

# Strategic Planning in Highly Dynamic Competitive Contexts

## *A Study of Italian Mobile Network Operators*

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**Abstract:** Strategic management formulation and implementation in highly dynamic competitive scenarios is a challenging task. This is the case of the Mobile Telephony segment of the Information and Communication Technology (ICT) industry. In this competitive setting, potentially disruptive changes in both marketing and technological dimensions are the norm, as attested by the recent decrease in voice-related revenues by Mobile Network Operators (MNO) and the consequent rise in mobile data traffic. In this context, this paper aims to contribute to the literature on Strategic Technology Management by proposing an interpretative framework to support strategic decision making in dynamic, competitive contexts characterized by disruptive changes in both technology and business dimensions. The proposed framework is based on empirical research conducted at the four MNOs operating in Italy and allows identifying drivers of potentially disruptive change and their implications on a firm's business model. The framework use is illustrated through the analysis of the Italian Mobile Telephony industry. Finally, the research also highlighted the main strategic routes MNOs have at their disposal to face the turbulent competitive times ahead. These include specific strategic actions to cope with the issues of mobile bandwidth scarcity and decreasing voice-related revenues. A summary of MNOs future strategic positioning options is also provided.

## 1 INTRODUCTION

Given the ubiquity of mobile phones, Mobile Telephony is clearly a cornerstone of the current Information and Communication Technology (ICT) industry. The relevance of Mobile Telephony was initially established during the 1990s, when substantial investments by Mobile Network Operators (MNOs) cemented a vast customer base all over the world. During the following decade and a half, the Mobile Telephony market was characterized by constant growth in terms of users and revenues, most of which associated with voice transmission.

In recent years, however, this context has changed considerably, with MNOs' focus increasingly shifting towards data transmission and its related value-added services (Peppard and Rylander, 2006). First of all, mobile subscriber growth is stagnating in most countries and, particularly in mature markets such as Western Europe, MNOs face a situation where subscriber saturation and tight cost competition lead to voice-related revenues becoming

increasingly less profitable.

Technology innovation is also a factor. On the one hand, the rise of mobile devices tailored to Internet use (i.e., smartphones and tablets) and the diffusion of data-hungry content such as video streaming drive the consumption of data in mobility. On the other hand, innovation and investment in network infrastructure technology increase the availability of data provision, while lower mobile data tariffs make it more accessible. In this complex competitive context, elements such as the regulatory backdrop, changing customer needs, and the positioning of competitors and partners alike are some of the additional variables that must be addressed by MNOs when devising their strategies.

Furthermore, MNOs must also contend with a business convergence trend in act in the ICT industry that mirrors the technological convergence of telecommunications, software, Internet and electronic devices. This has caused a paradigmatic shift in traditional Mobile Telephony value networks, as exemplified by the successful foray of

Apple in this market, that profoundly affects the strategy of all players involved, particularly MNOs.

It seems clear, then, that the task of setting strategic guidelines in this technology-oriented, multifaceted context is particularly daunting. New business models, pricing mechanisms and value network relationships must be designed and implemented in order to cope with the dynamic conditions and continuous technological change. However, these efforts require systematic research that considers both the business and technological issues at hand. In this way, important theoretical implications for the Strategic Technology Management discipline can be derived during turbulent times, as demonstrated by classic works such as Henderson and Clark (1990), Anderson and Tushman (1990), Christensen and Rosenbloom (1995) and Pepperd and Rylander (2006).

By studying the actions and decisions of firms profoundly affected by contexts of turbulent technologic and market change, insights on strategy formation mechanisms can be formed. In particular, it is possible to study the relationship between the sources of disruptive change and their potential strategic implications, as well as the business model dimensions impacted. Thus, the aim of this paper is to propose an interpretative framework to support strategic decision making in dynamic, competitive contexts characterized by disruptive changes in both technology and business dimensions.

