



## **E-Service Delivery in Cellular Mobile Communication: Some Challenges and Issues**

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### **Abstract**

*The liberalization of telecommunication industry has provided the necessary push to provide continuously superior customer services. The entry of global players has further added to the competitive pressure in India. This liberalization and globalization have led a challenge to the telecom operators as how to create differentiation with almost the same network technology with all the cellular operators. Improving the quality of service delivery can enable the cellular mobile service providers to create differentiation in order to gain profitability and competitive advantage. In light of this, the paper attempts to look at the ways in which IT can be used to provide superior quality services to customers in the highly competitive cellular service industry. A framework of E-service delivery is suggested and issues related to its practical application and its merits are highlighted. Finally some implications as well as future research directions are provided.*

*Keywords: Information Technology, Service quality, Service delivery, Cellular mobile, Competitiveness*

### **Introduction**

The pressures of global competition and privatization in telecom industry are driving the service providers to improve their products and services. Earlier in the monopolistic environment, quality of services was not the priority for the incumbent service provider and customers had no choice but to accept what ever was delivered to them. With the introduction of full competition in cellular mobile services, quality improvement has become vital to telecom companies trying to thrive in an increasing competitive environment. In this emerging scenario of stiff competition, cellular mobile service providers (CMSP) are forced to deliver enhanced customer services in order to build customer loyalty and gain competitive advantage. Service quality has become an important competitive tool in the telecom service industry. Tariff rates and value added services can be easily duplicated while quality is differentiable. The positive relationship of service quality

with customer satisfaction (Dabholkar, 1995; Danaher and Mattsson, 1994; Kim et al., 2004), customer retention (Ranaweera and Neely, 2003), profitability (Nelson et.al, 1992; Fornell, 1992; Danaher and Rust, 1996), competitiveness (Rapert and Wren, 1998), is well proven in the academic literature. Therefore, the pursuit of strategy based on enhancing service quality can enable the cellular mobile service providers (CMSP) to survive in this competitive milieu in telecommunication.

Information system can facilitate the cross functional integration of system and speed up the communication internally as well as externally with suppliers and customers. Information system is one of the important tools that is radically changing how the services are delivered. It is creating potential for new service offerings and profoundly changing the ways, companies interact and serve their customers. Information technology can enable the service providers to spend more time with customers,

better understand their needs and deliver what they require, quickly and effectively. Thus, helping the organizations to achieve high levels of customer satisfaction.

With the growing technological sophistication and global market place, there is a need to find out innovative ways in which the information systems can be used to provide high quality services in cellular mobile sector. Though there is much talk about using information technology for gaining competitive advantage, yet most of the organizations do not get the expected returns from the IT investment. The biggest challenge for service providers is how to better utilize information systems to respond to customer service needs. There can be an increasing number of contexts in which information system are being integrated to provide excellent services to customers in fields like banking, insurance etc., but the cellular mobile sector is less researched. Further, little attention is given in the academic literature on the use of IT to enhance service delivery and customer care services for achieving competitive position in cellular mobile industry. The present paper is an attempt to deal the above raised issues.

The remainder of this paper is structured as follows. In section 2, a brief conceptual background about the contribution of IT in enhancing the service quality is reviewed. In section 3, the various ways in which IT can enhance the quality of services in cellular mobile services with a focus on service delivery, is explored. A framework is developed for E-service delivery and its merits are highlighted in section 4. Some of the challenges and research issues in this area are discussed in section 5. Finally concluding observations are drawn in section 6.

### **E-Service Quality: Conceptual Background**

In today's scenario, where quality is oriented towards fulfilling the customer needs, IT has a key role in providing faster response to customer queries and complaints, thus improving the service quality. According to Dabholkar (1994) and Bitner et al., (2000), Information technology facilitated means of service delivery have the potential to benefit customers, employees and management. Customers can be offered additional or extended services, greater convenience and control. Randle (1995), observed that, IT based service options may indirectly improve customer service, as this type of service provides the means for gathering customer data, which can be useful in improving operational efficiency and service quality. This is also supported by other researchers including Cline, (1997) and Furey, (1991). Nolan (1995) emphasized that, organizations should integrate IT initiatives into

organization's overall quality management programs and find out new approaches to improve quality throughout their organization. Dawes and Rowley (1998) observed in a number of case studies from different contexts, that the service experience and perceptions of service quality can be fundamentally affected by the use of information technology. Zhu et al., (2002) observed that increased use of IT by the service providers has changed the nature of service delivery system. Their study indicated that IT based services had a positive impact on overall service quality and customer satisfaction in consumer banking sector.

