Chapter 5
Managing Competitiveness Through Flexibility in Telecom Industry of India: A Policy Perspective

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1 Introduction

Globalization and liberalization are the major factors in enhancing the dynamics of national policy making. These two factors are also responsible for creating pressures on enhancing innovations in products and services leading to competitiveness in any sector of economy and creating more competing organization for market share in their industry sector.

Globalization with reference to telecom sector also brings many international and cross-border regulatory issues and a requirement for multilateral regulatory forums. For example, IT-enabled services, international financial services, and e-commerce entail the transfer of data across borders, and these activities raise the issue inter alia of privacy (ITU-2007). The sheer volume of data transfer is itself a challenge but the OECD (http://www.oecd.org) notes two additional risks related to, firstly, secondary uses of personal data and, secondly, information security breaches.

In 1983, the ITU established the independent Commission for Worldwide Telecommunication Development, also known as Maitland Commission, to recommend ways in which the expansion of the telecommunications across the world could be stimulated. In 1984, the Commission, after studying the earlier works by ITU, OECD, the World Bank, and other international agencies, published "*Missing Link*," which embodied its conclusions and recommendations. The Commission's study of the role of telecommunications persuaded its members that "telecommunications can increase the efficiency of economy, commercial and administrative activities, improve the effectiveness of social and emergency services and distribute

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Table 5.1 Digital economy shift

From	To
Industrial society; centralized control or regulation, from regulators or monopolies in telecom; significant market powers of incumbents, conglomerates, and MNCs	Information society with a knowledge-driven digital economy, deregulated or privatized telecom, and industry-led self-regulation and power of individual users' fingertips over convergence of ICT, especially in the advent of Internet; share the markets with micro-, small-, and medium-sized entrepreneurs especially in the era of e-business or e-commerce; and almost "instant global village" connected by various technologies and services

Source: Dr. Eun-Ju Kim, ITU (2001)

the social, cultural and economic benefits of the process of development more equitable throughout a community and a nation" (ITU 1984).

The visible paradigm shift in digital economy took shape in the following format given above Table 5.1.

The argument forwarded by Rugman (2006): "Globalization is a myth. As currently understood, it does not exist. Far from taking place in a single global market, most business activity by large international firms takes place within regional blocks. Government regulations, transportation costs and cultural differences divide the world into the triad of North America, Europe, and Asia-Pacific – an extension of the three large economic hubs at its core: the United States, the European Union and Japan. Within these blocks rival multinational enterprises compete for regional market share and so contribute to economic efficiency" (Rugman 2006). But in telecom sector being service industry in nature, it does not discriminate the various sectors of economy. It serves all the sectors of the economy in a similar manner as the services provided by telecom sector to various categories of customers – those who need these telecom services because of faster mode and cost-effectiveness of communication arising due to business process fulfillment and long-distance separation of organizations separated around the globe, i.e., demand driven. Therefore in whatever formats globalization occurs in any country, it does not alter the configuration of telecom service delivery and always enhances the growth of telecom sector as it becomes the common denominator for all the industrial sector's growth enabler.

Within the Asia Pacific region, various voice usage patterns exist among consumers of voice communication services. Generally, there has been a preference shown for mobile communication over fixed-line communication, and as a result, customers have been shifting their subscriptions and usage. Also, in certain regions, particularly where price is an issue, a preference for the use of mobile data services over voice calling has become apparent. This increasing demand for mobile communication services can be attributed to the flexibility and mobility that is characteristic of these technologies as well as the value-added services that have become incorporated into the offerings of mobile providers.

The main theme of this chapter is that flexibility need not be only considered in processes but throughout the enterprise in people, processes, and technology in

various forms of flexibilities. Based on the framework presented in this chapter, we convey that flexibility incorporation is required for enhancing competitiveness.

1.1 The Need of Liberalization or Competition

- To provide customers with more choices of technologies and services (flexibility/freedom of choice) with quality and affordable prices (flexibility in pricing), but not necessary lower prices.
- To formulate effective competition policies to ensure that the benefits of liberalization or deregulation and market-based reforms flow through to both industries and consumers.
- The industry trend demonstrates faster and more growth of data (e.g., Internet) and mobile services, both areas which have tended to be more open up to competition, than that of basic fixed voice services.

1.2 The Need of Regulation

The telecom sector has witnessed many changes related to technology and market conditions of telecom sector, and the role of government as regulator has really played a dominant role in protection of both sides of demand (consumers/users of services) and supply (companies and its related players who create telecom infrastructure/software/hardware and content developers) of telecom sector. The telecom sector is typically depicted in terms of technology/market/regulation.

The need of regulation of the telecommunications industry sector is very much required as this sector touches the life of individual, business, and government in similar fashion, and it is now omnipresent in all walks of life, and telecom services are extending almost towards becoming an essential service in the life of people, and hence in order to protect the interest of all, some regulation is inevitable.

Regulatory intervention is required for a variety of reasons. Typically, regulators must authorize or license new operators. They must often remove barriers to market entry by new operators by providing them the level playing field. They must observe interconnection of new entrants with incumbent operators. Regulatory intervention should be in sync with high-cost areas or low-income subscribers of telecom services.

The objectives of telecommunications regulation vary from country to country and governments in most countries continue to see telecommunications as an essential public service. Even after telecommunications networks are no longer run by them, governments normally retain a regulatory role to ensure that telecommunications services are supplied keeping the public interest of their citizens and business interest of the operators.

1.3 Convergence

Convergence has raised new challenges for competition authorities since it is expected to generate pressures for consolidation. We have already witnessed numerous mergers and acquisitions among players in the new market space. In some instances, acquirers have emerged from nontraditional sectors. The following categories of convergence became apparent:

- **Convergence of operators** – Mergers, acquisition, joint ventures, or investment among telecommunications operators or manufacturers used as a strategy for entering new markets or maintaining market share within an existing market, e.g., in Japan, Softbank acquired Vodafone Japan gaining access to the mobile telephony market
- **Convergence of services –** The development of business strategies that either involve the incorporation of one service within another or the simple offering of one service with another, e.g., mobile Internet included with mobile telephony or triple play (package offering cable TV, Internet, and fixed-line telephony for a single price)
- **Convergence of technology –** The incorporation of one technology into another, e.g., incorporating broadcasting technology into mobile phones to allow for mobile TV
- **Convergence of markets –** Services that were once noncompeting become competing or when operators who were once noncompeting become competitors due to substitutability of the service, e.g., broadcasters in the telecommunications market and telecommunications operators in the broadcast market
- **Convergence of regulation –** The alteration of regulatory schemes or regulatory bodies such that they have power over areas of technology which were previously dealt with individually (typically a reaction to one of the other forms of convergence), e.g., the proposed merger of OFTA and the Broadcasting Division of the Television and Entertainment Licensing Authority to create the Office of the Communications Authority (OFCA)

Each of these categories of convergence does not appear in isolation. They are often found together and the appearance of one can cause the appearance of another. For example, the convergence of technology is often the catalyst for the convergence of markets. In the case of mobile TV, 3G mobile technology allows for the provision of video to a mobile handset. The response of mobile telephony providers has been to create content or to license content from content providers, essentially putting these telephony providers in the broadcast market. Table 5.2 provides change of attitudes towards convergence in the Asia Pacific region – country wise.

