

# India: The Awakening of M-Commerce

Syagnik (Sy) Banerjee  
University of Rhode Island  
Mark M. Lennon  
University of Rhode Island

## Abstract

This chapter presents our perspective on the evolution of m-Commerce in India, where the telecommunications sector was privatized in 1992 and further deregulated in 1999. The chapter introduces the leading mobile telecom players, and relates them to the emerging trends. Intertwined with this narrative are descriptions of specific M-Commerce cases, which deploy SMS in just about every application. These cases are further analyzed using the CLIP framework, which illustrate the markets' capacity to use low end technology to deliver high-end solutions. The chapter concludes with lessons drawn from the Indian experience, and directions for future research.

## I N T R O D U C T I O N

Following the economic liberalization of 1991, the opening up of the telecom industry boosted the telecom subscriber base to 50 million users and 44 million fixed line users by January 2005. Despite a decrease in average revenue per user (ARPU) by 17% in 2003-2004, the mobile telecommunications revenues increased by 30%<sup>1</sup>. In January 2005 the industry revenues were Rs 83 billion or \$1.9 billion. With the Indian economy continuing to grow at a fast clip, increasing cash flow into the telecommunications sectors set the stage for growing potential for commercial transactions taking place through the mobile phone interface. Before the advent of mobile telephony, there were attempts to integrate the business supply chains through combinations of rudimentary wireless and brick and mortar technologies. In highway transportation, for example, commercial vehicles were tracked through radio-wave

transmitting machines. At many petrol stations, truck drivers would swipe individual vehicle cards in order to be tracked on the Internet. With the advent of mobile telephony and m-commerce, mobile telephones are now the preferred means for tracking of trucks and other similar applications. Since mobile coverage is still spotty in rural areas, the backup fixed-line systems continue to be of value.

## **A Recent History of Telecom Policy and Industry**

### **Structure**

Up until 1994, the Department of Telecommunications (DOT) had the three roles of Licensor, Regulator and Service Provider. From DOT, VSNL & MTNL had been created to act as International Long Distance (ILD) operator and to offer services in Delhi and Mumbai respectively. After NTP (National Telecom Policy) 1994 paved the way for privatization, in 1997 TRAI (Telecom Regulatory Authority of India) was setup in a regulatory role, the adjudicatory role was given to TDSAT (Telecom Dispute Settlement Appellate Tribunal) and BSNL was created (from DOT) as a service provider of telephone and other related services. Between 1994 and 1998 DOT auctioned licenses to 2 CMSP's (Cellular Mobile Service Providers), requiring them to use the GSM technology. The next NTP (1999) allowed existing licensees in all telecom services, basic, cellular, paging and other value added services, to migrate to revenue sharing, with effect from August 1, 1999. Also, the government decided to levy the licensing and spectrum fees based on the adjusted gross revenue of each operator.

In January 2001, the Telecom Regulatory Authority of India (TRAI) licensed "limited mobility services," also referred to as "Wireless Local Loop," in the 800

MHz spectrum. In effect, this introduced CDMA technology. In January 2003, some of the limited mobility licensees, notably Reliance Infocomm, introduced a call forwarding mechanism that consequently functioned as an equivalent of roaming. This enabled full mobility on a par with that offered by the GSM-based CMSPs, and for the next ten months, the CMSP's and Basic service providers clashed with the TRAI over their claims of unjust discrimination of interconnection and license fees. By July 2003, amidst threats of legal action, the TRAI proposed "Unified Licensing for Basic and Cellular Mobile Services." This would grant any operator the right to provide any access service using any technology. In the wake of unified licensing, competition among operators expanded to encompass previously separate services – landline, fixed wireless (WLL), limited mobility (WLL-M), broadband data, and full mobility. Thus started a long journey of coexistence between different organizations with varying technology visions, fighting and collaborating for a share of this ever expanding market.

## **I N D I A ' S M O B I L E S E R V I C E P R O V I D E R S**

Bharat Sanchar Nigam Limited (BSNL), the state telecom monopoly dominated the telecom sector from mid-nineteenth century to 1992. With deregulation, initially eight metro licenses were open to bidding, and GSM was the Department Of Telecom (DOT) specified technology. Table 1 summarizes the Metro Regions and Operators that were awarded licenses in 1994. Table 1 lists the mobile telephone providers who were granted the licenses for these metro regions.