## 2 LITERATURE REVIEW

The issue of strategic planning in highly mutable competitive contexts is well established in academic literature. The field of Strategic Technology Management is perhaps the most prominent example. Most of the contributions in this regard can be traced back to two main approaches to strategy: the traditional positioning approach and the emergent (or incrementalist) approach. Moreover, the impact of ICT in business, particularly with the Internet diffusion of the early 90s, brought to light a new theme in strategic management: the concept of business model. These two topics are briefly addressed in this section in order to contextualize the empirical research.

### 2.1 Strategic Technology Management

Since the early 80s, technology has been incorporated into strategic thinking. This means, basically, to understand how technology relates to

the overall business strategy and incorporate this understanding into strategic planning and action. The fact that technological change is highly dynamic and frequently out of the firm's reach brings additional difficulties to this task.

#### 2.1.1 The Positioning Approach

A first approach to strategic management of technology incorporates a set of theories whose basic assumptions imply that competition is the battle for the most favourable position in a competitive environment, and strategy is how a firm can identify and achieve such position (Porter, 1980, 1985). Well known authors that adhere to this line of thought include, for instance, Foster (1985), Shapiro (1989), Hax and Majluf (1991) and Barat (2008).

Strategic decisions, thus, involve the selection of business areas within a market structure for a firm to explore and the internal leverage of a firm's resources to position itself in the industry. Thus, to build sustainable competitive advantage, a firm must analyse both endogenous and exogenous factors affecting the industry and its position within it. Technology, according to this approach, is at the same time one of the variables that can be used to implement a firm's strategic choices and a determinant of industry characteristics.

It is evident that this approach assumes that the competitive environment is rather static. This was, in fact, the overall condition when the basic theories that underlie this approach were elaborated. However, in the light of the growing pace of change in technological, economic, social and political scenarios that characterizes the current competitive environment, this is no longer the case.

#### 2.1.2 The Emergent Approach

This approach to strategic management assumes not only a highly dynamic competitive environment, but also that changes in this environment are inherently difficult to foresee. Notwithstanding, strategic efforts to induce and, if possible, control change and its effects must be made. Contrarily to the positioning approach, the emergent approach to strategic technology management considers that a firm's competencies and resources are the main source of competitive advantage, since they change at a much slower pace than technologies or market conditions. This approach builds upon the Resource-Based View theory (Wernerfelt, 1984, Barney, 1986) and has as main exponents authors like Prahalad and Hamel (1990), Teece et al. (1997) and Collis and Montgomery (1995), as well as more

recent conceptual deployments such as the Blue Ocean strategy (Kim and Mauborgne, 2004) and Open Innovation (Chesbrough, 2003).

In particular, in the emergent approach to strategic technology management considers technology as a variable that induce change either externally, through uncontrolled innovation by competitors or players in other industries, or internally, through planned innovation.

## 2.2 Business Models

Although initially criticized for their apparent murkiness (Porter, 2001), the concept of business model has been already fully incorporated in Strategic Management theory (Teece, 2010). It is now recognized as a valuable tool bridging the gap between strategy formulation and implementation in the form of business processes (Osterwalder, 2004; Shafer et al., 2005). Particularly in the context of Strategic Technology Management, a business model is a “coherent framework that takes technological characteristics and potentials as inputs, and converts them through customers and markets into economic outputs” (Chesbrough and Rosenbloom, 2002, p. 532).

Due to its potentially ample field of application, many authors have proposed different interpretations for the fundamental elements that characterize a business model. For the purposes of this research, a summarized conceptual model addressing business model elements elicited by Chesbrough and Rosenbloom, (2002); Osterwalder and Pigneur, (2002); Osterwalder, (2004); Shafer et al., (2005); Ballon, (2007) and Teece, (2010) is used. This conceptual model consists of the following dimensions: (i) value proposition; (ii) value creation; (iii) value delivery; and (iv) value appropriation.

The value proposition dimension relates to the effective offering in the form of products and/or services that create value for the user, but also includes target customer selection and segmentation as well as customer acquisition strategies. The value creation dimension reflects the internal organizational variables and characteristics that determine a unique strategic approach to the market and includes the key firm resources, assets, processes, activities, and capabilities necessary to create the value proposition. The value delivery dimension refers to how the business is articulated in order to reach its consumers and partners and relates to elements of value network positioning, key partnerships and relationships, delivery and distribution channels, and customer relationship

strategies. Finally, the value appropriation dimension, relative to how the business captures value and generates profit, includes the parameters of revenue model, revenue sharing, investment model, and financing and cost structure.