Convergence brings with it many advantages for consumers and providers, but it also brings with it difficulties, particularly in market regulation. For example, convergence of operators includes the convergence of manufacturers. A possible result of this is vertical and horizontal integration within the market and the concentration of market power. This could cause major antitrust concerns as horizontal and

Table 5.2 Change of attitudes towards convergence in the Asia Pacific region (country wise and government, operator, and consumer perspective)

	Government strategy	Operator strategy	Consumer demand
Hong Kong	Maximization of open competition	Exclusivity of content (the walled-garden approach) to attract customers and differentiate operators	Highly sophisticated consumers
	All markets fully liberalized	Value-added services	Willing to adopt new technologies
	No barriers to convergence	Bundling	
South Korea	Broadband converged network (BCN), executed in three phases, to be completed in 2010	Operators positioned to provide more than voice services as total solutions providers	Very technology savvy
	First mover in the creation of infrastructure	Pilot project for IPTV allowed by KBC and MIC	Willing to adopt new technologies
Japan	The u-Japan program which is moved towards the convergence of communication broadcasting and consumer electronics into a single network	Expand market power or move into new markets by merging with or acquiring another operator(s)	Technology savvy Willing to adopt new technologies
Australia	Slow regulatory reaction	Access to Telstra's fixed network is key	Willing to adopt new technologies if they are cost-effective
	Attempting to apply existing regulatory framework and only making changes as deemed necessary	Value-added services	
	Emphasis on industry self-regulation		
China	State-controlled competition	Competition based on service, no exclusivity of content	High demand for cost-effective services
	Government is fighting the push towards convergence in broadcast and telecommunications	Partnerships are forming to allow telecommunications operators in broadcast and broadcast operators in telecommunications	Huge market potential
	Convergence between telecommunications and broadcast is banned		Willingness to leapfrog technologies indicates a high interest in converged services

Source: (ITU 2007)

vertical monopolies may result. This will also raise the question of whether a natural monopoly will and should exist in the new market of converged services. Antitrust issues are only one of the challenging regulatory issues convergence has raised as regulators attempt to maintain quality and affordability as well as meet community standards for responsibility and accountability while nurturing the markets for these new services.

2 Literature Review

The high growth of telecommunications sector has been mainly because of the well-established notion that there is positive high degree of correlation between telecommunications and national development and secondly the felt need of telecommunications technology for holistic growth of the humanity. Beginning in 1960s, published papers of economists categorically cited a relationship between telephone density and GDP (Mowlana and Wilson 1990). Three important studies have been most influential in this regard. The International Telecommunication Union (ITU) in collaboration with the Organization of Economic Co-operation and Development (OECD) produced the first set of studies in the late 1970s. The result of the studies, later summarized in *Telecommunications for Development,* focused on the role of telecommunications in the process of development and especially in the development of the rural areas of the world's poor countries (Jipp 1963). The literature on flexibility, competitiveness and regulation is reviewed in the coming sub-section.

2.1 Flexibility

In Webster's Dictionary, "flexibility" is defined as "a ready capability to adapt to new, different or changing requirements." Because of the multitude of choices available to customers, today, flexibility is a key factor in business success. Not surprisingly then, it is suggested that the organizations should offer solutions for isolating, extending, and modifying the business rules that drive the processes within digital value chain (D'souza and Williams 2000; Porter 2001). Consequently, much research has demonstrated the importance of flexibility for firms to prosper in turbulent environments (Dreyer and Gronhaug 2004). Flexibility within a business context is a rather complex concept to define as it incorporates several dimensions (Shi and Daniels 2003). Traditionally, flexibility tended to focus on the ability of firms to adjust their manufacturing volumes to varying market demand. However, more recently, the concept of flexibility has been extended to incorporate the ability of firms to develop new products and enter new markets and industries (Dreyer and Gronhaug 2004). According to (Volberda 1996): "Flexibility is the degree to which an organization has a

variety of managerial capabilities and the speed at which they can be activated, to increase the control capacity of management and improve the controllability of the organization." The concept of systemic flexibility has been deliberated by Sushil (1997, 1999, 2000).

All organizations face internal and external environment so the flexibility associated with them are also there, i.e., external and internal flexibility. *Ansoff* was one of the first authors to probe more deeply into the concept of flexibility. He suggested that firms need internal and external flexibility to cope with unforeseeable contingencies. According to him, "external flexibility is best described by the maxim of not putting all of one's eggs in a single basket" (Ansoff 1965). This type of flexibility can be achieved *defensively* through a product-market posture which is sufficiently diversified to minimize the effect of a catastrophe and/or *offensively* by putting the firm into areas in which it can benefit from likely breakthroughs. Offensive external flexibility is more elusive and harder to implement than defensive external flexibility, but it maximizes the chance of participating in breakthroughs.

2.1.1 Organizational Flexibility

The organization chart of a traditional enterprise had long been defined as a shrinking pyramid with the CEO at the top. The twenty-first century organisations have started looking like the Web – a horizontal mesh that connects partners, employees, external contractors, suppliers, and customers in various forms of collaborations. The players are likely to grow more and more independent. Tomorrow's corporations are likely to be highly virtual, defined not by their location; cooperation grows in the future due to three broad reasons: regulatory factors, changes in the business, and approach (Volberda 1998).

Organizational flexibility is imperative necessity for its own survival. To be a flexible organization, it, inter alia, should create/observe the following dimensions: First, creating a responsive internal environment that can quickly react to any change in the marketplace, planned or unforeseen, a threat or an opportunity. Second, an organization should have variable cost-dominated structure to manage costs in situation of growth of the organization or recession in industry or change in demand. Third, an organization needs to be focused on profitable and core activities to the enterprise's success. Finally, the organization needs to have a resilient infrastructure that is available around the world and round the clock (Phan 2001).

It is the dynamic environment that these systems routinely perform and create this demand. As a result, there is a reciprocating impact on customer needs that are continuously changing, which results in an exponential increase in complexity.

In order to remain competitive, these systems and the organizations that realize them have to have more options, which is a direct influence on flexibility. These options also create a strain on the resources of any system, both intellectual and physical. To address these constraints while maintaining a requirement for flexibility,

the organizations that design these systems have to maintain a competitive advantage and by so doing rely heavily on the outsourcing of capabilities and resources. Outsourcing can enable an organization to be more competitive and offer the customers more value. However, outsourcing and the flexibility potentially propagates and introduces a new set of risks.

Flexible Workforce: The organization chart of a traditional enterprise had long been defined as a shrinking pyramid with the CEO at the top. To keep ahead of the steep new-product curve, it will be crucial for organizations to attract and retain the best thinkers. Companies will need to build a deep reservoir of talent – employees and free agents – to succeed in this new era (Amor 1999; Aalst 2000). Companies should be flexible enough to employ customer-focused people at every level of the organization and build processes that are simple to execute and flexible enough to change with changing times.

Organization Flexibility: The need for organization flexibility to accommodate a changing world is well understood. Today's high-velocity and competitive markets apply added pressure to adapt rapidly and perform at high levels. Organization is essentially a systemized whole consisting of interdependent and coordinated parts. Flexibility, however, centers on modification or adaptation. The more systemized and interdependent a group of humans is, the more difficult the change process. Thus, flexible organizations typically have been thought of as having less top-down control and more than an individual empowerment. Finally, many present-day theorists speak of the importance of possessing the dynamic resources and abilities necessary for rapid and effective action in business activities and decision-making. These action-oriented or kinetic capabilities are presented as essential complements to positional competitive advantages, a view that puts even further demands on the organization. Thus, organizational approaches are cornerstones or kinetic capabilities and are likely to be of primary importance for certain positional advantages, such as relationships with stakeholders. The flexibility in collaboration also refers to organizational flexibility as strategic alliances are more likely to involve competitors (Duysters et al. 2000). Contractor and Lorange (2002) suggest that the role of interorganizational cooperation grows in the future due to three broad reasons: regulatory factors, changes in the business and economic environment, and changes in industry practice and strategy. Companies must have flexibility in their alliance strategies to allow them to form quickly and effectively virtual supply chains that may transcend industry and national boundaries overcoming regulatory hurdles. Also, intermediaries need to renew organizational skills, resources, and functional competencies to sustain the advantages that they build (Teece et al. 1997).

