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Business Model Change Due to ICT Integration: An Application to the Entertainment Industry

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***Abstract*: This paper deals with the change of business models (BMs) due to Information and Communication Technologies (ICTs). Recent advances in ICTs have caused BM change to be indispensable in all businesses. This is even more essential in the industries, where there is a significant diffusion of ICTs, such as the entertainment and gaming industry. In the context of our analysis, we apply a specific methodology of managing BM change to Regency Casinos, i.e., the leader in the Greek gaming market. The case study shows that each step of this methodology fits to the business transformation plan of the company; hence, it arises that the applied methodology, supplemented by a series of factors favoring scenarios for BM development, can be applied to an unstable business environment, as the environment of our study.**

***Keywords*:** business model, Information and Communication Technologies, reengineering**.**

I. Introduction

The evolution of Information and Communication Technologies (ICTs) during the last decade has significantly altered the business landscape on a worldwide scale. The integration of ICTs in the business processes resulted in numerous examples of enhanced organizational performance both in developed and developing countries. The International Development Association (IDA), which is the part of the World Bank that helps the world's poorest countries, suggests that the growth in access to ICTs is boosting economic productivity, raising incomes of families and small businesses, and providing an important source of government revenue [1]. On an operational level, the World Bank [2] implies that firms that use ICTs grow faster, invest more, and are more productive and profitable than those that do not. Furthermore, many studies conclude to a positive relationship between ICT use and superior performance [3]. The positive effects of ICT integration brought up the issue of business model (BM) change for a number of companies that wanted to stay ahead of the competition. The transition to a new, more effective BM can only be achieved, if there is a sound understanding of the current BM. However, as discussed by Al-Debei et al. [4], understanding the BM domain by identifying its meaning, fundamental pillars, and its relevance to other business concepts is by no means complete. Furthermore, creating a radically new BM is a high risk strategy, as the probability of getting it right is acknowledged to be low [5]. As technology evolves and new solutions emerge in the business practices, the necessity of BM change becomes greater and companies are faced with the dilemma of change versus their traditional business architecture. Therefore, it is of great interest to study the effect of ICTs to BM transformation in all businesses and more specifically in the entertainment and gaming industry, where there is a significant diffusion of ICT tools during the last years.

This paper is presenting the basic concept of the BM while focusing more on the BM change process using as a case study a leading company that operates in the entertainment and gaming industry in Greece. It is divided into three main parts, the presentation of the BM theory, the management of models of change, and the application of the theory to the case study of Regency Casinos.

II. Related Work

A. The concept of business model

The term "business model" appeared for the first time in an academic article in 1957 [6] and it was first used in the title of an academic article in 1960 [7]. It is more widely spread from the 1990's onwards in an Internet context [8]–[9]. The BM term becomes even more popular and is used widely by academics, analysts, businessmen, and journalists who interpret it widely and approach it from different angles, leading Rappa [10] to conclude that it is perhaps the most discussed but least understood aspect on the Web. It is really surprising for a term that yields some 199,000 results in Google Scholar alone, not to have achieved definitional consensus. Even when performing a more specific search in EBSCO database, filtering scholarly peer reviewed journals (Business Source Complete, Historical Abstracts, Regional Business News, GreenFILE, Library, Information Science &

Technology Abstracts, American Bibliography of Slavic and East European Studies), we discovered 3744 full text articles containing the term "business model" out of which 424 contained the term in their title. Although the "business model" as a concept exists for over 50 years, the academic and business community has not reached a commonly agreed definition. In fact, our literature review produced 93 BM definitions, presented from 1985 to 2010.

Throughout the total population of available definitions, the BM has been referred to, among others, as an architecture [11]–[12], a plan [13], a system [14]–[15], a description [16]–[17]–[18]–[30], a logic [19]–[20]–[21], a method [10]–[8], a set [22]–[23], an abstraction [24]–[25], a story [26]–[27], a way [28]–[29], a conceptual tool [9], a reflection [31], and a configuration [32]. Other than what a BM is, many definitions describe what a BM does. More specifically, a BM may depict [33] or outline something [34], represent something [35]–[36], or account for something [37]. A third category of definitions describe what a BM consists of [38]–[39]–[40]–[41]. Shaffer et al. [36] suggest that this overwhelming definitional variety may be due to emanation from so many different perspectives (i.e., e-business, strategy, technology, and information systems), with the viewpoint of each author driving term definition; by peering through different lenses, authors are seeing different things. This is also supported by Tavlaki and Loukis [27], who conclude that the diversity of definitions converge towards the approach that the BM is related to a number of managerial concepts; it captures key components of a business plan, but a business plan deals with a number of additional start-ups and operational issues that transcend the model; it is not a strategy but includes a number of strategy elements; similarly, it is not an activity set, although activity sets support each element of a model.

Gunzel and Wilker [42] argue that some definitions are quite abstract and business network focusing, whilst others are detailed and encompassing of all business functions, mainly due to the fact that the definitions and the attributes of the BM are established according to the BM's indented use. Addressing the same issue, Morris et al. [35] identify that the diversity in the available definitions poses substantive challenges for delimiting the nature and components of a model and determining what constitutes a good model. As the authors suggest, this diversity leads to confusion in terminology, as BM, strategy, business concept revenue model, and economic model are used often interchangeably. Linder and Cantrell [19] suggest that when people speak about BMs they could be speaking about three distinct things: components of BMs, real operating BMs, and what they consider as change models.

In their contribution towards a better understanding of the concept, Pateli and Giaglis [37] provide an explanatory framework that classifies research into six research sub-domains: definitions, components, taxonomies, representations, change methodologies, and evaluation models. In the domain of definitions the authors conclude that some researchers perceive the BM as a purely business concept that explains the logic of making business for a firm [11]–[19]–[16]–[10], while some others consider it as a link between strategy, business processes, and information systems [9]. They identify that the difference between these two interpretations relates to the relationship of BMs with the concepts of strategy, business processes, and technology, suggesting that in the first interpretation the three concepts are included in the description of the term, while the second interpretation considers them as inter-linked components set in different levels of the pyramid construct shown in Figure 1 below.

