

# AN ANALYTICAL FRAMEWORK AND A DEVELOPMENT METHOD FOR INTER-ORGANISATIONAL BUSINESS PROCESS MODELLING

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**Abstract:** In a digital economy characterised by rapid technological advances and previously uncharted entrepreneurial territories, the task of predicting the future layout of industries and value chains becomes exceedingly important, albeit also highly problematic. As a result, scholars face difficulties in their attempts to theorise on the real strategic implications of the digital economy, while many practitioners fail to become and remain competitive in an ever-changing landscape on the verge of a potential worldwide economic slowdown. In this paper, we propose a business process modelling approach for addressing the problem of predicting the implications of ongoing transformations in industries through the combined effect of technological advances and new business opportunities. An analytical framework and model development guidelines are proposed, while a case study in the media sector is employed to highlight how the method can be utilised to identify transformations in advertising practices in the evolving market of digital television.

**Keywords:** Business Process Modelling, Inter-organisational Systems, Industry Transformation, DTV

## 1 INTRODUCTION

Business process modelling (BPM) is hardly a new concept [Giaglis, 2001]: a multitude of established management science and operational research methods (such as Activity Based Costing, Business Process Re-engineering, and Simulation) have utilised and extended BPM concepts and propositions. However, the interest in BPM is currently re-fuelled by the inherent complexities of studying business environments in the face of major changes occurring in the business landscape: globalisation, the digital economy, and e-business, to name but a few [Castells, 1996]. In a world that is undergoing such fundamental transformations, academics and practitioners alike need to formulate effective tools that will allow them to abstract away the unnecessary noise of the real world and concentrate on the important aspects of the problems at hand. Modelling is by definition a well-suited tool in their arsenal, as the idea behind it matches perfectly the above requirement. Modelling is concerned with creating a secondary entity of reference (the *business model*) when it is either infeasible or not cost-effective to study the real world in a direct fashion [Doran and Gilbert, 1994]. Although BPM has been extensively employed to encompass our knowledge of individual organisations into models that describe their processes and activities, relatively less attention has been paid to the potential role of BPM as a predictive mechanism of changes in whole industries

and value chains (*inter-organisational BPM*) [Giaglis et al, 1997].

In this paper, we focus on the changes occurring in industries of the digital era as we witness the transformation of many traditional markets into 'electronic marketplaces' [Malone et al, 1987]. The rapid growth of electronic markets, while not necessarily substituting their non-electronic counterparts, has exposed new ways of delivering products and services [Bakos, 1998] facilitated by technological advances, most notably the Internet and other information and communication technologies (ICTs).

However, the rapid shift from traditional to electronic markets has in many cases altered the layout of industries in previously unthinkable ways, for example by 'dis-intermediating' some markets [Giaglis et al, 2001] or, conversely, by allowing new 'cybermediaries' to enter traditionally stable value chains [Sharkar et al, 1995]. The inability to predict the exact nature of changes in each industry has led to many business failures and has perhaps been amongst the main reasons for the poor performance of many high-tech firms in recent years.

This paper addresses this problem through developing a predictive mechanism for changes occurring as a result of the new value propositions created by market transformations. The approach

focuses on *Inter-organisational Business Process Modelling (I-BPM)* and is based on an analytical framework and a model development method that, when combined, allow for reaching informed conclusions regarding the likely transition from the ‘as-is’ model of the present market to the ‘to-be’ scenario foreseen for its future structure and workings.

In the next section, the issue of market transformation is explored in more detail and a novel taxonomy of markets is proposed. Following that, section three introduces the notion of business modelling and argues for the potential contribution it can provide to understanding business transformations. Based on these theoretical premises, the paper proposes an analytical framework (in section four) and a model development method (in section five), which are empirically tested and verified through a practical case study in section six.

## 2 DRIVERS OF BUSINESS MODEL EVOLUTION

The adoption of innovative business practises has in theory been linked to an opportunity for increasing the total value in a given market [Bakos, 1998]. Drawing from the findings of Scott-Morton [Scott – Morton, 1991], two forces that could affect the structure of a market can be identified: *Business Opportunities* and *Technology Advances*. The combined effect of these forces will drive value chain transformations, thus causing the emergence of new business models and market structures.