Research in service quality dimensions and measurement is dominated with the works of Parasuraman et al. (1985). They measured service quality with ten attributes namely Access, Communication, Competence, Courtesy, Credibility, Reliability, Responsiveness, Security, Tangible, and Understanding. Gronroos (1984), came up with three quality attributes namely Technical quality, Functional quality and Reputation quality. According to Lehtinen and Lehtinen (1991), service quality attributes include Physical quality, Corporate quality, Interactive quality, Process quality and Output quality. Edwardsson et al. (1989) proposed four-service quality attributes namely Technical quality, Integrative quality, Functional quality and Outcome quality. It is observed that service quality is a multidimensional construct and considerable debate exists regarding the number and type of dimensions.

According to Zhu et al., (2002), the service quality dimensions identified by Parasuraman et al. (1985) are based on the traditional service delivery channels (viz. Telephone Company, securities brokerage, insurance company, banks and repair and maintenance). Thus it seems appropriate to include the attributes associated with IT based service delivery system. Cox and Dale (2001), in their study, highlighted various quality attributes that are relevant to web enabled service delivery. These include Accessibility, Responsiveness, Communication, Credibility, Understanding, Availability, Functionality and integrity.

In telecommunication industry, Dye and Schaaf (2002) established the feasibility and suitability of applying a near-miss event reporting system, known as Prevention and recovery information system for monitoring and analysis, as a tool for managing risks to customer satisfaction. In order to retain customers in cellular mobile, various researchers (Berson et al., 2000; Wei and Chiu, 2002) have proposed techniques based on data mining system for churn prediction and management.

From the review, it is revealed that IT has a positive impact on service quality and thus customer satisfaction. It seems that the implementation of Information system to provide excellent services to customers in fields like banking, insurance etc., is much explored, while the cellular mobile sector needs further research. Moreover, the issue of universal service quality dimensions also appears to be debatable among the researchers for different service environment and the conventional service quality attributes needs to be revised in the context of IT enabled service delivery.

**Application of Information System in Cellular Mobile Communication**

It is well recognized that information technology is transforming the way the business is conducted. The growth of information technology has provided various opportunities for service quality improvements in telecom industry. Cellular operators can improve their operational efficiency, enhance customer service and gain competitive advantage using the archival and interactive IT tools. Various researchers have emphasized service quality improvement in interacting with suppliers (Walker & Samuel, 1988), network maintenance and management (Peacocke & Rabie, 1988; Johnson & Sirikit, 2002); internal processes (Hsu and Su, 2002) and customer service delivery (Leisen, and Vance, 2001). Figure 1 below depicts the IT integration for improving service quality across these processes and interactions.

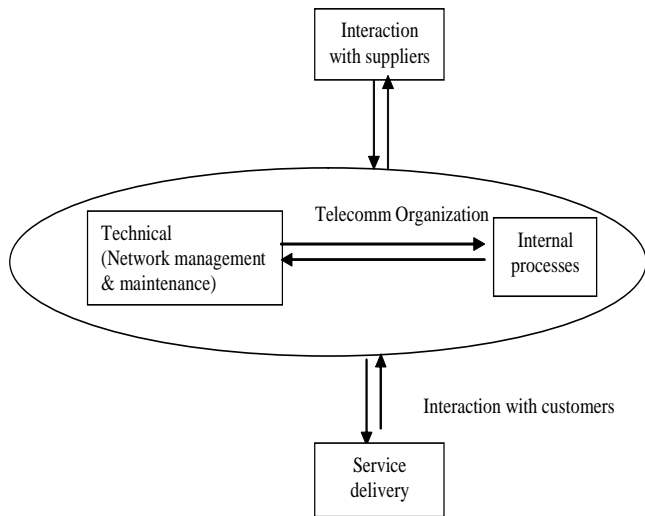


Figure 1: Use of IT for Service Quality Improvement in Telecom Industry

Some of the application areas of IT in the above transactions are

*Service quality has become an important competitive tool in the telecom service industry*

covered along with its impact on Quality of services delivered in table 1 below:

Table 1: Select Applications of IT for Service Quality Improvement in Telecom Industry

