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AN EVALUATION OF THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ON THE DEVELOPMENT OF BANKING SERVICES (CASE STUDY: IRAN)

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Abstract
The appearance of ICTs has changed the nature of modern society. Research and development activities concerning the application of ICTs in modern banks and other institutions assume great significance in Iran and other developing country. The empirical study reveals very interesting findings such as active association of banking personnel with ICTs and wider utilization of ICTs in the Banks. The study clearly established that ICTs are personally, professionally, organizationally and socially beneficiary to a great extent in Banks. But ICTs are not promoting personal management and human resource development in banks in view of their built-in limitations, according to the study. In retrospect, the study envisages the subtle excising of ICTs that enforce changes in the knowledge, attitude, behavioral patterns and performance and banking personal in Iran. The temporal drawbacks of ICTs also envisage future investigation at a different time periods and scales thereby the impact of ICTs on the development of banking services in Iran. The research suggest the government of Iran, modern banks and research and development organization to develop infrastructure facilities and evaluate the internal factors (personnel, funding, management etc.) and external factors (cultural of technology, social environment, government intervention, needs for customers etc.) in order to evolve suitable intervention strategies for the successful application of ICTs in the process of management.

Keywords: Communication technology, Banking services, Human resource development.

Introduction

Banking is a highly information intensive activity in Iran and other developing countries. The appearance of electronic banking services has changed the nature of financial management all over the world. Recently a number of Banks have started to offer electronic banking to their customers. Electronic banking has become the most effective and profitable distribution channel of the banks because it enables the banks to save costs. Information and Communication Technologies (ICT) contributes to a significant lowering of the transaction costs and also to a reduction of the information asymmetries. The extent of usage of ICT in the banking sector has brought about a process of standardization which has facilitated the source-friendly and users-friendly economic transactions. ICT is the combination of manufacturing services industries that capture, process, transmit and display data and information electronically.

Blurton (2002) observed that "ICTs are a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information. Tinio (2003)stated that "Information and Communication Technologies (ICT) include radio and television as well as newer digital technologies such as computers and the Internet which have been considered as potentially powerful enabling tools for educational change and reform all over the world". Guislain et al (2005) defined Information and Communication Technology as "a broad and encompassing term that refers to the range of technologies that facilitate the sharing of knowledge. Lee and Xiao (2007) defined ICT as "a set of generic technologies, such as semiconductors, computer systems and software which has the broad power to reduce the costs of coordination, communications and information processing.

Technological and regulatory changes have influenced the banking industry during the past 25 years so much so that they are the most important changes to have occurred in the banking industry, apart from the ones directly caused by the changing nature of the society itself. Here, technology is used interchangeably with information and communication technologies together with computer science. Today banks use technology as a revolutionary means of delivering services to customers by designing new delivery channels and services.

Engler and Essinger (2000) observed **"**However, the framework and paradigm within which these services are delivered has changed out of recognition. Successful use of data mining helps banks achieve significant increase in profits and thereby retain sustainable advantage over their competitors. From a theoretical perspective, banking technology is not a single, stand-alone discipline, but a confluence of several disparate fields such as finance (subsuming risk management), information technology, communication technology, computer science, and marketing science.