Various industries may find themselves being affected differently by these forces. Figure 1 illustrates the characteristics of four generic types of markets, based on the relative effect of business opportunities and technology advances on the dynamism of the respective market:

- a) *Stable Markets*: When neither technology development nor market opportunities can drive the evolution of a market, total value gain for all participants will stagnate for a long period. This will sooner or later result in a deadlock that can be resolved only by the gradual elimination of the weaker players from the market.
- b) *Technology Push*: Rapid development of new technologies can act as a catalyst affecting the basis of competition and co-operation within an industry. Information and communication technologies can lead to radical changes not only within an organisation but also in the relationships between organisations. As a result, those companies that are better prepared to encompass the technological advances will be in a better position to survive and flourish in a turbulent market. Industry leaders and followers

are differentiated according to their ability to assimilate technological innovations, and increased inter-organisational co-operation can be expected to occur.

- c) *Market Pull*: Business opportunities define the amount of value in the industry. Rapid growth may encourage economies of scale, thus contributing to increasing the entry barriers. Industry participants may focus on cost effectiveness and optimisation of resources in order to succeed.
- d) *Dynamic Markets*: These ideal business environments are characterised by the concurrent presence of technological innovations and euphoric market demand conditions. Such an environment will undoubtedly attract many participants in the industry thus nurturing fierce competition in the market. Effective use of resources is a critical factor for success, coupled with customer focus and service innovation. High-risk strategies are encouraged, but those undertaking them may be compensated by the emergence of ‘winner-takes-all’ scenarios where monopolistic or oligopolistic markets may be encouraged [Giaglis et al 2001].

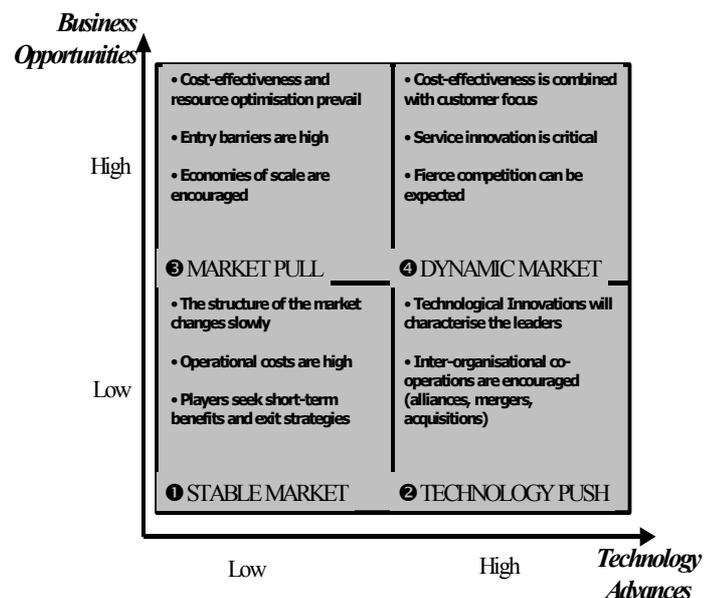


Figure 1. A Taxonomy of Market Dynamics

Before exploring how business modelling can be of value when trying to predict the likely transition pattern in a given market within the taxonomy of Figure 1, we will briefly discuss the nature and importance of business modelling in general.

### 3 BUSINESS MODELLING CONSTRUCTS AND USEFULNESS

The importance of the business modelling process has been heavily emphasised in the literature (for example in [Curtis et al, 1992; Hansen, 1994; Tsalgatidou and Junginger, 1995; Blyth, 1995]). The term Business Process Modelling (BPM) has been used to incorporate all the activities relating to the transformation of knowledge about business systems into models that describe the processes performed by organisations [Scholz-Reiter and Stickel, 1996]. Due to the complex and dynamic nature of organisations and markets, it has been argued that carefully developed models are necessary for understanding their behaviour in order to be able to design new systems or improve the operation of existing ones [Bhaskar et al, 1994].

However, this very complexity of business processes and market dynamics can make the modelling effort an arduous and problematic task [MacArthur et al, 1994]. Various BPM techniques have been proposed to assist modelling efforts [Giaglis, 2001], however no single technique can be thought of as being better than the others by default. The goals and objectives of a particular study will necessarily impact the uses to which a model will be put and therefore influence the requirements posed on the process representation formalisms to be employed [Liles and Presley, 1996].

