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LEVERAGING DIGITAL TECHNOLOGIES: HOW INFORMATION QUALITY LEADS TO LOCALIZED CAPABILITIES AND CUSTOMER SERVICE PERFORMANCE

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Appendix A

Indian Banking Context

The Indian banking sector has undergone rapid transformation since 1991—the year India started a series of economic reforms. As part of the reforms, along with public sector banks, private sector banks started operations in the country. Due to the rapid reforms of the banking sector and the increased competition, Indian banks are now featured prominently on the global stage. Estimates indicate that 22 Indian banks are in the list of top-1000 banks and 5 of them feature in the list of top-500 banks (Singh 2007). BANK, the bank studied by us, is one of these top banks.

The Indian banking sector is a relevant context as it plays a significant role in the growth of the Indian economy. Like other nations, India's banking sector is a key contributor to the national GDP (see Table A1[1]). Although Indian banks play an important role in Indian GDP, in comparison to their global counterparts, the Indian banks are smaller in terms of capital base and assets. For example, the biggest Indian bank, State Bank of India, has a market capitalization of under $10 billion compared to the market capitalization of $243 billion for Citigroup (Singh 2007). Although Indian banks are smaller in terms of the size of their capital base and assets, they are ahead of their global counterparts in terms of efficiency. Except for Bank of America and Citigroup, not too many of the global giants match Indian banks in terms of ROA—an important metric indicating efficiency (Dun & Bradstreet 2010; Singh 2007). Similarly, Indian banks are on par with the two global giants in terms of non-performing assets (NPAs), a key metric denoting efficiency of operations (Dun & Bradstreet 2010; see Table A2). These arguments indicate that, although comparatively smaller, service operations in Indian banks are quite sophisticated and well managed.

Usage of advanced digital technologies may be the reason for high efficiency in Indian banks. Because Indian banks adopted advanced digital technologies later than their global counterparts, they have been able to avoid varied legacy systems. In designing their digital infrastructure, Indian banks have adopted advanced digital design concepts, such as distributed computing. In building such advanced digital designs, Indian banks have benefitted from the vast availability of highly skilled and low cost technology talent in the country. As a result, the spending in the Indian banks is less than $11 per account on IT systems and services compared to an average spend of $76 per account in European banks (see Table A3). The low spending rates on digital technologies indicate a greater potential for adoption of such technologies in future. Greater

[1] McKinsey & Company (2007) is the basis for the findings in Table A1, Table A3 and Table A4. McKinsey & Company, in association with the Indian Banks' Association, profiled 14 leading banks in India based on five proprietary surveys that compared leading Indian banks with their global peers. The five surveys were McKinsey's Personal Financial Services Survey, Excellence in Retail Banking Survey, Organizational Performance Profile Survey, Asset Liability Management Survey, and IT Benchmarking Survey.

Table A1. Banking to GDP Ratio Across Countries

Country	% Contribution of Banking to GDP
China	6.5
USA	5.3
India	5.1
UK	4.8
Malaysia	2.6
Thailand	2.5

Source: McKinsey & Company 2007

Table A2. Comparison of Performance Ratios in Banks Across Developed and Developing Countries

	Country	ROA	ROE	NPL to Total Loans
Developed Countries	Australia	0.6	11.3	1.1
	Japan	0.2	4.9	1.8
	Singapore	1.1	11.1	2.3
	UK	-0.1	-2	3.3
	US	0.1	0.9	5.4
Emerging Countries	Brazil	1.2	13	4.5
	Russia	0.7	4.9	9.6
	India	1	12.5	2.4
	Indonesia	2.6	35.9	3.8
	China	1.1	NA	1.6
	Philippines	1.1	9.4	4.6

Source: Dun & Bradstreet 2010

Table A3. Technology Spending by Indian and European Banks (in US$ 000s)

	IT Spend[a] / Banking FTE*	IT Spend / 1000 Accounts	Network Spend / Access Point	(Desktop + Helpdesk) Spend / Desktop
Best Indian banks[b]	2.4	10.2	7.0	0.4
India	6.2	15.9	11.9	0.5
Sample average	9.1	n/a	11.7	1.0
European bank average[c]	21.2	76	n/a	1.5

Source: McKinsey & Company 2007

*FTE indicates full time equivalent employees

[a]IT spend is obtained from McKinsey's IT benchmarking survey. IT spend captures total spending on IT across categories, activities, and frequencies (i.e., recurring or one-time). Network spend and desktop spend are two categories of IT spending.