Flexibility in forming strategic alliances must address issues such as the following:

- The nature of collaboration – as the nature of competition becomes increasingly based on rapidly reconfigurable value chains (Rayport and Jaworski 2001).
- Mechanisms of quality assurance – Digital intermediaries, which assure quality for the company's products and services, should be considered strategic partners

because they can play a critical role in building brand image and enhancing customer satisfaction and loyalty.

The capacity of forming collaboration and alliances maintaining a strong brand image is possible only when companies can afford to be flexible in strategies related to the above issues. Flexible organizations mandate that business processes are integrated end to end, enabling it to respond with flexibility and speed to any customer demand, market opportunity, or external threat (Sethi and Sethi 1990; Shi and Daniels 2003). As organizations use real-time information to accelerate an increasing number of business processes, flexibility and adaptability become fundamental requirements for supporting today's – and tomorrow's – business imperatives (Davidson 1999).

2.1.2 Technical Flexibility

Technical flexibility refers to freedom of choice an organization possesses in terms of technology platforms available. Once the enabling technologies are flexible enough to quickly adapt to a changing market environment, it is important to create flexibility in core processes of technology-related business processes. Many studies in the past have shown that organizations can use technology as a resource to gain competitive advantage (Clemons and Row 1991; Parsons 1983). Technology, which is the primary force behind the emergence of the new economy, has become not only a means of production but also a main component of service, relationship building, collaboration, and coexistence. In this context, the importance of flexibility in technology cannot be overemphasized. Byrd and Turner (2001) identify several dimensions of technological flexibility such as data transparency, compatibility, application functionality, connectivity, technical skills, boundary skills, functional skills, and technology management. They also observe that flexibility in technology as measured by integration, modularity, and IT personnel flexibility is positively correlated to an organization's innovativeness, mass customization, market position, and difficulty to duplicate. Malhotra (2001) identifies technology flexibility as the ability to cope with the integration of new e-business applications with the existing brick-and-mortar infrastructures. Such integration entails flawless fusion of enterprise resource planning, supply chain management, and customer relationship management, which is not possible without having integration standards, network capacity, data storage capacity, and processing power. Gronhaug (1999) links technological flexibility with product and services flexibility by using the open-system metaphor (Katz and Kahn 1966) in which organizations are viewed as input-throughput-output systems. Flexibility in formulating and executing a technology strategy, which is critical to achieving a sustained competitive advantage for firms in the new market environment, must address such issues as impact of technological change within the organization and impact of technological change on the market; technological changes can exert a huge impact on the market by directly affecting the size and nature of customers,

partners/suppliers competitors, and products. In order to provide the flexibility, scalability, and reliability required of mobile telephony, service companies need to create a flexible e-business infrastructure. This infrastructure should consist of open interfaces that allow new applications and services to easily connect. The flexible e-business infrastructure should include universal connectivity through the use of open standards and integration with internal and external services. Universal connectivity through the use of open standards implies that companies must allow customers, business partners, suppliers, and influencers to have access to systems and applications with a variety of access devices available. Having interoperability to allow sharing or communicating with mixed technologies across and beyond the enterprise is an important success factor and technology infrastructure should have capability to integrate internal and external services seamlessly. By integrating business applications and data among customers, suppliers, partners, and employees, companies can achieve a more effective and efficient e-business model. Enabling integration is accomplished by using open standards-based infrastructure elements in conjunction with an integration, which allows existing application functionality to be integrated with the new application logic (Shi and Daniels 2003). Byrd and Turner (2001) identify several dimensions of technological flexibility such as data transparency, compatibility, application functionality, connectivity, technical skills, boundary skills, functional skills, and technology management. They also observe that flexibility in technology (measured by integration, modularity, and IT personnel flexibility) is positively correlated to an organization's innovativeness, mass customization, market position, and difficulty to duplicate. Malhotra (2001) identifies technology flexibility as the ability to cope with the integration of new e-business applications with the existing brick-and-mortar infrastructures. Such integration entails flawless fusion of enterprise resource planning and supply chain management.

2.1.3 Operations Flexibility

For consistent customer service and applications, customer data must be integrated with different databases and applications (Oliver 2001). The integration of applications, processes, and data creates a single view of the customer, prevents discrepancies in customer data, and ensures consistent service of the customer, no matter the channel. In addition, any employee who interacts with customers, no matter where they are in the organization, can access any customer information necessary in order to provide superior service (Papazoglou et al. 2000).

Operational flexibility of organizations encompasses people, process, and structure, where operations of an organization is planned, processed, and executed. Volberda (1998) explained that operational flexibility required for changes which are familiar and often led to a temporary change in the activity of level of organization. In the case of operational flexibility, there is no substantial shift in the relationship between an organization and its environment. For consistent

customer service applications, customer data must be integrated with different databases and applications (Oliver 2001).

2.1.4 Strategic Flexibility

Strategic flexibility has been considered by previous research in strategic management, economics, organization theory, and marketing. Strategic flexibility (or nonroutine steering capacity) refers to capabilities related to the goals of the organization. This most radical type of flexibility is more qualitative and involves changes in the nature of organizational activities. Such flexibility is necessary when the organization faces unfamiliar change that has far-reaching consequences and needs to be responded quickly. Eppink (1978) explained that strategic flexibility is necessary to compensate for strategic changes which originate in the indirect environment of the organization and reach it via the components of its direct environment. They require immediate attention to prevent the organization from being seriously affected. Eppink (1978) concludes that strategic flexibility is a new area but that organizations are increasingly confronted with strategic change.

Strategic flexibility (high variety, high speed) consists of managerial capabilities related to the goals of the organization or the environment (Aaker and Mascarenhas 1984). The issues and difficulties relating to strategic flexibility are by definition unstructured and nonroutine. The signals and feedback received from the environment tend to be indirect and open to multiple interpretations, "soft" and "fuzzy." Because the organization usually has no specific experience and no routine answer for coping with the changes, management may have to change its game plans, dismantle its current strategies (Harrigan 1985), apply new technologies, or fundamentally renew its products. Its response may also be external, e.g., influencing consumers through advertising and promotions creating new product-market combinations using market power to deter entry and control competitors (Porter 1980) or engaging in political activities management. Strategic flexibility is used by Sushil (2012) as a fountain head of the framework of flowing stream strategy.

2.1.5 Marketing Flexibility

Market is a place where buyers and sellers meet to transfer their products and services for some considerations. Therefore, marketplace has many actors interrelated to each other through different processes to achieve their desired objectives. Companies – an actor in marketplace – are required to be flexible in their product offerings as one variety (or even a few) is (are) not likely to be adequate to cater to the varying needs, tastes, and expectations of an increasingly segmented and global customer base. Flexibility, in this context, refers to the ability of a company to meet this challenge within the overall framework of its business strategy. The capacity and speed of product innovation is an attribute of such flexibility.

