-2008
The customer will interact first with interactive voice response to choose the agent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer will interact with call agent directly after dialing the number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8- Please identify the kind of call agent the customer interacts with for each of the following periods.

	1999-2000	2001-2003	2004-2006	2007-2008
The customer will interact with a single pool of agents able to deal with all banking services provided by the call centres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer will interact with specialized agent in particular banking services or able to speak particular language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9- Please identify which of the following banking transactions could be conducted by using call centre.

	1999-2000	2001-2003	2004-2006	2007-2008
Account enquiry (e.g. balance, last transactions).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fund transfer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request debit or credit card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activate or deactivate the debit or credit cards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request cheque book.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request statement to be received by fax, e-mail, or post.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10- For each of the previous transactions please identify the number of steps required to conduct each transaction by the call agent. Put the average number in the box of each period.

Transactions	1999-2000	2001-2003	2004-2006	2007-2008
Account enquiry (e.g. balance, last transactions).				
Fund transfer.				
Request debit or credit card.				
Activate or deactivate the debit or credit cards.				
Request cheque book.				
Request statement to be received by fax, e-mail, or post.				

11- Please put in the box of each period that your bank adopted call centers the average time was required to conduct the banking transactions.

1999-2000	2001-2003	2004-2006	2007-2008

12- Please which of the following contact routes were available to your agent to contact customers. Put the sign (X) if the technology was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Fax.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voice web chat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-mail.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic enquiry form via web.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video web chat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13- Did any errors occur in the banking transactions processed call centre system?

Yes

No

If no please go to 14

If you answered to the previous question yes, please identify the proportion of errors for each period that your bank was adopted call center.

1999-2000	2001-2003	2004-2006	2007-2008

14- Please identify which of the followings represent your bank call agent's job design. Put in the box of each period the sign (X) if adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Structured job pre-identified call length, break time or work schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Give call agent leeway in setting work schedule, flexible call length or break time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If further processing after hang up is required; this is done by the other specialized employees rather than call service agent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If further processing after hang up is required; this is done by the call service agent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The agents are able to handle all calls regardless of their specializations in handling specific calls.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15- Please identify to what extent your bank is concern about training the agents on the following skills. Put in the box of each period the number that represents the degree from the following scale.

1	2	3	4	5
Very low concern	Low concern	Moderate concern	High concern	Very high concern

Skills	1999-2000	2001-2003	2004-2006	2007-2008
Using the telephone system and related technologies effectively as how to use the desktop tools, e-mail, chat taps...etc				

The communication skills and soft skills as using smile, and the tone of voice.				
---	--	--	--	--

16- Please identify which of the following bases were used by your bank for compensating call agent. Put in the box of each period the sign (X) if the base was used.

	1999-2000	2001-2003	2004-2006	2007-2008
The adherence to shifts or time schedule.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The absenteeism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls handling time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How the call center agent treat customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Free of errors transactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17- Please identify which of the following customer's information available to call agent during the transaction. Put the sign (X) if the information was available.

	1999-2000	2001-2003	2004-2006	2007-2008
The transactions conducted via branches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The transactions conducted via other e-banking channels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The results of customer data analysis and behavior.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The transactions conducted via call center	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18- Was the call center services outsourced any time during 1999-2008?. Put the sign (X) in suitable box.

Yes

No

If no please go to 19

If you answered yes to the above question; Please identify which of the following actions were adopted. Put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The call center equipment was owned by your bank and the staff were recruited by your bank but managed by third party.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The bank owned the call centres equipments but the staff and management were outsourced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your bank contracted out live agent calls centre to the third party, so he owned the equipments and hired the staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19- Please identify the location of your bank call centre; please put the sign (X) in the box of each period if the call centre exists in this location.

	1999-2000	2001-2003	2004-2006	2007-2008
Onshore; or places in Jordan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Offshore; or exists outside Jordan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The location of onshore call centre is in urban area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The location of onshore call centre is in rural area

20- Please identify which of the following computer technologies were used by your bank telephone banking system, please put in the box of each period the letter that represents the type of computer system was used from the following scale.

	1999-2000	2001-2003	2004-2006	2007-2008
Mainframe architecture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Client server architecture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operating software is Windows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The system is able to record calls to be screened later	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The system is able to record the activities of call agent made on terminals or PCs which will be screened later.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21- Please identify which of the following telephone technologies were adopted, please put in the box of each period the sign (X) if the technology was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Computer-telephone integration; a middleware used automatic number identification authentication.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automatic call distributor; a specialized switch programmed to route calls automatically after selecting the service required by the customer from a list.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dialed number identification service; a technology used to rout the dial number to specialized agent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22- Please identify the number of the followings for each period.

