

Examining E-Business Models: Applying a Holistic Approach in the Mobile Environment

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Abstract

The benefits of living in a fast changing information society become evident if effective e-business practices are implemented, offering companies exposure and access to global markets and consumer access to customized, high quality services. Such practices are facilitated by innovative and effective e-business models. However, the business literature defines business models from different viewpoints, each focusing on different components. This leads to a fragmented and confusing picture regarding the shape and role of e-business models and the factors that distinguish successful business models. This paper explains why a more holistic approach to the study of e-business models is called for and proposes such an approach enabled by the examination of five thematic areas in the development and adoption of a business model: technical, individual, organizational, industrial, societal. A case study is examined in order to prove the appropriateness and importance of the proposed approach in the context of mobile business.

1. Introduction

A large amount of research work in e-business concerns the investigation and the analysis of business models. However, the current business literature appears to be highly diverse when it comes to studying e-business models, which constitute the “vehicle” that will lead economic

agents to carry out effective and therefore successfully e-business practices. Existing literature in the area offers a wide range of definitions for business models. Also the numerous studies focusing on the key components that prevail business models often present different e-business models classified across different dimensions. Furthermore, as research on e-business models is primarily driven by scholars from the management and information systems research communities, there is an organizational and/or technological emphasis in most studies. The former accentuates the importance of revenues from innovative business practices, while the latter focus on the role of information and communication technologies in supporting or hindering such organizational growth. While both perspectives are valuable, they can be criticized for missing the influence of additional, important factors that may have an impact on the adoption of business models. This paper aims at stressing the need for following a more holistic approach when studying and analyzing e-business models, so that a comprehensive study of what constitutes successful e-business model adoption can be achieved.

To this end, this paper aims to draw research attention to factors that influence the broad and sustainable adoption of e-business models, which we call 'e-factors'. In the course of our analysis, we have developed a framework which consists of factors, that were found to have an impact on e-business model adoption in Europe at five levels referred hereinafter as thematic areas: technology, individual, organization, industry and society.

Towards developing this e-factors framework, this paper has set three principal objectives: (i) compiling a review of the existing primarily scientific knowledge on e-business models, (ii) providing a systematic representation of factors that may influence e-business model adoption, and (iii) demonstrating, and thus validating, the importance of these factors for the development of mobile business models in the context of the *MobiCom*¹ research project.

These objectives are reflected in the paper structure. Section 2 provides an overview of the current understanding of e-business models in the literature. Section 3 constitutes the basis for our analysis, since it discusses the themes related to the adoption of e-business models and offers a short description of each thematic priority. Section 4 presents the *MobiCom project* and analyses the five key change factors and their role within this specific project. The paper concludes by outlining future research directions arguing that technical, individual, organizational, industrial and societal factors form an integral part of our understanding of e-business and its further development.

2. Literature Review

Several attempts have been made so far to define e-business models. Table 1 presents the widely cited definition provided by Timmers (1998) as well as some other definitions suggested more recently in the literature. These definitions range from generic (Magretta, 2002; Petrovic et al., 2001) to more concrete ones (Timmers, 1998; Weill & Vitale, 2001; Osterwalder & Pigneur, 2002). Thus, we can find definitions that explain what the purpose of a business model is, while other definitions focus on specifying its primary elements, and possibly their interrelationships. Table 1 lists some of the most widely used definitions of business models.

¹ *MobiCom* (Evolution Scenarios for Emerging m-Commerce Services, IST-1999-21000) a research project funded by the EU. Project partners: ELTRUN – The E-Business Centre /Research Centre of the Athens University of Economics and Business, Stet Hellas, Labrakis Research Foundation, University of Cologne, VPE, Crediteform, University of Jyväskylä, Sonera, University of Brighton.

Researchers	Definition
Magretta (2002)	A story that explains how an enterprise works.
Petrovic et al. (2001) Auer & Follack (2002)	A description of the logic of a “business system” for creating value that lies behind the actual processes.
Jutla, Bodorik, Wang, (1999)	The business model determines <i>processes</i> and <i>transactions</i> . (i.e. business process- retail [external, internal], procurement, transaction- buy, payment registration etc.)
Applegate (2001)	A description of a complex business that enables study of its <i>structure</i> , the <i>relationships</i> among structural elements, and how it will respond to the real world.
Timmers (1998)	An architecture for the <i>product</i> , <i>service</i> and <i>information flows</i> , including a description of the various business <i>actors</i> and their <i>roles</i> ; a description of the potential <i>benefits</i> for the various business actors; and descriptions of <i>sources of revenues</i> .
Osterwalder & Pigneur (2002)	A description of the <i>value</i> a company offers to one or several <i>segments of customers</i> and the <i>architecture of the firm</i> and its <i>network of partners</i> for creating, marketing and delivering this value and <i>relationship capital</i> , in order to generate profitable and sustainable <i>revenues streams</i> .
Weill & Vitale (2001)	A description of the <i>roles</i> and <i>relationships</i> among a firm’s consumers, customers, allies and suppliers that identifies the <i>major flows of product</i> , <i>information</i> , and <i>money</i> , and the major <i>benefits</i> to participants
Hawkins (2001)	A description of the commercial <i>relationship</i> between a business enterprise and the <i>products</i> and/or <i>services</i> it provides in the market. More specifically, it is a way of structuring various, <i>cost and revenue streams</i> such that a business becomes viable, usually in the sense of being able to sustain itself on the basis of the income it generates.
Tapscott et al. (2000)	A business model is about the invention of new <i>value propositions</i> that transform the <i>rules of competition</i> , and mobilize people and resources to unprecedented levels of <i>performance</i> .