Table 1: Mobile Telephone Operators Awarded Licenses

<b>Major Mobile Operators in India Awarded Licenses</b>	
<b>Metro Region</b>	<b>Operator</b>
Delhi	Bharti Cellular Ltd. & Sterling Ltd.
Mumbai	BPL Mobile Communications Ltd. & Hutchinson Max Telecom Ltd.
Kolkata	Modi Telstra& Usha Martin Telecom
Chennai	RPG Cellular & Sky Cell Communications

Source: Telecom Regulatory Authority of India

India's first cellular service was launched in Kolkata on July 31, 1995 by Modi Telstra. What followed in the next few years was extreme confusion in terms of regulations, chosen technology standards, license fees and revenue sharing. Taking advantage of regulatory confusion, Reliance Infocomm introduced WLL (M) services – in competition to the officially approved GSM standard. By January 2003, Bharti launched a price war by slashing local and long-distance rates by 50%.<sup>2</sup> This triggered explosive growth of mobile communications across the country, despite BSNL matching those reduced rates in a few days on their fixed line services.

Table 2 profiles the main telecom players as of late 2004.

**Table 2: India's Main Telecom Players in late (QE Dec) 2004**

<b>Major Players as of late 2004</b>			
<b>Service provider</b>	<b>Brand</b>	<b>Subscriber Base (Millions)</b>	<b>Percentage of Market Share</b>
<b>Reliance Infocomm</b>	<b>Reliance</b>	10.155	21.2
<b>Bharti</b>	<b>AirTel</b>	9.82	20.5

<b>BSNL</b>	<b>BSNL</b>	8.861	18.5
<b>Hutchison</b>	<b>Hutch</b>	7.18	15.0
<b>Idea Cellular</b>	<b>Idea</b>	4.7	9.8

Source: TRAI consultation paper: The Indian Telecom Services Performance indicators Oct –Dec 04, March 2005

As depicted in Table 2, the percentage of market share is approximately the same (20%) for the three major players, Reliance, Bharti, and BSNL. This is mostly due to the fact that they cover similar geographic areas and have similar offerings. This will be presented in more detail in the next section of this chapter.

## **C O S T S   A N D   C O V E R A G E**

Another aspect of the mobile market in India is the greater number with corresponding power for prepaid customers than the post paid. A major reason why Prepaid is so popular in India is that the country lacks a nationwide financial infrastructure, such as electronic bank drafts or credit cards, to support country wide Postpaid plan. Regarding the lack of credit cards, the most salient reason for this dichotomy is that unlike in Japan and the Far East, US, and Western Europe, there is no well developed credit rating service. Thus the mobile providers have great difficulty in examining the risk/benefit analysis to qualify consumers for Postpaid eligibility.

Tables 3 and 4 illustrate these points by comparing number of user in different geographic circles. The term ‘Circles’ refer to these geographic areas, with the letter designation of Circle A as the Metro regions, Circle B as smaller cities, and Circle C as the countryside.

### **Table 3 Number of Subscribers and Growth Rates in Prepaid mobile users**

<b>Number of Subscribers on Prepaid Phones</b>			
<b>Circle</b>	<b>Dec-03</b>	<b>Mar-04</b>	<b>% change</b>
Circle A	5,498,728	6,631,645	20.60%
Circle B	4,683,655	5,737,577	22.50%
Circle C	738,046	813,107	10.17%
<b><u>Metro</u></b>	5,592,366	6,202,288	10.91%
<b><u>All India</u></b>	16,512,795	19,384,617	17.39%

(Source: COAI press release, November 8, 2004)

**Table 4: Number of Subscribers and Growth Rates in Postpaid mobile users**

<b>Number of Subscribers on Postpaid paid Phones</b>			
<b>Circle</b>	<b>Dec-03</b>	<b>Mar-04</b>	<b>% change</b>
Circle A	2,273,041	2,720,634	19.69%
Circle B	1,308,286	1,633,171	24.83%
Circle C	158,307	249,373	57.52%
<b><u>Metro</u></b>	1,403,457	1,739,723	23.96%
<b><u>All India</u></b>	<b><u>5,143,091</u></b>	<b><u>6,342,901</u></b>	<b><u>23.33%</u></b>

(Source: COAI press release, November 8, 2004)

As shown in Table 3, the fastest growing market for Prepaid phones is approximately 20% for both Circle A and Circle B. Nationwide, there are 19.4 million Prepaid subscribers as of March 2004. By comparison, the Postpaid phones have only 6.3 million users, demonstrating the Prepaid popularity.

Having said this however, it should be noted that there is a larger percentage increase in Postpaid phones, most notably the 57% increase in the Country side (Circle C). This should be taken with a caveat though, as the number of users at 249,373 still lags well behind with 813, 107 in Circle C prepaid phones.

While the breakdown of the volume of Prepaid and Postpaid users is valuable, so is the understanding of prices of the providers, Table 4 illustrates this by examining user breakdown and prices in the Delhi region. Delhi was chosen because, as the Indian capital, the city has some of the most robust users with high penetration rates for mobile service. Table 5 summarizes the monthly expenditures based on usage Providers' plans.