	1999-2000	2001-2003	2004-2006	2007-2008
The number of full time call service agents				
The number of part time call service agents				

23- Please identify which of the followings represents how telephone banking system of your bank was integrated with other e-banking channels. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Telephone banking system was independent from banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any transactions conducted via telephone banking can be made available in real time by other banking channels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24- Please identify which of the following telephone system was used by your bank. Put the sign (X) in the box of each period if the system was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Private branch exchange telephone system (PBX); an automatic phone switch which is used to direct calls in the bank or call centre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Key telephone systems; every phone line appears on every telephone set connected to the system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25- Please identify which of following phone line services that your banking subscribed. Put the sign (X) in the box of each if the service was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Traditional line, which carry one phone call on a single connection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital line, which carry large number of telephone calls (e.g. 24 calls) on a single connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26- Please identify which of the following quality control actions of telephone banking system was used by your bank; please put the sing (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The customers are asked to evaluate the quality of call centre regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The system is generated a report includes the average call time, the percentage of hang up calls, the number of calls processed ...etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The performance indices are compared with planned performance or other banks performance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The statistical data are analyzed by using statistical quality charts to identify the out of control transactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of telephone banking complaining system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The telephone banking system is able to recover transactions errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All telephone banking transactions are backed up at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All telephone banking transactions are backed up at the end of each working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All telephone banking transactions are backed up on line in the time of transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27- Did the customers of telephone banking complaint against bleach their confidentiality and security.

Yes

No

If no please go to 28

If you answered to the previous section yes, please identify the percentage of complaints in each period.

1999-2000	2001-2003	2004-2006	2007-2008

28- Please identify which of the following mechanism was used by your bank to protect the telephone banking data. Put the sing (X) in the box of each period if the mechanism was adopted

	1999-2000	2001-2003	2004-2006	2007-2008
Using secure socket layer (SSL) in telephone banking system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using of fire walls to protect telephone banking system against hackers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular system and network configuration review for telephone banking system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular review for security and functionality of telephone banking system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for firewalls and antivirus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written procedures for telephone banking security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forming special committee for evaluating and planning e-banking risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sending alert message to customer after conducting telephone banking transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

29- Please identify which of the following capacity management actions were adopted by your bank telephone banking system; please put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Using telephone lines carry out large number of calls at the same time (e.g, 24 calls)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using system let each telephone call occupy very limited portion of bandwidth available range from 9-16 kbps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The using of specialized software to supply real time information to enable managers to conduct forecasting, scheduling, and identify daily workload management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using leaflets, brochures and other media to inform customer about the telephone banking services to motivate them toward using telephone banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

29 continue next page.....

E-mails or fax received from customer are answered in a short time (e.g. during 24hrs) to drive customers away from the call centre.

Inform customer about peak and valleys demand periods of telephone banking system.

30- Please identify the number of telephone trunk lines that connect the bank telephone system to public service telephone service for each of the following periods.

1999-2000	2001-2003	2004-2006	2007-2008

31- Please put in the box of each period that your bank adopted telephone banking the number of banking transactions that could be processed by the telephone banking system's server or mainframe.

1999-2000	2001-2003	2004-2006	2007-2008

32- Please put in the box of each period that your bank adopted telephone banking the number of banking transactions that the telephone banking system could be processed.

1999-2000	2001-2003	2004-2006	2007-2008

33- Please identify the number of authentication layers of telephone banking transactional services that the customer was followed before conduct the retail banking transactions, please put in the box of each period the number of layers.

1999-2000	2001-2003	2004-2006	2007-2008

34- Please identify which of the following authentication methods were adopted by your bank's telephone banking system. Put the sign (X) in the box each period if the method was adopted.

1999-2000 2001-2003 2004-2006 2007-2008

Password or PIN

Customer's Account number.

Questions or quires that require specific customer knowledge to answer.

Password generator which is a device that generate one time password (OTP), which generated on the screen after entering the password.

Voice recognition device used to compare the voice ton with metrics saved on the server.

One time password scratch card

35- Please identify which of the following services were provided by your bank's telephone banking system. Put the sign (X) in the box each period if the service was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Interest rate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bank's products and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Branches and ATM locations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please identify the followings

Your job title.....,

Your experience.....,

Your experience in the current enterprise.....

