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Open enterprise: how gratis and reputation foster innovation

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OPEN ENTERPRISE: HOW GRATIS AND REPUTATION FOSTER INNOVATION

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ABSTRACT

Companies can discover the seeds of great ideas from any nook of the world, and the internet has dramatically reduced their cost of access. A big challenge is represented by the *new business models emerging from the web and based on the "gratis philosophy"*. Recently a high number of new innovative enterprises, we named *Open Enterprises*, faced different competitive markets by *fostering innovation* both in products and services through open software and open hardware web platforms which offer tools, ideas and services for free and encourage the individual contribution and collaboration among customers, companies and contributors, the so-called crowdsourcing.
The research investigates the functioning of the Open Enterprises' business models and their contribution to traditional companies' collaboration for innovation. Basing on literature and 116 web-platforms scanning and empirical analysis, we developed a theoretical framework which offers a systematization of the key building blocks of the Open Enterprise business models and their main characteristics, advantages/disadvantages in terms of contribution in the companies' collaboration for innovation.

KEYWORDS

Open enterprise, gratis business model, reputation, innovation

INTRODUCTION

Companies can discover the seeds of great ideas from any nook and yard of the world, and the internet has dramatically reduced the cost of accessing them. Internet is based on the two-sided market model (Rochet and Tirole, 2003; Eisenmann, Parker and Alstyne, 2006) and on the user generated content, where the customer is not anymore a user only, but also a contents' producer, called "prosumer" (term coined by Alvin Toffler in Future Shock, 1970). The innovation can come from the customers, with approaches called *user innovation* (Von Hippel, 1986) and *co-creation* (Norman and Ramirez, 1994).

The evolution of the open-source and of the free led companies not only to different approaches as regards collaboration models for innovation, but also as regards the appearance of new companies which establish their businesses on these collaboration models and on the collective intelligence.

In the '90s scholars (e.g.: Davis, 1989; Pine, 1993) identify *mass customization* as the frontier of business competition. In the early 2000, online *custom marketplaces* born (e.g.: cafepress.com, zazzle), first manufacturing service providers for customized products (skirtsdotnet.com), crowdsourcing business (innertee, threadless). From the IPR side, two important steps were the GNU free documentation license published for software (2000) and *creative commons* licensing by Lessing for online content (2001), these permit commons-based peer production. Then, the rapid prototyping/digital manufacturing (*fabbing movement*) grow, and first online factories appear (emachinestop.com in 2002) and from 2006 manufacturing design under creative common license were published (the first by Ronen Kadushin in 2006) and parallel concepts of user involvement in design and production, aided by digital identity management and social internet infrastructure become commonplace.

A big challenge for companies is therefore represented by the new business models emerging from the web and based on the "gratis philosophy", the *gratis business models*. In fact, recently a high number of new innovative enterprises, we named ***Open Enterprises***, faced different competitive markets by fostering innovation both in products and services through open software and open hardware web platforms which offer tools, ideas and services for free and encourage the individual involvement and collaboration among customers, companies and contributors, the so-called *crowdsourcing*.

The open innovation model taught us that successful innovation is often created in a cooperative mode with external actors. Wikis and social software have in fact revolutionized the ways we create and distribute knowledge. They have become a great tool for e-collaborate, collecting and sharing knowledge in communities. Moreover, one of the key considerations is that internet is not a closed system, but has the logics of an ecosystem, where not only the economic value but also reputation and attention from the network play an important role. How can companies insert in these new ways of doing business? How can they gain direct or indirect revenues? Literature is in its infancy and lets still unexplored and emergent research areas, especially as regards web-based business models for companies' collaboration for innovation. The present work focuses therefore on the ***web-based innovation based on gratis business models, with the aim to identify, analyse and present a systemic vision of the present and emergent business models on the web in a context of open innovation.***

For example, key themes are:

- analysis of change drivers in technology, market, business practise and user needs;
- description of present business models and value chain in selected domains;
- identification of the key building blocks of the web-based platforms' business models (i.e. key activities, resources, system of relationships and rewards, distribution channels, cost structure, revenue flow);
- identification and estimation of the value creation in networks based on crowdsourcing.

The present paper, after having highlighted the theoretical background, grounded on open source economy, crowdsourcing and gratis business models, explains the research aim and design, showing the sample of the web platforms analysed and the variables chosen for the classification. Then, the results of the analysis of 116 web platforms are shown and discussed in terms of three-dimensional analysis. These analysis permit a systemic description of the functioning of the gratis business model on the web.