**Table 5: Monthly Expenditures by User Type and Provider Plans in Delhi**

Monthly Expenditures in Prepaid and Postpaid Plans in Delhi Region				
	Prepaid		Post-paid	
User Type	Provider's Plan	Monthly Bill (Rs.)	Provider's Plan	Monthly Bill (Rs.)
<b>Low Users</b>	Tata Teleservices Limited-CDMA mobile Prepaid	324	MTNL Cellular-Plan E budget	288
	MTNL Cellular- Trump Traveller	330	MTNL Cellular-Plan F Economy	331
	MTNL Cellular - Trump - Keep in touch	550	Hutch- Talk Rent Free	331
	Idea –Chitchat (Recharge 550) (with STD pack)	550	MTNL Cellular-Plan A	343
	Idea - I-Card	550	Hutch- Talk Rent Free (with STD pack)	359
<b>Medium Users</b>	MTNL Cellular - Trump - Keep in touch	550	MTNL Cellular-Plan F Economy	331
	Airtel prepaid	699	MTNL Cellular-Plan E budget	418
	Idea- Chitchat (Recharge 1100) (with STD pack)	1100	MTNL Garuda (Limited Mobility)	451
	MTNL Cellular- Trump Afford	1100	MTNL Garuda (Limited Mobility)- Plan	456

			B Standard	
	Idea - I-Card	1100	MTNL Cellular-Plan A	473
<b>High Users</b>	Idea- Chitchat (mobile pack and STD pack)	1100	MTNL Cellular-Plan F Economy	580
	MTNL Cellular - Trump Afford	1100	MTNL Garuda (Limited Mobility)- Plan B Silver	663
	Airtel prepaid	1102	MTNL Garuda (Limited Mobility)- Plan B Standard	669
	Airtel Friendz prepaid	1102	MTNL Cellular-Plan E budget	690
	MTNL Cellular - Trump Power	2200	MTNL Garuda (Limited Mobility)- Plan B Platinum	1126
<b>Very High Users</b>	Idea- Chitchat (Mobile pack and STD pack)	3300	MTNL Garuda (Limited Mobility)- Plan B Gold	1195
	Idea- I-Card (Recharge 3300)	3300	MTNL Garuda (Limited Mobility) - Plan B Silver	1236
	Airtel prepaid	3306	MTNL Garuda (Limited Mobility) - Plan B Standard	1266

Source: TRAI paper for Mobile Phone Tariff Comparison: Preliminary results of a research study, 10th February 2005

Table 5 offers further empirical evidence that Prepaid plans are more popular than Postpaid. In all the Prepaid, Heavy User plans, the amount of 3,300 R, (\$66) compared with only 1,200 (\$24). Interestingly, the heavier the user, the more prone he is to use Prepaid, but in the lower and medium users, there is not as much as a gap in monthly costs. This Prepaid propensity by heavy users may indicate their desire to keep track of time expenditures when online, as oppose to guess work of possible overage charges in Postpaid plans.

Also of note, in every user plan offered in each user bracket, regardless of Postpaid or Prepaid, the amount of usage is approximately in each plans about the same. This may indicate that the plans offered by each Provider maybe similar and substitutable. Given that the costs are also about the same for every Provider to handle mobile usage, it is likely that the revenues generated (and corresponding profits) are also approximately equal. Therefore, Providers must provide unique services to attract more users and greater overall usage. This leads us to our next section on VAS.

### **Transition from Voice to VAS**

Due to the afore mentioned fierce competition amongst the mobile operators, the revenues from voice services has decreased markedly. Providers had no choice but to look for additional revenue sources. Fore with airtime tariffs in India being among the lowest in the world at \$16 per month for a 300-minute basket. The battle took a turn for the worse when Reliance entered the market with its famous peg of STD (national long distance) for 40 paise (\$0.01). Although cellular operators responded in kind to the tariff war, cellular subscriber base suddenly experienced slower growth. ARPUs dipped from Rs 871(\$21) during the year 2002 to Rs 522 (\$12.42) in the April-June quarter to Rs 516 (12.28\$) in the July-September quarter of 2003. It was a clear signal to GSM operators that the time has come to change tactics and move the war to another realm—focus on new services.

### **R e l i a n c e I n f o c o m m : T h e E a r l y I n n o v a t o r**

Reliance has a well-planned and comprehensive strategy on mobile applications. The company believes that both voice and data are critical as they provide a diverse set of applications that are rich in experience. Infocomm has mobile apps clubbed under five heads— information, entertainment, communications, commerce and enterprise applications. Presently, the content is available in eight Indian languages. The beauty about the mobile

applications strategy is that it is applicable to all irrespective of handset type—black and white, color, and PDA phones. Neither is it dependent on the educational, social, or economic background of a user thereby giving flexibility to the subscriber to use the service depending on his needs and requirements. This gives the user a lot of comfort in accessing service and they are not bounded because the applications are developed only in English language.