Questionnaire (E7)



Dear Sir or Madam, The specialist in mobile banking operations.

I am a Jordanian Ph.D. candidate in Bradford University -United Kingdom; I am doing a project about the importance of traditional and electronic banking operations strategies that have been adopted by retail banks in Jordan during the period (1999-2008). I would be very grateful if you could assist in this study by completing the attached questionnaire.

These strategies are very important since the retail banking sector in Jordan faced a lot of changes in the recent years as a consequences of the need to adopt e-banking channels (internet banking, mobile banking, telephone banking, and ATMs), the launching of new banking and electronic transaction laws, and the need to comply with Basel Accord II.

Your cooperation in this research project will help in identifying the best practices of e-banking and traditional banking operations strategies, the outputs of this research should be helpful to the decision makers of retail banks in Jordan, and will also be of value to banks in developing countries; since the banking sector in Jordan is one of the leaders in the Middle East and North Africa Region.

Your anonymity will be protected, also the results will be presented in a form that will prevent its identification, and furthermore, the confidentiality will be protected by developing a secure database which will be deleted after the completion of the research project, I thank you sincerely for your kind cooperation and support.

If you have any inquires or questions do not hesitate to contact the research on the following contacts

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Questionnaire #: E7
Bank Code:..... (For the researcher use).

This questionnaire is concerned with identifying the mobile banking process design and capacity management. This questionnaire is divided to thirty eight sections; each section is separate and independent, so you can take a break any time. The time required to complete the questionnaire is between 10-15 minutes.

Please keep in your mind the following definitions:

Push SMS: alert message send to customers' mobile in a form of SMS after conducting banking transactions.

Pull SMS: the customer will conduct banking transactions by using SMS.

Mobile internet banking: the customer will enter the bank website via his mobile device (e.g. mobile phone) to conduct banking transactions

1- Did your bank adopt push SMS banking at any time during 1999-2008?. Put the sign (X) in the suitable box.

Yes

No

Please identify when.....

If no please go to 8

If you answered to the previous question yes, please identify which of the following messages were sent to the customer. Put the sing (X) in the box of each period that your bank adopted mobile banking.

	1999-2000	2001-2003	2004-2006	2007-2008
ATM Withdrawal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheque Deposit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheque Withdrawal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deposited Cheque Returned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cash Deposit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fixed Deposit Maturity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Issued Cheque Returned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inward & Outward Transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bill Payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debit and credit cards Payments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cash Withdrawal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheque book request.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bank products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stock prices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Currency prices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 2- Please put in the box of each period that your bank was adopted push SMS the average number of message the server of SMS was able to process and send each hour.

1999-2000	2001-2003	2004-2006	2007-2008

- 3- Please put in the box of each period that your bank was adopted push SMS the average time was required to send alert message after conducting the transactions.

1999-2000	2001-2003	2004-2006	2007-2008

- 4- Please put in the box of each period that your bank was adopted push SMS the average number of the messages were sent each month via your bank push SMS service.

1999-2000	2001-2003	2004-2006	2007-2008

- 5- Did the customer complain about breach their confidentiality or security as a result of adopting push SMS service during the period 1999-2008? Please put the sign (X) in the suitable box.

Yes

No

If no please go to 6

If you answered to the previous question yes, please identify the percentage of customers complained.

1999-2000	2001-2003	2004-2006	2007-2008

- 6- Please put in the box of each period that your bank was adopted push SMS the average operating cost per message.

1999-2000	2001-2003	2004-2006	2007-2008

- 7- Did any errors occur in the messages sent to the customers during the period 1999-2008? Please put the sign (X) in the suitable box.

Yes

No

If no please go to 8

If you answered to the previous question yes, please identify the percentage of errors.

1999-2000	2001-2003	2004-2006	2007-2008

8- Did your bank adopt pull SMS banking at any time during 1999-2008?. Put the sign (X) in the suitable box

Yes

No

Please identify when.....

If no please go to 21

If you answered to the previous question yes; please identify which of the following banking transactions were provided by this channel. Put the sign (X) in the box of each period if the transaction was provided.

	1999-2000	2001-2003	2004-2006	2007-2008
Account enquiry (balance or mini statement).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fund transfer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheque book request.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request debit or credit card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Block debit or credit card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9- Please identify how Pull SMS banking transactions were flow. Put the sign (X) in the box of each period if the procedure was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The customer sent customized SMS with predefined command and PIN, and then he/she will receive the response in the form of short message.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer received a text menu on his/her phone after calling a specified number, then the customer will send the number of service in the menu and send it via SMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The command will be stored on the host-server or e-purse which will be transferred later to the core banking system to be processed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The command will be submitted to core banking system via financial switch to be processed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10- Please put in the box of each period that your bank was adopted pull SMS the average number of message the server of SMS was able to process and send each hour.

