

Brief Articles, Notes and Comments

**An Implication of Computerization:
Public vs. Private Sector Banks**

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This paper is a survey of public and private bank employee's responses towards computerization of banking services. The objective of this analysis is to measure the employees' awareness, perception, and the level of satisfaction with regard to IT Services offered by the Indian public and private sector banks in the Jaipur city. The study is divided into four major segments, i.e. Information Technologies Strategic Advantages, Technological Know-How and Organizational Capacity, Decision Making Process, and Motivations Toward Information Technology.

Keywords: Computerization, Banking Services, Employees' Satisfaction, Information Technology

Section I
Introduction

Indian banks have played a significant role in the development of Indian economy by inculcating the habit of savings in Indians and by lending finance to Indian industry. All the banks in India were earlier private banks. They were founded in the pre-independence era to cater to the banking needs of the people. But after nationalization of banks in 1969, public sector banks came to occupy dominant role in the banking structure. The financial reforms that were initiated in the early nineties and the globalization and liberalization measures brought in a completely new operating environment to the banks which were till then operating in a highly protected milieu. The arrival of foreign banks and financial institutions, the setting up of a number of private banks and the measures of de-regulation that encouraged competition has led to a situation where the survival of those who do not join the race will become difficult. Unless the state-of-the-art Information Technology (IT) was introduced as early as possible, winning new business and even holding on to the old one will become increasingly difficult.

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Services and products like anywhere banking, tele-banking, internet banking, web banking, e-banking, e-commerce, e-business, etc. have become the buzzwords of the day and the banks are trying to cope with the competition by offering innovative and attractively packaged technology-based services to their customers. Today world has become a global hub for business. To sustain and grow in the global market industries require a strong banking system, which can satisfy the increasing needs of customers. Indian banking system is now ready for the global market because of the automation.

David Whiteley has given a detailed description of e-banking in his book "e-Commerce". According to David there are times when bank customers want to know their bank balance or make an urgent payment and a visit to a branch is not convenient, internet banking can solve these problems. Online banking allows the customer to check their balance or pay a bill at any time of the day or night.

V Chandrasekhar, GM (Chief Technology Officer), Bank of Baroda, says "IT has changed the way a bank reaches out to its customers. Gone are the days where IT was deployed for automating accounting/back office functions to remove drudgery of employees. It is now massively being deployed for customer interfacing/interaction."

Naresh Wadhwa, Vice President-West, Cisco Systems (India), confirms "With the improved services and lowered costs of service providers such as DoT and VSNL, it became more feasible for banks to network their branches. This gave banks an impetus to network all the branches and set up centralized databases."

Section II **Objectives of the Study**

The following are some of the objectives of the present study:

- ❑ To know the IT advantages for the four major IT uses in banking operation: (a) Information Technologies Strategic Advantages, (b) Technological Know-how and Organizational Capacity, (c) Decision Making Process, and (d) Motivations Toward Information Technology.
- ❑ To develop understanding for comparability of employee perceptions for these segments.

Section III **Research Methodology**

Descriptive research methodology has been used to accomplish this research. Descriptive research can use qualitative or quantitative methods to describe or interpret a current event, condition or situation.

1. Collection of Data

For the study, both primary and secondary data has been collected, analysed and presented in a lucid statistical manner. For collection of primary data, stratified random sampling technique has been adopted. The literature review of the current study has been done on the basis of secondary data whereas primary data has been used to satisfy the objectives of the current study.

For secondary data, books, research papers, journals, magazines and internet were referred. Primary data has been collected with the help of a structured questionnaire. The questionnaire was developed as per the following mechanism.

2. Questionnaire Development

For the purpose of this analysis, a structured questionnaire was developed in two stages. In the first stage, an exploratory study was carried out using personal and focus group interviews. This was done to understand the factors influencing employees' preferences toward IT uses in banking operations. In the second stage, based on findings of the exploratory study, a 5-point Likert scale was developed. Items in the questionnaire covers four important segments of IT uses, i.e. Information Technologies Strategic Advantages, Technological Know-How and Organizational Capacity, Decision Making Process, and Motivations Toward Information Technology.