Table 1. Business Model Definitions

What these definitions share is that a business model “...seems to influence the potential revenues and the future success of the eBusiness initiative” (Alt & Zimmermann, 2001). In this paper, we choose to adopt the definition proposed by Timmers (1998), since it provides clear indications of the primary issues/elements to be examined while developing a business model: *actors and roles*; *product or service flows*, *revenues* and *benefits* to key participants. As a further effort to organize current knowledge on e-business models, scholars have made several attempts to provide classifications of these models (Timmers, 1998; Tapscott et al., 2000; Alt & Zimmermann, 2001; Weill & Vitale, 2001; Mahadevan, 2000). The prime issue to consider while classifying business models is the number of dimensions, or otherwise classification criteria, to be used. Most authors define and use their own, usually two,

dimensions to classify business models. Moreover, the types of business models classified under each dimension are highly diversified. Pigneur (2000) reviews the dimensions used in the literature to propose several types of business models; these can range from *functional integration* and *degree of innovation*, to *interaction patterns* and *value chain integration* (Timmers, 1998), to *economic control* (both hierarchical and self-organizing) and *value integration* (Tapscott et al., 2000), to *revenue* and *position in value chain* (Rappa, 2001) as well as more generic dimensions, such as *object* and *purpose* (Alt & Zimmermann, 2001).

A concise review of existing definitions and classification frameworks has demonstrated the multiplicity and diversity of current research efforts in order to define, classify, and assess e-business models. This finding drives to the further conclusion that e-business models are quite broad concepts, which can be attributed widely diversified meanings, based on the adopted research perspective and the given context. In the lack of a concise framework for discussing e-business models, managers and researchers use their own approach for designing, operating and assessing the adoption of e-business models. The results of their work cannot be neither evaluated nor communicated to people and organisations that have a different conceptual model of business models and use a different agenda of issues for discussing them.

Subsequently, the need for a consistent and systematic approach, for investigating factors that affect e-business models operation and adoption is imperative. However, in order to suggest such a framework of e-factors (that is factors affecting the broad and sustainable adoption of e-business models) it should contemplate in the analysis (or framework) issues addressing first of all the very nature of a business model, characterized by an evolving dimension, responding this way to the various modifications in its external and internal environment. Furthermore, this framework should also tackle the level abstraction and diversification that is currently observed in the literature.

However, the problem still remains. An approach that investigates e-business models in various conditions should be introduced. We suggest that a preliminary phase of such a framework would be the identification of thematic areas comprised by the collection and classification of factors that promote or inhibit the successful performance of a given e-business model.

This paper argues that our effort to provide a comprehensive framework of e-factors also needs a systematic review of the *empirical* evidence in the development and adoption of e-business models in a variety of application contexts. A feasible approach to this undertaking consists of recording empirical evidence from relevant Information Society Technologies (IST) projects within Key Action II (KAII), existing case studies and surveys. This approach would be of particular relevance to European policy makers, business agents and academic scholars. The following section describes how this can be addressed in a manner that would be beneficial for all these parties.

3. Themes related to the adoption of E-business models

A large amount of work within current IST projects is concerned with, or has as its implication in the creation of new models for work and business. To this end, the E-FACTORS² project brings together, through a series of clustering activities, the experiences

² E-Factors (IST 2001- 34868) is a thematic network project funded by the EU. The project co-ordinator is ELTRUN – The E-Business Centre /Research Centre of the Athens University of Economics and Business. Project partners: University of Surrey, Copenhagen Business School, Athens Laboratory of Business Administration, University of Jyvaskyla, Erasmus University, University of Cologne, Norwegian School of

in e-business models adoption that are based on several current KAII projects. The collective experience of the project partners indicates five thematic priorities where current KAII project work is focusing and where further cross-project contributions could be made. These common thematic priorities are: technical, individual, organizational, industrial, and societal (e-Factors Consortium, 2002). The following paragraphs discuss each thematic priority, giving examples of its impact on e-business models adoption. Figure 1 presents an overview of the e-factors identified for each thematic priority. It is worth noting that this framework has resulted after a series of discussions amongst consortium members, which has made possible a comprehensive, inter-disciplinary result. It is the aim of this paper to thoroughly investigate a case study in order to demonstrate the appropriateness and importance of the proposed approach in the mobile environment.