To be able to accommodate its objectives and be fit for its purpose, a business model must be capable of providing various information elements to its users. Such elements include, for example, what activities comprise the process, who is performing these activities, when and where are these activities performed, how and why are they executed, and what data elements they manipulate. Process modelling techniques differ in the extent to which their constructs highlight the information that answers these questions. To provide this information, a process modelling technique should be capable of representing one or more of the following 'process perspectives' [Curtis et al, 1992]:

- a) *Functional perspective*: Represents what process elements (activities) are being performed.
- b) *Behavioural perspective*: Represents when activities are performed (for example, sequencing), as well as aspects of how they are performed through feedback loops, iteration, decision-making conditions, entry and exit criteria, and so on.
- c) *Organisational perspective*: Represents where and by whom activities are performed, the physical communication mechanisms used for transfer of entities, and the physical media and locations used for storing entities.

- d) *Informational perspective*: Represents the informational entities (data) produced or manipulated by a process and their relationships.

Although the above-mentioned definitions provide the guideline for what to search for when looking for a suitable Inter-organisational BPM (I-BPM) method, there are still contextual problems to be overcome. These problems refer to the unique elements that characterise the problem of modelling whole industries and value chains, and can be further exacerbated because of the lack of a specific development framework that will guide modelling efforts. In the next section we articulate such a framework that provides guiding principles for the development of business models. The framework is supported by a model development method that has been established to provide a systematic analysis environment for business model development.

### 4 A CONTEXTUAL FRAMEWORK FOR I-BPM

A business model exemplifies the architecture of physical and information flows, including a description of the participating business actors [Timmers, 1999]. A model containing such information can then become the focal point around which decisions for business change and/or improvement of operations are made [Giaglis et al, 1999]. The *objective* of the modelling effort thus becomes the first factor to be determined in any business modelling exercise. Curtis [Curtis et al, 1992] have identified five different, albeit not mutually exclusive, goals for a BPM effort: facilitation of human understanding and communication, support for process improvement, support for process management, automated guidance in performing a process, and automated execution support. Given our stated scope in this paper, we will limit our attention to the first three objectives that deal primarily with understanding the current situation and predicting the future in inter-organisational modelling efforts.

Assuming that the business scenario to be modelled is clarified at least in a textual descriptive way, the next major issue that needs to be resolved is the definition of the *abstraction level* that is suitable for the investigation of the problem at hand. If the level is too high (too abstract a model) then the model may not be able to provide the necessary level of understanding and insight to form the basis of concrete action at the industry or firm level. Conversely, if the level of abstraction is too low (too detailed a model) then the real issues that need attention may be hidden in the detail and thus lost at the analysis stage.

We suggest that the *macroscopic* strategic level is the most appropriate when modelling inter-organisational systems with a view to improving their operations [Papakiriakopoulos et al, 2001]. Modelling at this level can support a holistic approach towards modelling the industry as a whole [Eriksson and Magnus, 2000], while at the same time maintaining its usefulness for each participating actor alone. Such a model will also be capable of representing a ‘process map’ of an industry and illuminate the distinction between inter- and intra-organisational business issues. This distinction is known to be strongly correlated with the boundaries and the assets of the firm [Ponce de Leon et al, 1996], which is definitely an issue to explore in inter-organisational BPM since tracing changes to process boundaries can facilitate market transformation.

Having resolved the issues of modelling objective and abstraction level, the major elements of the modelling analytical framework need to be laid out. In line with Papakiriakopoulos et al [Papakiriakopoulos et al, 2001], we propose the 4-C framework consisting of *Co-ordination*, *Co-operation/Competition*, *Customer value*, and *Core Competencies*. The constructs and utility of the 4-C forces are described in Table 1.

4-C Forces	Description
<b>Co-ordination</b>	Co-ordination is defined as the management of dependencies among activities [Malone and Crowston, 1994]. Since a business model is the abstraction of how a system functions, the activities are already included within the scope of the model. Dependencies reflect the interconnections between the resources and the activities, and for each dependency there are several mechanisms to resolve co-ordination problems. The chosen co-ordination process affects the market structure in a direct fashion.
<b>Co-operation/Competition</b>	The study of co-operation and competition provides the required understanding in order to define the relative positions of actors within a market. The dynamics of these positions affect the boundaries of organisations and may result in market shifts (for example, networked firms and virtual organisations).
<b>Customer value</b>	According to Porter [Porter, 1985], failing to understand the customer needs and to provide added value to customers is the primary reason for competitive disadvantage and organisational failure. Thus, customer value becomes a natural compass according to which business modelling efforts should be navigated.
<b>Core Competencies</b>	Core competencies are firm-specific skills and cognitive traits directed towards the attainment of the highest possible levels of customer satisfaction [Hammel and Heene, 1994]. The competencies contribute in the economic development of the organisation through the exploitation of its strengths and opportunities.