3. Scope of Study

Six banks have been considered for comparing the computerization effects in public and private sector banks. State Bank of India (SBI), Punjab National Bank (PNB) and State Bank of Bikaner and Jaipur (SBBJ) have been used from public sector whereas ICICI Bank, HDFC Bank and UTI Bank (now known as AXIS Bank) have been used from private sector banks for this study.

4. Comparative Study of Selected Public and Private Sector Banks

A questionnaire (enclosed as Annexure 1) having 22 questions covering four major IT uses, i.e. Information Technologies Strategic Advantages, Technological Know-How and Organizational Capacity, Decision Making Process, and Motivations Toward Information Technology was circulated among the bank employees for primary data collection. 125 copies of questionnaire were distributed in different branches of each bank out of which the following number of questionnaires were returned with full information:

SBI	88
PNB	85
SBBJ	107
HDFC	98
ICICI	74
UTI	105

The composite weighted Likert score for various banks is given in Table 1. These scores are collected by administering questionnaire for different statements as provided in Annexure 1.

The questionnaire mentioned in Annexure 1 was filled up by the employees of all six banks (name and sample size) mentioned above. The Likert score for each bank was calculated separately and then combined in Table 1 (*Tables and Annexure are given at the end of the paper*).

Result: From the above Likert calculation we may understand the IT advantages for the four major IT uses in banking operation:

- Information Technologies Strategic Advantages,
- Technological Know-How and Organizational Capacity,
- Decision Making Process, and
- Motivations toward Information Technology.

Public and private banks are giving equal weightage for instituting a technology watch in order to change rapidly your Information Technology when necessary. It shows that private banks are ahead in developing the technological culture in banks. Private banks are also being considered as a leader in Information Technology usage.

Private banks give more concentration on organization's business objectives while planning the information system. Private bank employees are using present technology in a very efficient manner for their decision making process and motivation for the same is also given by the respective banks of private sector.

Section IV **Data Analysis**

The following test has been conducted for data analysis:

Kruskal-Wallis

Kruskal-Wallis is a non-parametric method for testing whether three or more independent samples have been drawn from populations with the same distribution. It is a non-parametric test used to compare three or more independent groups of sampled data.

Characteristics: This test is an alternative to the independent group ANOVA, when the assumption of normality or equality of variance is not met. This, like many non-parametric tests, uses the ranks of the data rather than their raw values to calculate the statistic.

Test: The hypotheses for the comparison of two independent groups are:

(a) H_0 : The samples come from identical populations

(b) H_a : The samples come from different populations

Notice that the hypothesis makes no assumptions about the distribution of the populations. These hypotheses are also sometimes written as testing the equality of the central tendency of the populations.

The test statistic for the Kruskal-Wallis test is H . This value is compared to a table of critical values for U based on the sample size of each group. If H exceeds the critical value for H at some significance level (usually 0.05) it means that there is evidence to reject the null hypothesis in favour of the alternative hypothesis.

In the present study we have used Kruskal-Wallis for each segment. As we discussed earlier there are following four segments in the questionnaire:

- Information Technologies Strategic Advantages
- Technological Know-How and Organizational Capacity
- Decision Making Process
- Motivations Toward Information Technology

There can be two types of hypothesis coming from Kruskal-Wallis

(a) H_0 : All median of responses are equal (Null Hypothesis)

(b) H_1 : Not all median of responses are equal (Alternative Hypothesis)

Special Note: The Kruskal-Wallis was performed for various factors involved in the research. Here ranking are not for different banks but for variables which are reflecting the percentile performance relating with different banks.

Section V Findings

The following are the findings of above tool:

- (a) The Kruskal-Wallis test for Information Technologies Strategic Advantages accepts the Null Hypothesis, i.e. all median responses of different banks for this segment are identical or we may say that for Information Technologies Strategic Advantages variables the employees are having similar perceptions. Here the public and private sector bank employee's perceptions are showing the same responses for the respective variables of this segment.
 - (b) Whereas the same test for Technological Know-How and Organizational Capacity, Decision Making Process, and Motivation Toward Information Technology rejects the Null Hypothesis, i.e. all median responses of different
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banks for these segments are not identical. We may also say that for the variables of all these segments the employees are having different perceptions. Here the public and private sector bank employee's perceptions are showing the different responses for the respective variables of these segments.