[b] Sample set of best banks in India includes 5 leading private and foreign banks.

[c] As with the Indian banks, European bank average was obtained from a sample of the leading banks in Europe.

use of digital technologies may help the Indian banking sector to counter the varied challenges it faces. Although Indian banks have done well in increasing shareholder value, allocating capital and contributing to GDP growth, they are facing challenges regarding financial inclusion and management of intermediation costs.

Especially, financial inclusion is an important goal in the Indian context because Indian households have one of the highest saving rates in the world, but Indian banks have little access to these funds. On an average, Indians save approximately 32.4 percent of their income (McKinsey & Company 2007). Household savings account for approximately 70 percent of India's gross national savings. However, because of geographical fragmentation, the financial system can access only 47 percent of these savings. Most of the savings deposits of Indian banks (60 percent) are from urban households even though the urban households constitute only 27 percent of the population. Further, the banking sector faces challenges in managing the intermediation cost and the cost of lending continues to remain high in India in comparison to lending costs in other countries (see Table A4). Because there is a greater scope to further grow the use of digital technologies, they are likely to play an important role in enabling the Indian banking sector to meet its challenges. Because of being representative of Indian banking services, BANK offers a good context to test our theory of customer-side digital business strategy.

Table A4. Intermediation Costs in Banks Across Countries

Country	Difference Between Lending Rate and Deposit Rate (In Percentage)
India	5.1
Thailand	4.0
China	3.4
USA	2.9
Singapore	2.4