2.1.6 Financial Flexibility

The concept of flexibility has basically developed in the context of manufacturing systems and organizational systems. As regards financial management systems, the need and raison d'etre of flexibility has drawn increased attention of professionals only in the recent years. New concept in this area real options and their interaction with the financial flexibility of the firm have been reviewed by Trigeorgis (1993). In the concept of financial management, Gupta (1983) has aptly underlined the significance of flexibility. The balance sheet can be used primarily for assessing the vulnerability of an enterprise in terms of the strength and flexibility of its financial frame which can be best thought as a kind of constraint ring surrounding the enterprise.

Flexibility in financial management refers to liberation of the financial management from the clutches of the strict normative framework for providing freedom of choice to financial managers. Financial flexibility can be defined as "exercise of the freedom of choice within the framework of government's monetary and fiscal policies, capital market regulation, investor's risk returns preferences and corporate strategy, evolving financial processes with versatility, adaptiveness and transparency for better resonance with business environment" (Jain and Sushil 2000).

The investment decisions will be governed by the growth strategy adopted by the organization and matching of the project with corporate strategies and core competencies. This is further compounded by the interplay of "financial flexibility" in terms of capital availability, sources of finances, and the cost of capital.

Flexibility in capital structure process is concerned with exercise of the freedom of choice to dynamically interplay among the various sources of financial providers of fund (individual and institutional investors from the country and abroad) and various financial instruments, keeping in the view the conditions prevalent in financial markets, government regulations in vogue, and firm's own financial profile.

Flexibility in dividend decisions, being open to various policy options as well as different modes of implementation, provides leverage to the decision-maker in terms of speed of adjustment, taking care of extreme financial position of the firm and the liquidity crisis. This will prove to be more "investor friendly" and thereby contribute towards price enhancement of the share, eventually furthering the value of the firm.

2.2 Competitiveness

Firms operating in today's economy are experiencing increased pressures due to several factors including a rapidly changing business environment, shorter product life cycles, increasing demanding and less loyal customers with rapidly evolving preferences, and fiercer competition (Dreyer and Gronhaug 2004). These trends are motivated by an increasingly global economy, deregulation in many industries, and

fast developments in information technologies that enable new business models and novel forms of collaboration and competition. This is especially the case for firms that operate within an online environment (such as mobile telephony) which is characterized by lower switching costs, lower barriers to entry, more substitution threats, quickly changing regulations, and increased competition due to lower differentiation and increased geographic reach (Porter 2001).

"Competitiveness" originated from the Latin world, *competer*, which means involvement in a business rivalry for markets. Competitiveness is a complex, multidimensional, and relative concept. It is linked to a large number of interdependent variables, thus, making it difficult to sense and define it. Defining and measuring competitiveness is itself a research challenge. It is being relative concept without bearing any direct relationship with economic performance indicators. Competitiveness has been dealt with by coining two separate but related concepts, viz., comparative advantage and competitive advantage. Competitive advantage corresponds to the notion of firm-specific assets and describes the proprietary elements of the firm that determines what activities it should undertake and what distinguishes it from its competitors. The real difference between these two terms in existing literature seems to lie in their levels of analysis. While the literature on comparative advantage deals with the issue of competitiveness of nations and their industries, writers on competitive advantage are more concerned with firm level.

The competitiveness has been getting importance in the USA towards the latter half of the twentieth century. Declining competitiveness of USA in the early 1980s can be attributed to macroeconomic factors. The firm-level behavior is strongly influenced by macroeconomic factors. For example, short-term profit orientation of US firms in this era resulted into high cost of capital due to low private saving. The rising competitiveness of Japan in international trade was interlinked with macroeconomic factors, such as long-run productivity growth, higher savings and investment rates, governments emphasis on quantity and quality of education, and investment in public infrastructure (Baumol and McLennan 1985). Some authors (Vernon 1966; Krugman 1983, 1986; Porter 1990) have argued that while factor advantages were important in the eighteenth and nineteenth centuries, economies of scale, technological change, comparable factor endowments, cheaper transportation costs, and inflow of foreign capital and other factors have pushed firms towards factor-exploiting advantages of multiple nations, thus leading to the emergence of a large number of multinational firms. Some writers (Borrus 1983; Tyson 1988, 1992) have given prominence to the role of the government. It is noteworthy to see that in NICs (newly industrialized countries), governments have nurtured infant industries and shaped competitiveness of firms in these industries to gradually enter the global market and gain prominence. The market promotion policy of the government has been focused on those industries that have spillover effect over entire economy because of "linkage externality" (Krugman 1987) and on which the future competitive success of various industries depend (Tyson 1988).

Competitiveness is also defined as the accumulation of competitiveness of firms operating in nation's boundary cutting across industries or group of industries (Papadakis 1994). Researchers have conceptualized firm-level competitiveness as

competitive position of a firm vis à vis its competitors in international markets. This is determined by three sets of interrelated factors, namely, delivered costs. Porter argues that the role played by comparative factor advantage is there but there exist competitive industries in many countries not endowed with comparative advantage in the relevant factors (Porter 1990). Classic example of this argument is Japan. Some writers (Hays and Wheelright 1983) attribute the competitiveness problem and challenges of USA to micro (firm-level) developments, such as lower emphasis on manufacturing and operations, product and process innovation, short-term orientation of corporate managers, and less emphasis on technology development.

2.3 Regulation

In a few short decades, radical changes in technology, market institutions, and regulatory and competition policy have transformed telecommunications markets. Telecommunications service traditionally meant "voice communication"; however, the term now encompasses audio (voice), data (fax and email), and video (graphics and multimedia). It is common to refer to these forms of electronic communication as the "triple play" when made available from a single provider. With these changes, the phenomenon of "convergence" has emerged as both the principal offspring and driver of the technology-market-policy triad. Convergence is bringing together previously disparate communication services, content, and consumer market segments.

This phenomenon raises questions about the future of communications and, in particular, about that of voice communication particularly (1) what place will voice communication have in the converged world of electronic communication? and (2) how will regulation and competition policy shape the environment in which voice communication services will be provided and consumed?

3 Trends in Regulation and Policy

The trends in regulation and deregulation have been of the trigger to change and adopt various measures. The following is the list of issue related to such trends:

- Protect public interests from anticompetitive behaviors of industries and growing cyber crimes.
- Face convergence of ICTs in not mere technologies and services but also legislation and institutions.
- Undertake sector reform or reengineering through liberalization or privatization.
- Ensure fair competition or competition safeguard.
- Be aware of digital divide in ICT infrastructure and applications not only between countries but also within the country.
- Increasing concerns over private anticompetitive practices led by liberalization or privatization.

- Some 80 countries (inc. 50 developing ones) adopted competition policy including laws and other measures to promote competition in the national economy through dealing with price fixing, cartel arrangements, abuses of a dominant position or monopolization, and mergers that limit competition.
- Developing a multilateral framework on competition and e-commerce policy within the WTO is under the review.

The privacy laws, cyber law, dispute settlement over domain names, and certificate authority began to be introduced in the advent of Internet and e-commerce.

3.1 Regulatory Trends for Spectrum Management

In the current situation, the general approach of spectrum regulators remains one of "command and control," where changing uses of spectrum is a deliberative process involving study and opportunities for public comment. However, we can recognize some trends towards a more flexible approach.