Earlier studies reveal that the adoption of ICT products is higher among the new generation banks for all the products except MICR, Local Area Network, Wide Area Network and Daily Calculation of Accounts Program (Master, 1992; Park, 2001; Karajaluoto, 2002; Graham, 2003; Britz, 2005; Chinn, 2005; Fabian et al, 2005; Lee and Guo, 2006; Khan, 2007; Awad, 2008; Herselman et al, 2008). The new generation banks have ensured 100% rate of adoption of new technologies in their day to day operations such as Electronic Funds Transfer, Computerized Credit Rating and Daily Calculation of Accounts Program. Most of the old generation banks have Electronic Home, Office Banking, Telephone Banking, Automated Teller Machine and Electronic Data services to a limited extent. Gazali (2005) studied the economic impact of ICT usage in Malaysia and reported that recent usage of ICT was poorly regarded as one of the contributing factors in improving the productivity of the Malaysian economy. Twati (2005) examined the organizational culture of the oil and gas and banking sectors in Libya and highlighted the importance of organizational culture variables in IS/IT adoption and identifying the presence and relevance of these was undertaken using the OCAI. Siam (2006) conducted an evaluation on e-commerce in Arab Bank, Jordan Kuwaitis Bank, and City Bank and reported that most of the banks still provided traditional electronic services such as ATM, and Visa card, whereas Internet still not used for electronic executive business by the banks. The study suggested that adoption of electronic banking services would reduce the operational costs by increasing banking transactions through Internet. Ndubisi (2006) analyzed the customer's perception and intention to adopt Internet in Malaysia and reported that influences of perceived usefulness, perceived ease of use, perceived reliability, and computer self-efficacy on IB adoption in Malaysia were the primary factors associated with the adoption of Internet banking by the consumers. This study has suggested that adoption of Internet banking system would bring the consumers closer the banking institutions and provide round the clock services. Munadi Rizal (2006) examined the relationship between ICT and ACEH development and reported that ICT implementation considerably improved administrative activities and public service

In the present times, most of the developing countries have realized the importance of Information and Communication Technology (ICT) in banking sector and have started the shifting from traditional trade into electronic trade. Consequently, most of these countries have achieved remarkable success in the application of ICT and improving the delivery system. In present study, an attempt is made by the researcher to assess the extent of application of ICT in various banks of Tehran district of Iran. It is also felt necessary to identify and analyze the disadvantages of application of ICT in banking sector in order to suggest suitable preventive, protective and promotional measures which would enhance the credibility and efficiency of banking institutions in Tehran district of Iran. Applications of

ICT in banking services in Iran and the impact of ICT on the development of banking services in Tehran district were primarily considered in the study

Literature review

Information and Communication Technologies (ICT) occupy an enviable status in the process of organizational management in the present times. Information is regarded as power in the modern society which is also known as 'information society'. Since the launch of Internet, the large planet has become a smaller one. Revolutionary changes and developments in the field of ICT have undoubtedly changed the profile of the modern organizations. Engler and Essinger (2000) had also identified the reasons which have brought about revolutionary changes in the banking system as follows:

a. Governments have implemented philosophies and policies based on an increase in competition in order to maximize efficiency.

b. This has resulted in the creation of large new financial institutions that operate simultaneously in several financial sectors such as retail, wholesale, insurance, and asset management.

c. New technology creates an infrastructure allowing a player to carry out a wide range of banking and financial services, again simultaneously.

d. Banks had to respond to the increased prosperity of their customers and to customers' desire to get the best deal possible. This has encouraged banks to extend their activities into other areas.

e. Banks had to develop products and extend their services to accommodate the fact that their customers are now far more mobile.

ICTs have rendered enormous impact on all spheres of human life and modern organizations including the banks. The global trend business area set certain challenges that cannot be fulfilled with the help of the traditional banking system in Iran and other developing nations. The survey of current banking system in Iran reveals that it requires rapid modification and adaptation to cope with the changing global economy and needs of the various stakeholders who matter most from the point of view of development of banking sector.

Hwang, Ku, Yen and Cheng (2004) stated with pride that ICT has not only helped banks to deliver robust and reliable services to their customers at a lower cost, but also helped banks make better decisions. Dawn (2005) further reported that "The performance of Iran's ICT cluster is based to a large extent on the developments of telecom which provides substantial input to computer services and equipment production. Graham (2003) reported that

"While ICT provides so many advantages to the banking industry; it also poses security challenges to banks and their customers. Even though Internet banking provides ease and convenience, it is most vulnerable to hackers and cyber criminals. Online fraud is still big commerce around the world. Chandrashekar (2000) assessed the growth and development of ICT as instruments of human development in Indian organizations and reported that there was a cumulative spread of the benefits derived from the new technologies which are expected to directly improve human development through the application of highly developed and dispersed ICT skills to improving governance, facilitating the empowerment of poorer households and communities and rendering the delivery of the benefits of extension programmes and welfare schemes more transparent and efficient. Kolodinsky, Hogarth and Hilgert (2004) assessed the consumer acceptance of e-banking technology and highlighted the areas of special consideration in the adoption of new technologies. The researchers suggested that consumers could be motivated to utilize e-banking services if they are properly informed and trained in the art and craft of technology management. Fabiani et.al. (2005) studied the Information and Communication Technologies (ICT) adoption choices of Italian manufacturing firms and observed that the most important determinants of application of ICT were the size, the human capital of the workforce and the presence of large firms in the local environment. ICT adoption also tended to be associated with changes in a firm's organizational structure, according to the study.