Source: McKinsey & Company 2007

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Appendix B

Loadings and Cross-Loadings

	COMP	ACCU	FORM	CURR	PII	PCOM	SPE	EXP	ORI	CSP-REL	CSP-UNIT
COMP1	0.74	0.17	0.19	0.40	0.17	0.15	0.13	0.10	0.07	0.19	0.13
COMP2	0.73	0.15	0.40	0.13	0.14	0.17	0.08	0.10	0.17	0.16	0.14
COMP3	0.71	0.41	0.12	0.17	0.15	0.16	0.40	0.15	0.19	0.24	0.23
ACCU1	0.37	0.70	0.13	0.13	0.17	0.18	0.20	0.24	0.25	0.27	0.22
ACCU2	0.35	0.73	0.14	0.14	0.22	0.24	0.23	0.21	0.27	0.30	0.32
ACCU3	0.34	0.74	0.15	0.16	0.15	0.17	0.10	0.18	0.14	0.36	0.31
FORM1	0.30	0.07	0.77	0.17	0.12	0.13	0.14	0.16	0.15	0.17	0.32
FORM2	0.31	0.13	0.75	0.19	0.21	0.24	0.23	0.22	0.21	0.10	0.15
FORM3	0.44	0.17	0.70	0.16	0.15	0.13	0.12	0.13	0.17	0.19	0.24
CURR1	0.38	0.19	0.25	0.74	0.12	0.16	0.15	0.17	0.20	0.23	0.21
CURR2	0.31	0.21	0.26	0.73	0.13	0.14	0.16	0.10	0.14	0.17	0.20
CURR3	0.30	0.24	0.22	0.71	0.10	0.16	0.17	0.24	0.22	0.17	0.15
PII1	0.31	0.17	0.14	0.17	0.74	0.13	0.44	0.17	0.27	0.20	0.19
PII2	0.34	0.23	0.17	0.15	0.71	0.12	0.10	0.12	0.13	0.17	0.19
PII3	0.30	0.21	0.12	0.14	0.73	0.17	0.12	0.10	0.14	0.14	0.20
PII4	0.33	0.24	0.10	0.10	0.70	0.14	0.10	0.17	0.16	0.21	0.24
PCOM1	0.31	0.22	0.15	0.17	0.35	0.74	0.13	0.16	0.17	0.24	0.20
PCOM2	0.24	0.17	0.16	0.20	0.32	0.75	0.12	0.15	0.12	0.27	0.12
PCOM3	0.21	0.15	0.17	0.22	0.17	0.80	0.18	0.14	0.17	0.20	0.17
PCOM4	0.20	0.17	0.19	0.24	0.19	0.75	0.19	0.10	0.12	0.28	0.28
SPE1	0.20	0.19	0.21	0.23	0.14	0.17	0.71	0.17	0.13	0.25	0.24
SPE2	0.20	0.24	0.24	0.21	0.22	0.15	0.74	0.19	0.14	0.21	0.23
SPE3	0.21	0.22	0.20	0.20	0.26	0.14	0.77	0.22	0.14	0.20	0.22
SPE4	0.24	0.21	0.22	0.17	0.27	0.19	0.70	0.15	0.17	0.20	0.20
SPE5	0.19	0.15	0.10	0.28	0.11	0.12	0.66	0.16	0.15	0.08	0.14
EXP1	0.14	0.14	0.12	0.24	0.10	0.13	0.19	0.73	0.13	0.05	0.12
EXP2	0.16	0.10	0.14	0.23	0.12	0.05	0.18	0.74	0.12	0.04	0.17
EXP3	0.15	0.07	0.16	0.22	0.13	0.08	0.30	0.72	0.16	0.01	0.10
ORI1	0.14	0.13	0.12	0.21	0.14	0.41	0.32	0.14	0.70	0.07	0.13
ORI2	0.16	0.12	0.17	0.17	0.17	0.32	0.33	0.10	0.71	0.15	0.10
ORI3	0.24	0.12	0.16	0.16	0.15	0.37	0.17	0.11	0.73	0.14	0.14
ORI4	0.22	0.13	0.15	0.31	0.17	0.37	0.15	0.12	0.74	0.10	0.16
ORI5	0.27	0.28	0.12	0.30	0.24	0.21	0.17	0.14	0.70	0.12	0.12
ORI6	0.21	0.24	0.13	0.32	0.21	0.22	0.13	0.19	0.69	0.13	0.17
CSP-REL1	0.17	0.21	0.14	0.34	0.20	0.27	0.21	0.24	0.13	0.65	0.35
CSP-REL2	0.19	0.20	0.12	0.30	0.21	0.14	0.22	0.23	0.10	0.68	0.32
CSP-REL3	0.15	0.22	0.19	0.32	0.19	0.15	0.10	0.07	0.17	0.71	0.35
CSP-REL4	0.14	0.26	0.22	0.17	0.18	0.17	0.11	0.14	0.24	0.74	0.32
CSP-REL5	0.13	0.24	0.24	0.15	0.15	0.24	0.17	0.19	0.20	0.77	0.35
CSP-REL6	0.12	0.10	0.29	0.16	0.17	0.21	0.22	0.21	0.21	0.72	0.31
CSP-REL7	0.17	0.16	0.31	0.19	0.22	0.24	0.24	0.28	0.17	0.70	0.41
CSP-REL8	0.20	0.15	0.32	0.24	0.21	0.21	0.30	0.21	0.15	0.71	0.32
CSP-UNIT1	0.21	0.13	0.33	0.22	0.23	0.22	0.22	0.23	0.13	0.30	0.69
CSP-UNIT2	0.24	0.17	0.30	0.21	0.24	0.30	0.29	0.21	0.12	0.44	0.72
CSP-UNIT3	0.22	0.20	0.17	0.20	0.19	0.10	0.24	0.15	0.30	0.32	0.74
CSP-UNIT4	0.23	0.22	0.19	0.17	0.16	0.13	0.27	0.17	0.18	0.45	0.77
CSP-UNIT5	0.24	0.20	0.25	0.12	0.15	0.14	0.30	0.30	0.28	0.40	0.70
CSP-UNIT6	0.22	0.17	0.26	0.13	0.14	0.17	0.31	0.32	0.21	0.37	0.73
CSP-UNIT7	0.21	0.15	0.14	0.16	0.17	0.14	0.13	0.12	0.20	0.30	0.72