Table 1. The 4-C Forces

The 4-C forces, coupled with external forces related to market pull and technology push [Scott-Morton, 1991], provide a holistic mechanism to addressing the problems of inter-organisational business modelling. This framework is illustrated schematically in Figure 2.

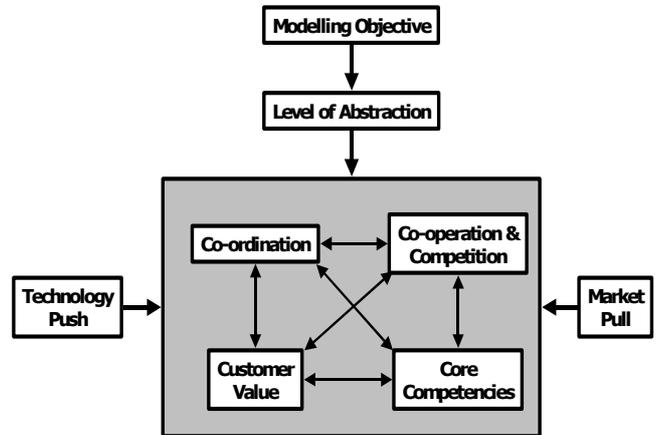


Figure 2. The 4-C Framework for Inter-Organisational Business Process Modelling

## 5 BUSINESS MODEL DEVELOPMENT METHOD

In the following, we will present the steps of a BPM development method, which has been designed for conducting analyses of inter-organisational situations in order to identify likely future layouts in the face of changes anticipated in a given industry or value chain. The method has been developed in line with the postulates of the modelling framework of Figure 2 and consists of four successive steps that are discussed in the following sub-sections.

### 5.1 Step A: Scope Definition

The modelling effort should begin by defining the context and the scope of the business model. Theoretically, this can be based on a stakeholder analysis [Papazafeiropoulou et al, 1999] in the market where the business model will be applied. The scope of the business model needs to be determined in order to eliminate potential redundancies that will overhead the model with unacceptable complexity. According to the 4-C framework, the *modelling objectives* and the appropriate *level of abstraction* should be the guiding principles when defining the scope of the model. The results of this step are the definition of the actors, their strategies, and the boundaries for each participant in the business model.

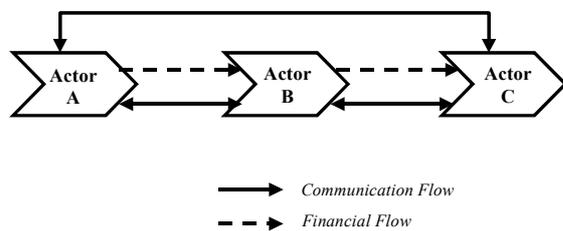
### 5.2 Step B: Value Flow Identification

The second step in the method is the description of the relationships between the actors of the business

model. A business model can be seen as the collection of a series of relationships between actors participating in the creation of value in a field of economic activity [Kim and Mauborgne, 1997]. Value is defined as anything that directly increases the profitability, capability, or mission-readiness of an organisation [Scott-Morton, 1991]. The notion of *value* can be analysed from two interdependent perspectives: *financial* and *communication* [Malone et al, 1987; Malone and Crowston, 1994].

Financial flow refers to the exchange of monetary assets between market participants. Each financial flow in the market can be thought of as ‘paying’ for a service flow of equal value but of opposite direction in the business model [Porter, 1985]. Conversely, communication flows refer to the exchange of ideas, information, and other non-monetary resources between business model actors. Communication flows facilitate the co-operation among the players [Rayport and Sviokla, 1996].

Figure 3 illustrates the notion of the *communication-augmented value chain* proposed in this paper. The total value is decomposed in communication flow (solid arrows) and financial flow (dotted arrows). This distinction provides a better understanding of the market under investigation as it allows for the identification of characteristics of the 4-C forces within the scope of study.