The Information and Communication Technology (ICT) and allied tools of organizational management have profound position in international arena that no technology can compete with them operationally and otherwise. Information and Communication Technology (ICT) is one of the basic outcomes of data technology and equipment for development of efficient banking services since their save lot of time, energy and man power. The economic competence of modern banks has remarkably improved over a period of time thanks to revolutionary changes in the field of ICT. A new delivery system has been designed on the basis of tested and tried technological advances which have transformed the operations of modern banks. Innovative services are delivered to the customers through electronic and interactive communication channels which are the by products of Information and Communication technological revolution. ICT enable financial institutions, customers, individuals or business to access accounts, transact business and obtain information on financial products and services without any delay or discrepancies.

Modern banks use several strategies to win over the various stakeholders who are the prime movers of organizational development regardless of the nature and scope of functions of various organizations. Prominent among those strategies include cost-leadership strategy, differentiation strategy, focused cost-leadership strategy, and focused differentiation strategy.

Cost-leadership strategy aims at attracting stakeholders with low prices that are achieved by low costs, which occur by offering free checking and ICT services in banking.

Given rapid technological advances, electronic banking, payment systems and credit registries enhanced the financial services at national and international level. Developed markets have demonstrated the potential and some pitfalls of e-banking and credit registries. E-banking is a new feature leading to a multi channel strategy that will influence competitive advantage in a developing nation like Iran. Several studies which are conducted on the application of ICT in banking sector in other developing nations have also suggested that banks should incorporate ICT into their strategic plans for effective performance, payment and delivery systems.

In this context, the accessibility of ICT, information acquisition, utilization of banking services and the role of ICT in the development of banking services were primarily investigated in the present study. The tools of ICT which link the employees, customers and other stakeholders to the main stream of banking services in Iran was also investigated by the researcher. This chapter enumerates the hypotheses of the study, variables of the study, study areas, study sample, research design and statistical analysis, limitations of the study and definitions of terms used in the study. Applications of ICT in banking services in Iran and the impact of ICT on the development of banking services in Tehran district were primarily considered in the study because:

- In this age of information revolution, command over information is an unmistakable index of power and development.
- Modern banks in Iran and elsewhere cannot do away with ICT which has become powerful means of institutional management.
- Iran has achieved considerable progress in the banking sector through various innovative and progressive policies, programs and services.
- Application of ICT has enhanced the managerial competence in banks and other organizations in Tehran district of Iran.
- The banks in Iran have developed and maintained ICT with a view to build and promote mutually beneficial relationship between the organization and stakeholders.
- Application of ICT in banks of Iran has to be carried away on the basis of tested and tried methods in order to improve organizational success and operational efficiency.
- Constant and continued research on the application of ICT in banks and impact of ICT on the development of banking services is imperative in a developing nation like Iran.

Methodology

Sample design

Morgan table was followed by the researcher to select about 338 respondents representing both of public and private banks in Tehran. The sample size is divided among branches of banks in Tehran district by following the proportionate stratified random sampling technique. The websites of Central Reserve Bank in Iran and other central banks in Tehran were visited by the researcher to select a representative sample of the study. It was decided to interview the personnel of the banks (top management, middle management and lower management) for the purpose of collection of primary data. Primary data were collected from 338 respondents who are directly associated with Banks as personnel.