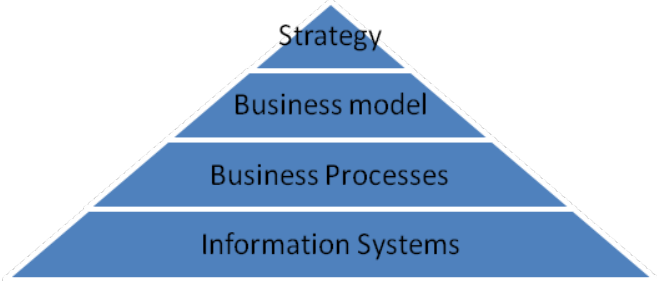

Figure 1. Business model definition framework (based on Pateli and Giaglis)

Throughout the literature review, many authors identify and address the definitional problem [16], highlight the necessity to ground the definition of the BM on an established theory, in order to make its application resistant to constant challenges. Hedman and Kalling [39] suggest that a theoretical sound definition of the BM would also help the field of IS strategy research. It is now more evident and in favor of Zott's et al. [43] recent argument, that the lack of definitional consistency and clarity represents a potential source of confusion, promoting dispersion rather than convergence of perspectives, and obstructing cumulative research progress on BMs.

In their work "Defining the Business Model in the New World of Digital Business", Al-Debei et al. [4] identify the lack of consensus regarding the BM definition and its meaning and provide further clarification using a three step approach. First, they present a classification of definitions, acknowledging that the term is fuzzy and vague and still in its conceptualization phase, despite its perceived importance. Second they propose guidelines on which to develop a more comprehensive definition in order to reach consensus. Third they identify the four main BM concepts and values and their interaction, concluding to five basic principles which may lead to a new definition (Table 1).

1.	The definition should be comprehensive and general.
2.	It is not sufficient to define the business model only in terms of its components.
3.	The business model is defined for a single organization.
4.	The definition should synthesize the different points of view presented in earlier research.
5.	The definition should incorporate the future element of business planning.

Table 1. The five basic principles of a business model definition design (Source: Al-Debei et al.).

The authors, using a systematic methodology followed by the proposed principles presented above, manage to deduce a

well structured definition that can serve as the basis of definitional consensus of the term "business model" (Table 2).

The business model is an abstract representation of an organization, be it conceptual, textual, and/or graphical, of all core interrelated architectural, co-operational, and financial arrangements designed and developed by an organization presently and in the future, as well as all core products and/or services the organization offers or will offer, based on these arrangements that are needed to achieve its strategic goals and objectives.

Table 2. The business model's definition (Source: Al-Debei et al.).

In this paper, we will adopt Al-Debei's et al. definition and suggest that it has a vast contribution towards the most desired definitional consensus, as we have to agree with the following characteristics.

1. It is comprehensive and general.
2. It demonstrates the flexibility of the BM representation.
3. It identifies the location of the BM within the business organization.
4. It represents the importance and the reasons behind designing and developing the BM.

B. Business model frameworks

A short literature review on BM theory shows that various authors have tried to describe and present the framework of a BM, mainly by decompressing it into separate model components [44]–[16]–[17]–[38]–[19]–[9]–[45]. In 2004, Professor George Yip of the London Business School [46] presented a clear overview of the elements of a BM (Figure 2). Prof. Yip differentiates the BM from strategy by highlighting that a radical (versus a routine) strategy is needed to change a BM which comprises the following elements:

- value proposition
- nature of inputs
- how to transform inputs (including technology)
- nature of outputs
- vertical scope
- horizontal scope
- geographic scope
- nature of customers
- how to organize.

The ontology approach of Osterwalder [9], integrates all the important elements of a BM and is used later in this study as an adequate representation of the developed theory on BMs (Table 3).

Pillar	Building Block of a Business Model	Description
Product	Value Proposition	A Value Proposition is an overall view of a company's bundle of products and services that are of value to the customer.
Customer Interface	Target Customer	The Target Customer is a segment of customers a company wants to offer value to.
	Distribution Channel	A Distribution Channel is a means of getting in touch with the customer.
	Relationship	The Relationship describes the kind of link a company establishes between itself and the customer.
Infrastructure Management	Value Configuration	The Value Configuration describes the arrangement of activities and resources that are necessary to create value for the customer.
	Capability	A Capability is the ability to execute a repeatable pattern of actions that is necessary in order to create value for the customer.
	Partnership	A Partnership is a voluntarily initiated cooperative agreement between two or more companies in order to create value for the customer.
Financial Aspects	Cost Structure	The Cost Structure is the representation in money of all the means employed in the business model.
	Revenue Model	The Revenue Model describes the way a company makes money through a variety of revenue flows.

Table 3. The business model design template: Nine building blocks and their relationships (Source: Osterwalder).

Osterwalder's conceptualization allows the organization to identify and describe its BM. It acts as a photo camera, giving the tool to the company to take a snapshot of its current operations.

Samavi et al. [47] criticize previous BM frameworks for not taking into consideration the competitive landscape and critical strategic issues, arguing that an effective business modeling framework should brink closer the concepts of BM ontology and strategy modeling techniques. Their strategic business model ontology (SBMO) framework aims to address this gap by extending BM ontology with strategy modeling features and by providing a visual modeling framework with

rich semantics that is suitable for describing and analyzing a firm's strategy, business actor's goals, intentions, and motivations, and the exploration of alternate ways of exploiting business mechanisms.

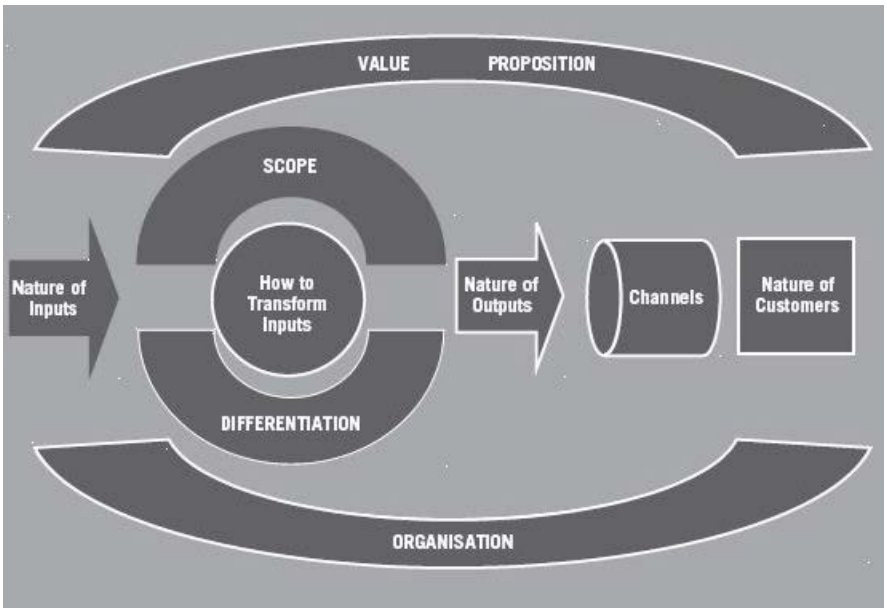

Figure 2. Elements of a business model (Source: Yip)