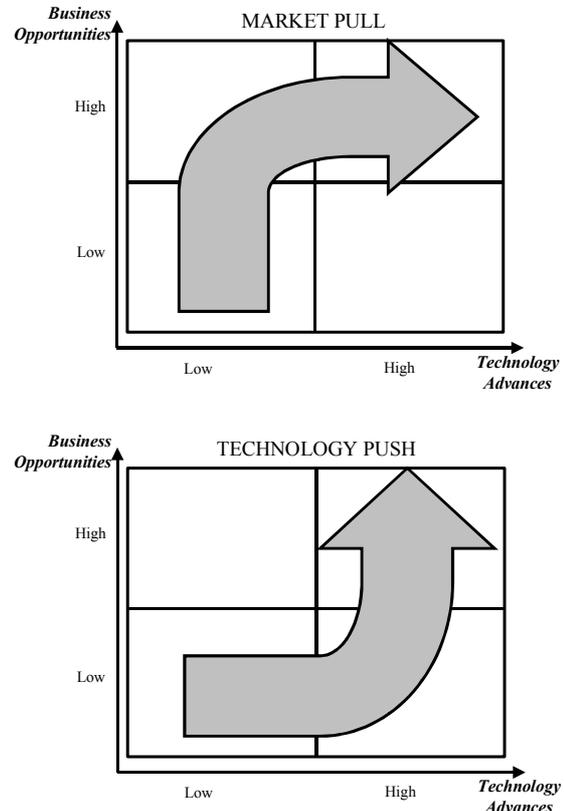


**Figure 3. Communication-Augmented Value Chain**

**5.3 Step C: Identification of Competitive Drivers**

The third step of the business model development method is concerned with elaborating in more detail the relationships between actors in order to identify the competitive drivers in the market [Porter, 1985]. As argued earlier, an increase in total market value can be realised through two avenues: business opportunities and technology advances. Value acceleration can be achieved only if the two forces work in harmony. If an organisation tries to increase value only through technology innovation without taking into account the business opportunities, it may find itself overexposed to unnecessary investment levels. Similarly, if an organisation tries to increase value only through market pull it may realise that technology-enabled competitors may be

quicker to the market. Having said that, it is worth pointing that an organisation should not generally attempt to pursue both dimensions at the same time. Two alternative paths exist to boost value acceleration (Figure 4). The business model definition effort should provide specific mechanisms in order to identify which path is more attractive in each particular case.



**Figure 4. Alternative Paths to Value Acceleration**

**5.4 Step D: Construction of the Feedback Chain**

Value chain analysis [Porter, 1985] is considered to be an excellent tool to explore the *present* structure of a market but it may not be as effective when trying to predict the *future* of a market structure. In this paper we propose the *Feedback Chain* as an analytical tool that complements and extends the notion of the value chain. The objective of the feedback chain is to examine and collect the information resources that support and empower the processes depicted in a value chain analysis.

The actors of the feedback chain target their behaviour to exploiting market opportunities, based on informational competencies supported by technological capabilities. A business model consisting of both a Value Chain and a Feedback Chain is targeted at explaining not only the functions that produce products and services (Value Chain),

but also how the value chain is dynamically adapted to the market needs (Feedback Chain).

The next section illustrates how the above steps can be put in practical use. The method validation study used refers to a real-life case study aiming at predicting the future structure and workings of the advertisement industry in the digital television era.

## 6 METHOD VALIDATION STUDY

The 4-C analytical framework and the four-stage model development method discussed above were used in order to construct the business model of delivering interactive and personalised TV advertisements to the viewers of a digital television broadcasting medium. The case study was conducted within the overall context of a larger research project aiming at designing and developing the necessary technological infrastructure for the provision of interactive digital television. The system should be able to broadcast advertisements consisting of both video and interactive content, monitor (upon viewer permission) the interactivity of viewers with the medium in order to measure the efficiency of the advertisements, and provide personalised information through a TV set-top box in the consumer household.

Digital Television promises to deliver a wide spectrum of value adding services to the viewer. One great attraction is the prospect of providing viewers with interactive services. Consumers can ultimately order goods through the television, download games, check their bank statements, receive personalised advertisements, and enjoy many additional services of a similar nature. Unlike traditional broadcast mechanisms where the entire audience receives the same content, digital television enables an individual connection between a viewer and the online presence of a business entity. To fully realise the advantages of personalisation, a business entity must aggregate the data collected from individual viewers to deliver personalised content to a targeted audience, through the close co-operation between Advertising Companies and Broadcasters [Pramataris et al, 2001].

Within this digital transformation, the Advertising Companies will undoubtedly wish to deliver targeted interactive personalised advertisements to the viewers, with the expectation of having more detailed data regarding consumer behaviour and buying patterns. The combined effect of changes both in the business opportunities *and* technological advances is expected to have a fundamental impact on the structure of the advertisement industry, albeit in a yet unpredictable way. The analytical framework and the business model development method proposed in this paper were therefore

employed in an attempt to arrive at informed conclusions regarding the future structure of this market. In the following sub-section we will illustrate the main points of this application (for a more detailed discussion of the case study, the interested reader is referred to Papakiriakopoulos et al [Papakiriakopoulos et al, 2001]).