Scope of the Study

The present study approached the problem through a systematic survey method which is very popular in the fields of commerce and management. A structured and pre-tested interview schedule was administered to the personnel working in public and private Iranian banks located in Tehran district. Tehran is one of the most advanced cities in the field of ICT in the country, and the level of ICT education and its application is high. Moreover, the ICT infrastructures are proportionately distributed in Tehran district. The ICT tools applied in the field of banking is first utilized in this district too, and then is scattered in other districts. The number of banks in Tehran district is 2763; primary data were gathered from 338 respondents through questionnaire tool by the researcher, distributed amongst these banks, using proportionate stratified random sampling. The questionnaire was designed to explore their understanding about the acceptability of ICT, application of ICT, implementation of ICT and impact of ICT in the banks. The questionnaire consisted of three segments which focused the attention of the respondents on the dependent variables of the study such as level of acceptability of ICT in banking services, application of ICT in banking services, utility of ICT in banking services, customers' response to ICT in banking services and employee's response to ICT in banking service.

Before administering the questionnaire to the respondents to the study, a pre-test was conducted in the non-sample area during December, 2008. The contents of the questionnaire were subjected to changes and modifications in order to make the questionnaire free from ambiguity. The entire study was exploratory in nature and that several ideas were also incorporated into the research design on the basis of informal discussions and consultation with specialists in commerce and management fields.

The validity of the instrument of data collection was scientifically tested by the researcher in consultation with the experts in the fields of commerce, management and

information and communication technologies. It was ensured that the instrument served the purpose of collection of precise primary data from the field. The reliability of the data was also duly examined by the researcher on the basis of meticulous observation of the existing state of affairs and the perception of the respondents on various aspects of usage of ICTs in the banks. Thus, the validity and reliability of the research tools, techniques, data and statistical tests were systematically examined by the researcher in order to overcome possible inconsistencies and drawbacks of data collection, data analysis, drawing of inferences and presentation of suggestions.

Demographic Features of the Sample

In a developing country like Iran, the demographic features of the people matters most from the point of view of attainment of social change, economic development, political reformation, cultural promotion and so on. The demographic features of the study sample has a definite bearing on the association of the respondents with the institutional affairs, management process, organization development process, crisis management process and so on. In the present study, the researcher made a conscious effort toward identifying a reasonably representative sampling so as to assess their perception, experience and vision about the application of ICTs in the various banking operations in Iran. Prominent among the independent variables considered for the present study include-gender, age, education, position, duration of service and monthly income. The demographic features of the study sample numbering 338 are presented in the following table and paragraphs.

Table 1
Respondents and their Gender

Independent Variables	Respondents	Percentage (%)
Male	252	74.56%
Female	86	25.44%
Total	338	100%

Source: Secondary data

The total number of respondents was 338, out of which 252 (74.56%) were male and 86 (25.44%) were female respondents. The female respondents were less in number because they were not actively involved in the banking sector either as employees or as depositors due to the existing socio-economic circumstances. The men represent the total sample in large number because they sit on the driver's seat because of the prevailing social, economic, political and cultural order in Iran and other societies.

Table 2
Respondents and their Position

Independent Variables	Respondents	Percentage (%)
Employees	35	10.36%
Supervisors	81	23.96%
Executive Manager	100	29.59%
Middle Manager	69	20.41%
Top Manager	53	15.68%
Total	338	100%

Source: Survey data

There were 100 (29.59%) of the respondents representing executive managers' occupational category, 81 (23.96%) of the respondents representing supervisors' category, 69 (20.41%) of the respondents representing middle management category, 53 (15.68%) of the respondents representing top management category and 35 (10.36%) of the respondents representing employees' category. A majority of the respondents 222(65.68%) belonged to the middle and top management categories.

Table 3
Respondents and their Monthly Income

Independent Variables	Respondents	Percentage (%)
3000,000 to 4000,000 RLs	26	7.69%
4100,000 to 5000,000 RLs	47	13.91%
5100,000 to 6000,000 RLs	119	35.21%
6100,000 to 7000,000 RLs	68	20.12%
7100,000 to 8000,000 RLs	63	18.64%
Above 8000,000 RLs	15	4.44%
Total	338	100%

Source: Survey data

There were 119 (35.21%) respondents with a monthly income of 5100,000 to 6000,000 RLs, 68 (20.12%) of the respondents with a monthly income of 6100,000 to 7000,000 RLs, 63 (18.64%) of the respondents with a monthly income of 7100,000 to 8000,000 RLs, 47 (13.91%) of the respondents with a monthly income of 4100,000 to 5000,000 RLs, 26 (7.69%) of the respondents with a monthly income of 3000,000 to 4000,000 RLs and 15 (4.44%) of the respondents with a monthly income of above 8000,000 RLs. A vast majority of the respondents belonged to the middle and high-income groups since they earned 5100,000 to 8000,000 RLs and above.