- (c) The results from Kruskal-Wallis for Technological Know-How and Organisational Capacity, Decision Making Process, and Motivation Toward Information Technology shows the non-identical responses and indicate the very low results (employees perception) of public sector banks in the defined variables of these segments. So here the public sector banks may work more to find out the lacunae and try to improve the employee's perception for the variables of said segments (refer Tables 2-5).

Section VI Conclusion

Nearly 70 per cent of ICICI Bank transactions take place electronically, resulting in lower cost of transactions, high productivity and better profitability. Private banks are the early adopter of technology and took more IT initiative than public sector banks.

In present study Kruskal-Wallis test accept the Null hypothesis for first segment, i.e. Information Technology Strategic Advantages which means that the responses received for this segment from different banks are more or less identical and for rest segments Null hypothesis is not accepted, i.e. all median responses of different banks for these segments are not identical.

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Table 1
Composite Likert Score

<i>Statement</i>	<i>SBI</i>	<i>PNB</i>	<i>SBBJ</i>	<i>HDFC</i>	<i>ICICI</i>	<i>UTI</i>
Information Technologies Strategic Advantages						
(A)	69.545	66.588	66.729	65.918	67.297	70.667
(B)	75.227	65.882	69.907	71.020	74.865	70.857
(C)	71.591	65.412	66.729	67.347	69.730	69.905
Technological Know-How and Organizational Capacity						
(A)	49.318	54.118	49.159	65.510	67.027	68.952
(B)	60.909	59.765	61.682	65.510	70.270	68.571
(C)	67.727	64.000	63.738	69.796	75.135	70.667
(D)	77.727	75.059	74.019	71.020	73.514	72.190
(E)	76.818	69.176	70.654	65.306	68.649	68.190
(F)	53.864	56.706	57.570	66.735	71.622	69.714
(G)	59.318	55.294	62.430	68.776	74.324	71.238
(H)	55.227	54.353	58.131	61.633	61.892	62.095
Decision Making Process						
(A)	52.045	51.294	53.084	67.959	70.541	69.333
(B)	57.727	60.000	61.308	67.755	67.568	69.143
(C)	62.955	60.235	67.664	72.041	72.432	71.238
(D)	55.227	54.353	55.140	64.490	65.676	64.952
(E)	54.545	55.294	56.075	74.082	76.216	74.095
(F)	52.500	57.647	54.019	69.184	73.243	70.476
Motivations Toward Information Technology						
(A)	54.545	56.000	57.196	69.184	71.622	69.905
(B)	66.364	62.588	64.673	77.551	79.189	75.810
(C)	65.909	68.235	66.729	74.694	76.757	73.333
(D)	65.682	68.000	64.112	70.612	71.351	72.571
(E)	71.818	68.941	71.028	77.347	80.270	75.619

Table 2
(a) Information Technologies Strategic Advantages

The Kruskal-Wallis for Information Technologies Strategic Advantages is as below:

Data		<i>Groups</i>	<i>Sample Sizes</i>	<i>Sum of Ranks</i>	<i>Mean Ranks</i>
Level of Significance	00.05				
Intermediate Calculations					
Sum of Squared Ranks/Sample Sizes	1901	1	3	43	14.33
Sum of Sample Sizes	18	2	3	7	02.33
Number of Groups	6	3	3	23	07.66
		4	3	26	08.66
		5	3	34	11.33
		6	3	38	12.66
Test Result					
H-Test Statistic	09.70				
Critical Value	11.07				
p-Value	0.08				