### 6.1 Step A: Scope Definition

The context of the business model is to investigate the structure and inter-organisational relationships in the television advertisement industry, as they are likely to be in the digital television era. To achieve this, we must start by modelling the extant ('as-is') structure of the market before hypothesising on potential transformations for the future.

A stakeholder analysis of the industry has resulted in the identification of the following groups of players (actors) in the as-is model:

- a) *Advertising Companies*: They are professional organisations that develop advertising campaigns and TV spots aiming at promoting a product or service to its target consumer group, thereby fulfilling the requirements of their customers (the *advertisers*).
- b) *Advertisers*: They are organisations selling products and/or services. Of their many operations, in this modelling exercise, we are interested only in their efforts to boost the sales of their product/service portfolio and to acquire new customers through TV advertisements.
- c) *TV Channels*: They broadcast specific programme content, which is intercepted by advertisement breaks that constitute the main source of their revenue generation.
- d) *Viewers (Consumers)*: They watch television for entertainment or other purposes and may be attracted by advertisements to become potential buyers of products/services that are advertised. In the as-is scenario, they cannot fulfil their intention to acquire products/services through the TV; therefore the actual buying process is not of interest here (however, it will become important in the to-be scenario of interactive television).

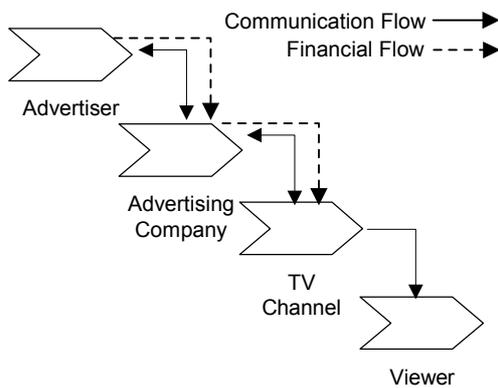
Having identified the scope (boundaries) of the modelling effort, the next issue is to decide upon the level of modelling abstraction that is most suitable for this exercise. Since the aim is to lay down the foundation for predicting the future business model of the industry as a whole, the level of analysis may be safely limited to the macroscopic view suggested by the 4-C framework. In other words, only the inter-organisational relationships between the market actors need to be modelled, without unnecessarily complicating the exercise by including intra-organisational business processes as well.

**6.2 Step B: Value Flow Identification**

The main relationships of the aforementioned players are as follows:

- a) The Advertisers co-operate (*Communication Flow*) with Advertising Companies, specialised in developing and managing advertisement campaigns. In the case of a successful contract negotiation, the Advertising Company receives a monetary input, proportional to the service it provides (*Financial Flow*).
- b) The Advertising Companies contact TV Channels and request the broadcasting of advertisements during specific dates and time zones. This request can only be fulfilled if the TV Channel is able to provide the broadcast network resources, namely the requested airtime for advertisement purposes. A contract is again negotiated between the two actors, governing one or (usually) more transactions.
- c) The TV Channels extend their program flow (content provision) with commercial spots and broadcast the combined outcome to the end Viewer/Consumer.

It must be noted that in the present, non-interactive, TV environment, the communication flows between the TV channels and the viewers are unilateral, since the viewers have no means of indicating their interest for a potential purchase through the non-interactive analogue broadcasting medium. The communication-augmented value chain of the as-is scenario is illustrated in Figure 5.

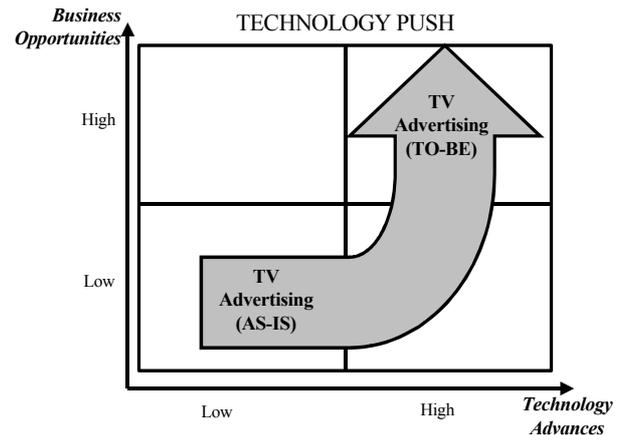


**Figure 5. Communication-augmented value chain in the TV industry (as-is scenario)**

**6.3 Step C: Identification of Competitive Drivers**

In this step, the most appropriate path for the transition of the advertisement industry to its most likely future layout must be identified. According to the above analysis, it should be evident that

technological development is the strongest competitive driver pushing the industry forward. The introduction of new IT-based technologies that will transform the analogue broadcasting medium into a digital interactive infrastructure is often argued to be a revolution in the media industry, providing an opportunity for efficient access to consumer information and loyalty building [Boscheck, 1998; Bane et al, 1996]. It can therefore be induced that achieving higher value within the market is better served by the ‘technology push’ path (see Figure 6).