The building blocks of the SBMO ontology are defined by four intuitions:

1. Network of dependencies
   In SBMO, a business model is seen as a network of dependencies among stakeholders trying to achieve their goals, each with their internal motivations and rationales.
2. Reasoning
   Capturing and representing the intentions or goals in a BM allows the modeler to explore the motivations and rationales of the participants.
3. Stakeholder's autonomy
   Participants such as customers, partners or channels have freedom for their actions, even if the relationships are bound to an agreement. The modeler in the SBMO, by using goals and methods is able to explicitly define the spaces of possible freedoms.
4. Strategic reflectivity
   The reflective process of comparing tasks is strategic because participants in a BM want to determine which changes would better serve their strategic interests.

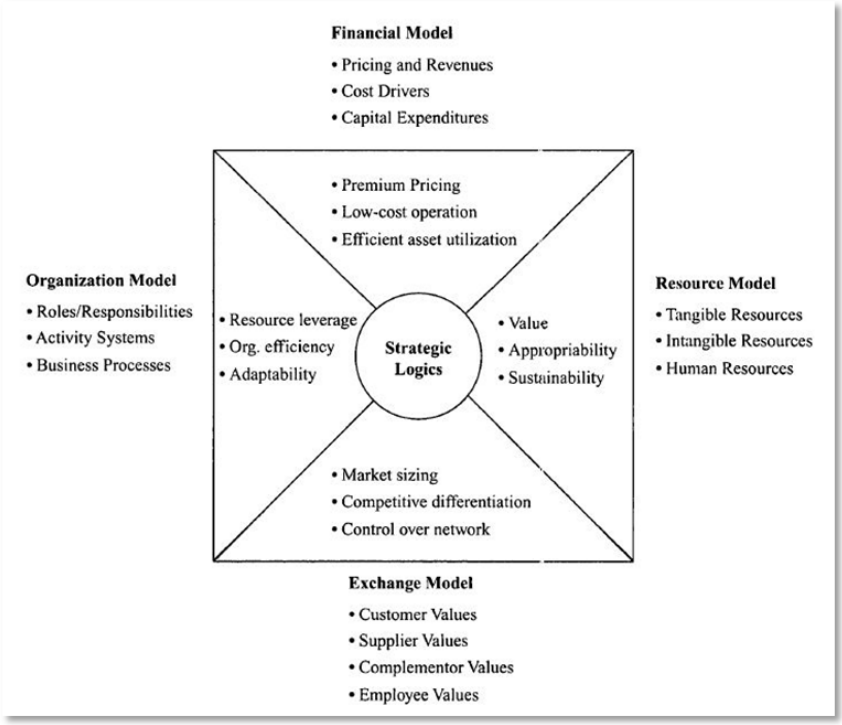

Figure 3. A business model framework (Source: Shi and Manning)

Shi and Manning [48] present a BM framework that offers a comprehensive look of how a firm creates value for its stakeholders, while distinguishing itself from various depictions of a firm's business, such as firm's strategy, enterprise model, business process model, revenue model or financial model (Figure 3). As the authors suggest, their BM framework addresses the interests of the key stakeholders of a business. It describes how the business works internally and externally with the key stakeholders. It depicts what resource base the business has that enables it to work and it defines the business's objectives in a set of functions that tie together the stakeholders' interests, the interest realization systems, and their enabling resource base. Yip, Osterwalder, Samavi et al., and Shi and Manning present a descriptive framework in a given point in time which allows describing an operational BM and observing its alignment with strategy. But as Linder and Cantrell [19] suggest, BMs do eventually wear out. Given the increasing pace of ICT advances, leading companies should effectively manage BM change, which is the purpose of this paper.

C. ICT and business model change

Having reviewed the theory on BMs, it is evident that understanding and communicating the architecture of the company is an essential task, yet sometimes it is proven insufficient in a turbulent and dynamic technological environment. As Gunzel and Wilker [42] suggest, the BM is not static. Start-ups, as well as existing businesses must revise their BM over time to keep up with changing technology, market and regulatory conditions, etc. Furthermore, as Teece [31] argues, technological innovation by itself does not automatically guarantee business or economic success, adding that good BM design and implementation, coupled with careful strategic analysis, are necessary for technological innovation to succeed commercially. Existing literature mainly examines the BM and its components as a static representation of how the company creates and delivers value to its customers. However, the need to inter-relate ICT developments and BMs started to express through the work of Venkatraman [13] and his "five levels of IT-enabled business transformation" model (Figure 4), and Poon and Swatman's [48] "Internet-to-internal applications systems integration" model (Figure 5). Venkatraman's first approach to IT integration, examines the range of potential benefits in relation to the adoption of IT-enabled business transformation through a sequential five-stage process. This stretches from the evolutionary level of localized exploitation all the way to the revolutionary level of business scope redefinition.

Poon and Swatman's [48] work on adoption and exploitation of ICTs by small and medium-sized enterprises (SMEs) produced a model, which was based on Venkatraman's variables identifying the levels of Internet integration, starting from the inter-organizational level to the full benefits of full organizational integration.