In the case of Infocomm, R World and R Connect are the two interfaces for mobile data applications. The RConnect is an installer-dialer combo that also enables the phone to be used as a modem to connect to the net. The R World is, on the other hand, a virtual world created by Reliance which can be accessed through their phone and several items can be downloaded or consumed through it. In the R World model, there are close to around 90 applications and the company is working on increasing its number at regular intervals. Infocomm is even planning to provide e-mail access and instant messaging on phones.

Meanwhile, R Connect, which gives data-connectivity, has around 200,000 subscribers. As for commercial apps, users can conduct banking transactions including paying the Reliance bill using a credit card—using the mobile phone. It is a secure connection, approved by the bank and certified by Coopers and Lybrand. Presently, the transaction is specific to HDFC bank account holders but Reliance plans to tie up with other banks soon.

### Developers: Crucial to their Strategy

Agreeing that content will be the main driver; Reliance Infocomm has invested a lot in generating India-specific content. For this, the company has a two fold strategy—internal as well as external. On the internal front, the company has its own applications and solutions group. Apart from this for the gaming front the company has formed Paradox Studios, a 100 percent subsidiary of Reliance. Presently, Paradox has a team of around 52 people, whereas the application and solutions group has around 90 plus in content development. On the external front, the company has launched DADP (Dhirubhai Ambani Developer Program) on

28 December 2003. This created an ecosystem so that developers can become a part of Reliance Infocomm. Now that Qualcomm is also planning to set up a content development facility in India that will also provide content to all service providers, some excitement lies ahead.

In the GSM model, the content strategy is driven by handset manufacturers, but in CDMA it is driven by the service providers. DADP is expected to hone the local talent, reduce the overall cost of application development, and get more India-specific content. Out of the 90 plus applications presently available, so far only around 25 applications has been developed externally says Mahesh Prasad. In DADP, Reliance has got around 10,000 applications of which around 600 plus are from corporations. Here the company provides development kits, tools and a lab environment that can be used by developers to develop apps.

Reliance Infocomm has selected two sets of developers till date. Under the Chartered Developer Program 1 (CDP1) conducted in March 2003 around eight companies were selected to develop around 20 plus applications. In CDP2, conducted in early November 2003, around six developers were selected and around nine applications have been assigned. Infocomm is looking at three models—outright purchase, outright licensing, and revenue sharing. The revenue sharing part is presently not applicable as R World is a free service.

Looking at its past strategies, it seems Reliance Infocomm is planning for a nominal monthly subscription for its mobile content. With a large number of subscribers, the company can think of earning a fair percentage of revenues from non-voice services. The theory running in Infocomm is that if the pricing is proper and the services have value, and then people will use it in the long run. Table 6 gives a listing of some of the VAS which the Providers are operating to increase usage.

.

**Table 6: Breakdown of VAS offerings by Providers**

<b>VAS by Providers</b>				
<b>Providers</b>	<b>Java Games</b>	<b>Videos</b>	<b>Email Access</b>	<b>Internet Connectivity</b>
<b>Airtel</b>	<b>Yes</b>	<b>Yes</b>	<b>Supports POP3 &amp; Web emails</b>	<b>Restricted to GPRS coverage</b>
<b>Hutch</b>	<b>400+ games</b>	<b>Exclusive like world cup cricket</b>	<b>Hotmail, Yahoo!, MS Outlook</b>	<b>Restricted to GPRS coverage in main cities</b>
<b>Reliance Infocomm</b>	<b>Yes</b>	<b>Not a priority – only free content available</b>	<b>Supports POP3 &amp; Web emails</b>	<b>Rconnect – Best coverage and speed</b>
<b>BPL mobile</b>	<b>Yes</b>	<b>Yes</b>	<b>Supports POP3 &amp; Web emails</b>	<b>Only in Mumbai</b>
<b>Idea Cellular</b>	<b>Only in Dehli</b>	<b>Only in Dehli</b>	<b>Proprietary system, POP3, &amp; Web emails</b>	<b>Only in Dehli</b>

(Source: Author's Research)

Table 6 again demonstrates the commonality of VAS offerings by each Provider.

These companies are attempting to differentiate themselves, however, by fulfilling market niches. This is particularly true in the mobile Video offerings, where exclusivity of content is sought. Hutch is a good exemplar for this desire for uniqueness in two VAS categories. In the mobile video, Hutch is the sole provider of the World Cup cricket. Likewise, in Java Game, this Provider is also the predominant leader due to its wide range (400+) of different offerings.

Even with all the wide variety of VAS offerings, though, there is a commonality as many of them rely on an enabling technology, SMS (short message service). The next section of this chapter will explore in detail this phenomenon.