**Figure 6. Digital Television: Increasing value through technology**

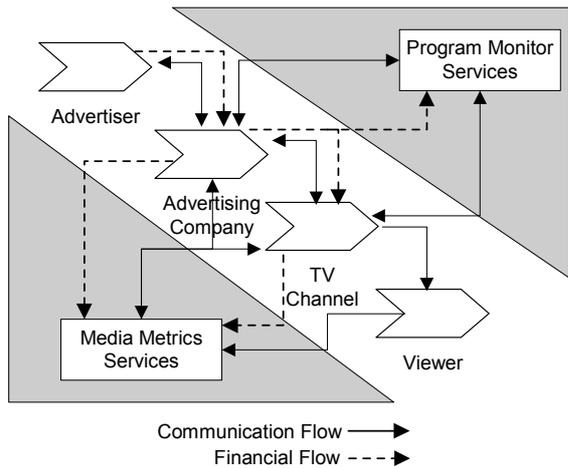
**6.4 Step D: Construction of the Feedback Chain**

In order to construct the feedback chain of the as-is advertisement industry, we need to extend the stakeholder analysis of Step A in order to include two additional types of players that, although not participating in the narrow-sense value chain, are fundamental for the smooth operation of the industry because of the feedback mechanism and the arbitration role they play in the market. These actors are:

- a) *Media Metrics Service Providers*: They are independent organisations that collect information about TV viewing. The Media Metrics Service Providers select a representative panel of households and supply them with hardware monitoring devices. This equipment captures viewers’ preferences for TV programmes. Based on the information provided, the pricing of advertisement airtime is negotiated between Advertising Companies and TV Channels.
- b) *Program Monitoring Service Providers*: They monitor the broadcast TV program flow and compare it to the pre-announced schedule. The results of this analysis are then disclosed to both

the TV Channels and the Advertising Companies. The Advertising Companies use this information to evaluate whether the money paid (Financial flow) for booking advertisement airtime has been used according to the contractual terms.

Combining the communication-augmented value chain of Figure 5 and the feedback chain actors identified above, we can arrive at an enriched as-is business model of the advertisement industry. This model is depicted in Figure 7.



**Figure 7. AS-IS Business Model of the Television Advertisement Industry**

**6.5 Complementing the AS-IS Model with the 4-C Framework Analysis**

The as-is model of the industry is a very useful construct in understanding the participants, their relationships, and the present structure of the market. However, it cannot provide a clear idea of the dynamics of the industry and the forces that will ultimately drive the transformation from the present to the future state. Therefore, the model development exercise was complemented by the application of the 4-C framework as a guideline to explore the dynamic issues that affect industry structure. Table 2 illustrates various indicative issues that have been identified in this analysis (due to space limitations, the detailed analyses cannot be provided here, however they have been published in Papakiriakopoulos et al [Papakiriakopoulos et al, 2001]).

Step	Co-ordination	Co-operation/Competition	Core Competencies	Customer Value
A	The content and access to a broadcast network are the assets of the TV Channel	There are common interests between Advertisement Companies and TV Channels	Advertisers usually outsource their marketing strategy	Viewers are classified based demographics criteria
B	Sequential arrangement of activities	Limited feedback in the value chain	Bargaining power lies primarily with the TV channel	Viewers are passive entities in the value system
C	Inter-organisational task arrangements will be modified in digital environments	The need to co-operate will increase in the digital era	TV Channels and Advertising Companies will need to build new competencies	Opportunity for value innovation
D	Media Metrics Services provide the information for future negotiations	Future collaborations are determined from the effects of the feedback chain	Knowledge of alternative communication channels needs to be built	Measurement-driven inference for ad effectiveness will prevail.

**Table 2. The 4-C framework applied to the TV Advertisement Industry**

The effectiveness and practical utility of the 4-C framework are clearly demonstrated by the aforementioned analysis. Indeed, applying the framework has allowed for bridging the gaps between the (known) as-is and the (unknown) to-be structure of the industry. This analysis can then be used to develop the to-be model in the next stage.