3.2 Legal Trends

- Establish new telecom or ICT legislation.
- Modify the existing telecom laws or regulations.
- Harmonize or improve legal environments and frameworks to reflect convergence and its implications in advent of the Internet, e.g.:
- Data protection/privacy, intellectual property rights
- Security (e.g., authentication, digital signatures)
- Harmful and illegal content (e.g., child pornography)
- Domain names and their standardization
- Jurisdiction and cross-border issues
- Cyber crime (e.g., virus, fraud)

3.3 Global Trends on Legislative Reforms

- Over 150 countries have introduced new telecom legislation or modified existing regulations to introduce competition, establish regulatory authority, and privatize the incumbent and/or accommodate convergence of ICT.
- Further changes are anticipated to fit the new realities of convergence.
- Legislation on interconnection.

Table 5.3 provides recently revised ICT legislation in Asia and Fig. 5.1 gives the global trend of regulatory bodies.

Table 5.3 Revised ICT legislation in Asia

Recently revised ICT legislation in Asia

Countries	Years	Laws
India	1999	Telecommunications Policy
	2000	Information Technology Act
China	1997/8	Regulations
Hong Kong	2000	Telecommunications Ordinance (Rev)
		Broadcasting Ordinance (Rev)
Malaysia	1998	Communications & Multimedia Act
		Communications & Multimedia Commission Act
Singapore	1998	Electronic Transactions Act
	1999	Telecom Act
Thailand	1999	Corporatization Law
	Pending	Frequency Bill

{Source: ITU, *Asia-Pacific Telecommunication Indicators, 2000}*

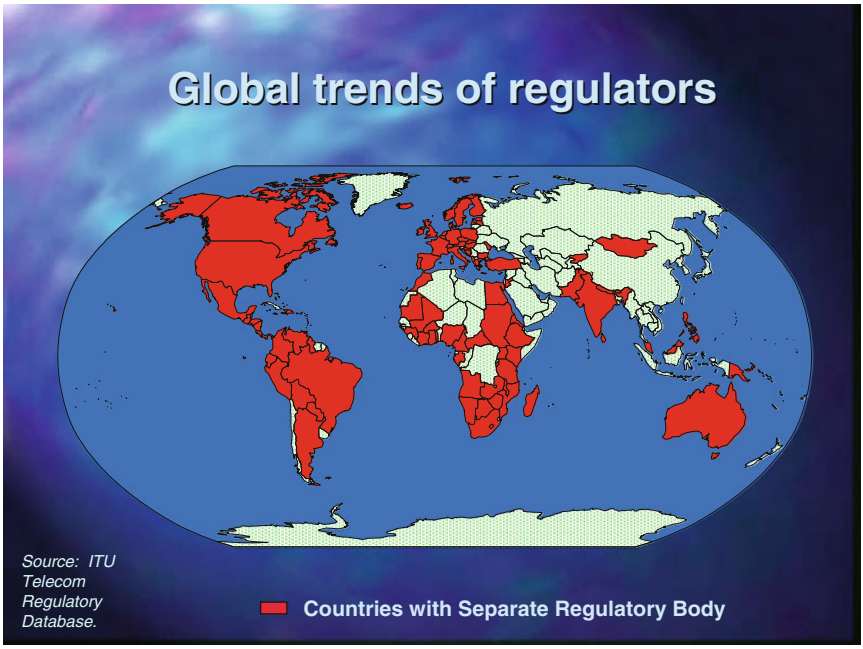

Fig. 5.1 Global trend of regulatory bodies

3.4 Regulatory Trends in India

As mentioned above, India made commitments under the General Agreement on Trade in Services (GATS) to review further opening up of national long-distance service in the year 1999. This commitment was reinforced by the NTP 1999, which declared that the market for domestic long distance (DLD) should be opened up to competition by January 2000. This, however, has yet to occur. The NTP 1999 requested the TRAI to make recommendations to the government in this regard. The TRAI released its discussion paper in September 1999 and announced its recommendations in December 1999. The Telecom Commission has not yet announced the government's definitive policy but this is expected by April 2000. The main elements of the TRAI's recommendations on DLD competition are as follows:

- Creation of a multiplayer environment.
- Competition limited to facilities-based players.
- Entry fee of a one-time Rs.5 billion, with Rs.1 billion in cash and the rest as bank guarantee ensuring rollout.
- Revenue-sharing scheme of 5 %.
- A phased network rollout plan with obligatory coverage of 15–100 % of the total long-distance charging areas in the first 2–7 years.
- Equal access and interconnection to be provided immediately. Thus far, the DoT/DTS has agreed to the separation of accounts proposed by the TRAI in order to set up a distinct long-distance operator. However, it has objected to both the open competition and the recommended level of revenue sharing, set at 5 % of the licensee's revenue, which it considers suboptimal. It is not eager to pay license fees equal to that of private long-distance operators. It argues that India's telecommunications policy does not require the payment of license fees for basic fixed telecommunications.
- Another important regulatory development relates to the government's policy on Internet service providers. The policy stated that ISPs should be allowed to operate their own international gateways and thus be able to lease either satellite transponder or submarine cable capacity for connection to the Internet backbones in other countries. Although the ISP policy was released in 1998, it is only as recently as February 2000 that private ISPs have been given official clearance for setting up international gateways.

3.4.1 Current Status Regulation

The Indian government has also been setting new policy targets, in an effort to modernize the telecommunications sector. The policy also aims to create a modern and efficient telecommunications infrastructure taking account the convergence of electronics, telecom, IT, and media. It commits to a strong and independent regulator and proposes new targets for telecommunications network

development. In response to the TRAI's recommendations dated August 29, 2007, DoT announced changes in the telecom policy. The key highlights of the new policy are as follows:

- Removal of cap on the number of access providers in any service area
- Permission to existing UASL operators to provide wireless services using alternate technology
- Implementation of new subscriber norms for allocation of spectrum

3.4.2 Recent Regulations in India

During the year 2011–2012, TRAI issued the following regulations:

(i) The Telecom Commercial Communications Customer Preference (Sixth Amendment) Regulations, 2011 (5 of 2011), dated September 05, 2011
(ii) The Telecom Commercial Communications Customer Preference (Seventh Amendment) Regulations, 2011 (6 of 2011), dated October 25, 2011
(iii) The Telecom Commercial Communications Customer Preference (Eight Amendment) Regulations, 2011 (7 of 2011) dated November 01, 2011
(iv) Telecom Consumers Complaint Redressal Regulations, 2012, dated January 05, 2012
(v) Telecom Consumers Protection Regulations, 2012 (2 of 2012), dated January 06
(vi) Telecom Consumers Complaint Redressal (Amendment) Regulations, 2012 (3 of 2012), dated January 12, 2012
(vii) Telecom Consumers Protection (Amendment) Regulations, 2012 (4 of 2012), dated January 12, 2012 Annual Report 2011–2012
(viii) Telecom Consumers Protection (Second Amendment) Regulations 2012 (5 of 2012) dated February 21, 2012
(ix) Telecom Consumers Protection (Third Amendment) Regulations, 2012 dated March 09, 2012

4 A Case of Indian Telecom Mobile Service Industry

4.1 Industry Overview

The telecom sector continued to register an impressive growth during the year. The number of telephone subscriptions increased from 846.32 million to 951.34 million, registering a growth of 12.41 %. The wireless subscriber base increased by 107.58 million and the wire-line subscriber base recorded a decline of 2.56 million. The wireless segment continued to dominate with a total base of 919.17 million connections. The overall teledensity in the country increased to 78.66 from 70.89. The rural teledensity increased to 39.22 from 33.79.