Table .4
Respondents and their Education

Independent Variables	Respondents	Percentage (%)
Diploma	46	13.61%
Associate of Arts	68	20.12%
Bachelor	131	38.76%
Master	73	21.60%
Ph.D.	20	5.92%
Total	338	100%

Source: Survey data

There were 131 (38.76%) respondents representing bachelors' category, 73 (21.60%) of the respondents representing post-graduates, 68 (20.12%) of the respondents representing associate of arts category, 46 (13.61%) of the respondents representing diploma category and 20 (5.92%) of the respondents representing doctoral degree holder's category. A majority of the respondents (224 i.e., 66.27%) belonged to the educationally creamy layer since they have obtained bachelors, masters and doctoral degrees in Iranian society.

Table .5
Respondents and their Duration of Service

Independent Variables	Respondents	Percentage (%)
Less than 5 years	41	12.13%
6-10 years	81	23.96%
11-15 years	114	33.73%
16-20 years	56	16.57%
21-30 years	46	13.61%
Total	338	100%

Source: Survey data

There were 114 (33.73%) respondents representing the group of personnel with 11-15years of service, 81 (23.96%) of the respondents representing the group of 6-10years of service, 56 (16.57%) of the respondents representing the group of 16-20 years of service, 46 (13.61%) of the respondents representing 21-30 years of service and 41 (12.13%) of the respondents representing less than 5 years of service. A majority of the respondents (63.90%) belonged to the group which has rendered 11-30 years of service in various Banks in different capacities.

A majority of the respondents belonged to male category (252 i.e., 74.56%), young and middle age groups (271 i.e., 80.18%), graduates, post-graduates and doctoral degree holders group (224 i.e., 66.27%), middle and top management categories (222 i.e., 65.68%) and 11-30 years of service groups (216 i.e., 63.90%) respectively.

Testing of Hypotheses

H1: Information and Communication Technology (ICT) acceptability level differs from one bank to another bank.

Chi-Square test, Hypothesis 1

Components	Mean	S.D	Difference	Chi-Square	P value
A1	0.94	0.23	0.06	266.27	0.00
A2	1	.00[a]	-	-	-
A3	0.9	0.3	0.1	215.68	0.00
A4	0.94	0.23	0.06	266.272	0.00
A5	1	.00[a]	-	-	-
A6	0.96	0.21	0.04	280.663	0.00
A7	0.45	0.5	0.55	3.420	0.044
A8	0.82	0.39	0.18	135.491	0.00
A9	0.89	0.32	0.11	203.089	0.00
A10	0.51	0.5	0.48	0.296	0.586
A11	0.07	0.26	0.93	245.396	0.00
A12	0.75	0.43	0.25	83.503	0.00
A13	0.75	0.43	0.25	83.503	0.00
A14	0.8	0.4	0.2	125.55	0.00
A15	0.89	0.32	0.11	203.089	0.00
A16	0.45	0.5	0.55	3.03	0.42
A17	0.26	0.44	0.74	75.74	0.00
A18	0.75	0.44	0.25	81.527	0.00
A19	0.67	0.47	0.33	38.45	0.00
A20	0.44	0.5	0.56	4.734	0.03
A21	0.34	0.47	0.66	35.799	0.00
A22	0.52	0.5	-0.48	0.580	0.446
A23	0.31	0.46	-0.69	48.473	0.00
A24	0.12	0.33	-0.88	190.876	0.00
A25	1	.00[a]	-	-	-
A26	0.52	0.5	-0.48	0.580	0.446
A27	0.06	0.23	-0.94	266.272	0.00
A28	0	.00[a]	-	-	-
Total	0.61	0.33	0.11	102.08154	0.07

Source: Survey data

The results and discussions pertaining to the level of acceptability of ICTs in various banks have been proved that the banks have made a good beginning in regard to acceptance of ICTs as effective means of operations management. The findings clearly indicate that the level of acceptability of ICTs did not vary from one bank to another bank. Therefore, hypothesis "Information and Communication Technology (ICT) acceptability level differs from one bank to another bank is rejected.