<i>Bank Name (Variables)</i>	<i>Value</i>	<i>Rank</i>	<i>Bank Name (Variables)</i>	<i>Value</i>	<i>Rank</i>
PNB(A)	65.41	1	ICICI(B)	69.73	10
PNB(B)	65.88	2	UTI(A)	69.90	11
HDFC(A)	65.92	3	SBBJ(C)	69.91	12
PNB(C)	66.59	4	UTI(B)	70.67	13
SBBJ(A)	66.73	5.5	UTI(C)	70.86	14
SBBJ(B)	66.73	5.5	HDFC(C)	71.02	15
ICICI(A)	67.28	7	SBI(B)	71.59	16
HDFC(B)	67.35	8	ICICI(C)	74.86	17
SBI(A)	69.54	9	SBI(C)	75.23	18

<i>SBI</i>	<i>PNB</i>	<i>SBBJ</i>	<i>HDFC</i>	<i>ICICI</i>	<i>UTI</i>
69.55	66.59	66.73	65.92	67.30	70.67
75.23	65.88	69.91	71.02	74.87	70.86
71.59	65.41	66.73	67.35	69.73	69.91

Note: As shown in the Table 2 for this segment, the value of H is less than value of H critical. This means that for this segment all median responses are equal (H_0). Null Hypothesis accepted.

Table 3
(b) Technological Know-How and Organizational Capacity

The Kruskal-Wallis for Technological Know-How and Organizational Capacity is as below:

Data		<i>Groups</i>	<i>Sample Sizes</i>	<i>Sum of Ranks</i>	<i>Mean Ranks</i>
Level of Significance	00.05				
Intermediate Calculations		1	8	156	19.50
Sum of Squared Ranks/Sample Sizes	31000	2	8	133	16.63
Sum of Sample Sizes	48	3	8	151	18.88
Number of Groups	6	4	8	206	25.75
Test Result		5	8	277	34.63
H-Test Statistic	11.16	6	8	253	31.63
Critical Value	11.07				
p-Value	0.05				

<i>Bank Name (Variables)</i>	<i>Value</i>	<i>Rank</i>	<i>Bank Name (Variables)</i>	<i>Value</i>	<i>Rank</i>
SBBJ(A)	49.16	1	ICICI(B)	67.03	25
SBI(A)	49.32	2	SBI(F)	67.73	26
SBI(B)	53.86	3	UTI(B)	68.19	27
PNB(A)	54.12	4	UTI(C)	68.57	28
PNB(B)	54.35	5	ICICI(C)	68.65	29
SBI(C)	55.23	6	HDFC(F)	68.78	30
PNB(C)	55.29	7	UTI(D)	68.95	31
PNB(D)	56.71	8	PNB(G)	69.18	32
SBBJ(B)	57.57	9	UTI(E)	69.71	33
SBBJ(C)	58.13	10	HDFC(G)	69.80	34
SBI(D)	59.32	11	ICICI(D)	70.27	35
PNB(E)	59.76	12	SBBJ(G)	70.65	36
SBI(E)	60.91	13	UTI(F)	70.67	37
HDFC(A)	61.63	14	HDFC(H)	71.02	38
SBBJ(D)	61.68	15	UTI(G)	71.24	39
ICICI(A)	61.89	16	ICICI(E)	71.62	40
UTI(A)	62.10	17	UTI(H)	72.19	41
SBBJ(E)	62.43	18	ICICI(F)	73.51	42
SBBJ(F)	63.74	19	SBBJ(H)	74.02	43
PNB(F)	64.00	20	ICICI(G)	74.32	44
HDFC(B)	65.31	21	PNB(H)	75.06	45
HDFC(C)	65.51	22.5	ICICI(H)	75.14	46
HDFC(D)	65.51	22.5	SBI(G)	76.82	47
HDFC(E)	66.73	24	SBI(H)	77.73	48

<i>SBI</i>	<i>PNB</i>	<i>SBBJ</i>	<i>HDFC</i>	<i>ICICI</i>	<i>UTI</i>
49.32	54.12	49.16	65.51	67.03	68.95
60.91	59.77	61.68	65.51	70.27	68.57
67.73	64.00	63.74	69.80	75.14	70.67
77.73	75.06	74.02	71.02	73.51	72.19
76.82	69.18	70.65	65.31	68.65	68.19
53.86	56.71	57.57	66.74	71.62	69.71
59.32	55.29	62.43	68.78	74.32	71.24
55.23	54.35	58.13	61.63	61.89	62.10

Note: As shown in the Table 3 for this segment, the value of H is more than value of H critical. This means that for this segment not all median responses are equal (H_1). Null Hypothesis rejected.