## 3 RESEARCH METHODOLOGY

The present research is based on a comprehensive literature analysis on the topics of Strategic Technology Management, particularly regarding deliberate and emergent strategy formation mechanisms, Business Models and Value Networks. The strong empirical- and business-oriented nature of the research problem at hand, as well as its high complexity, calls for an exploratory research approach.

Thus, four explorative multiple case studies were employed as research method for the empirical study (Yin, 1994). The unit of analysis for the case studies was the firm. All four MNOs operating in the Italian Mobile Telephony market were studied: Telecom Italia Mobile, Vodafone, Wind, and Tre. Data collection was conducted through seven face-to-face semi-structured interviews with top and middle managers responsible for the following organizational units: Operations (Value-Added Services), Operations (Broadband Content), Market Innovation and Research, Planning and Control (Technology and Operations), Operations (Mobile Broadband), New Project Development, and Technology Strategy. Secondary sources such as internal company documents, news published in specialized publications, reports and white papers were also used.

Data analysis for the four case studies was conducted in parallel, with combined cross-case analysis of case study write-ups. Data analysis procedures included coding analysis of the interview transcripts and secondary data (Auerbach and Silverstein, 2003; Ritchie and Lewis, 2003). The empirical study began in October 2011 and was concluded in January 2012.

## 4 RESULTS

From the insights obtained in the empirical research it was possible to draw a tentative framework to incorporate disruptive change into strategy and business model formation in turbulent competitive scenarios. This framework includes two main

elements: a classification schema for disruptive change and guidelines to identify disruptions and incorporate them in the strategic planning process and, consequently, in business model design and implementation.

#### 4.1 Disruptive Change Factors

The first element of the proposed framework is a classification schema for disruptive change factors that classifies disruptions as environment- or enterprise-driven. Environment-driven changes are exogenous to the company and can be further distinguished as: (i) external innovation; (ii) regulatory change; (iii) customer change; and (iv) competitor strategy change.

In line with Garcia and Calantone (2002), external innovation refers to marketing and/or technological discontinuities at the macro level, that is, on a world, market or industry level. This includes, for instance, the introduction of the App Store distribution model by Apple (a market macro-level discontinuity coupled with a significant technology discontinuity at micro/firm level) or the emergence of tablets and smartphones as main computing platforms (a technology discontinuity at macro level causing significant discontinuity at both marketing and technology micro/firm levels).

Radical regulatory change is almost invariably the result of marketing or technological innovations that require new rules of conduct for companies or individuals operating under the new assumptions. Thus, it was deemed necessary to revamp the regulatory backdrop regarding consumer privacy following the refinement of tools that automatically capture and analyse browsing habits online.

Changes in customer habits and preferences are also considered exogenous disruptions as only a very limited number of players may be actually capable of generating such large-scale socio-economic phenomena through marketing or technological innovations. Finally, competitor strategy changes include the usual relationships between different firms competing in the same industry. A change in the overall strategic focus or in business model dimensions by one player normally affects its competitors, even if the impact is only a change in market share or profit levels.

On the other hand, enterprise-driven changes refer to disruptions to the competitive *status quo* generated by the firm itself. Basically, these can be originated from: (i) research and development efforts; and (ii) emerging resources and competences. R&D efforts normally result in

innovations that may disrupt the market context at a macro or micro level, from a technological or marketing point of view (Garcia and Calantone, 2002). Similarly, emerging resources and competences refers to change opportunities arising from a firm's unique processes and intangible resources. While some of these opportunities may be fully developed into marketing or technological innovations, most of the time these changes will result in improved internal processes, better productivity or increases in intellectual capital that may impact strategic planning and business model deployment.

#### 4.2 Impact of Disruptive Change Factors

From the insights obtained in the empirical research it was also observed that disruptive changes in a market are normally associated with changes in business model dimensions or value network relationships. Normally, the direction of this effect is from the outside to the inside, that is, a change in market conditions can be deduced from a misfit between the initial assumptions that drove the business model design or value network positioning and the current performance parameters observed.