THEORETICAL BACKGROUND

Profound advances in information technology, such as the Internet, have influenced a great part of the economy (Mankiw, 2003). In order to explain the Digital Economy, Negroponte (1996) used a metaphor of shifting from processing atoms to processing bits, discussing the disadvantages of the former (e.g., mass, materials, transport) and advantages of the latter (e.g., weightlessness, virtual, instant global movement). Therefore, due to the enormous quantity of connected users, the potentiality of connections across the entire globe, the speed of information and the irrelevance of distance, the internet has enabled the change of present business models and the rising of different and new ones.

From a cost perspective, scholars (e.g. Currie, 2000) underline how bits can be reproduced with virtually zero cost. Negroponte (1996) indicates that although everything on the Internet appears to be free, even if a rational economic model were to be implemented, it would likely still cost only pennies to disseminate a million bits to a million people. However, Shapiro and Varian (1999) indicates that information is simply being provided at its marginal cost of zero. Mondahl (1999) notes that price differences based on poor information or geographic distance will not survive in the Internet Economy.

As Anderson (2006) explains in the *long tail* approach, the democratization is not referred only to production (the production of the product has a marginal cost approximately next to zero - ex: digital cameras, blog tools, etc.), but also to distribution (the cost of distribution is a minimum fraction of the product cost, for example the bandwidth cost to supply an mp3 from iTunes - ex: Amazon, eBay, iTunes, etc.) and to the meet of demand and offer (it makes sense to sell online opening the offer to a niche, for example a niche of 0.1% in the internet (considering millions of people) is a lot - ex: Google, Rhapsody, etc.).

Referring in particular to innovation, the interesting point is that the web enables a context of open innovation with contributes for free. According to Anderson (2009), the gratis business model is indeed *per se* any news, because it already happened in the physical context, especially as a form of advertising, but the novelty is that, being the bytes different from atoms and being the reproduction of web content effectively without cost, the web presents the opportunity for companies of new and different

business models based on giving for free products and services but gaining in other ways (from advertising, from premium customers, etc.).

In the context of the internet, open source, open hardware and free open innovation approaches have become possible. They work using crowdsourcing and wiki logics (how), and they are enabled by models of incentives and models of gratis (why).

From open source and open hardware to open innovation

The internet enables the rising of a *free knowledge approach*, what Stallman refers to with the concept of "Four Freedoms": free technology (free and open software, open standards, open hardware, open fabrication), free education (free educational materials, and open educational resources - e.g. OpenCourseware), free culture (freely licensed works of art, music, text, books, encyclopedias, etc.), open research (open access, open data, open content in publishing - e.g. Open Access and Open Data movements), open innovation (user innovation, distributed innovation).

Historically, the first systems based on spontaneous collaboration in the Internet were the free and open-source software (Firefox, OpenOffice, VLC, Gimp, 7-Zip), operative systems (BSD, GNU and Linux) and content models (Wikipedia). Moreover, the open-source philosophy extended also to open-hardware: the free release of information about the hardware design (schematics, bill of materials and PCB layout data) or the sharing of the hardware description language (HDL) code. Examples are computer systems (as Simputer, a handheld computer), peripherals (as the RepRap Project: an open source 3D printer), computer components (CPU, as Arduino; graphic cards, as Open Graphics Project; wireless hardware, as Sun SPOT for sensor networks; Laptop cases, as VIA OpenBook), etc.

The open source, open software and open hardware let arise a new economic model with the basis grounded on collaboration, information freedom and reciprocal exchange among users. Clearly, the theme of the IPR becomes of absolute relevance into this framework, and already free systems have emerged (free licenses, creative commons).

Recently, also "traditional" companies have tried to foster their competitiveness and innovation potential by making use of collaborative approaches - Wikinomics (Tapscott and Williams, 2008), co-design, collective intelligence (Brown and Lauder, 2000), smart mobs (Rheingold, 2002), lead-users innovation (Von Hippel, 1986), open-source communities, innovation markets, etc.

The open innovation model (Chesbrough, 2003) underlines the potentialities of external sources for innovation. The companies use both internal and external ideas as input for the innovation process and use both internal and external market paths for the development of innovative products/services. Knowledge is diffused and distributed and the company boundaries have to be more open, companies should not only base on their own research centres, but buying innovation from external (through exchanges with other companies) or investing in it, and then not only selling to the traditional market its own innovation but also licensing the innovations internally developed but not used in own business.

Some open innovation approaches can be mass customization, customer toolkit, lead user, freedom rule, research collaborations, virtual communities, supplier partnerships, coopetition, technology brokering, practice communities (De Toni, 2005). Although the application of these approaches is still in its infancy, it has already delivered convincing results, see for instance the changes in innovation policy at Procter & Gamble (Chesbrough, 2003; Dodgson, Gann and Salter, 2006).