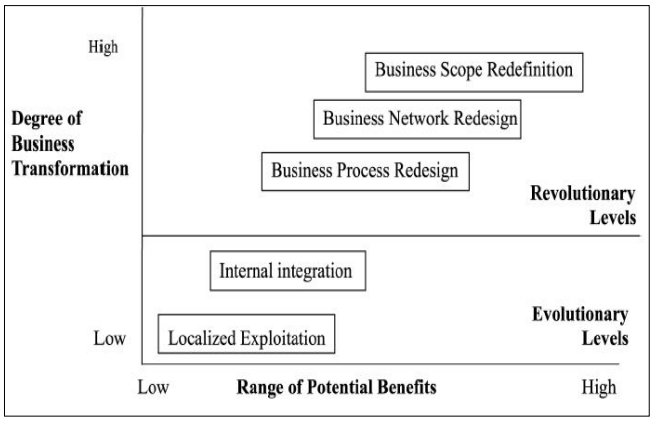

Figure 4. Five levels of IT-enabled business transformation (Source: Venkatraman)

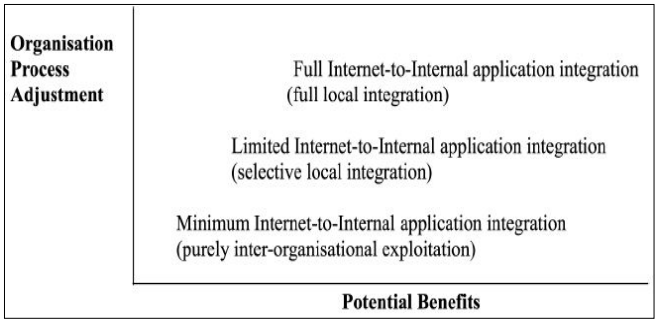

Figure 5. Internet-to-internal applications systems integration (Source: Poon and Swatman)

In 1998, Tapscott et al. [14] introduced the term "b-web", which they define as "a distinct system of suppliers, distributors, commerce service providers, infrastructure providers, and customers that use the Internet for their primary business communications and transactions". Managers are called to design a new agenda for b-web strategy by describing, disaggregating, and re-aggregating the core value proposition. The authors suggest a 6 step methodology for b-web strategy design, shifting from the traditional BM to the web integrated BM.

1.	Describe the current value proposition from the customer's view-point, that is, why the system exists.
2.	Disaggregate: Consider the contributors and their contributions, strengths, and weaknesses. Compare the parts and capabilities of your business to those on other systems.
3.	Envision b-web-enabled value through brainstorming and other creative design techniques. Decide what the new value proposition will be.
4.	Re-aggregate: Define what it will take to deliver the new value proposition, including processes, contributors, contributions, applications and technologies, and other success factors.
5.	Prepare a value map: Design a visual map that depicts value exchanges in the b-web.
6.	Do the b-web mix: Define a b-web typing strategy that will improve your competitive advantages.

Table 4. Six steps for b-web strategy design (based on Tapscott et al.).

During the same year, Timmers [11] studies the effect of technology innovation on the BM, and more specifically the effect of the Internet on traditional businesses. Based on the degree of innovation and functional integration, Timmers presents eleven BMs, some of which are essentially an electronic re-implementation of traditional BMs, while others go far beyond and seek innovative ways to add value through information management and a rich functionality.

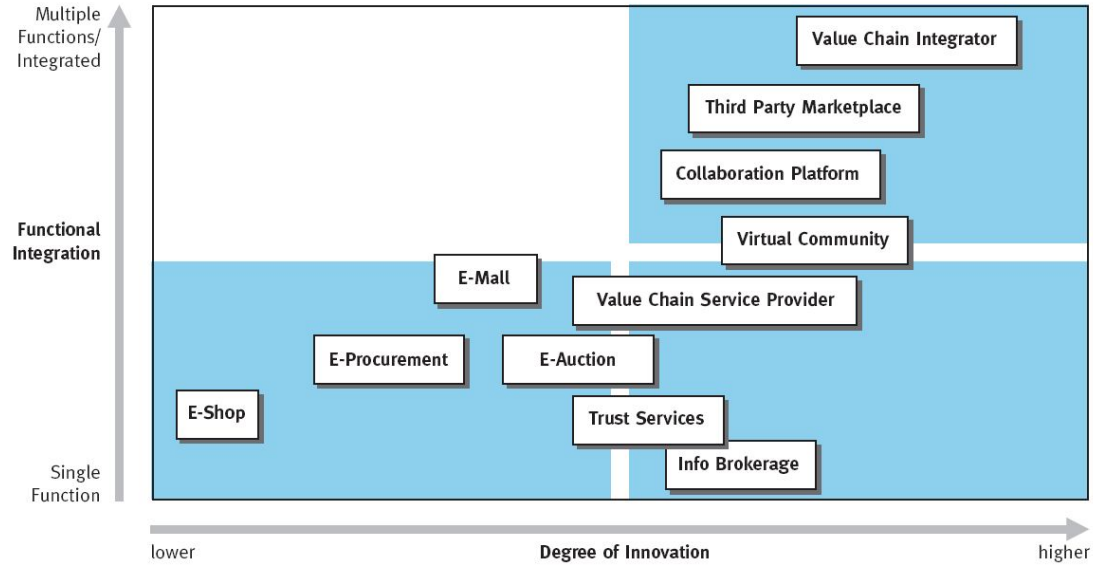

Figure 6. Classification of Internet business models (Source: Timmers)

Linder and Cantrell [19] identified that most BMs are under constant pressure to change. Based on empirical data they presented four basic types of change models: realization, renewal, extension, and journey models (Table 5).

Realization Models	Renewal Models	Extension Models	Journey Models
Brand maintenance	New service offerings	Backward integration	Commoditi-zation: from product to price
Product line extensions	New brands	Forward integration	Globalization
Geographic expansion	Untouched markets	Horizontal integration	Avoiding commoditi-zation: from product to service to solution
Penetration	New retailing formats	Externalizing an internal capability	Up market in products: from price to speed and agility
Incremental product or service line expansion in one-stop shops	Disruptive new product or service platforms		Up market in services: from price to brand or expertise
Additional sales or service channels			
Roll up			

Table 5. Basic types of change models (based on Linder and Cantrell).

Based on the realization that in current BMs "…*Information and Communication technology changes dramatically the way activities are performed*", Papakyriakopoulos et al. [49] present a roadmap for the construction of e-business models.