Table 4
(c) Decision Making Process

The Kruskal-Wallis for Decision Making Process is as below:

Data		<i>Groups</i>	<i>Sample Sizes</i>	<i>Sum of Ranks</i>	<i>Mean Ranks</i>
Level of Significance	00.05				
Intermediate Calculations					
Sum of Squared Ranks/ Sample Sizes	15132.33	1	6	51	8.50
Sum of Sample Sizes	36	2	6	58	9.67
Number of Groups	6	3	6	66	11.00
Test Result					
H-Test Statistic	25.32	4	6	156	26.00
Critical Value	11.07	5	6	171	28.50
p-Value	0.00	6	6	164	27.33

<i>Bank Name (Variables)</i>	<i>Value</i>	<i>Rank</i>	<i>Bank Name (Variables)</i>	<i>Value</i>	<i>Rank</i>
PNB(A)	51.29	1	UTI(A)	64.95	19
SBI(A)	52.05	2	ICICI(A)	65.68	20
SBI(B)	52.50	3	ICICI(B)	67.57	21
SBBJ(A)	53.08	4	SBBJ(F)	67.66	22
SBBJ(B)	54.02	5	HDFC(B)	67.76	23
PNB(B)	54.35	6	HDFC(C)	67.96	24
SBI(C)	54.55	7	UTI(B)	69.14	25
SBBJ(C)	55.14	8	HDFC(D)	69.18	26
SBI(D)	55.23	9	UTI(C)	69.33	27
PNB(C)	55.29	10	UTI(D)	70.48	28
SBBJ(D)	56.07	11	ICICI(C)	70.54	29
PNB(D)	57.65	12	UTI(E)	71.24	30
SBI(E)	57.73	13	HDFC(E)	72.04	31
PNB(E)	60.00	14	ICICI(D)	72.43	32
PNB(F)	60.24	15	ICICI(E)	73.24	33
SBBJ(E)	61.31	16	HDFC(F)	74.08	34
SBI(F)	62.95	17	UTI(F)	74.10	35
HDFC(A)	64.49	18	ICICI(F)	76.22	36

<i>SBI</i>	<i>PNB</i>	<i>SBBJ</i>	<i>HDFC</i>	<i>ICICI</i>	<i>UTI</i>
52.05	51.29	53.08	67.96	70.54	69.33
57.73	60.00	61.31	67.76	67.57	69.14
62.96	60.24	67.66	72.04	72.43	71.24
55.23	54.35	55.14	64.49	65.68	64.95
54.55	55.29	56.08	74.08	76.22	74.10
52.50	57.65	54.02	69.18	73.24	70.48

Note: As shown in the Table 4 for this segment, the value of H is more than value of H critical. This means that for this segment not all median responses are equal (H_1). Null Hypothesis rejected.

Table 5
(d) Motivations Toward Information Technology

The Kruskal-Wallis for Motivations Toward Information Technology is as below:

Data		<i>Groups</i>	<i>Sample Sizes</i>	<i>Sum of Ranks</i>	<i>Mean Ranks</i>
Level of Significance	00.05				
Intermediate Calculations		1	5	45	9.0
Sum of Squared Ranks/Sample Sizes	8693.4	2	5	42	8.4
Sum of Sample Sizes	30	3	5	41	8.2
Number of Groups	6	4	5	108	21.6
Test Result		5	5	122	24.4
H Test Statistic	19.17	6	5	107	21.4
Critical Value	11.07				
p-Value	0.00				