1999-2000	2001-2003	2004-2006	2007-2008

11- Please put in the box of each period that your bank was adopted pull SMS the average time was required to response to the customer message.

1999-2000	2001-2003	2004-2006	2007-2008

12- Please put in the box of each period that your bank was adopted pull SMS the average number of the messages were sent each month via your bank pull SMS service.

1999-2000	2001-2003	2004-2006	2007-2008

13- Did the customer complain about breach their confidentiality or security as a result of adopting pull SMS service during the period 1999-2008? Please put the sign (X) in the suitable box.

Yes

No

If no please go to 14

If you answered to the previous question yes, please identify the percentage of customers complained.

1999-2000	2001-2003	2004-2006	2007-2008

14- Please put in the box of each period that your bank was adopted pull SMS the average operating cost per message.

1999-2000	2001-2003	2004-2006	2007-2008

15- Did any errors occur in the transactions processed via pull SMS during the period 1999-2008? Please put the sign (X) in the suitable box.

Yes

No

If no please go to 16

If you answered to the previous question yes, please identify the percentage of errors.

1999-2000	2001-2003	2004-2006	2007-2008

16- please identify which of the following banking transactions were provided by this channel. Put the sign (X) in the box of each period if the transaction was provided.

	1999-2000	2001-2003	2004-2006	2007-2008
Stock prices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information about bank's products or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Currency prices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATM locations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Branches locations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17- Please identify which of the following access technology adopted by your bank SMS banking. Put in the box of each period the letter that represents the technology was adopted from the following scale.

	1999-2000	2001-2003	2004-2006	2007-2008
Unstructured supplementary service data 1 (USS1) which allows one way communication.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unstructured supplementary service data 2 (USS2) which allows two ways communication.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structured short service message (SSMS).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SIM application toolkit as SAT which allows the service provider or bank to house the consumer's mobile banking menu within SIM card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18- Please identify the number of authentication layers of pull SMS Banking that the customer was followed before conduct the transactions, please put in the box of each period the number that represents the number of layers.

1999-2000	2001-2003	2004-2006	2007-2008

19- Please identify which of the following authentication methods were used by your bank pull SMS banking; please put the sign (X) in the box of each period if the method was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The user should enter PINs to authenticate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific customer knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The user of mobile banking system should call interactive voice response system to verify the PINs number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The user will be provided by token card which include onetime password to be used for pull SMS banking transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer will enter the bank website put his username and password, then he will receive a onetime password sent in the form of SMS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20- Please identify which of the following capacity management actions were adopted by your bank pull SMS banking system; please put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Inform customers about the services provided by pull SMS banking to motivate them to use mobile banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inform customer about peak and valleys demand period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customers can use the pull SMS banking services of other banks in Jordan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21- Did your bank adopt mobile internet banking at any time during 1999-2008?. Put the sign (X) in the suitable box bellow.

Yes

Please identify when.....

No

If no please go to 22

If you answered to the above question is yes; please identify which of the following banking transactions provided by your bank. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
Account enquiry (balance or mini statement).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheque book request.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Request debit or credit card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Block debit or credit card.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fund transfer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bill payment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22- Please identify how mobile internet banking transactions were flow. Put the sign (X) in the box of each period if the procedure was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The customer can access the bank website directly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software as JAVA/J2ME was installed on the customer mobile device to let them access the mobile internet banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer should prepare the mobile banking transactions off line before browsing the mobile internet banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer's request will be stored on the host-server or e-purse which will be transferred later to the core banking system to be processed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The customer's request will be submitted to core banking system via financial switch to be processed.

23- Please put in the box of each period that your bank was adopted mobile internet banking the average number of transactions the server was able to process each hour.

1999-2000	2001-2003	2004-2006	2007-2008

24- Please put in the box of each period that your bank was adopted mobile internet banking the average time was required to conduct the transaction after login.

1999-2000	2001-2003	2004-2006	2007-2008

25- Please put in the box of each period that your bank was adopted mobile internet banking the average numbers of the transactions were processed each month via your bank mobile internet banking.

1999-2000	2001-2003	2004-2006	2007-2008

26- Did the customer complain about breach their confidentiality or security as a result of using mobile internet banking during the period 1999-2008? Please put the sign (X) in the suitable box.