1. Identification of players.
2. Defining current business objectives for each key player.
3. Identification of current value flows in the marketplace.
4. Identification of key competitive drivers in the market.
5. Synthesis of the current business model.
6. Embedding the innovative technology framework into the current business model.
7. Defining requirements for technological capability development for existing key players.
8. Defining the mediating functions performed by the service provider.
9. Developing a new co-operation scheme in the marketplace: exploiting the existence of the new service provider.
10. Synthesis of the proposed business model.

Table 6. Papakyriakopoulos et al. BM development method (based on Pateli and Giaglis).

Complementing the work of Petrovic et al. [16], Auer and Follack [18] suggested nine prerequisites for a methodology developing a BM.

1. The methodology should be able to handle complex systems.
2. The methodology should support the structuring and sharing of knowledge and the change of mental models.

3. The methodology should be able to predict the outcomes more accurately through the support of risk free experiments.
4. The methodology should create a learning environment for managers.
5. The methodology has to support iterative expansion and change.
6. The methodology should be grounded on theory and practically applicable.
7. The methodology requires (inter)-action as an integral part of the process itself.
8. The methodology is based on the researcher's professional values rather than methodological considerations.
9. The methodology has to support structured reflection of learned lessons and academic discourse.

Having followed the above prerequisites the authors present the Evolaris three phase methodology for improving existing models.

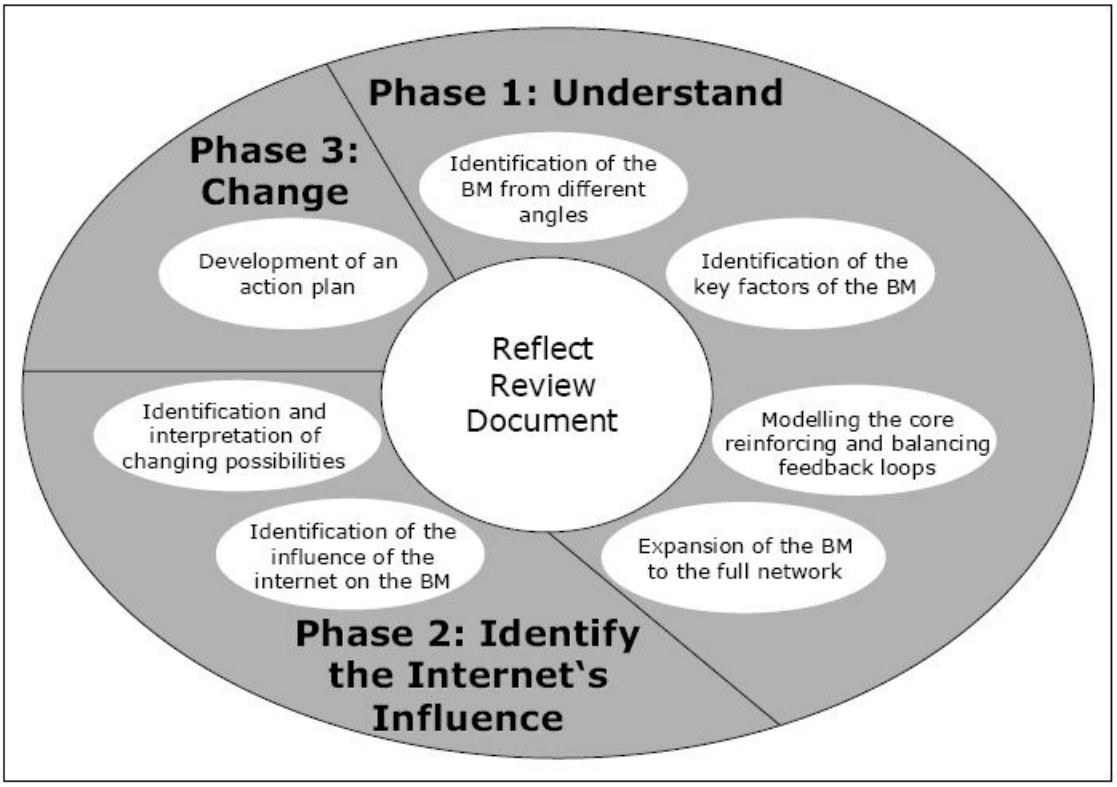

Figure 7. The Evolaris methodology (Source: Auer and Follack)

The first phase of the methodology is labeled "understand" and it is composed of four steps:

1. Identify the BM from different angles.
   Taking into account different perspectives, including the positions of as much different stakeholders, leading to a complete overview and a BM definition.
2. Identify the key factors of the BM.
   Analyzing and defining all influencing variables within the BM.
3. Model the core reinforcing and balancing feedback loops.
   Involving the organization's people and reinforcing acceptance.
4. Expand the BM to the full network.
   Identifying specific clusters of variables.

The second phase "indentify the Internet's influence" describes the next two steps in the process:

5. Identify the influence of the Internet on the BM.
   Identifying all variables of the BM which are influenced by the Internet.
6. Identify and interpret the changing possibilities of the BM.
   Seeking options for changing the BM in order to use the influence of the Internet.

Phase three is about the actual "change" of the BM entailing the final step of the methodology:

7. Develop an action plan.
   Documenting and structuring the knowledge gained during the phases and steps before, leading to an action plan for changing the BM.

At this stage it is important to note that the authors argue that this methodology should be seen as a network rather as a linear sequence of steps. Moving back and forth during the application of the methodology is not just allowed but also encouraged, in order to take into consideration the effect of new variables in the formulating BM. Doz and Kosonen [23], based on findings from their empirical work on strategically agile companies, identified five determinants of a successful BM renewal.

1. Decoupling: gaining flexibility.
2. Modularizing: disassembling and reassembling business systems.
3. Dissociating: separating resource use from ownership.
4. Switching: using multiple models.

5. Grafting: acquiring to transform oneself.

In 2009, Reuver et al. [25] produced a model that describes the impact of external drivers on the life cycle of BMs, which proved to be more applicable to small start ups rather than established firms. The model, derived from a case survey of over sixty case descriptions of BMs, contributed in the understanding of what drives BMs dynamics rather than suggesting a change methodology (Figure 8).