Crowdsourcing and wiki

The FORA survey on innovation (OECD, 2009) highlighted how the drivers that are transforming how companies innovate can be found in the global and welfare challenges, in the global knowledge sourcing and collaborative networks and in co-creating value with customers and tapping into knowledge about users. Collaboration is therefore one of the main topics. The reasons for this trend can be found in the globalization and in the low return on R&D costs for a lot of industries and therefore companies naturally tend to look outside for new product and service ideas. The new *Web 2.0* tools and technologies are enabling collaboration (and online collaboration) in a distributed environment as we never imagined. Companies are of course using it, procuring significant product ideas using a web platform. Even the companies from so called traditional industries (e.g. Pharma), rightly and timely realized the significance building platforms like Bountychem, eventually spinning them into what we all know as Innocentive.

The connection and development of distributed knowledge is therefore fundamental. With the term *crowdsourcing*, literature refers to a model where the company invite a distributed group of people not already organized in teams for the development of a project, a product or a service in a bottom-up way, while with the term *wiki* to informatics web-based platforms with the aim to create, codify and share knowledge in a collaborative way. The role of intermediaries becomes fundamental too. In this sense, the web intermediaries facilitate the integration of external actors and information from the firm's periphery in the innovation process, see for example the web based platforms that perform crowdsourcing and open innovation for companies (OntoWiki, KiWi, Ideaconnection, Inventnow, FellowForce, OpenMoko, Chaordix, NineSigma, etc.). Diener and Piller (2009) studied these service providers and platforms for open innovation, they called open innovation accelerator intermediaries (OIA). They conclude that, referring to the open innovation methods, there are three main service approaches: managing communities (84%), providing special (social) software, or operating as an open innovation consulting agency. There can be also combinations (44% are mainly consultants and community managers) and use of tools (43% of all OIAs run competitions (mostly idea contests); nearly 34% of the accelerators apply workshops (mostly brainstorming)).

Gratis business models

The notion of innovation has changed radically. Previously, R&D was about developing the best technology and pouring large amounts of resources into long term projects in company R&D departments. But innovation today is no longer only technology based. Realizing what is important now and for the future requires that company executives adopt a different mindset. In this sense, the OECD (2009) says: "What is new is that more and more companies are reacting to the changing conditions for business and are beginning to innovate in new ways. In other words, they are changing their strategies and business models." A big challenge for companies is therefore represented by the new business models emerging from the web and based on the "gratis philosophy", the *gratis business models*. The *Open Enterprises* are the companies that use or base on open software and open hardware web platforms to foster innovation offering tools, ideas and services *for free* and encourage the individual involvement and collaboration among customers, companies and contributors.

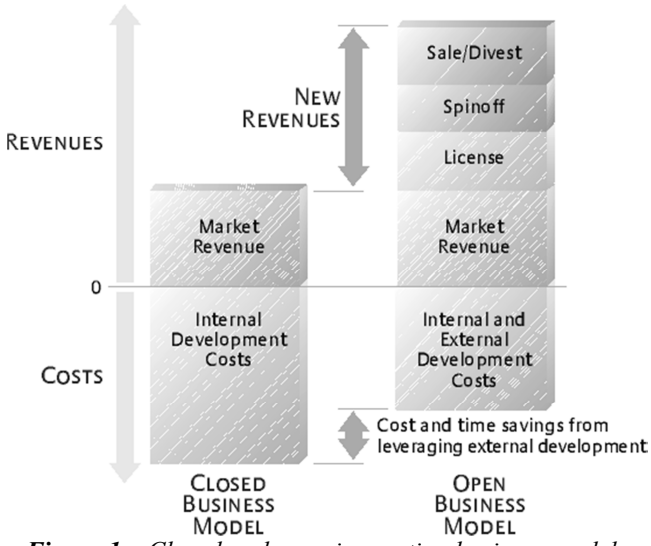


Figure 1 *– Closed and open innovation business models*

According to Chesbrough (2003), the open innovation is already based on a new business model. While the closed business model based on revenues from the market and the costs derived from internal development; the open business model both saves costs and time leveraging external development, both adds revenues coming from license, spinoff and sale/divest. (See Figure *1*)

The web scenario let emerge other business models, and especially business models based on a gratis philosophy. The most popular business model overlooking in the web scenario is the *freemium business model* (Wilson, 2006[1]), that offers for free basic or limited services and for payment advanced functionalities or extensions of the services. But other models can be adaptable can be the free business model, the premium business model and the network effect business model (Narula, 2006). In this line, we can find the work of Anderson (2009) who, distinguishing "gratis" as an economic model (in the 2000) from "gratis" as a marketing technique (in the 1900), underlined the power of this new logic.