Business model dimensions that may be particularly subject to change following disruptions in market conditions include: target segments; customer value perception; value proposition characteristics; internal value creation resources (for example, specific processes or organizational structures); position and role in the value chain; value capture mechanisms (that is, the revenue model); and cost structure. Similarly, changes in value network structure derived from disruptive environment changes may include: the arrival or departure of players; changes in the value creation activities of specific players; changes in the value network governance structure; and changes in the overall value network competitive strategy.

Thus, the main assumption of the proposed model is that business model dimensions and value network relationships can be used as signalling tools for disruptive changes in the market context. It is important to note that these elements must be analysed and fed into the strategic planning process. In a turbulent competitive context, strategic planning must be continuous and particularly responsive. The strategic guidelines thus generated must then be used as input to the business model design and implementation activities. The aim is to achieve, as soon as possible, the best possible fit between the

overall strategy, its implementation in terms of business models, and the characteristics of the competitive environment.

## 5 FRAMEWORK APPLICATION

In order to illustrate how the proposed interpretative framework can be used to support strategy and business model formation, it was applied to the analysis of the Italian Mobile Telephony industry.

### 5.1 Disruptive Change Factors

The first element of the proposed model is the identification of disruptive change affecting the industry. In the case of the Italian MNOs, interviewees pointed out as the main change factors the relatively recent explosion in mobile data traffic coupled with the constant decrease in revenues from voice traffic. The data traffic increase in mobile networks has been explained by interviewees as a direct result of a number sub-factors, such as the diffusion of value-added service offering by over-the-top operators, the growing popularity of bandwidth consuming services such as video streaming and peer-to-peer, the emergence of more accessible data traffic plans, the popularity of social networking services (some of which include rich-media applications such as photo and video uploading), the diffusion of easy-to-use Internet-capable smartphones and decisive marketing efforts by MNOs to prompt the use of value-added services by mobile subscribers.

It is opportune to note that interviewees see the increase in data traffic not only as a driver of business, but also as a technological threat. This is so because mobile bandwidth is a scarce resource that, according to some forecasts, can be saturated in the near future if the pattern of traffic growth intensifies. Moreover, the research suggests that as much as MNOs are concerned, the value appropriation dimension of current business models in act is not capable of generating enough revenues to repay investments to expand the network and improve quality of service.

On the other hand, MNOs seem to bring the decrease in voice-related revenues back to the following factors: market saturation (which leads to extreme cost competition in order to shift market shares), emergence of voice-over-IP (VoIP) services, and diffusion of social networking services. The latter two factors are seen by the interviewees as substitute products that circumvent the traditional

MNO value appropriation mechanism: the mobile phone bill.

### 5.2 Impact of Disruptive Change Factors

Other than identifying the factors of disruptive change in act in the Italian Mobile Telephony market from the MNOs' point of view, the research attempted to understand their impact in the operationalization of MNOs' strategies, i.e., their business models. Figure 1 summarizes the findings.

Change Factor	Source of change	Business Model Dimension			
		Value Proposition	Value Creation	Value Delivery	Value Appropriation
Increase in data traffic	Diffusion of VAS (OTT)	Direct	No	Direct	Indirect
	Bandwidth consuming services	Indirect	Indirect	Indirect	Indirect
	Accessible data traffic plans	Direct	No	Indirect	Direct
	Social networking services	Indirect	Indirect	Indirect	Indirect
	Smartphones	Direct	No	No	Direct
	Marketing efforts	Direct	No	Direct	No
Decrease in data revenues	Market saturation	Indirect	Indirect	No	Direct
	Emergence of VoIP	Indirect	Indirect	No	No
	Social networking services	Direct	Indirect	Indirect	Indirect

Figure 1: Impact of disruptive change factors in MNOs' business model dimensions.

Moreover, the change factors have deeply impacted the Mobile Telephony value network configuration. This is particularly true in the case of the Mobile Content and Internet market, and is evident through a number of elements highlighted by interviewees during the empirical research.