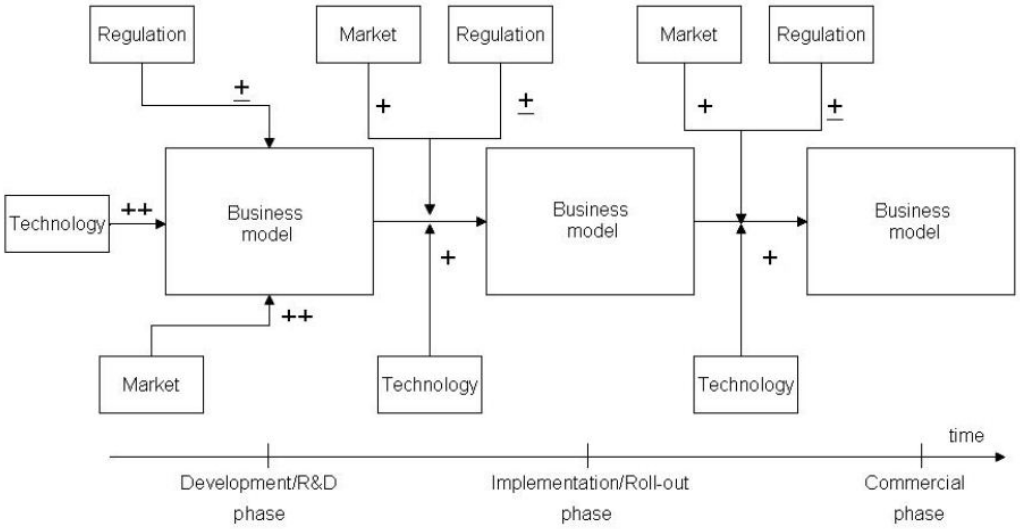

Figure 8. Dynamic business model framework (Source: Reuver et al.)

The concept of the BM life cycle is also studied by Morris et al. [35]. Their conceptualization of the BM life cycle is shown in Figure 9.

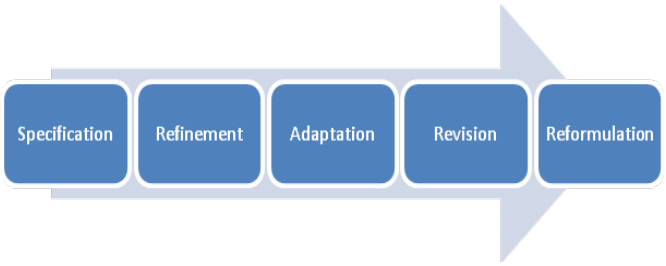

Figure 9. The business model life cycle (adapted from Morris et al.)

The authors suggest that "*an initial period during which the model is fairly informal or implicit is followed by a process of trial and error, and a number of core decisions are made that delimit the directions in which the firm can evolve. At some point, a fairly definitive, formal model is in place. Subsequently, adjustments are made and ongoing experiments are undertaken*".

Santos et al. [32] argue that managers do not need to await breakthrough technology or invest heavily in new products, new business ventures, or new market development to gain the advantages of BM innovation. They suggest that change within the BM can be achieved through the reconfiguration of activities, and more specifically through relinking, repartitioning, relocating, and reactivating.

Classification	Type	What Changes	Examples
Relinking – altering the linkages between units performing activities	Regoverning	The governance of transactions among units	An arms-length relation with a supplier becomes an alliance
	Resequencing	The order in which activities are performed	Design and procurement activities become mutually reciprocal instead of sequential
Repartitioning – altering the boundaries of the focal firm by moving activities and the units that perform activities	Insourcing	Moving inside activities that were performed outside the focal firm	A manufacturer opens its own retail stores to supplement its dealers
	Outsourcing	Moving outside activities that were performed inside	A firm outsources its IT activities
Relocating – altering the (physical, cultural, and institutional) location between units performing activities	Off-shoring	Moving activities from a unit in the firm's home country to a foreign country	A bank moves back-office activity to a foreign subsidiary
	On-shoring	Moving activities from a foreign country unit into the home country of the firm	A call center is moved back to the original country

Reactivating – altering the set of activities performed by the firm	Augmenting	Adding new activity to the firm	A free give-away newspaper adds people to hand out the paper at subway stops
	Removing	Removing an activity from the firm	An airline removes cooking hot meals from its service

Table 7. Typology of BMI – Reconfiguring a firm's activities (Source: Santos et al.).

Based on the presented concepts and supported through various case studies, the authors propose a theory of BM innovation that builds on four propositions.

Proposition #1 – A firm's business model juxtaposes two systems of relationships: one involves transactional linkages among activities and the other involves governance linkages between the organizational units that perform those activities.
Proposition #2 – Because business models involve relationships among organizational units, alterations in business models require transformational behavioral change within the impacted units.
Proposition #3 – When a business unit is a part of a corporation (rather than a free standing business), the corporation presents both constraints on and opportunities for BMI. The constraints arise from the potential impact of unit-level BMI on corporate scope and risk as well as the potential impact on the operations and strategies of fellow units.
Proposition #4 – A combination of loose horizontal coupling among the corporation's business units combined with mutual engagement and organizational justice between the units and the corporate center will maximize opportunities and minimize constraints on business unit level BMI.

Table 8. Propositions on BMI theory (Source: Santos et al.).

Samavi et al. [47] have not only contributed with the SBMO earlier presented, but also have presented a methodology to incorporate change (Figure 10). The methodology is divided into two major bands, one is about "understanding the change" in the market place and the second describes the "transitional states".

Understanding the change

The first step comes as a consequence of one or multiple environmental disruptions as shown earlier in Reuver's et al. framework. Those could be regulatory changes, technological advances or even a major change in the market condition, e.g., the entry of a new player. Whichever the case, the new information is incorporated in the current state of the company (C1). Then the significance of the change will be weighed against the objectives of the stakeholders (C2) to determine whether is a signal or just a noise that can be ignored (C3).

Transitional states

Once the signal from C3 is received, a new state is triggered (T1), new assumptions are added resulting to the suggestion of innovative strategic moves. With the help of the SBMO model, a feasibility analysis takes place (T3) in terms of BM functionality (T4b) and strategic alignment to the goals of the company (T4a). If by incorporating the innovative strategic moves, the strategy is aligned to the goals and the BM is working, then what follows is an evaluation of the market's aftermath (T5) to investigate the market's reaction to the change. At this final stage (T6), the market's reaction might cause another signal of change that would result to the continuation of the investigation. The whole process should produce a final fully operational and aligned BM.