3.1 Technical

The advent of Information and Communication Technologies (ICT) enables the development of new e-business models. The technological advancements open additional possibilities for collaboration with distribution and supply partners, for participation in virtual trading communities or dynamic virtual organizations, and for extending classic value chains to value networks. Technological factors are more or less externally indicated, and the company itself must consider them as factors in different business models which are closely dictated by external factors, like the state of technological development, user preferences and expectations, competitive environment. The main areas of technological factors that have been identified are based on the identification of the key technological change drivers in e-business. These key factors include for example; ***Interoperability and Interconnectivity, System Integration, Commitments*** (e.g., *service level agreements*), ***Service Performance, Internal IS Platforms***, and ***Generic Business Services***.

3.2 Individual

User acceptance concerns both customers and employees that utilize e-business. The individual thematic priority deals with the individual at a micro level and provides valuable insight into the mental processes that influence an individual's decision-making. However, these mental processes are not easy to decipher. It is not surprising therefore that literature lacks a coherent and comprehensive map of an individual's behavioral patterns in respect to technology acceptance and adoption as well as eBusiness acceptance and adoption. Some of the most important factors affecting the latter are: ***Geographic, Culture, Education and Experience, Transactional, Psychological, Behaviour, Individual Differences*** (cognitive and physical), and ***Demographic***.

3.3 Organizational

Quite often, as most R&D projects' primary concern is the development of a new product, service, or even part of a basic technical and business infrastructure, the change impact of the development efforts is not sufficiently addressed. In the same vein, since the pre-commercial nature of results does not necessitate deep and prolonged user involvement with the project results (something often made impossible due to the projects' timeframe), the opportunity to

gauge organizational impact of new business models is lost. Such organizational impact is manifested in changes in the nature and structure of work at the intra- and inter-organizational levels, and creation of new types of communities (among users, partners, facilitating agencies). The main categories of organizational e-factors have stemmed from a list of possible reasons of business model studies and include: *Product Characteristics, Management and Structure, Market and Customers, Resources and Capabilities, Partnerships, Efficiency, Organizational Culture*.