### **SMS – The Killer App**

A startling aspect of Indian mobile commerce is the wide spread proliferation and deployment of a relatively simple technology, SMS.. Interestingly, only less than half of the consumers used SMS because it was cheaper than voice and voicemail services. This substitution of SMS in lieu of voice is illustrated in Table 7 wherein 84% of SMS traffic is person to person messaging. Another growing component of SMS usage is downloading ringtones (5%), which we will further discuss in one of the following sections.

**Table 7: Breakdown of SMS Traffic**

<b>SMS Applications and Percentage of Usage</b>	
<b>Application</b>	<b>Percentage of Total SMS Usage</b>
P2P (Person to Person) messaging	84%
Downloading Ringtones	5%
Cricket (during peak season)	7%
Assorted (movies, astrology, Railway info)	4%

(Source: Author's research)

Because of this overwhelming popularity of SMS, a trend for the integration of other mobile commerce applications using SMS has arisen, which will be discussed in more detail in the next section of the chapter, a series of case studies. In each of these cases it should be noted that without the SMS platform, these m-commerce applications would not exist.

Through a series of mini-case studies, the succeeding portion of this chapter will describe some of the intriguing applications that have been developed through use of this SMS technology.

Additionally, the cases are examined through the CLIP framework. In each case, the integral components (be it Cost, Location, etc.) is identified, with further analysis given.

## **C A S E   S T U D I E S**

### ***Gaming***

Other than laptop connectivity on the move, the only other reason why anyone would bother with GPRS at all, apparently, is to be entertained through games and video downloads. Paid downloads of mobile games are approximately 300,000 a month.<sup>3</sup>The third most prolific gamer on Hutch's GPRS service is a bored housewife who is in her 50s. After her husband, a real estate broker, leaves for work, she racks up monthly bills of Rs 4,000 to Rs 5,000 (\$100-\$125) a month zapping away at her handset. The explosion of Java-enabled handsets has led to mobile gaming becoming the new craze. At Rs 50 to Rs 200 (\$1.25 - \$5) a game, operators like Hutch and Airtel are milking it for what it's worth. Hutch has exclusive access to downloads such as the World Cup cricket replays and Miss Universe downloads. R World, on the other hand, has NDTV's Apsara awards. One of the major providers for gaming services is Indiagames, which was acquired by TOM Online, as of 24 February 2005.<sup>4</sup>

### ***Music***

SMS also supports the interactions necessary to select and download ring tones and music files. As found in other mobile markets, these services

are quite popular. The variety of ring tone types is quite widespread, the most famous being Bharti's campaign on ring tones with AR Rehman. Bharti got ace musician Rehman to compose exclusive tunes, which was offered to its subscribers as downloads. Idea Cellular followed suit with its Cellular Jockey campaign and Hutch launched its memorable campaign of cricket replays with Rahul Dravid. Operators' efforts were complemented by handset vendors like Samsung who launched aggressive campaigns to highlight ring tone features.

Cellular operators targeted the youth and the urbane population. Ring tones became an instant hit amongst youngsters with downloads reaching a peak of 200,000 downloads a day across networks (Phoneytunes estimates) by the end of 2003. (Voice & Data, February, 2004)

Many operators like Airtel started off with free ring tones and some still do, but all operators will charge eventually with everyone in the chain getting a small share. In ring tones and caller ring back tones, three parties have to cooperate to provide the service. The music companies provide the content or the ring tones themselves, aggregators who take care of issues like copyrights and formatting the music, and finally the phone company. Handset manufacturers are expected to become the fourth partner soon, what with Ericsson tying up with Napster and Motorola planning to offer the iTunes music service.<sup>5</sup>

Mobile music now contributes around 5% to the existing music industry. It is expected to grow to nearly 23% by 2010," says KPMG India associate director, corporate finance, Anindya Roychowdhury<sup>6</sup>.

Therefore, music labels too are eyeing the burgeoning traffic and are excited by this additional revenue stream to their bottom lines. With the aforementioned 200,000 downloads a day on monophonic tunes alone (priced at Rs 5-10 or \$0.2 per download) across networks, the revenues are not small for anyone to ignore. Added to that is the revenue for the music labels. At a minimum of Rs 1.50 (\$0.025) towards copyrights, the revenues add substantially to the label owners' bottom lines too, sometimes even making the difference between black and red! Yet service providers have not leveraged off this exponential growth completely. What is missing is a differential pricing model within this premium content.