Anderson (2009) distinguishes four models that support the offer of products and services for free (see Figure *2*):

1. *Direct Exchange*: the classic exchange between buyer and seller, when an object is gifted in exchange for a transaction connected to another one (e.g. gadget as free gift by buying another object);
2. *Two-sided market*: the classic model of advertisement, where the customer receives the service, but the platform is sponsored by advertising, as Mediaset for media and Google for internet.
3. *Freemium*: freemium (free + premium) is a business model that works by offering basic Web services, or a basic downloadable digital product, for free, while charging a premium for advanced or special features (de la Iglesia and Gayo, 2008); An early example of the freemium model working on the internet was Musicmatch Jukebox, an all-in-one music management tool that was first marketed with a freemium model in 1999: most users could use the Basic/Free version, but a $19.99 upgrade provided extra features such as

[1] "Give your service away for free, possibly ad supported but maybe not, acquire a lot of customers very efficiently through word of mouth, referral networks, organic search marketing, etc., then offer premium priced value added services or an enhanced version of your service to your customer base." (Wilson's Blog)

(super-tagging, faster ripping and burning). Now, according to the New York Times, freemium is becoming the "most popular business model among Web start-ups", and it is used on very popular sites, such as Pandora, Flickr, LinkedIn, and Skype.

4. *Not monetary marke*t: the profit for services does not correspond to money fluxes but to reputation. For example, Linux (open software) users contribute not because of money but because of ideology, Arduino (open hardware) is because of reputation (the user can be seen as an expert of electronic design and can make money by consulting).

Other models can be the cross-subsides (free services to sustain the advertising business; as for Google analytics); the labor exchange (free service because the use from the customer augment its value; as Youtube) and the zero marginal cost (free distribution cost, as for music from the web).

Moreover, Diener and Piller (2009) found five approaches for the profit model or open innovation accelerators:

- charging a product license fee;
- billing person days;
- a subscription based model;
- charging a service or success fee;
- demanding a posting fee.

Finally, the business model is clearly connected to the incentives models, which can be broadly divided into intrinsic and extrinsic (intrinsic refers to actions on personal interest and pleasure and extrinsic motivation concern actions that lead to a result) and monetary and not monetary rewards.

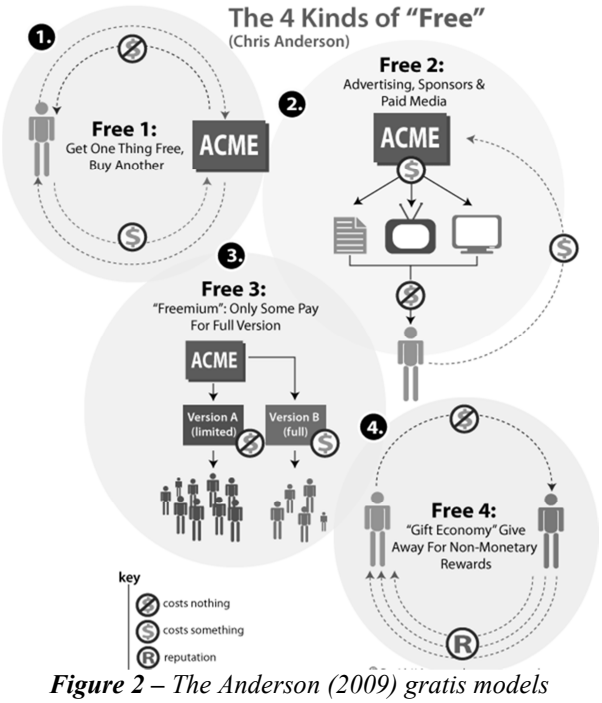


***Figure 2** – The Anderson (2009) gratis models*

RESEARCH DESIGN

Research aim

Our research would like to investigate the functioning of the Open Enterprises' business models and their contribution to traditional companies' collaboration for innovation through the following research questions:

- ***What are the Open Enterprises business models?***
- ***How do these business models of Open Enterprises work out?***
- ***What is the contribution of open enterprise platforms in the companies' collaboration for innovation?***

Research method, sample and framework of analysis

The work empirically investigates the state of the art of the Open Enterprises' business models through a taxonomy of 116 web-based platforms. We identified six areas of classification variables to characterize the OE:

1. the innovation phase;
2. the return of the user;
3. the beneficiaries;
4. the perspective of the company (the return of the company);
5. the typology of gratis;
6. the typology of product/service: final or auxiliary.