Yes

No

If no please go to 28

If you answered to the previous question yes, please identify the percentage of customers complained.

1999-2000	2001-2003	2004-2006	2007-2008

27- Please put in the box of each period that your bank was adopted mobile internet banking the average operating cost per transaction.

1999-2000	2001-2003	2004-2006	2007-2008

28- Did any errors occur in the transactions processed during the period 1999-2008? Please put the sign (X) in the suitable box.

Yes

No

If no please go to 29

If you answered to the previous question yes, please identify the percentage of errors.

1999-2000	2001-2003	2004-2006	2007-2008

29- Please identify the mobile banking access technology was adopted by your bank. Put in the box of each period the letter that represents the technology was adopted from the following scale.

	1999-2000	2001-2003	2004-2006	2007-2008
Wireless application protocol 1 (WAP 1.0)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wireless application protocol 2 (WAP 2.0)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30- Please identify the number of authentication layers of mobile Banking that the customer was followed before conduct the transactions, please put in the box of each period the number that represents the number of layers.

1999-2000	2001-2003	2004-2006	2007-2008

31- Please identify which of the following authentication methods were used by your bank mobile banking; please put the sign (X) in the box of each period if the method was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The mobile banking user should enter PINs to authenticate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Questions or quires that require specific customer knowledge to answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer must select images from a pool of images.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The user of mobile banking system should call interactive voice response system to verify the PINs number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The user will be provided by token card which include onetime password to be used for mobile banking transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customer will enter the bank website put his username and password, then he will receive a onetime password sent in the form of SMS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32- Please identify which of the following capacity management actions were adopted by your bank mobile internet banking system; please put the sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Inform customers about the services provided by internet banking to motivate them to use mobile banking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inform customer about peak and valleys demand period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The customers can use the internet banking services of other banks in Jordan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33- Please identify the degree of integration between your bank mobile banking and other banking channels. Put in the box of each period the sign (X) if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Mobile banking system database is soiled from other banking channels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any transactions conducted via mobile banking can be made available in real time by other banking channels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

34- Please identify the role of customer service and relations management staff in your bank. Put the sign (X) in the box of each period of the role was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Retrieve mobile banking transactions history to answer customer's questions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Retrieve mobile banking transactions history to resolving issues with customer as solving errors modify or cancel service subscription	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyze mobile banking transactions data to create rules or guides about internet banking services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35- Did the mobile banking operated by external agent?. Put the sign (X) in the suitable box bellow.

Yes

No

If no please go to 36

If you answered to the above question yes; please identify the operator from the following. Put the sign (X) in the box of each period.

	1999-2000	2001-2003	2004-2006	2007-2008
The mobile network operator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Third party rather than mobile network operator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36- Please identify which of the following quality control practices were adopted by your bank's mobile banking system. Put sign (X) in the box of each period if the action was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
The mobile banking customers were asked to evaluate the quality of branches' services regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The mobile banking system was generated a report includes the average transaction time, the percentage of transaction errors, the number of transactions processed ...etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The performance indices of mobile banking system were compared with planned indicators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The statistical data were analyzed by using statistical quality charts to identify the out of control transactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The availability of mobile banking complaining system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobile banking system was able to recover transactions errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobile banking transactions were backed up at the end of each working day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobile banking transactions were backed up at the end of each working week.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobile banking transactions were backed up on line in the time of transaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37- Please identify which of the following actions or technologies were adopted by your bank's mobile banking system; please put the sign (X) in the box of each period if it was adopted.

	1999-2000	2001-2003	2004-2006	2007-2008
Using secure socket layer (SSL) in mobile banking system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using of fire walls to protect mobile banking system against hackers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular system and network configuration review for mobile banking system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular review for security and functionality of the mobile banking system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conduct regular update for firewalls and antivirus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide customers with free-downloaded software as anti-virus and firewalls.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducting data integrity check.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written procedures for mobile banking security, data backup, system update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Forming special committee for evaluating and planning e-banking risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide the customers with clear instructions about how to conduct secure mobile banking transactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All information stored on the mobile device is encrypted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All communication messages are encrypted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38- Please identify the mobile network operators channel that your bank subscribed with, please put in the box of each period the sing (X).

	1999-2000	2001-2003	2004-2006	2007-2008
2G GSM gateway	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5G GPRS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3G	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please identify the followings

Your job title.....

Your experience.....

Your experience in the current enterprise...