S. No.	Area of operation	Select Application Area	Typical Impacts on Quality of services delivered
i	Interaction with the suppliers	Various information systems like EDI (Electronic data interchange), decision support systems etc. can be integrated to interact with the suppliers for the transmission of purchase orders, invoice, electronic funds transfer etc., and for providing feedback.	Improves quality of procured products. Leads to reduction in errors Enhances communication Increased supplier satisfaction and morale
ii	Network Monitoring and Maintenance	The information system (like Expert systems) can be used for the detection of failure of any network component; for collecting the signaling information between network components; for carrying out network planning and design; and for collecting information about the state of complete network through simulation.	<ul style="list-style-type: none"> <li>· Enables early detection and correction of troubles</li> <li>· Better network planning</li> <li>· Efficient control on operations</li> </ul> Help in strategic decision making
iii	Internal Processes	IT can be integrated in the internal processes involving internal communication, administration functions, accounts and finance etc. Further, it can be integrated into the organization's overall quality improvement programs to improve quality throughout the organization.	Provide support in making employees effective and efficient Improves internal communication Enables job satisfaction Increased morale and commitment towards organization
iv	Service Delivery Process	IT facilitates various customer care functions like billing system, customer database and providing prompt response to customers.	<ul style="list-style-type: none"> <li>· Improves customer relationships</li> <li>· Increased customer satisfaction</li> <li>· Increased customer loyalty towards product/services rendered</li> </ul>

Leisen and Vance (2001) advocated that telecommunication services are rather complex and most of the customers can not

judge the technical quality, so they are likely to base their judgments on the service delivery process. Looking to the

importance of the service delivery process, the conventional service quality attributes are studied in the context of IT enabled service delivery in cellular mobile services. The technology needed to enhance those quality attributes for attaining better service quality is also identified in the Table 2.

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**Table 2: The Role of IT in Improving the Quality of Service Delivery in Cellular Mobile Communication**

S. No.	Select Service Quality Attributes	Usage of IT in Relevance to Cellular Mobile	Typical Technology Needed
i	Reliability	Ensuring accuracy in billing; keeping the customer records correctly	Storage area networks (SAN); Content based billing, Expert System
ii	Responsiveness	Enabling prompt response to customer requirements/complaints	Local area networks; E-mail response management system (ERM); Expert system; Customer resource management (CRM)
iii	Accessibility	Providing online service activation; online bill payment	Electronic bill presentation and payment (EBPP) system
iv	Competence	Skills and knowledge of customer care personnel to answer their queries	CRM; data mining management; decision support systems; Expert system
v	Communication	Explaining the various features of services and tariff rates in languages, customers can understand; complaint redressal system;	Internet/ telephonic connectivity; Customer resource management (CRM)
vi	Security	Ensuring security in online transactions	Authentication; Encryption; Firewall system; digital signature certification
vii	Convenience	Convenience of bill payment	Unified billing system; Electronic bill presentation and payment (EBPP) system
viii	Flexibility	Ability to deploy new services and expand the networks as per the customer needs	Convergent mediation systems; Customer resource management (CRM)
ix	Understanding	Understanding the services customers subscribe for; Identifying the over and under used services	Convergent mediation systems
x	Efficient Service Restoration Capabilities	Ability to rectify incorrectly delivered bills	Customer resource management (CRM)

From the above table, it is clear that CMSP can deploy various information systems for enhancing quality attributes as shown above. However, they need to understand how the use of these technologies can affect the customer's perception of service quality. For this, a framework is described in the next section.

**Framework for E-Service Delivery**

A framework (Figure 2) for E-service delivery is envisaged after thorough literature review and in-depth interviews with academicians, professionals at various levels of select cellular mobile companies and consultants. In depth personal interviews comprised of open-ended questions (e.g what they perceived about the IT integration for service quality improvement?; What steps they have taken for improving service quality through IT? What are the various issues involved in the IT enabled service delivery?) Insights obtained from the executive interviews forms the basis of the framework. This framework depicts E-service delivery and its causal linkages with quality attributes, perceived service quality, customer satisfaction and competitiveness.

The figure shows that the level of IT integration for service delivery is influenced by the service quality commitment and strategic quality goals of the organization, customer convenience and other demographic factors like age and education level etc. E-service delivery can impact the internal processes, the quality attributes, which may impact the customer perceived service quality, customer satisfaction and thus competitiveness of an organization. This customer-focused framework can benefit the organization in the following ways:

- Improvement in the customer perceived service quality and customer satisfaction.
- Increased operational efficiency in terms of throughput.
- Reduction in cost.
- Increased return on investment
- Enhancement in the overall competitive position.