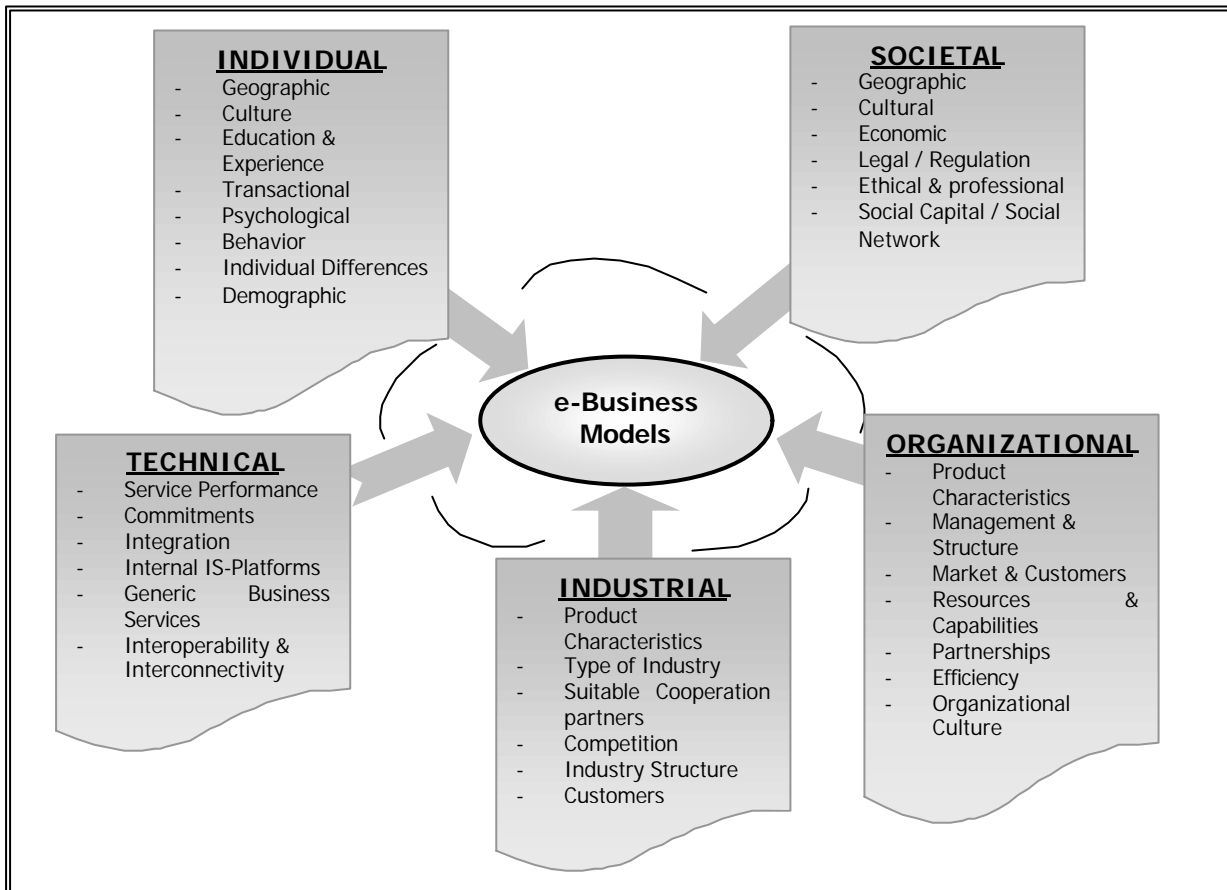


Figure 1. Five thematic areas related to the adoption of e-business models

3.4 Industrial

Adoption of e-business models is influenced by industry structure and vice versa. However, not every industry faces the same changes in structure due to e-business. The amount of Internet usage within an industry sector is not only reflected in the nature of the product (e.g. digitized products such as music, books and software that are easier to sell and distribute over the Internet) but also on consumer tastes and habits. The latter can often differ across different market environments and across time through the evolution of industrial structures, markets and consumer orientations. In general, we witness a trend where the boundaries of industries (e.g. the telecommunications industry, retail, finance, media, entertainment, publishing), as

we know them, are blurring and networks of organizations, so called value webs, are replacing individual business units. Moreover, within new business models, organizations from different industries collaborate in partnerships to deliver customised products and services. Generally, the industrial factors that affect an e-business model adoption are: *Product Characteristics, Type of Industry, Suitable Cooperation Partners, Competition, Industry Structure, and Customers.*

3.5 Societal

As new e-business models lead to new business practices they will affect work and consequently employment. Analysis of new skills and capabilities is required. To focus on dynamic capabilities that emerge from new business models and define new methods of work, there is a need to investigate the evolution of knowledge workers and consequently implications on employment. Effective e-business practices will give companies exposure and access to global markets. The transfer of knowledge necessary for the companies to make the right steps ahead is required, through a training program in e-Business best business cases and implementation approaches. Moreover, the fast changing world of the information society creates vast educational requirements for new graduates and for the re-training of the existing workforce. The availability of online e-management education programmes seems to become very important for the adoption of e-business models. Finally, issues of regulation and policy are critical, facilitating the harmonization of work practices and business effectiveness in different parts of Europe, where e-commerce adoption is still at different stages of maturity. Consequently, the factors that relate to the adoption of e-business models and affect people in both their work and social environment are: *Geographic, Cultural, Economic, Legal / Regulation, Ethical and Professional, Social Capital / Social Network, and Social Structure.*

4. The MOBICOM Project

In order to better illustrate the proposed framework, this section is going to present and analyze a case study drawn from the *MobiCom* Project.

4.1 Project Description

The *MobiCom Project* aims to explore the essential factors that are affecting the evolution of Mobile e-Commerce, such as market structure, key players, technology architectures, consumer behaviour, new products and services. Towards this aim, the following objectives are pursued:

- a) Identification of existing factors deriving from mobile communications and e-commerce industries, which enable or constrain the development of m-commerce in Europe,
- b) Identification of new development trajectories emerging from the convergence of mobile communications technologies and e-commerce entrepreneurial activities,
- c) Description and specification of new business models and services as well as of diffusion and adoption patterns in m-commerce,
- d) Preparation of guidelines on regulation and policy for facilitating the growth of m-commerce, and

- e) Consensus building, dissemination and interaction of m-commerce stakeholders.

In order to achieve these objectives, the project has been divided into 3 phases (Figure 2). The first phase comprised of an analysis of the mobile communications and e-Commerce sectors, exhibiting the fundamental characteristics of the two industries driving their evolution and growth. The second phase has assessed the industry convergence, technological evolution and potential market growth in m-commerce. New services and applications were assessed against socio-economic factors affecting their adoption and diffusion. Feasibility studies have provided input on the commercialisation process and market readiness. The third phase has involved a socio-economic analysis on the intensity of new market evolution. To this end, four m-commerce evolution scenarios have been developed with respect to critical issues that affect this process. Emphasis has been given on studying market dynamics, business models as well as regulatory and policy issues under the light of these four evolution scenarios for the mobile market.