H-2: Effective use of Information and Communication Technology (ICT) increases the efficiency in banking services.

Chi-Square test, Hypothesis 2

Components	Mean	S.D	Difference	Chi-Square	P value
B1	3.05	0.56	1.95	194.065	0.00
B2	4.09	0.29	0.91	225.373	0.00
B3	3.6	0.65	1.4	92.03	0.00
B4	3.82	0.98	1.18	189.101	0.00
B5	3.86	0.62	1.14	114.538	0.00
B6	4.32	0.76	0.68	52.053	0.000
B7	3.17	0.66	1.83	80.278	0.00
B8	3.04	0.63	1.96	107.118	0.00
B9	3.45	0.71	1.55	182.136	0.000
B10	3.86	0.35	1.14	170.414	0.00
B11	3.81	0.58	1.19	149.544	0.00
B12	2.89	0.6	2.11	142.46	0.00
B13	4.18	0.49	0.82	259.817	0.00
B14	3.65	0.66	1.36	82.462	0.00
B15	3.04	0.47	1.96	301.639	0.00
B16	4.37	0.48	0.63	22.911	0.00
B17	3.64	0.48	1.36	25.041	0.00
B18	2.66	0.65	2.34	281.846	0.00
B19	3.49	1.03	1.51	134.592	0.00
B20	3.72	0.68	1.28	65.643	0.00
B21	4.22	0.42	0.78	104.568	0.00
B22	3.26	0.98	1.74	107.467	0.00
B23	3.26	0.44	1.74	79.574	0.00
B24	3.77	0.66	1.23	73	0.00
B25	3.1	0.3	1.9	215.68	0.00
B26	3.41	0.49	1.59	10.651	0.001
B27	3.73	0.45	1.27	70.166	0.00
B28	2.73	0.53	2.27	183.663	0.00
B29	3.05	0.37	1.95	429.308	0.00
B30	3.78	0.42	1.22	102.355	0.000
Total	3.53	0.58	1.47	141.65	0.00

Source: Survey data

The results and discussions pertaining to the adoption of ICTs in various banks have been proved that banks have successfully adopted ICTs for institutional management in general and operations management in particular. The findings clearly indicate that there was meaningful correlation between adoption of ICTs and efficiency in banking services. The hypothesis **"**Effective use of Information and Communication Technology (ICT) increases the efficiency in banking services**,** is *ACCEPTED*. H-3: There is a direct relationship between ICT application and employees' behavior in banking services.

Chi-Square test, Hypothesis 3

Components	Mean	S.D	Difference	Chi-Square	P value
E1	4.1864	0.49104	0.81	97.32	0.00
E2	3.7367	0.62955	1.26	143.195	0.00
E3	3.1746	0.38015	1.83	149.757	0.00
E4	3.9024	0.59118	1.1	153.769	0.00
E5	3.4586	0.65803	1.54	98	0.00
E6	3.2308	0.42195	1.77	1.704	0.192
E7	3.5355	0.49948	1.46	250.763	0.00
E8	4.1864	0.49104	0.81	0.107	0.324
E9	3.4911	0.50066	1.51	79.781	0.000
E10	3.9822	0.66246	1.02	259.817	0.00
E11	3.1775	0.48524	1.82	13.68	0.00
E12	3.3994	0.4905	1.6	88.799	0.00
E13	3.6391	0.64446	1.36	273.68	0.00
E14	3.2781	0.47444	1.72	275.615	0.00
E15	3.1627	0.47505	1.84	259.817	0.00
Total	3.57	0.53	1.43	143.05	0.034

Source: Survey data

The results of the study with respect to the application of ICTs and employees behavior in banks have been proved that banks have effectively adopted ICTs to enrich the banking operations in general and effectiveness of services of the employees in particular. The findings clearly indicate the direct relationship existed between application of ICTs and employees behaviour with respect to banks. The hypothesis **"**There is a direct relationship between ICT application and employees' behavior in banking services "is ACCEPTED. H-4: There is a direct relationship between ICT application and customer's behavior in banking services.