The growth in subscriber base resulted in an increase in the gross revenue of telecom services from Rs.1,71,719 crore to Rs.1,95,442 crore during the year, a growth of 13.82 %. At the same time, the minutes of usage (MOU) per subscriber per month for GSM and CDMA full mobility service registered a decline from 349 and 263 at the end of March 2011 to 346 and 229 at the end of March 2012, respectively. The average outgo per outgoing minute decreased from Rs.0.51 to Rs.0.49 (a fall of 3.08 %) for GSM full mobility service and the average outgo per outgoing minute remained at Rs.0.47 for CDMA full mobility service during the period. The average revenue per user per month (ARPU) which at the end of March 2011 was Rs.100/- in case of GSM full mobility service decreased to Rs.97/- at the end of March 2012. The monthly ARPU in respect of CDMA full mobility service increased from Rs.66/ to Rs.75/- per month during the same period. Resultantly, the earnings before interest, tax, depreciation, and amortization (EBITDA) for the telecom sector in 2011–2012 was Rs.23,221 crore, as against Rs.23,266 crore in the previous year indicating a decline of 0.19 %. The EBITDA margin declined from 13.95 % in 2010–2011 to 12.91 % in 2011–2012. The capital employed in the sector decreased from Rs.3,37,683 crore in 2010–2011 to Rs.3,21,375 crore in 2011–2012, i.e., a decrease of 4.83 %.

Low Initial Demand for Mobile Services: Mobile telecom services were introduced in India in late 1995 and were marked by low demand and high tariffs, due to large license-fee commitments and capital expenditure requirements of service providers. In March 1998, there were merely 0.88 million mobile subscribers in the country, over half of these being from Delhi and Mumbai.

"NTP 1999" Dialed in Accelerated Growth from 1999 to 2003: The National Telecom Policy, 1999, revolutionized the industry by allowing a shift from a fixed license-fee regime to a revenue-share regime, thereby attracting more players to the market. Consequently, the mobile services industry began to look up and added 0.7 million customers to its base in 1999–2000. The growth accelerated in 2000–2001 with an additional 1.7 million subscribers. In 2001–2002, net additions of the industry increased to 2.9 million and further to 6.7 million in 2002–2003.

In 2002–2003, BSNL launched its services as the third operator across many circles, followed by fourth operators. This, along with the consequent decline in tariffs, accelerated growth, with the total number of mobile subscribers now going up to 13.8 million in March 2003.

The year 2003–2004 witnessed phenomenal growth in the industry with an addition of over 20 million subscribers. This can be attributed to the Calling Party Pays (CPP) regime implemented in May 2003, which made incoming calls free and the launch of services by Reliance Infocomm. While the CPP regime brought more low-usage customers into the mobile telephony fold, Reliance Infocomm lowered entry barriers for mobile services with schemes such as "Monsoon Hungama."

In 2004–2005, the mobile industry witnessed an addition of 21.4 million customers which was lower than the net additions in 2003–2004. This was because Reliance Infocomm disconnected around 1 million subscribers after checks for credit worthiness and customer verification. Moreover, there were no significant growth triggers

during this year. However, 2004–2005 turned out to be momentous because by the end of the year, the total mobile subscriber base reached 56.97 million, which outnumbered the total fixed subscriber base. The ratio of fixed to mobile subscribers dropped down from 0.7 times in 2004–2005 to 0.4 times in 2005–2006.

In 2005–2006, the total telecom subscriber base increased by 43.6 million to reach 140.4 million. The mobile subscriber base went up by 43.5 million subscribers whereas fixed services added 0.13 million subscribers during the year. The launch of a 2-year incoming-free scheme by Tata Teleservices and the introduction of lifetime-validity scheme triggered growth, thereby pushing net additions to cross the 4 million mark.

In 2006–2007, the total telecom subscriber base went up by 66.5 million and reached 206.8 million. In June 2006, the government introduced a policy wherein fixed wireless subscribers were included in the mobile segment and fixed wire-line subscribers would alone constitute the fixed telephony segment. As a result, the total wireless segment (mobile plus fixed wireless) went up by 67.2 million subscribers reaching 166.05 million in March 2007 and again soared up by 19.08 million to reach 185.13 million in June 2007. Fixed wire line continued the past year's trend and declined by 0.8 million to reach 40.8 million, as of March 2007. In 2006–2007, the average monthly wireless subscriber net addition was 5.7 million.

Mobile phone subscribers are classified into prepaid and postpaid subscribers. While postpaid subscribers pay for usage of services at the end of the billing period, prepaid subscribers pay a fixed amount in advance for which they get corresponding talk time valid for a certain period.

Between 1999–2000 and 2003–2004, the number of postpaid subscribers as a proportion of total GSM subscriber base witnessed a secular decline. In 2004–2005, the number of postpaid subscribers increased for the first time which is believed to be a result of the aggressive cut in rentals on postpaid services by many operators. This was reflected in the sharp decline in postpaid ARPU in 2004–2005. In 2005–2006, the share of postpaid subscribers went down again to 13 % but picked up in 2006–2007 to reach 16 %.

On the other hand, the share of prepaid subscribers climbed up from 81 % in 2005–2006 to 87 % in 2006–2007. The upward trend of subscribers in the prepaid segment was an outcome of the relaunch of lifetime-validity prepaid scheme by various mobile network operators, available at a minimum charge of Rs.495 as against Rs.999 introduced last year.

Over the last 5 years, while the number of postpaid subscribers expanded at a CAGR of 43 %, the prepaid segment grew at a CAGR of 94 %.

Mobile phone services were initially launched in the metros, which accounted for almost the entire mobile subscriber base and thus the net additions in the first 2 years of operation. Among the metros, Delhi and Mumbai accounted for a substantial portion of the net additions.

However, this scenario changed after the launch of services in nonmetro circles; the share of metros in the total subscriber addition came down from 92 % in 1996–1997 to 42 % in 1997–1998. Category-A circles accounted for 30 % of the net additions,

category B for 25 %, and category C for 3 percent in 1997–1998. This trend continued up to 2001–2002. Metros continued to lead the net additions followed by category-A circles. Thus, metros continued to enjoy the largest market share in terms of the total outstanding subscriber base at the end of 2001–2002.

The year 2002–2003 witnessed a change in trend, and category-A and category-B circles surged forward in net additions. Category-A circles led the growth, accounting for around 37.8 % and 38.6 % of the total net additions in 2002–2003 and 2003–2004, respectively. While metros and category-B circles accounted for around 29 % of the total net additions at the end of 2002–2003, category-A circles surpassed the metro circles with a subscriber base of around 4.6 million. Whereas, in 2003–2004, metros continued to grow at 30.1 %, category-B circles experienced a decline in net additions at 27.5 %.

In 2004–2005, category-A circles accounted for the highest proportion of net additions of 34.9 % while the share of metro circles fell quite steeply to 23.3 %. The share of category-C circles, on the other hand, jumped appreciably from around 4 % in the past few years to 7.7 %. In terms of total subscriber base, category A continued to be the highest with a market share of 36.5 %. Category B ranked second with a market share of 29.7 % at 16.4 subscribers. The metros slipped to the third position where its market share stood at 28.5 % accounting for 15.7 million subscribers.