Deleted:

Today, Indian operators have priced ringtones uniformly; the latest tunes priced the same as the old dead content or even the polyphonic tunes priced the same as the monophonic ones. Probably the limitations to this are not at the operator billing software end as much as the sense of resistance which operators see from subscribers. Therefore operators need to address this area as part of the market development activity and ensure fair revenue benefit for all stakeholders involved in the chain. Handset manufacturers and operators today offer far greater exciting options—polyphonic tunes for over the air downloads, tune composers with multi-track notes within the handset, voice recordings added to pre-configured tunes as voice mail messages, ring-back tones over the network.

### ***Customer Management - Banking***

In Apr 2004, ABN Amro India launched its Mpower mobile banking and payments platform as a way to better serve its customers and build valuable relationships with wireless operators, banks and merchants<sup>7</sup>. Given the popularity of SMS (short messaging services) in India, the

bank found initial pilots of the SMS-based Mpower service to attract over 40 per cent of its client base. A selling point is the ability of consumers to make mobile payments at merchants equipped with Mpower terminals, with the bank validating the transaction data before sending the customer a return SMS message with approval for the payment.

The bank's use of a single phone number (8877) for mobile payments limits the potential for fraud, and the validation SMS sent to the customer, contains the merchant's name, transaction total and ABN Amro's transaction reference number, according to the Express Computer Weekly. After the customer validates the transaction by keying 'MPA' and the PIN into their phone, the funds are transferred to the merchant's account, and a confirming SMS is sent to both parties. In short, the Mpower system is suited to payment at physical retailers, for pizza deliveries, or for the 'remote' purchase of cinema tickets.

ABN Amro ensures the security of mobile payments via its Mpower service by assigning a unique PIN to the mobile phone number registered at the bank by the consumer. This way, even if a phone handset is lost or stolen, the PIN is deactivated after five attempts, which means that a third party who manages to compromise both the PIN, and the account number, will have difficulty in making a transaction. Mpower also promises to reduce ABN Amro's operational costs in that payments take just 40 seconds, versus a minute and a half for a credit or debit card, for which the bank has to give a 2 per cent discount fee.

### ***Customer Management - Insurance***

AVIVA Plc. is UK's largest and the world's seventh largest insurance Group. AVIVA has a joint venture with Dabur, one of India's oldest, and largest group of companies with annual sales in excess of Rs 1,350 Crores, or \$32 Million<sup>8</sup>. The company had a number of requirements that could be satisfied with mobile applications.

They demonstrated certain needs for both that could be satisfied by mobile applications, including automated reminders for premium payments, a complementary system to existing customer related voice systems, and providing critical information to the mobile work force (e.g. sales leads, policy renewal dates, etc.)

SMS has been able to fulfill these needs by improving the CRM. As a benefit, there are timelier premium collection and higher customer satisfaction. Through the providing of real time data to sales personnel, productivity has been enhanced greatly. SMS has therefore streamlined the operations, resulting in numerous cost savings which then in turn contributes positively to the bottom line. This increase in profits has justified the creation and implementation of this SMS system.

### ***Sales Reporting – Industrial Materials***

ICI Paints<sup>9</sup> is a leading manufacturer and marketer of paints. With an employee strength of about 1,200, ICI India's manufacturing sites, business and sales offices and distribution network spans large geographic proportions. The firm required a reliable method for sending dynamic MIS/Sales data to mobile sales force. Through the integration of an existing SAP system, an SMS based system has been put into place to

automate both a query system and the sending and receiving of sales reports for year/month and day.

This mobile automated system has allowed the sales personnel to keep apprised in real time both sales and inventory data. By the collection of this, sales forecasting has been greatly facilitated, as emerging patterns of where ICI paint products are most needed are readily apparent. This has resulted in costs savings for inventory management and transportation as product is only sent and stored in the place it is required.

In addition to these tangible benefits, the use of SMS has encouraged communication between the disparate members of the ICI work force. Contacts between sales and home office personnel are fostered, leading to increased communication. SMS has therefore enabled its employees to coalesce in order to operate effectively. Through the use of SMS, all the employees can receive messages that are pertinent to them. Through this sharing of this data, a more uniform system of management is achieved, thereby increasing efficiency which through the various costs savings increases profitability.

#### ***Order Fulfillment – Consumer Products***

HP is a technology solutions provider to consumers, businesses and institutions globally. The company's offerings span IT infrastructure, personal computing and access devices, global services and imaging and printing for consumers, enterprises and small and medium businesses.

In the Indian countryside and urban areas, HP offers a Dial-a-Cartridge service wherein a customer can call up a toll free number and order a cartridge<sup>10</sup>. Through integration with its call center, the order is instantly

placed with the nearest dealer. An order message is generated and sent via SMS to the customer and dealer.

This system greatly expedites the entire order process. The local dealers know exactly where the product is to be delivered; the customer too knows the location of the local dealer in case further assistance beyond the delivery is required, such as technical support.