In their paper, Pateli and Giaglis [37] proposed a stepwise methodology, which allows companies to design alternative scenarios for BM evolution or extension under the impact of technology innovation (Figure 11). Having identified the limitations of previous methodologies for BM change [16]–[50]–[51], the authors constructed a 3 phase comprehensive methodology, which is supplemented by a series of factors favoring scenarios for BM development. The advantage of this methodology compared to other BM change models is that, it can be applied to unstable business environments as it incorporates scenario planning, which aims at reducing the level of risk in BM transformation. The first phase is a detailed documentation of the current BM. Tools, such as Osterwalder's [9] design template, can be used to provide a complete understanding of the operations and the relationship between the key elements comprising the BM. The second phase is decomposed into two different steps, the assessment of the influence of technology innovation and the identification of the missing roles. Those two factors are combined to identify the technology's influence to the current BM. Change is completed in the third phase of the methodology, which comprises three distinct steps, defining scenarios, describing the new BMs and evaluating the impact of changes. However, Pateli and Giaglis [37] admit that although the aforementioned steps define a well-grounded methodology for BM change under the impact of technology innovation, they are by no means sufficient on their own to guide the BM design effort. This is why they add a series of industry-related and firm-specific factors that help the company to assess scenarios more effectively (Table 9).

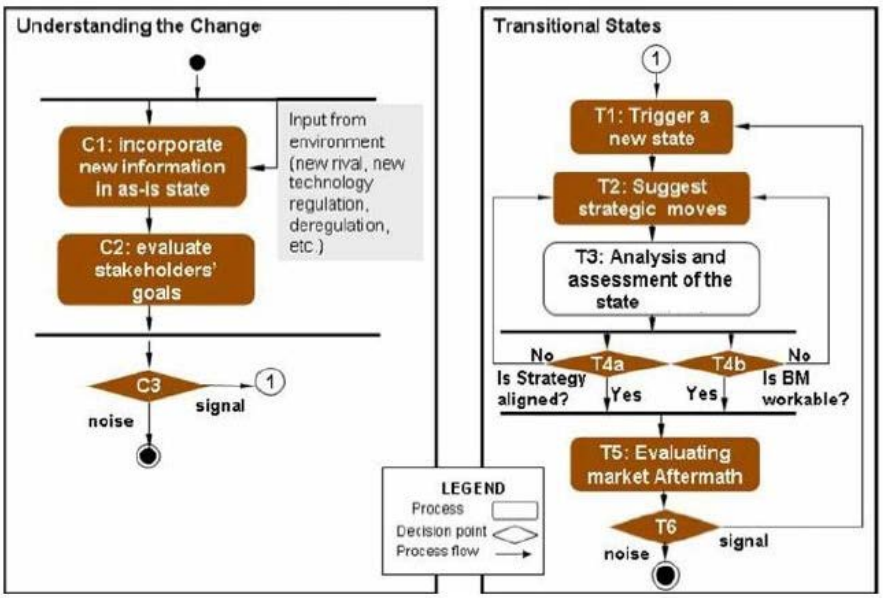

Figure 10. Process overview to model BM dynamics (Source: Samavi et al.)

Industry-Related Factors	Firm-Specific Factors
Industry structure	Strategic objectives
Balance between transaction costs and costs of internal development	Firm capabilities and assets
Type of players	

Table 9. Factors favoring scenarios for BM development (Source: Pateli and Giaglis).

The firm and industry's unique characteristics are balanced carefully, helping the organization to choose the right scenario to evolve into its future BM. The methodology suggested by Pateli and Giaglis [37] allows the company to identify its current BM, evaluate its ICT options, move safely to the realization of the new BM through scenario analysis, and evaluate the effectiveness of the new BM. The authors use as a real life case study, involving the commercialization of a mobile application, but it would be quite interesting to test if the theory can be applied to other industries as well, in our case the entertainment and gaming industry, and more specifically to a land based casino.

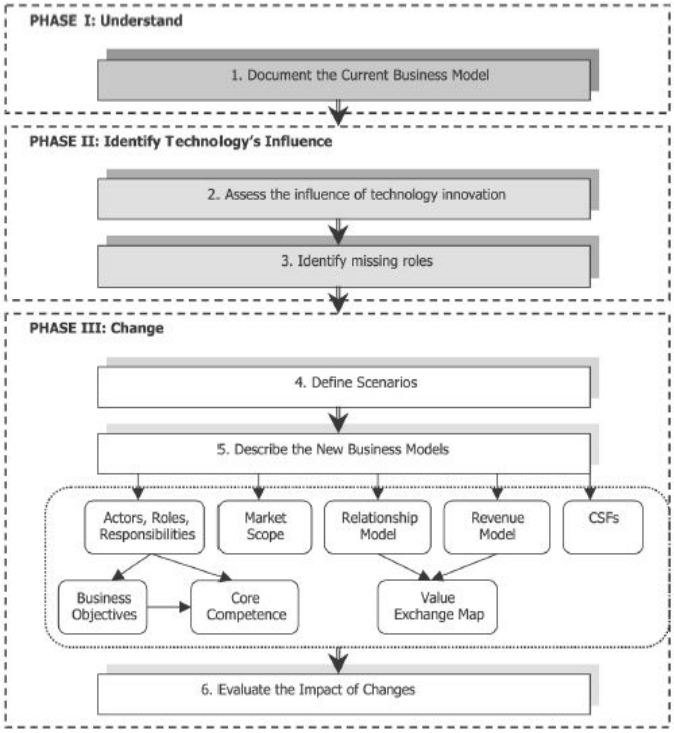

Figure 11. Scenario-based methodology for BM change (Source: Pateli and Giaglis)

III. Theory Application to a Gaming Organization Operating in the Entertainment Industry

Founded in 1994, Regency Entertainment S.A. focuses its business activity on the establishment, operation and management of casinos (Regency Casino Thessaloniki and Regency Casino Mont Parnes) and luxury hotel complexes (Hyatt Regency Thessaloniki). As leader in the Greek gaming market, Regency Entertainment has faced the challenge of incorporating ICTs in its operations, significantly evolving its BM. ICT advancements, such as the transition from analog to digital recording, the introduction of new processors in slot machines, the installation of the CasinoLink and TITO (Ticket in-Ticket out) systems, the introduction of the automatic card shufflers, the operation of automated touch bet roulettes, as well as other ICT developments, have gradually changed the organization's BM to its current situation. The transformation was based on rather operational than theoretical grounds, and under the light of Pateli and Giaglis's [37] suggested methodology, it would be useful to test if the theory applies to our selected case study. Owing to space limitations, we will use the example of the Slots Accounting System (SAS) protocol implementation, an automated system for reporting, event logging, player tracking, ticketing and cashless gaming.