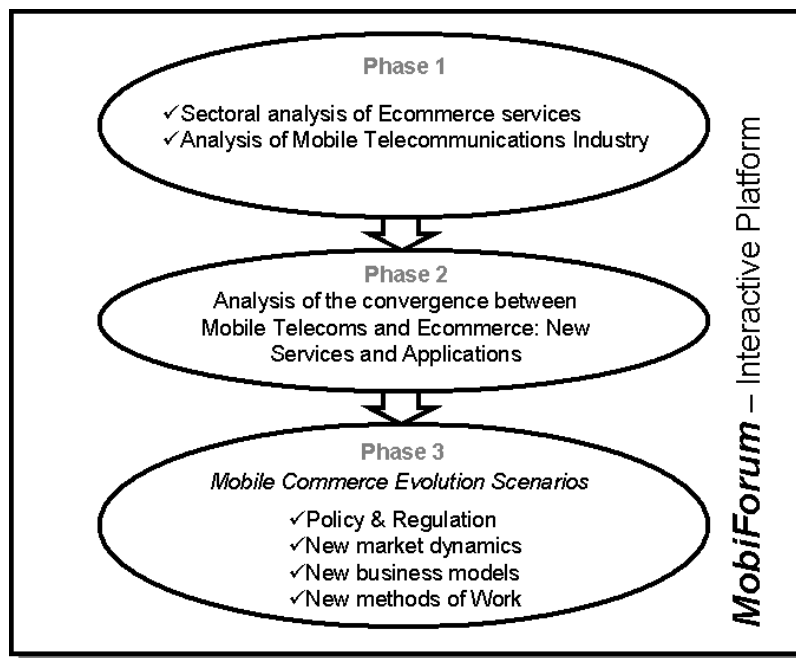


Figure 2. The three phases of the Mobicom Project

4.2 Applying the e-factors framework to MobiCom

This section aims to examine the extent to which the *MobiCom* project has taken into consideration the five thematic areas in the development and adoption of their business models for the future mobile market (MobiCom Consortium, 2002). Such an analysis will provide the opportunity for a deep understanding of how the proposed framework and its five key thematic areas can be applied in the business context of this project. More generally, it demonstrates the usefulness of this framework in evaluating the use of e-business models in a specific context.

4.2.1 Technical

From the technological perspective, the *MobiCom project*, in its second phase, examines technological aspects of m-commerce from the view of technological evolution of e-commerce. The *MobiCom project's* case evaluations give an extensive view of some key technical aspects of mobile commerce adoption, such as technical infrastructure and case examples of used platforms and applications. In the project, both telecom operators and application developers provide a strong input especially in the form of explaining the evolving characteristics of m-commerce technologies and services.

In the examination of future business models for the mobile market, technology plays a determinant role. In the case that roaming of network access and service provision is achieved, open standards are dominant, and multiple technology platforms are available, the technology framework is considered as rather liberal for the creation of new services and the entrance of new market players. However, if several of the above factors are negative, then the situation may become a bit complex and difficult for new and existing players to survive, and thus new business models to prosper. The main technology issues examined within the *MobiCom* business model analysis are: *Roaming*, *Standardization* and *Technological Pluralism*.

4.2.2 Individual

Approached from the individual perspective, the *MobiCom project* illustrates the importance of several interesting issues like demographic and behavioral traits as well as peer-to-peer and social networks. M-commerce and its effect on European competitiveness is the focal point of the *MobiCom project* indicating this way the importance of the **geographic** issues. The consortium members are countries that have distinct differences and that represent different regions of Europe. These differences are reflected on the behavior of individuals. The aggregate analysis carried out, in the course of the project, provides a unique opportunity to look deeper into different regions of Europe.

The important role of the **demographic** issues derived from the *Life-Course-Need-Model*, which was followed in the course of the project. Consumer behaviour is determined by factors such as age, personal development and - in a more aggregated view - the social structure consumers live in and their financial resources. The *MobiCom project* assumes that even though different people have different needs, these needs can be aggregated in a few age groups. Thereby, they have identified similar challenges/problems for specific age groups and thus determine similar needs or desires of consumption within this group.

Furthermore, the *MobiCom project* demonstrates the significance of the **behavioural** factors through the online survey that was conducted in the course of the third work package (Vrechopoulos et al., 2002). Detailed information concerning this survey can be found in deliverable D3.2 "*E-Commerce Demand Side Analysis*" (MobiCom Consortium, 2001b) of the project. This survey analysed the current usage and adoption of m-commerce services in Greece, Finland and Germany. Specifically, it investigated consumers' attitudes and behaviour patterns towards m-commerce services in these countries, indicating significant variations.

The *MobiCom project* has assumed that different people face different challenges/problems at different ages and therefore indicate different consumer needs. Following that assumption, the *MobiCom project* has employed the concept of Life Course and Human Development Research in order to get a description of consumers' transition phases at subsequent stages in their lives. Moreover, in order to better comprehend the **psychological** make up, and

consequently the needs, of the consumers, a study was carried out in the three participating countries: Greece, Germany and Finland. This study served as an exhaustive analysis of the different make-ups of the three countries' populations.

The notion of *peers/social networks* was extensively examined in the *MobiCom project*. According to the *MobiCom project*, life is influenced and determined by factors such as the physical, intellectual and emotional capacities as well as socio-economic circumstances. These observations led to a metaphor for linking the macro and micro level in the life course analysis: the concept of trajectory. The term trajectory refers to an entire life course that can be empirically broken down into a sequence of transitions. Transition describes the change from one stage to another. The trajectory metaphor, if combined with the life stage principle, refers to an active, self-generating process of an unfolding biography. Life course research concerns trajectories and transitions across interrelated life domains.