In 2005–2006, category-B circle accounted for the highest proportion of total net additions with 36.1 % of the total net additions, followed by category-A circle at 33.5 %. Category C saw a jump in total net additions, contributing 11.1 % as against 7.7 % in 2004–2005.

In 2006–2007, category-B circles maintained the ace position accounting for net additions of 39.8 %, followed by category A with a share of 35.9 %. However, category-C circle overtook metros in terms of share of net additions, standing at 12.2 %. Metros continued the downward trend and reached 12.1 %.

In 2006–2007, category-A and category-B circles stood at almost the same level of around 35.5 % in terms of total subscriber market share. Metros followed both, placed at 19.5 %. Category-C circle had a market share of 9.6 %.

4.2 Mobile Penetration by States

In India, mobile teledensity varies significantly between different circles. Delhi has the highest teledensity, followed by Chennai, while Bihar and West Bengal circles rank the lowest. Broadly, the relative teledensity in different circles corresponds to per capita GDP in a particular circle. States with higher per capita GDP have a higher penetration and vice versa.

4.3 Subscribers by Technology

GSM being the most widespread technology worldwide, mobile services in India were initially provided on GSM and all mobile licensees had to base their services on this technology.

The basic service operators were permitted to provide limited mobility services based on CDMA technology only in 2001. However, limited mobility services were more or less in competition with full-fledged mobile services. This led to disputes between mobile network operators and basic service operators hampering investments and growth of the sector. Subsequently, TRAI introduced Unified Access Service Licence (UASL) in November 2003 wherein a UASL licensee was permitted to provide access services based on any technology. Furthermore, the basic service operator was provided the option of converting to UASL by paying the requisite fees. Pursuant to this, all basic service operators providing limited mobility services converted to UASL and presently provide mobile services based on CDMA technology.

The GSM mobile subscriber base increased significantly at a CAGR of 79.9 % from 3.6 million in March 2001 to around 121.4 million in March 2007, accounting for around 73.1 % of the total mobile subscriber base in India.

Though CDMA operators were late entrants in the mobile services market, the share of CDMA subscribers (including WLL-F subscribers) in the total mobile subscriber base increased from a meager 0.03 % in March 2001 to 26.9 % in March 2007. This was brought about by aggressive schemes launched by Reliance Communications and Tata Teleservices.

4.3.1 Current Scenario of GSM and CDMA Services in India

The GSM subscribers were 808.80 million at the end of September 2012 as against 831.86 million at the quarter ending June 2012, showing a negative growth of 2.77 %. Bharti with 185.92 million subscribers continues to be the largest GSM mobile operator, followed by Vodafone (152.66 million).

The CDMA subscriber base further declined from 102.24 million at the end of Jun-12 to 97.82 million at the end of Sept-12, thereby showing a negative growth rate of 4.32 %. Reliance with 54.49 million subscribers continues to be the largest CDMA mobile operator. However, in terms of net additions during the quarter, only Sistema showed a positive growth, rest of the service providers recorded decline in subscribers.

4.4 All-India ARPU

The All-India blended average revenue per user (ARPU) per month has shown an increase of 3.80 % from Rs.74.91 in QE June 2012 to Rs.77.76 in QE September 2012.

ARPU for prepaid service increased by 1.61 % from Rs.47 in QE June 2012 to Rs.48 in QE September 2012. ARPU for postpaid service has also increased by 1.21 % from Rs.449 in QE June 2012 to Rs.454 in QE September 2012 as per TRAI (2012).

4.5 Industry Structure

Traditionally, services in the telecommunications sector – local as well as national and international long distance – were monopolized by state-owned organizations. Though BSNL and MTNL both provided fixed (basic) services, domestic long-distance services were taken care of by BSNL while VSNL catered to international long-distance services. As the need for developing the telecom sector to promote economic growth was felt and given the government's financial constraints to meet the sector's resource requirements, the central government threw open the doors to private players. Although the mobile services segment had private player participation from the advent itself, other services were opened up subsequently.

4.6 Migration from Fixed License-Fee Regime to Revenue-Sharing Regime (Flexibility to Operators)

In July 1999, private telecommunications operators were offered the option to change the basis of license-fee payment from a fixed amount to a share of revenues. However, these concessions were subject to operators accepting a set of conditions, which included the following:

- The existing cellular operators had to clear all their outstanding dues by January 2000 (effective August 1999).
- The new license agreement would not have the clause relating to exclusiveness of the license. This meant more operators could be provided licenses in future to offer cellular services.

All private telecommunications operators accepted the terms of migration to a revenue-sharing arrangement effective August 01, 1999 and the license fee paid till July 1999 by the existing cellular operators was treated as entry fee. The provisional license fee for all categories of circles was fixed at 15 % of gross revenue, according to the license agreement with the Department of Telecommunication (DoT).

In September 2001, the DoT changed the license-fee payable by the existing or future cellular service providers with retrospective effect from January 26, 2001 to 12 % of AGR (adjusted gross revenue) for metropolitan areas and category-A circles and for categories B and C, it was at 10 % and 8 %, respectively.

4.7 Third and Fourth Cellular Licenses

The government allotted third cellular operator's license for Mumbai and Delhi to MTNL and for the rest of India to BSNL. While MTNL commenced cellular services in Delhi and Mumbai during February 2001, BSNL started operating in Kolkata, Tamil Nadu, and Bihar in July 2002. For the remaining circles, it introduced cellular services in November 2002.

The government issued licenses for cellular services corresponding to the fourth operators' slot in October 2001. Licenses were issued to the Bharti Group in eight circles, Escotel in four, Hutchison Essar in three, and Reliance (through Reliable Internet) and Idea Cellular in one circle each. The entry fee for the fourth cellular license in the four metros and 13 circles aggregated Rs.16.33 billion. The highest quoted fee was Rs.2,060 million for Karnataka. Almost all operators holding the fourth cellular license commenced services during 2002–2003.

4.8 Limited Mobility Services

The technology used by limited mobility service providers is the CDMA-based wireless in local loop (WLL) platform. Limited mobility is a facility offered by basic service operators whereby a fixed-line telephone connection can be used like a cellular service within a short distance calling area (SDCA) with the help of a handset similar to a mobile handset. As compared with full-fledged cellular services, limited mobility has lesser features and does not provide roaming facility which allows subscribers to access the network in other areas.

It was only after a long tussle between basic service operators and cellular service providers that the Telecom Dispute Settlement Appellate Tribunal gave a green signal to the introduction of limited mobility service by basic service companies. The Department of Telecommunication included WLL services in the wireless segment effective June 2006.

4.9 Unified Access Licensing Regime (Flexibility to Operator)

Limited mobility services were in direct competition with full-fledged mobile services, on account of two reasons: first, only a small proportion of the mobile subscribers used roaming services and second, one of the operators used techniques such as call forwarding and multiple registration, which effectively resulted in the subscriber getting roaming facility.

As the license fee paid by the limited mobility providers (the basic service operators) was substantially lower than that of the cellular providers, they could price their services at lower price. This led to litigation between the full-fledged cellular service providers and the basic service providers. The disputes resulted in

the operators, particularly the GSM operators, holding back their investment plans and growth of the industry suffered.

The government, however, brought an end to this conflict in November 2003 by introducing the Unified Access Service Licence (UASL) wherein licensees could access services based on any technology. The guidelines of the UASL state that in order to migrate to UASL in any circle, a basic operator would have to pay an amount equivalent to the difference between the entry fees paid by four cellular operators and him. On the other hand, cellular licensees were not required to pay any additional amount to migrate to UASL. Reliance Communications and Tata Teleservices migrated to UASL soon after UASL was implemented by paying the prescribed entry fee of Rs.15.42 billion and Rs.5.45 billion, respectively, to the government and began offering full-fledged mobile services to their subscribers.