<i>Sample</i>	<i>Value</i>	<i>Rank</i>	<i>Sample</i>	<i>Value</i>	<i>Rank</i>
SBI(A)	54.55	1	HDFC(B)	70.61	16
PNB(A)	56.00	2	SBBJ(E)	71.03	17
SBBJ(A)	57.20	3	ICICI(A)	71.35	18
PNB(B)	62.59	4	ICICI(B)	71.62	19
SBBJ(B)	64.11	5	SBI(E)	71.82	20
SBBJ(C)	64.67	6	UTI(B)	72.57	21
SBI(B)	65.68	7	UTI(C)	73.33	22
SBI(C)	65.91	8	HDFC(C)	74.69	23
SBI(D)	66.36	9	UTI(D)	75.62	24
SBBJ(D)	66.73	10	UTI(E)	75.81	25
PNB(C)	68.00	11	ICICI(C)	76.76	26
PNB(D)	68.24	12	HDFC(D)	77.35	27
PNB(E)	68.94	13	HDFC(E)	77.55	28
HDFC(A)	69.18	14	ICICI(D)	79.19	29
UTI(A)	69.90	15	ICICI(E)	80.27	30

<i>SBI</i>	<i>PNB</i>	<i>SBBJ</i>	<i>HDFC</i>	<i>ICICI</i>	<i>UTI</i>
54.55	56.00	57.20	69.18	71.62	69.91
66.36	62.59	64.67	77.55	79.19	75.81
65.91	68.24	66.73	74.69	76.76	73.33
65.68	68.00	64.11	70.61	71.35	72.57
71.82	68.94	71.03	77.35	80.27	75.62

Note: As shown in the Table 5 for this segment, the value of H is more than value of H critical. This means that for this segment not all median responses are equal (H_1). Null Hypothesis rejected.

Annexure 1
Questionnaire for Bank Employees

Employee Name: _____

Bank Name & Branch: _____

In comparing your bank with the competitor, indicate whether these aspects of your information systems constitute a strong or weak point of your bank. Refer to this scale to answer:

Very Weak	Moderately Weak	Neither Strong Nor Weak	Moderately Strong	Very Strong
1	2	3	4	5

Section I: Information Technologies Strategic Advantages

- (a) Knowing the Information Technology used by your competition. 1 2 3 4 5
- (b) Instituting a technology watch in order to change rapidly your Information Technology when necessary. 1 2 3 4 5
- (c) Ensuring that your choice of Information Technology follows the evolution of your environment. 1 2 3 4 5

Section II: Technological Know-How and Organizational Capacity.

- (a) Mastering current Information Technology products. 1 2 3 4 5
- (b) Being considered as a leader in Information Technology usage. 1 2 3 4 5
- (c) Development of a technological culture in your firm. 1 2 3 4 5
- (d) Having, within the organization, the required human and organizational resources to manage the information systems. 1 2 3 4 5
- (e) Having the ability to effectively identify and fill your needs in Information Technology. 1 2 3 4 5
- (f) Strategic planning of information systems in relation to the organization's business objectives. 1 2 3 4 5
- (g) Mastering the technology presently in use in your organization. 1 2 3 4 5
- (h) Using a distributed system to share information within the firm. 1 2 3 4 5

Section III: Decision Making Process

- (a) Use of specific selection criteria for the acquisition of new information systems. 1 2 3 4 5
- (b) Choosing Information Technology related to the strategic orientation of your firm. 1 2 3 4 5
- (c) Knowing the impact that IT will have on the different functions of your bank. 1 2 3 4 5
- (d) Evaluating potential problems related with the implementation of a new system. 1 2 3 4 5
- (e) Knowing the results of a financial feasibility study before the acquisition of IT. 1 2 3 4 5
- (f) Identification of possible sources of resistance to change before implementation. 1 2 3 4 5

Section IV: Motivations Toward Information Technology

(a) Use of IT to reduce your production costs.	1	2	3	4	5
(b) Use of IT to make substantial savings.	1	2	3	4	5
(c) Use of IT to improve your firm's productivity.	1	2	3	4	5
(d) Use of IT to increase your firm's profitability.	1	2	3	4	5
(e) Use of IT to improve the quality of products or services.	1	2	3	4	5