1.1.1 Organization

The organizational perspective has also been evident in the course of the *MobiCom project*, illustrating thus the importance of this category and its factors, products and services, markets and customers, efficiency as well as resources and capabilities, for the proliferation of business models. The *MobiCom project* has identified the significance of *products and services* through the examination of the customer value factor in building an m-business model. In particular, the customer value factor examines whether the product/service provided by a specific business model is of significant value in order to determine the profitability and viability of this specific business model.

Additionally, the *MobiCom project* has identified the significant role of the market and customers through the examination of the market structure and scope in the process of building the m-business model framework. According to the *MobiCom project*, market scope is about the market segments or geographic areas to which the value should be offered, as well as how many types of products that embody versions of this value should be offered. Scope is about offering versions tailored to the needs of different customers and designing these versions to accentuate the needs of different groups of customers. Scope may also refer to the description of the activities that an actor has to undertake with the purpose of providing value to its customers. Furthermore, in the context of the project, the ownership and good care of the customer base has been identified as crucial factor for determining the player who plays the dominant role, in the business model's value chain or network. In the *MobiCom* business model analysis, a critical part of a business model is the determination of the firm's *revenue* sources and *profits*. Many firms receive their revenue streams directly from the products they sell. Others may receive their revenues not from the products sales but from the before- and after-sales service provision. In the media model, firms offer value to their customers, but charge the advertisers, not their customers. Such a revenue model is usually applied in the case of content provision on the Internet.

As indicated by the *MobiCom project*, an important part of profiting from the value that firms offer customers is to price it properly. That means that the employed *pricing mechanisms* should take into consideration the prices of competitive products in the market as well as the degree of customer willingness to pay for that. One of the most fundamental features of information goods sold through Internet and soon via wireless networks is that their cost of production is limited to the first-copy costs. Information is costly to produce but cheap to reproduce. The fixed production cost is high, but the variable cost of reproduction is low. This special feature of digital goods requires managers to pay attention on how to price their products, so that customers are encouraged to buy them and prefer them from similar market

products. The discussion on pricing also includes identification of one or more billing schemes, policies for price discrimination, based on different versions of the same product, and definition of the cost structure (initial, fixed, variable) within the firm.

Moreover, the *Mobicom* project stressed the need for an organization to invest in exploiting its own **resources and capabilities**, but also to outsource the mechanisms and processes that it cannot support, thus contracting either temporary or permanent **partnerships**. The above factors have been examined under the category core competence and market structure respectively in the *MobiCom* business model framework.

1.1.2 Industry

The Industry perspective has also been examined in the context of the *MobiCom project*, as it constitutes another important key change driver in the business model adoption. As indicated by the project, the mobile communications industry does not bear any profit yet. A possible explanation could be the high degree of uncertainty in the specific **type of industry**. Given the fact that there are not any technological standards in this industry, many alternative mobile solutions exist. This technological pluralism can result in the presence of many diverse (mobile) business models. The success of these models is highly dependent on their ability to offer value-added mobile services to the mobile customers.

Considering first of all that mobile services are intangible and secondly that information exchanged through wireless networks and mobile devices is costly to produce but cheap to reproduce, it is observed that new players are entering the market of mobile content and service provision, encouraging in this way the market **competition** and thus the growth of the specific industry. In order to provide value added services, the *MobiCom* project has identified a number of scenarios that rely on the **cooperation** of multiple mobile players such as content providers, service providers or aggregators, mobile operators and application developers. As the industry grows, the number of players is expected to increase, and thus the possibility (and challenge) to find suitable cooperation partners will rise.

As far as the customers are concerned, two types of **customers** have been identified: business and consumers. That means that the same service or package of services may be offered to each type of customer under a different business model, so that the value offered to each target group is increased and the percentage of business model adoption is raised.

1.1.3 Society

The societal context of the specific industrial sector is highly relevant to the *MobiCom project*. Due to its international dimension, this project offers an excellent example of the various societal diversities that can be identified in different **geographical** regions within Europe that influence the adoption of the emergent and dynamic mobile e-commerce (m-commerce). The countries that have been studied are: Greece, Finland and Germany, exhibiting different **cultural, social, economical, legal** and technological backgrounds.

In the context of D3.2 “*E-Commerce Demand Side Analysis*” (MobiCom Consortium, 2001b), an online survey was performed that analysed the current usage and adoption of m-commerce services in the three countries. This survey explored consumer attitudes and behaviour patterns towards m-commerce services in Europe and more specifically tested the hypothesis that current Internet e-commerce has the potential to trigger and strengthen the uptake of mobile commerce. The results of this survey indicate the existence of significant variations in the penetration of m-commerce, between different countries and markets in Europe. More specifically, considerable differences were observed concerning the **consumer behaviour patterns and attitudes** towards m-commerce amongst these three countries. In particular, the marginally most mature market in terms of m-commerce adoption was found to be the Finish