A SAS networked slot machine, using the TITO system, prints out a bar-coded slip of paper, which can then either be redeemed for cash, or inserted for play into other TITO machines. The machines utilize a barcode scanner built into the bill acceptor, a thermal ticket printer in place of a coin hopper, and a network interface to communicate with a central system that tracks tickets.

A. Step 1: Document the current BM

The first step would be to create a blueprint of current operations. Using a BM analysis framework, such as Osterwalder's [9] design template, would provide a clear picture of the current business environment. The identification of the key actors operating in the current BM could act as the basis for the forthcoming change. More specifically, regarding slots operations, the key actors were:

1. Slots attendants, who were attending the customers, carrying out hand pays, and making sure the slot machine operates optimally (hoper fills, etc.).
2. Slots supervisors, who would supervise and direct the attendants to carry out hand pays.
3. Cage staff, which exchanged tokens with cash and provided the cash for attendants' hand pays.
4. Hard count department, who counted and prepared the rolls of tokens.
5. Security staff, who escorted the attendants for the hand pays.
6. Surveillance, which monitored the hand pays.
7. Customers, who had to interact with attendants for hand pays, or with the cage staff to exchange tokens with cash.

B. Step 2: Assess the influence of technology innovation

This step aims at defining the benefits arising from the introduction of SAS and identifying the elements of the current BM which would be most affected by technology innovation (Table 10).

Key Actors	SAS Benefits
Slot attendant	Reduced-eliminated hopper fills, simplified hand pays
Slot supervisor	Enhanced reporting through central accounting system
Cage staff	Less workload, no tokens buckets, ease of pay through bar-coded tickets and ATMs
Hard count dept	Withdrawal of tokens, elimination of the department
Security staff	Reduced escorting for hand pays
Surveillance	Reduced monitoring for hand pays
Customer	Increased play time with reduced wait time, resulting in greater player satisfaction. Ease of pay through ATMs

Table 10. Expected benefits for key actors.

C. Step 3: Identify missing roles

If the organization planned to exploit the SAS technology, it would have to identify the missing roles in its operations. Those were:

- Hardware related, as the organization did not have the know-how of building a SAS system.
- Software related, as the organization could not develop the right application to support the hardware.
- Installation, configuration and maintenance issues.
- Operating issues and reporting, that would involve training from the system vendor.

All the above missing roles would have to be supplied by a new actor, either developed internally or through outsourcing.

D. Step 4: Define scenarios

At this stage, the organization is called to define all possible scenarios for BM change, having already defined the emerged missing roles. One of the novelties of Pateli and Giaglis's model [37] lies exactly in this phase. The organization minimizes the risk of a deficient BM change by simulating different scenarios, which are based on a combination of industry-related and firm-specific factors.

In our case, the market in which the redesigned BM would operate would still be oligopolistic and the costs of internal development of a SAS system would dramatically exceed the costs of outsourcing. The market is dominated by private organizations, which would probably mean low chances of long-term differentiation, as a competitive me-too strategy would wait just around the corner.

Regarding the firm-specific factors, the organization would follow a combination of a differentiation strategy through the provision of value-added services and a cost effective strategy through the reduction (or even elimination) of costs, as well as the reallocation of resources. Furthermore, the organization's capabilities would allow the operation of advanced ICTs, if those were acquired by a partner.

Following the decision to outsource the SAS protocol to International Game Technology (IGT), two scenarios emerged. The first scenario would include the installation of the SAS protocol and the E-Z Pay system (IGT's TITO system) vs. the second scenario, which would use the Advanced Funds Transfer (AFT) technology, also known as cashless gaming.

E. Step 5: Describe the new business models

Both alternative scenarios would lead to different configurations of the new BM. According to the proposed methodology, a detailed description of the emerging BMs would have to be given in terms of actors, their roles and responsibilities, the market scope, the relationship model, the revenue model, and the critical success factors (CSFs) for the BM implementation.

Since it was decided to outsource, a new actor entered the BM, in the form of a partner, leveling the cost factor for both scenarios. Nevertheless, the relationship between the organization and the new actor would have to be described analytically in the new BM construct. Both BMs are changing the role of the actors, enhancing the customers' experience and

creating important benefits for the organization. The main difference between the TITO and the AFT system is the number of cash transactions, as the cashless system introduces a debit card account offered to the customer, thus reducing the printouts and the use of physical cash notes. This fact, as well as the legislation, which allows the government to monitor the accounts on the AFT system, led to the selection of the TITO based BM.

F. Step 6: Evaluate the impact of changes

The impact of TITO implementation in the Greek market is difficult to measure, as it was only allowed by the Greek government in 2008 and Regency Casinos were the first (and only so far) to adopt it. Furthermore, the effect of the economic crisis does not allow clear conclusions to be drawn. On a worldwide scale, the use of SAS systems is widespread and according to IGT, over 400 gaming machine and system vendors and regulators have received SAS so far.

IV. Conclusion

This research aimed at describing the change of BMs under the influence of ICT integration. Business practice has proved that there is a positive correlation between ICT integration and BM effectiveness, henceforth there is great interest on how new technologies contribute to BM transformation. A comprehensive definition was suggested, as well as conceptualization models to define and describe the BM and its components. However, the dynamic nature of ICT development could not be depicted in the static BMs. As a result, new models had to be designed adopting the new technologies. Complementing the previous generic frameworks, Pateli and Giaglis's contingency approach was used to describe the management of change into a new BM, taking into consideration additional industry and firm factors. In order to verify this comprehensive framework, a case study of a leading entertainment company was employed. The findings suggest that a BM change process can follow the stepwise approach of Pateli and Giaglis, resulting in risk minimization and efficiency maximization in the newly emerged BM.

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