**Some Challenges and Research Issues**

Information technology enabled service delivery has the potential to satisfy the customers and reduce the

operational costs for service providers. It can provide convenience and control into the hands of customers and enable the CMSP's to reduce the cost of generating and delivering paper bills etc. However, it is essential to understand the multifaceted implications of IT for improving the quality of service delivery. This would help in integrating the information system into long term strategic planning for getting the maximum advantage. Some of the implications/ challenges for using the information system for CMSP are highlighted below:

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IT-enabled service delivery requires a secured network infrastructure, so that the network is easily accessible to customers and yet incorporates security.

As the IT infrastructure expands, the system may get complicated, which may hinder operational efficiency rather than enhancing it. Thus the service providers need to find out ways to integrate the system to reduce the complexities.

*Some Research Issues*

There exists an ample opportunity to focus on the following research issues that have emerged from the review.

- How can customer loyalty and competitiveness be cultivated on the transactions based on information system?
- What is the impact of IT on customer perceptions of service quality, customer satisfaction and loyalty?
- What are the reasons affecting the adoption and non-use of IT enabled services among the various segments of customers?
- With the deployment of IT, what are the changes experienced in the traditional models of the service delivery?
- What are the various service quality factors for IT based business environment?
- How the customers evaluate IT based service options and which factors affect their evaluation?

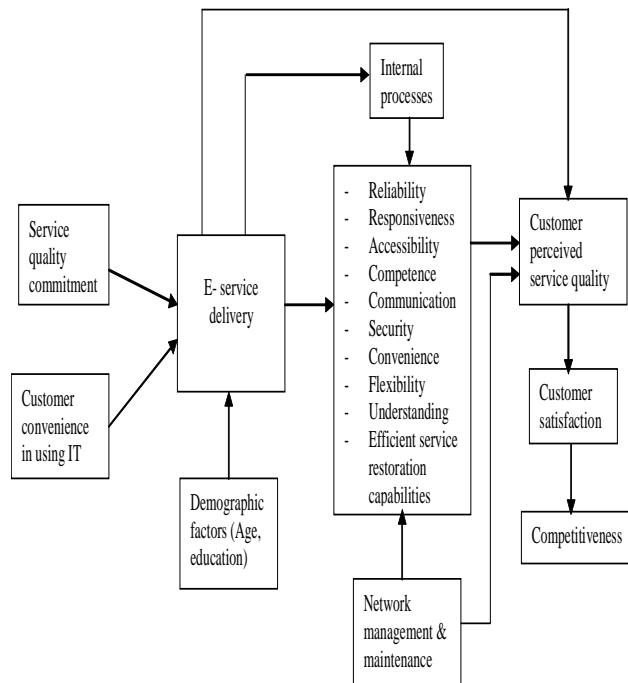


Figure 2: Framework for IT Enabled Service Delivery

The biggest challenge for successful IT implementation is the human resistance at each and every point in the process.

Another critical issue is the cost involved in IT deployment. Various affecting forces include customer requirements, drive for better service quality delivery, reduced cost, competitive pressures etc.

The choice of technology is again one of the critical aspects, which is affected by cost factors, customer ease of operation, their relative importance for quality attributes (listed in table 2). Therefore, the CMSP can decide for particular technology based on relative importance of different quality attributes or based on market needs.

Customer care representatives supported by information systems are required to access more complex database.

**Concluding Observations**

This paper highlights the ways in which IT can be integrated to improve service delivery process along the various quality dimensions including Reliability, Responsiveness, Accessibility, Competence, Communication, Security, Convenience, Flexibility, and Understanding and Efficient service restoration capabilities. It is noted that the biggest challenge for cellular mobile service providers is to find out the relative importance of these attributes for customers. This would help them to deploy IT tools in those areas, which provide greatest improvements in customer satisfaction and hence competitive position. IT deployment also creates employees resistance, which can be overcome by providing proper and adequate training to them and making them efficient in handling the information systems. Further, It

is observed that IT enabled service delivery improves operational efficiency and has positive impact on customer perceptions of service quality and customer satisfaction. However, its impact needs to be empirically validated in the context of cellular mobile services. For this, a framework linking variables like service quality commitment, customer convenience, quality attributes, perceived service quality, customer satisfaction and competitiveness is proposed. Finally some of the research issues are discussed, which shows ample amount of study needed in this area.

*With the growing technological sophistication and global market place, there is a need to find out innovative ways in which the information systems can be used to provide high quality services in cellular mobile sector*

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