An added bonus to this system is the effect it has had on inventory forecasting and expenditures. By centralizing the order process, HP distribution centers know exactly where the cartridges are most needed, and can plan accordingly. This has resulted in significant cost savings in both storage and transportation, for no longer is too much (or too little) product sent to the dealers. These savings have then been passed onto the dealers as the unit costs of the cartridges has decreased, thereby increasing their profit margins. This has had significant impact on the small dealers in the countryside who no longer need to keep large amounts of inventory in stock.

### **CLIP ANALYSIS**

In this section of the chapter we will now examine the CLIP framework as it applies to various cases described above. Each case has been scrutinized by each facet of CLIP, and the relative importance of each of the four aspects has been analyzed. As will be described in the succeeding section, to a degree all four aspects of CLIP apply to every case (e.g. Communication). In our analysis, however, we have selected just one of the four aspects to each of the cases, as we view this assigned

aspect as integral to the particular mobile commerce application. Table 8 summarizes these findings.

**Table 8: Integral CLIP Aspect for Each Case**

<b>Integral CLIP Aspect of Case Studies</b>				
<b>Case</b>	<b>Communication C</b>	<b>Location L</b>	<b>Information I</b>	<b>Payment P</b>
<b>Gaming</b>				Integral
<b>Music</b>				Integral
<b>ABN Ambro India (Customer Management)</b>	Integral			
<b>Aviva Plc. Ltd. (Customer Management)</b>	Integral			
<b>ICI Paints (Sales Reporting)</b>			Integral	
<b>HP (Order Fulfillment)</b>		Integral		

(Source: Author's research)

### ***Communication***

Given that this is the point of using mobile devices, Communications is applicable to all the cases. However, in some cases it is more salient than others. In the Customer Management cases (Banking and Insurance) it is critical that there be a flow of accurate data between the company and the consumer. Due to the importance of correctness in the financial transactions of ABN Ambro (India) and AVIVA Plc., precise communication is imperative; for without which use of mobile communications and mobile commerce could have a greatly adverse effect on the operations of these firms.

Modicare, in its Employee Integration also uses Information as a major tenant. The firm is an amalgamation of various subsidiaries and joint ventures, with numerous other companies in a wide variety of fields.

### ***Location***

Location is also ubiquitous to all the cases, as it is inherent in the capabilities of mobile technology and commerce. Some of the cases though are more influenced, and have a need for, this aspect of CLIP than others.

The Consumer Products case of HP's order fulfillment application is a prime example. If the company, while interacting with its customers and dealers via mobile technology, was unable to pinpoint the locations of each, use of the mobile system would be moot, for there would be little added value in automating its systems.

Location specific data engenders the productivity of the firm to more rapidly and accurately serve its stakeholders, thereby increasing efficiency and the resultant profitability. .

### ***Information***

Inherent to mobile communication and commerce systems are the transferring back and forth of data. This data, however, can be termed Information when it has been processed and becomes value added for both the consumer and producer. Certainly to a degree all the cases cited can fulfill this requirement, but once again some more so than others.

Sales reporting of Industrial Materials by ICI Paints are an excellent exemplar of the importance of Information. In their system real-time raw, MIS/Sales data is collected in the field, and then transmitted to the home base. From there it is converted into useful and value added Information, which is then re-transmitted to all the participants in the mobile commerce application. Therefore a powerful ability of mobility to gather data has been deployed.

### ***Payment***

The majority of the cases used in this chapter have been for services either internal to a company or provided gratis to its consumers, so the Payment portion of CLIP is not prevalent. On the other hand, however, are the providers of content for the handsets of the mobile users. In this situation, Payment is the primary CLIP component, as without it the mobile commerce applications would not exist.

In the Music (be it songs or ring tones) and Gaming cases, Payment is the enabling technology. The content would not be available to end users without some type of monetary exchange.

Due to the neophyte structure of financial systems in the mobile commerce arena (such as low use of credit cards), Indian mobile providers have developed unique ways to fulfill the Payment requirements. By deploying SMS in a rather clever manner, the Payment mechanisms have been put into place.

When selling content, Indian mobile providers will first send SMS to their users, offering its new content. If the user then desires to, she can respond with an SMS and the content is then sent to the user's handset. The Payment for this is then added to the mobile subscriber's monthly bill, thereby obviating the need for ancillary systems such as credit cards or direct electronic withdrawals from bank accounts.

## LESSONS FROM THE INDIAN EXPERIENCE

In this chapter, we have reviewed the India Mobile Telecom industry – its historic antecedents, government policies, and listing of Providers. We then presented and analyzed the India mobile market via examining such factors as the number of users, monthly costs, and subscriber growth rate. From this we have concluded that the Indian consumer is more likely to use Prepaid phones for a variety of reasons, including the lack of supporting financial and technological infrastructure. The lesson here is that alternative forms of payment (in lieu of more common in other markets the Postpaid systems) can be used.