4.10 Tariff Structure

As mentioned earlier, the minimum subscription cost is a combination of cost of handsets and the monthly charge paid by subscribers to use the service. The average monthly outflow incurred by a subscriber, i.e., average revenue per user, is a combination of per minute tariff paid and the total minutes used by the subscriber in a month. Over the last few years, the per minute tariff charged by the subscriber has fallen drastically due to economies of scale achieved by operators owing to rising subscriber base, continuously declining cost of capital equipments, and intense competition in the market place.

5 Proposed Conceptual Framework

The proposed framework for the regulation of telecom sector of India based on flexibilities provided to organization by regulators of India enhances competitiveness, i.e., the framework proposes that the resultant flexibility affects the overall competitiveness of the organization manifested in four perspectives of the organization as shown in Fig. 5.2. The important variables in the conceptual framework are as follows.

5.1 External Flexibilities

This relates to external dimension of the strategy that ensures the ability of an organization to grow despite insecurity and turbulence and capitalize on emerging opportunities while maintaining a focus on existing customer, market, and

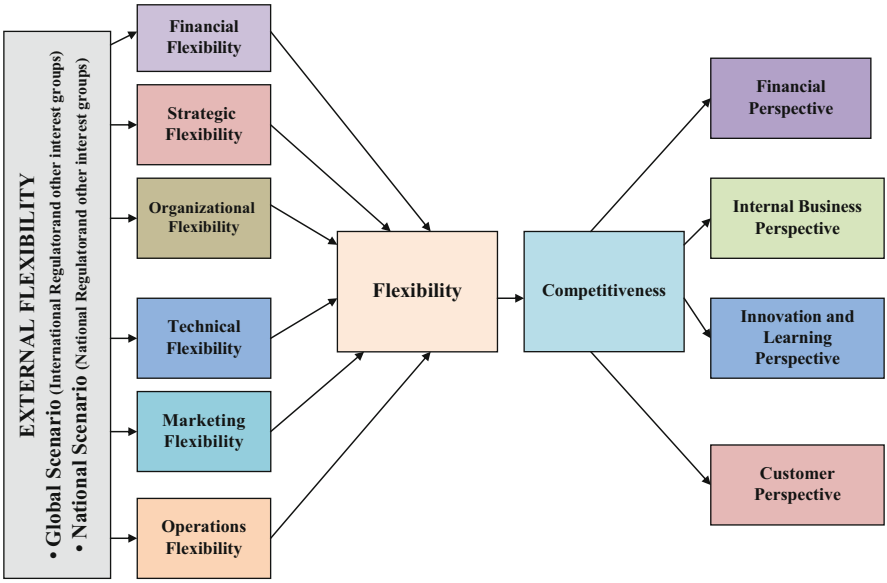

Fig. 5.2 Conceptual framework for flexibility and competitiveness

suppliers. This type of flexibility also originates from regulatory mechanism from the regulators and government departments of the country dealing with the industry segment. This flexibility is also affected by international scenario/global regional scenario/own country scenario in terms of technology available, integration of international regulators, and global service provider in mobile telecommunications sector.

5.2 Internal Flexibilities

These flexibilities are related to the internal dimension of the strategy. Internal flexibility of the organizations ensures that the different organizational subunits and linkages continue to work together efficiently even while the organization renews itself for the new operations, market, or customer. The following are the internal flexibilities taken up in the proposed framework:

- Strategic flexibility
- Organizational flexibility
- Technical flexibility
- Marketing flexibility
- Operations flexibility
- Financial flexibility
- Customer perspective

5.3 Competitiveness Perspectives of the Organization

The competitiveness perspectives are based on balanced score card (Kaplan and Norton 1993, 1996a, b) as given below:

- Financial perspective
- Internal business perspective
- Innovation and learning perspective
- Customer perspective

6 Conclusion

The transition from monopoly to competition in telecommunications is well underway in the vast majority of countries and largely completed in many countries. The transition has proved beneficially transformational and has set in motion further dynamic changes that are delivering a vastly expanded set of global opportunities in electronic communications. These opportunities are again positively transformational and are covered in the term convergence. But in order to participate in and maximize the benefits of convergence, a new regulatory framework has to be put into place in India. The new regulatory framework must address the legacy of the earlier transition period while supporting investments in the new period and facilitating new investments in the new market space. Clearly a level playing field would be most advantageous, i.e., an integration of existing regulatory frameworks into a single framework that is coherent across the entire electronic communications market space.

The convergence further call for convergence of regulators and policymakers in India as it happened in Thailand, i.e., (a) the Science and Technology Ministry for information technology; (b) the Transport and Communications Ministry for telephone and other basic telecoms infrastructure; and (c) the Commerce Ministry for e-commerce converged for the purpose of telecommunications. Therefore the convergence whether through technology, business models, or regulation is the future growth road map for India. This type of policy change can be categorized as flexibility in terms of organizational flexibility of Government of India.

Simple offerings of voice services will no longer be able to provide the revenue needed to operate in the emerging competitive environment as revenue and usage of these will continue to decline. However, people will always want some form of voice service, and they will look to those service providers who offer them additional value in the form of value-added services or cost-effective packages. This demand will drive service providers to find and incorporate those additional services or packages that will address the desires of the consumers, but at the same time, the service provider will continually pursue ways to reduce its supply costs and maximize revenue.

Mobile number portability (MNP) is a facility given by operators where a subscriber can move from one service provider to another without changing the

number allocated to the subscriber. Thus, under MNP, a subscriber will have the option of retaining the same phone number issued by the old operator even with the new operator.

Telecom regulator TRAI of India has already recommended the implementation of nationwide mobile number portability by June 2009 in a phased manner and has requested DoT to select an operator for providing and operating MNP solutions. This move has pushed operators to provide quality services to retain their subscribers. MNP is expected to lead to shifting of subscribers from one operator to other in large scale and lead to flexibility to subscriber, provided by the regulator, to opt for cost-effective and better quality of telecom service provider. This will lead to competition among service providers to hold their customers.

To achieve the successful implementation of MNP, operators carried out a comprehensive cost-benefit analysis to ascertain whether the implementation of the technology would prove to be profitable for the operator. Cost aspects such as the upgradation of existing networks, software modifications, and assessment of effective call-routing mechanism are some of the areas where operators need to focus their attention. Operators had the option of providing MNP through a centralized or distributed database of ported numbers. Here the role of regulators becomes difficult to manage the balance of interest of customer and telecom service providers.

This framework is a comprehensive framework for telecom industry catering to regulators of telecom service providers where the regulator can create appropriate interventions to manage competition among operators without sacrificing the interest of customers. This framework suggests that by creating appropriate flexibilities, the regulator can enhance competitiveness of service providers in all the four perspectives given in the proposed framework.

The framework is not intended to be prescriptive about how the various processes are carried out, how a regulator of telecom service provider is to be organized, or how the tasks are identified in any single regulator related to mobile telecom service provider.

One of the strengths of this proposed framework is that it can be adopted at enterprise level also by allowing a service provider to enhance their competitive positioning by capturing the opportunities provided by the regulator's flexibility in terms of entry of players or internal business process permitted by their respective regulator.

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