one. Nevertheless, it has to be noted that the specific study revealed that there is a convergence in the reported results of almost all the respondents in the three countries. In the context of the second work package of the *MobiCom project*, another important example can be found regarding the emphasis that it is placed to the **social structure** and **cultural diversity** of the three European countries that participate. This is indicated in D2.2 “*Analysis of Consumer Behaviour*” (MobiCom Consortium, 2001a), where a thorough analysis of the consumers’ needs and preferences was performed and the *Life-Course-Need-Model* was introduced. This model is based on the fact that consumers behaviour is influenced by needs that are determined by age, personal development, by the social structure consumers live in and upon their financial resources. Therefore, it is assumed that although the needs of the different people vary amongst them, these needs can be put together in a few age groups. According to the model, a person’s life is divided into defined phases where people experience special interests and needs. In the context of this model, the main sources of influence in each life phase have been included given the importance of the influence that is yield from one’s **peers** and the **social network** to which he/she belongs. These interests and needs are considered as the main factors that first of all characterise the profile of an individual - analysed in section 4.2.2 - in the society and secondly determine, to a non-trivial extent, their behavioural patterns towards the adoption of mobile technologies as well as the resulting business models.

1.2 Summary

The identification of e-factors in the context of the *MobiCom project* has been realized using a ‘reverse engineering’ approach. In the context of the project, the above factors were chosen and examined as key aspects affecting the future business environment of the mobile market, without adherence to any framework or guidelines. In this paper, we have tried to identify factors, which could possible affect either positively or negatively the development and adoption of a business model, in the released deliverables and reports, and thus validate the framework of e-factors that we have developed.

The study of e-factors has been made through all phases of the *MobiCom project*. Specifically, Phase I examined issues related to technology, industry, individual and social themes, while Phase III focused on issues related to organizational and societal themes (Figure 3). The aim of this analysis aimed at defining mobile business models in the light of the four evolution scenarios during the final phase of the project.

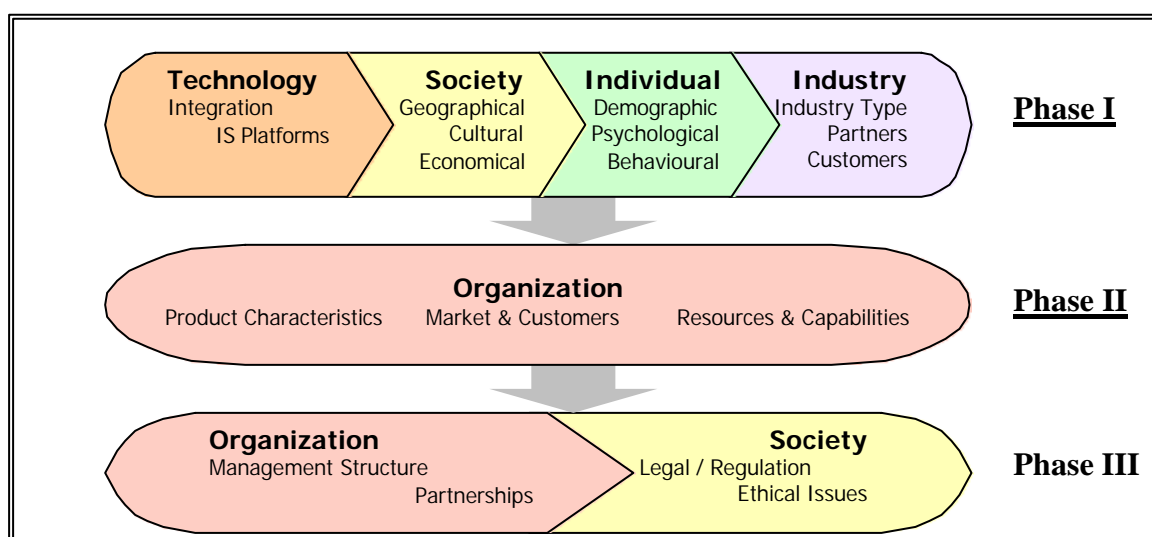


Figure 1. Distribution of E-factors analysis in the MobiCom Project Phases

Our case study analysis, demonstrated that the *Mobicom* project examines all e-factors of the framework produced, and most of its sub-factors. The analysis of these factors has impinged on the process of developing mobile business models. It can be considered as a best practice case for studying e-factors in a research context with the following features: high degree of *technology* innovation, *industry* uncertainty, large target scope, resulting in significant *individual differences*, great *geographical disparity*, generating *social unevenness*, and great potential for *organizational innovation*.

2. Discussion

In order to build an e-factors framework, we have drawn from several different domains of research, encapsulating the results in five categories: technical, individual, organizational, industrial, societal. In each of the categories a large number of existing theories have been studied. These factors have initially been analyzed for their potential contribution to establishing an e-factors framework. None of the reviewed theories provides in isolation an encompassing framework for the problem of e-business model take-up (E-Factors Consortium, 2002).

Given the ample choice of possible directions that this paper provides and the diversity of scientific disciplines underlying the proposed framework, focusing on understanding the 'right problem' is a major challenge to be solved in the near future. In the context of e-business models, this means selecting and implementing appropriate models. That makes the development of a holistic framework not just desirable, but also necessary. This paper contributes in this direction by conceptually positioning the five thematic priorities as equally important and interdependent (Figure 4).