Chi-Square test, Hypothesis 4

Components	Mean	S.D	Difference	Chi-Square	P value
D1	4.0503	0.55591	0.95	194.065	0.00
D2	3.9615	0.70711	1.04	43	0.00
D3	3.1834	0.38759	1.82	135.491	0.00
D4	4.0385	0.63643	0.96	104.633	0.00
D5	3.0858	0.4095	1.91	372.077	0.00
D6	2.8047	0.64709	2.2	87.077	0.000
D7	3.3964	0.7682	1.6	294.024	0.00
D8	4.4467	0.58045	0.55	127.355	0.00
D9	4.1686	0.70897	0.83	43	0.000
D10	3.7544	0.66853	1.25	69.876	0.00
D11	3.9053	0.58915	1.09	152.26	0.00
D12	4.2988	0.64182	0.7	87.521	0.00
D13	4.4112	0.49279	0.59	10.651	0.00
D14	3.7633	0.42568	1.24	93.74	0.00
D15	3.9467	0.5583	1.05	191.03	0.00
Total	3.81	0.59	1.19	133.72	0.00

Source: Survey data

The results of the study with respect to the application of ICTs and customers behavior in banks have been proved that banks have successfully adopted ICTs to cater to the needs of the customer and facilitate positive customer behavior with respect to the management of banking services. The findings further indicate that a direct relationship existed between application of ICTs and customer behavior with respect to banks. The hypothesis "There is a direct relationship between ICT application and customer's behavior in banking services "is ACCEPTED. H-5: in providing the banking services to the customer, the factors like systems and nature of banking affects the level of acceptability of the ICT.

Chi-Square test, Hypothesis 5

Components	Mean	S.D	Difference	Chi-Square	P value
C1	3.49	0.5	1.51	0.107	0.07
C2	3.27	0.44	1.73	72	0.000
C3	4.45	0.58	0.55	127.355	0.00
C4	3.72	0.45	1.28	63.065	0.00
C5	3.49	0.66	1.51	122.385	0.00
C6	3.5	0.5	1.5	0	1.00
C7	3.77	0.42	1.23	100.166	0.00
C8	3.4	0.49	1.6	13.68	0.00
C9	3.25	0.69	1.75	55.568	0.00
C10	3.9	0.85	1.1	91.586	0.00
C11	3.27	0.44	1.73	72	0.00
C12	3.81	0.39	1.19	132.97	0.03
C13	4.4	0.49	0.6	13.68	0.00
C14	3.91	0.59	1.09	152.260	0.000
C15	4.19	0.72	0.81	37.178	0.00
C16	3.86	0.62	1.14	114.538	0.00
C17	3.78	0.85	1.22	39.84	0.00
C18	3.67	0.47	1.33	39.811	0.000
C19	3.95	0.48	1.05	282.65	0.00
C20	3.94	0.77	1.06	9.485	0.01
C21	3.49	0.5	1.51	0.107	0.74
C22	3.4	0.49	1.6	12.888	0.00
C23	3.58	0.65	1.42	98.87	0.00
C24	3.86	0.55	1.14	192.68	0.00
C25	4.06	0.82	0.94	2.065	0.36
Total	3.74	0.58	1.26	73.88	0.089

Source: Survey data

The results and discussions pertain into the role of ICTs in customer relations management in various banks have been proved that banks have effectively adopted ICTs for meaningful customer relations management. The findings clearly indicate that different system and nature of banking did not affect customer relations vis-à-vis application of ICTs. Thus hypothesis "In providing the banking services to the customer, the factors like systems and nature of banking affects the level of acceptability of the ICT"is REJECTED.

Conclusion

The ICT resources and services are largely designed to meet the needs of the developed sections of the society in the present times. Research initiatives should address specifically the requirements of marginalized sections of the society and they should not be left just to market forces which are bent upon commercialization of ICTs. Research and development endeavours are required in Iran and other developing countries with a view to strike a meaningful balance between technology-push and market-pull. The Government is mainly responsible for creating a congenial environment for the effective and judicious application of ICTs in modern institutions including banks. The Government should also form a strategic alliance of laboratories for banking research which would result in significant contributions to developing the economic status of the nation through meaningful application of ICTs.