The first value network-related impact mentioned is the arrival of new players. In the cases at hand, this takes the form of Web-originated companies expanding their value proposition to the Mobile delivery channel, as well as a large number of independent or semi-independent application developers and mobile middleware technology providers. Specific strategic relationships with each type of new player have to be formulated and implemented, with evident impact in coordination resources. At the same time, a higher level of strategic complexity is observed in these relationships, with the introduction of co-opetition dynamics with device manufacturers and web companies, open innovation agreements and partial role overlapping in some cases (for instance, between device manufacturers and MNOs for direct

customer ownership or billing).

The empirical research also generated an understanding of the potential strategic directions MNOs are evaluating given the change factors identified and the potential impacts assessed. A first set of strategic actions are aimed at solving the issue of bandwidth scarcity. These include the revamping of the value appropriation dimension of MNOs' business models in order to align revenue mechanisms with cost structures necessary to expand network infrastructure. This may be deployed through the limitation of flat data traffic plans by a network cap or contract diversification according to user choices such as peer-to-peer usage, quality of service desired/required based on usage profile, and time of day connections are established.

Another potential stream of strategic actions aims at solving the bandwidth scarcity issue by modifying the regulatory system. This can take the form of net neutrality violations in the case of network congestion, that is, blockage of high bandwidth services identified through deep packet inspection mechanisms. Conversely, MNOs can also try to explore additional frequencies made available through the digital dividend, that is, the switch-off between analogic and digital transmissions taking place in most Western countries. Finally, strategic regulatory initiatives in this area may benefit of ETICS (Economics and Technologies for Inter-Carrier Services), a FP7 project promoted by the European Community that aims at balancing the revenue models of all players involved in the Fixed-Mobile Internet value networks through revenue and investment sharing mechanisms.

A third potential strategic solution to the bandwidth scarcity issue lies, obviously, in increased investments in network infrastructure, with consequent expansion of capacity. If possible, this solution would also benefit of the co-investment strategies mentioned before.

The research also highlighted a second set of strategic actions aimed at solving the issue of decreasing voice-related revenues. The first option is revamping the value appropriation dimension of MNOs' business models. This can be achieved, for instance, by contract differentiation (with or without VoIP access, for instance) or, as currently, price reduction actions in order to improve market share (a strategy successfully employed by Mobile Virtual Network Operators all over Europe, for instance).

If these strategic actions are not enough to stop the losses or create enough profits for future growth, MNOs have also at their disposal the possibility of exploring the disruptive changes at hand. This can

take the form of specific strategic investments in innovative marketing opportunities. It is important, however, to highlight the need for the adequate fit between these innovative marketing opportunities and firms' competencies and distinctive value creation assets. For instance, Telecom Italia Mobile has decided to invest in areas such as Mobile Payment, eBooks, OTT TV, target advertising, Cloud Computing, and Application Stores. In this particular case, the MNO was forced to face the disruption caused by Apple's marketing and technological innovations, which have changed the distribution paradigm for mobile digital content from Mobile Portals to Application Stores. The research suggests that MNOs willing to develop their own Application Stores must be able to guarantee a number of critical success factors dictated by the market. These include a large user base that can be easily reached (and this has to be effectively communicated to potential application developers), and a sustainable business model for third parties and developers coupled with a proven technical infrastructure for application development (which also needs to be effectively distributed to potential application developers). Interviewees also highlighted the need for sharing marketing information such as client segmentation and application store usage with application developers as well as implementing effective marketing tools for them to promote their own content. All of this must be grounded in an application store that, from the user point of view, must be easy to use and at the same time customizable and integrated to social networking applications.

### 5.3 MNOs Future Strategic Scenarios

Finally, the research provided a summary of MNOs future strategic positioning scenarios. In short, MNOs must choose their own role in the Mobile Internet convergence scenario. Three potential future scenarios were evidenced through the empirical research.