Next we described in some detail the use of SMS, the ‘Killer App’ of using SMS in a series of case studies. This wide spread usage has been able to surmount the obstacles faced by the lack of m-commerce enabling infrastructure. The clever use of this older SMS technology is then illustrated by a series of case studies. In each firm, the lesson here is that simple technology can, through clever use, enable a wide variety of applications.

Another lesson we can take away is equally remarkable. Specifically, that it is possible, even without a well developed physical infrastructure such as electronic networks, credit cards, etc. to have real world transactions. Indian mobile carriers have been able to deploy an elegant solution to m-commerce services through the use of the relatively more simple technology of SMS. This is a valuable lesson in that it may be applicable in other developing nations as well, and may be a contributing decision

making factor when global mobile carriers seek to internationalize their products and expand overseas.

Within the analysis of the case studies, we also applied the CLIP framework. We identified the integral elements of the framework (e.g. cost, location, etc.) for each individual case. This enables us to learn that some aspects of CLIP are more prominent than others in each individual m-commerce application. This extension of the CLIP framework could therefore be used in the analysis of other m-commerce situations.

As the Indian marketplace matures, and newer technologies, such as MMS and graphical access to the internet become a valuable, it will be fascinating to see how these technological developments impact the use of mobile phones and m-commerce in the Indian economy. Given India's prominence in the community of nations, and as a pre-eminent player among developing nations, such a study will be time well worth spent.

## REFERENCES

Cellular operators association of India (February 14 2003) *Presentation to Shri Arun Shourie –the honorable Minister of Communications, IT & Disinvestment*

Dholakia, N. and Kshetri, N. Electronic Architectures for Bridging the Global Digital Divide: A Comparative Assessment of E-Business Systems Designed to Reach the Global Poor. In *Architectural Issues of Web-enabled Electronic Business*, Shi Nansi (ed.), Idea Group Publishing, 2003. 23-40

Economist.com. Falling through the net. September 23, 2000.

Edejer, Tessa Tan-Torres. Disseminating health information in developing countries: the role of the Internet. *British medical Journal*, 2000, 321:797-800.

Eggers, Inga and Siefken, Sven T. (2000) Four Countries Connect. UN Chronicle XXXVII (2), <http://www.un.org/Pubs/chronicle/2000/issue2/0200p32.htm>

Jain, Rekha. Review of the policy changes in the Indian telecom sector: Implications for decision makers, *Journal of Global Information Management*. Hershey: Summer 1993. Vol.1, Iss. 3; pg. 33

Dhir, K.S. (1992). "The Challenges of Introducing Advanced Telecommunications in India" in *The Global Issues of Information Management*. ed. Palvia, Palvia and Ziegler, Idea Group Publishing, Harrisburg, USA.

Enos, J.L. and W.H. Par (1988): *The Adoption and Diffusion of Imported Technology: The Case of Korea*, Croom Helm, USA.

### Internet resources

<http://www.itim.org/4aba.html>

<http://www.indiainfoline.com/nevi/tede.pdf>

[http://www.air2web.co.in/jsp/a2wi\\_Media.jsp](http://www.air2web.co.in/jsp/a2wi_Media.jsp)

<http://www.expresscomputeronline.com/20031117/coverstory01.shtml>

<http://www.businessworldindia.com/july0504/indepth02.asp>

<http://timesofindia.indiatimes.com/articleshow/1013140.cms>

The Hindu business line

<http://www.trai.gov.in/report17jun05.pdf>

<http://coai.in/docs/COAI%20News%20Flash-%20Music%20on%20Mobile.pdf>

---

<sup>1</sup> COAI paper at

<http://www.coai.com/docs/Annual%20Report%20on%20Revenues%20&%20ARPU%20s.pdf>

<sup>2</sup> <http://india-cellular.com/News-Oct-Dec-2001.html>

<sup>3</sup> <http://www.gamespot.com/news/2005/04/25/news>

<sup>4</sup> [http://www.gamedev.net/community/forums/topic.asp?topic\\_id=304132](http://www.gamedev.net/community/forums/topic.asp?topic_id=304132)

<sup>5</sup> <http://coai.in/docs/COAI%20News%20Flash-%20Music%20on%20Mobile.pdf>

<sup>6</sup> <http://www.moconews.net/?p=2148>

---

<sup>7</sup> <http://www.epaynews.com/index.cgi?survey=&ref=browse&f=view&id=1083237870622215212&block>

<sup>8</sup> <http://www.aviva.com/>

<sup>9</sup> <http://www.ici.com/ICIPLC/divisions/Paints.jsp>

<sup>10</sup> <http://welcome.hp.com/country/in/en/welcome.html>