The importance of economic development and technological progress forming the core of national development strategies is being strongly recognized in Iran. The challenge facing the country today is how to bridge the gap between information haves and have-nots through proper development of infrastructural facilities and application of new communication technologies. It is here that the social responsibility of the government, development organizations, banking institutions, media institutions and research and development organizations assumes profound social significance. Optimum use of all available communication resources including ICTs can certainly bring about the progress of banking institutions in general and empowerment of various stakeholders in particular. In the absence of planned, organized, scientific and systematic intervention strategies with reference to application of ICTs, the goals of organizational development, customer relations management, employee relations management and so on cannot be achieved. The future agenda for the government and banking institutions must deal with the meaningful application of ICTs as effective instrument of overall institutional progress and human relations management. The government and banking institutions have to work in close collaboration toward ensuring meaningful and constructive application of ICTs in the processes of institutional management and operations management.

Suggestions on Banks of Iran

The present investigation revealed that ICTs were accessible to the employees of the Banks to a considerable extent. The banks have also experienced certain advantages and limitations with respect to adoption of ICTs in the process of management. The banks of Iran have to rise against the time and achieve commendable progress by proper application of ICTs in day to day operations management in general and customer relations management in particular. Experience reveals that application of ICTs in banks has the highest effect on delivery of goods and services since it saves manpower, resources, time and energy and so on.

Meaningful strategies have to be developed towards the application of ICTs in Iranians banks in order to improve productivity and competitiveness of the banks. Current commerce processes and practices have to be examined in order to adopt ICTs since the hardware and software costs are becoming affordable and available for banks. The banks should also scientifically evaluate the domestic factors (staff, funding, management etc) and external factors (government support, culture of technology, customer's needs and demands etc) and evolve suitable intervention strategies for the effective and successful application of ICTs in the process of management.

Suggestions on Research and Development Organizations

Contemporary society is rightly characterized as 'information society' and the present age is also known as 'information age' mainly because of the revolutionary changes in the field of communication science and technology. The whole world has been converted into a 'global village' thanks to the communication revolution which has occurred all over the world. Information storage, retrieval and distribution are ensured in all modern organizations with a view to facilitate meaningful operations management. The present investigation revealed that ICTs were accessible to the vast majority of the respondents to a considerable extent. The new media of communication should be actively utilized for the purpose of disseminating information, education, training and guidance to various stakeholders on all aspects of banking operations in Iran. The research and development organizations are required to conduct need based research on various aspects of ICTs in order to provide meaningful suggestions and guidelines on the utilization of ICTs for various developmental endeavours in banks and various organizations. The R&D institutions have a social obligation of providing better vision for the adoption of ICTs in a developing country like Iran.

Scope for Future Research

The present study is an attempt to understand the perception of the employees of various Banks on the impact of ICTs on the development of the banking services in Iran. The role of ICTs in operations management, customer relations management and employee relations management is scientifically examined by the researcher. But, during the course of the study, it is understood that there are many areas which warrant serious research interest in this virgin area of research with special reference to Iran. The intervention of ICTs for effective banking operations management and human relations management with reference to the Iran is a very vast area of research. Yet, there are many areas of future research-ICTs and organizational development, ICTs and human resources development, ICTs and corporate communication management, ICTs and corporate advertising management, ICTs and customer relations management, ICTs and social change, ICTs and economic development, ICTs and governance, ICTs and education, ICTs and personality development; and ICTs and

leadership development which are broadly associated with the process of national development including effective banking service management.

The researcher is very conscious of the significance of ICTs in the contemporary society. It is clearly emphasized that adoption of ICTs for improvement of delivery system in a developing country like Iran is an enduring area of research. Hence, a combination of empirical study, case study, experimental research, quantitative analysis and qualitative analysis is strongly advocated for understanding the role of ICTs in the development of modern organizations in Iran and elsewhere.

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