If MNOs wish to maintain a focal role in the future Mobile Internet value network, current strategy makers understand that they must manage three areas contemporaneously: (i) customer relationship (the business model dimension related to value delivery), where they can build sustainable competitive advantage through economies of scope; (ii) content commercialization and innovation, focusing in innovative services and diminishing the time-to-market of new content and services; and (iii) infrastructure management, focusing in network

access services and mediation capability, where their competitive differential also lies in economies of scale. In other words, MNOs that wish to retain their focal role must manage and control the value network through the lens of the “Smart Pipe” analogy, that is, exploring the opportunities brought by the network functionalities and managing the quality of service as source of competitive advantage. An example of business model implementation of the Smart Pipe concept was provided by one of the interviewees: by managing data traffic functionalities, it is possible to create “preferred routes” for companies willing to pay for superior network connection speed to costumers accessing their sites or applications. In this business model, MNOs can also create opportunities for shared revenues with providers of technology management services or third parties that intermediate the value delivery for companies and users alike. A second potential business model that illustrates the Smart Pipe vision relies on the use of core network functionalities by third parties in B2B arrangements. Functionalities that can be explored in these business models include location-based technologies or the potential to billing the user through the MNO’s Sim card. The MNO, thus, would “rent” its technological assets and capabilities to third parties able and willing to develop and manage a profitable business model. Normally, value appropriation in these cases can take the form of revenue sharing.

Another strategic option suggested in this research for MNOs in the near future goes beyond the role of Smart Pipe. Depending on the technological and marketing evolution of the competitive environment, MNOs can play the role of “Value Network Orchestrators”. According to the evidence in this research, this implies in two main strategic courses of action. The first one requires that MNOs be able to achieve a state of equilibrium in their relationships with other large players in the value network, such as device manufacturers and web companies. The other course of action is to pursue the development of open technological platforms compatible with as many different devices as possible. Evidently, there is a delicate trade-off in the actual strategic actions to be taken, as pursuing open platforms may be contrary to the interests of device manufacturers. The specific actions necessary to achieve a role of “Value Network Orchestrator” depend, evidently, of the future developments in the Mobile Internet convergence scenario, but all Italian MNOs are aware of this option.

Finally, a third analogy for the future strategic

role of MNOs was suggested in this research. That is the role of “Innovation Coordinator” in the value network. This requires the MNOs to relinquish the operational activities related to content creation and development of new products and services to specialized third parties. Thus, MNOs become coordinators of the development ecosystem and, if the transition is managed correctly, will be able to keep a main role in the value network without the high costs related to development of innovative products. MNOs, in this scenario, provide the overall direction for the development efforts based on their knowledge about the customers (obtained through the usage monitoring and user profiling). This is a similar role that is currently played by Apple in the closed ecosystem it created with its devices.

Obviously, these three scenarios are not mutually exclusive. Instead, they are complementary – each MNO will certainly look for a role adequate to its strategic characteristics, competences, assets and capabilities.

## 6 CONCLUSIONS

This paper presented an empirical research conducted on the four Italian MNOs that resulted in an interpretative framework to support strategic decision making in highly turbulent competitive scenarios. This is precisely the case of the Mobile Telephony industry in recent years, as the technological convergence between Internet and Mobile has brought to light a number of business consequences. By studying the strategic decision making process of top and middle managers of firms operating at the core of the affected industry, it was possible to understand how strategy makers identify the drivers of potentially disruptive change and, more importantly, how they perceive the impact of change factors in their business models. Finally, the research also highlighted the main strategic routes MNOs have at their disposal to face the turbulent competitive times ahead. These include specific strategic actions to cope with the issues of mobile bandwidth scarcity and decreasing voice-related revenues. A summary of MNOs future strategic positioning options is also provided.

Given the exploratory nature of the research reported, this paper represents a somewhat generic contribution to the understanding of strategy formation in dynamic contexts. However, its main contribution lies in the detailed analysis of the Mobile Telephony market in a context of technology

and business convergence. The richness of data available made it possible to draw a clear picture of the challenges and opportunities MNOs face. Although the specific issues were analysed in the Italian context, it can be argued that it is reasonably representative of most Western markets and, thus, results and insights can be somewhat generalizable. Evidently, explanatory and descriptive future research will have to be conducted in order to expand and validate the findings reported.

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