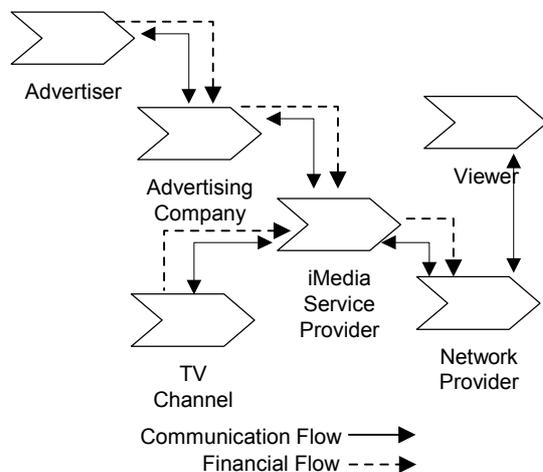
**6.6 Developing the TO-BE Business Model**

Drawing on the above analysis, we can now revisit the original research question of how technological advances will affect the as-is business model. The

analysis has led to the conclusion that the key capability issue in our research context is that of targeted and personalised distribution of interactive content. This represents a clear shift away from the presently prevailing paradigm, leading us to redefine the roles and objectives of the key actors in the new business model. A mediation/brokerage scheme of co-operation in the industry seems to be consistent with the findings of the 4-C analysis presented earlier. Along this scheme, a set of technological capabilities for existing and new actors in the industry also needs to be defined.

By examining the respective roles of the stakeholders in the as-is model, a role gap can be

identified. The gap refers to the need for a mediating actor that will take up the role of providing existing players with an infrastructure and associated services to realise the full benefits of interactive advertisements in the digital TV environment. Therefore, a new role has been introduced in the proposed to-be model: the *Interactive Media (iMedia) Service Provider*. A detailed analysis of the structure, responsibilities and functions of the new role is discussed in Pramataris et al [Pramataris et al, 2001]. This role needs to be combined with the known new role of the *network provider* that will undertake the provision of the required backbone infrastructure of digital broadcasting and will sell its services to the TV Channels. This analysis has resulted in placing the new role within the as-is business model, thus constructing the proposed to-be business model illustrated in Figure 8. It must be noted that the new roles do not necessarily imply that additional organisational entities will be established. For example, it may well be that the services of the network provider and the TV Channel might be provided by the same organisation in some cases. Similarly, the iMedia Service Provider responsibilities may be internalised by the Advertising Companies and/or the TV Channels. However, the to-be model also implies that there seem to be business opportunities for the emergence of new business roles within the industry.



**Figure 8. TO-BE Business Model of the Television Advertisement Industry**

## 7 CONCLUSIONS

The adoption of business innovation requires a framework guiding sustainable business development and improvement. The required elements and construction method of an appropriate business model are still insufficiently addressed topics in the literature, especially with regards to modelling whole industries and value chains. In this

paper, drawing on theoretical constructs relevant to the transformation induced to value creation by the adoption of innovative business practices, we have proposed an analytical framework and a development method for constructing inter-organisational business models. The utility of the proposed method was then demonstrated through a real-life application concerned with modelling the transformation of the traditional advertisement in the digital television domain.

The method has been designed to be iterative: a first application of the method results in the depiction of the 'as-is' model that corresponds to the present structure of the industry. Based on the knowledge gained through the first application, coupled with findings from the application of the analytical framework, the method may be revisited to draw a model of the 'to-be' scenario, which outlines the modeller's predictions regarding the industry transformations that are likely to occur. The method contains built-in mechanisms that enable the 'natural' transition from one step to the other, based on the information gathered at each step, thus guiding the modeller towards a successful and cost effective application.

We have examined the advertisement through television from the business model perspective. Many researchers argue in favour of the creation of a new marketplace affecting in a direct way the price of products and services within the new form of doing business [Bakos, 1998]. Further research within the domain of interactive personalised advertisements includes the identification of special pricing schemes for the redefined advertisement break, modelling of the clustering procedure and the price determination based on software agents, and the organisation of advertisement campaigns over emergent interactive media. The wider research project to which this case study belongs is already undertaking targeted research and technology development along these lines.

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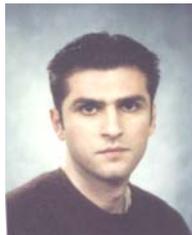
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