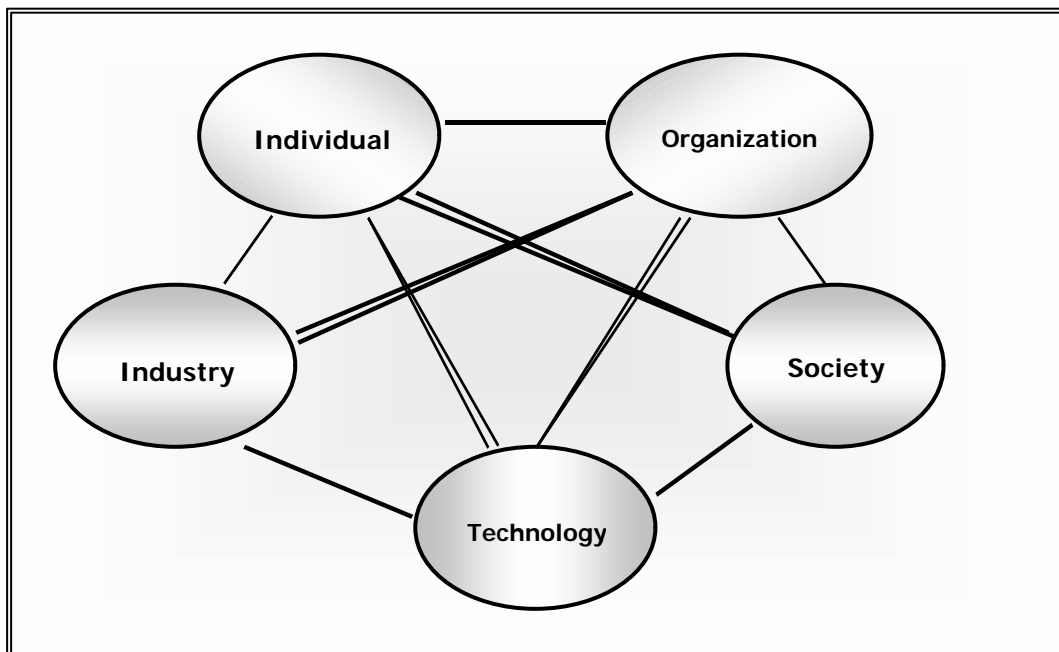


Figure 2. Conceptual Positioning of the five thematic priorities

The benefits of this kind of comprehensive framework, we argue, are multiple. First, it addresses not just technical and organizational factors, which have been most emphasized in the current e-business literature. It also encapsulates factors that define the situation in that particular market, and dictate the environment to which the company is directing its new business operations. Second, earlier models concentrate on business functions, with little understanding of the role of such elements as the individual and society. The proposed framework of e-factors pays special attention on the structural issues on each thematic area – which are important especially in the multi-cultural and multi-linguistic European context. It is important to note that the same e-factors may work as obstacles for some companies and as accelerators for others, depending on how different players recognise their importance, adapt to them or are in a position to transform them to their ends.

3. Conclusions and Future Research Work

The main objective of this paper has been first to assemble the existing theoretical work on e-business models, secondly to identify factors affecting e-business models adoption, in the context of the five key thematic priorities (technology, individual, organization, industry and society) and lastly to support these with an example from the European Research Area. In completing this work, we can draw some estimation about the final list of factors affecting e-business model adoption. The design of the final e-factors framework requires another step: the collection, description and examination of further cases and their analysis from the viewpoint of the five key thematic priorities. The results of this phase will provide input for redesigning the framework and finalizing the e-factors list.

Further research attempts should also be directed towards analyzing the inter-relationships between these factors. It is important to note that our framework does not consider the above factors as independent aspects of a business model analysis, but rather, as complementary perspectives on the factors that affect e-business model adoption. Thus, a future research aim is to make the interrelations between the thematic priorities explicit. To this end, the thematic priorities could be considered in pairs, commenting on their similarities in terms of perspective adopted by each thematic priority.

At this point in our work, we argue that understanding e-business model adoption is about understanding growth that is driven by the interplay of innovation and adoption of technology by consumers and organizations. This growth is driven by technical performance, as well as a growing number of e-product users. Education and personal development of individuals and growth of the industry and its business firms are further dimensions. On the societal level, innovation shall lead to economic growth, which drives the creation of employment and wealth. After all, growth is a multi-perspective phenomenon that a business model has to cope with.

Under this strain, it is worthwhile to involve actively the business community in this research, which is equally concerned with managing growth processes. In short, the research work done so far can be linked to ongoing research towards an integrative perspective on growth in dynamic business environments and how it can be managed. This would be an interesting as well as far-reaching decision for the next steps in this research initiative. The factors identified herein would then need to be tested in the cases as to whether they further or hinder growth processes (rather than whether a specific business model ‘fits’ a certain situation) and the cases would therefore need to observe growth processes over some time as longitudinal

cases. Growth processes are both theoretically interesting and of high practical relevance. They certainly are worth an in-depth research investigation.

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