This model has been designed to identify peculiar variables to examine the website and highlight the constitutive characters, in order to give information in relationship to the business model, the gratis and the incentives.

In fact, considering the innovation as a process, the platform can be an enabler of one or more *innovation phases*, which are foresight, creativity and design that respectively have as outputs trends, concepts and designs. Moreover, the users (*beneficiaries*) of the innovation can be individuals, a single company (company initiative) or many companies. Focussing in particular to the business model, we considered both the perspective of the user and the perspective of the company. The *company return* can be money from a direct customer, from a freemium customer or from another company, or can be non monetary in reputation/attention or contribute/work from the user, while the *user return* can be money, personalization of the, IPR sharing or not monetary (reputation, ideology, etc.). Focussing on the gratis model, the gratis can be total, partial or no gratis. Finally, the gratis can be the final product/service or the auxiliary product/service (the tools).

The sample of 116 web-based platforms was selected starting from the list of the P2P foundation[2] and other lists of potential services based on open source and open innovation (open innovators list[3]). Moreover, two other criteria were used: (1) their availability in literature or in the World Wide Web and (2) the possibility to test and to evaluate them or the availability of an in-depth description of the 6 selected features. Appendix shows the list of the considered OE.

Table 1 reports the 6 classification variables grouped in four categories (innovation, user perspective, company perspective, product perspective), the characteristics and

[2] http://p2pfoundation.net/Product_Hacking
[3] http://www.openinnovators.net/list-open-innovation-crowdsourcing-examples/

the result in terms of number and percentages of software which have those characteristics.

Table 1 *– Framework of analysis*

CATEGORY	N	VARIABLE	CHARACTERISTIC	RESULT	
INNOVATION	**1**	**Innovation phase**	Trend	13	11,21%
			Concept	59	50,86%
			Design	106	91,38%
USER PERSPECTIVE	**2**	**User return**	Personalization	43	37,07%
			Money to user	43	37,07%
			IPR sharing	8	6,90%
			Not monetary	84	72,41%
	3	**Beneficiaries**	Individual	60	51,72%
			Company	40	34,48%
			Many companies	52	44,83%
COMPANY PERSPECTIVE	**4**	**Business return**	Money from customer	43	37,07%
			Other company	75	64,66%
			Reputation/attention	35	30,17%
			Contribute/Work	31	26,72%
PRODUCT PERSPECTIVE	**5**	**Gratis models**	Total gratis	60	51,72%
			Partial gratis	15	12,93%
			No gratis	41	35,34%
	6	**Final/auxiliary product**	Auxiliary	73	62,93%
			Final	2	1,72%

ANALYSIS Of OPEN ENTERPRISES' BUSINESS MODELS

As the results show, the OE are particularly focused on the design phase (91,38%), with an half of them covering also the creativity phase (50,86%), while the foresight phase remain quite underdeveloped (11,21%).

From a user perspective, there is a tendency to contribute also for non monetary rewards (72,41%), or anyway to immediately materialize with personalized purchases (37,07%) or money offers (37,07%) than recognise legal rights with long term profits (6,90%).

From a company perspective, the model used can be the freemium model or the money from direct customer. The freemium model presents itself as an emergent model, from elaborated data results a percentage of freemium (6,03%) lower than the old model of direct customer (31,03%). The company in fact prefers to monetize, or from the direct customer, or from another company (64,66%), as in the two-sided market that affirms as the most important model in the Internet. Finally, also reputation and contribute have high percentages (30,17% and 26,72% respectively), but they are often not alone, but a combination of not monetary rewards and monetary ones.

As regards the gratis model, the "total gratis" (51,72%) has an important impact in the definition of a business strategy parallel to the not-gratis model (35,34%). But, considering a two-dimensional analysis of gratis model and final/auxiliary

product/service (Table 2), it can be shown that there are few cases of total gratis final product/service (1,72%) and the majority is a total gratis auxiliary product/service (50,00%).

Table 2 *– Gratis model and final/auxiliary product/service*

		PRODUCT/SERVICE		
		Final	Auxiliary	Absent
FREE PRODUCT AND/OR TOOL	Total	1,72%	50,00%	35,34%
	Partial	0,00%	12,93%	
	Absent			

For the three-dimensional analysis (see Figure 3), we considered the three axes composed by:

1. Gratis model for product/service and/or tool
2. User return
3. Company return

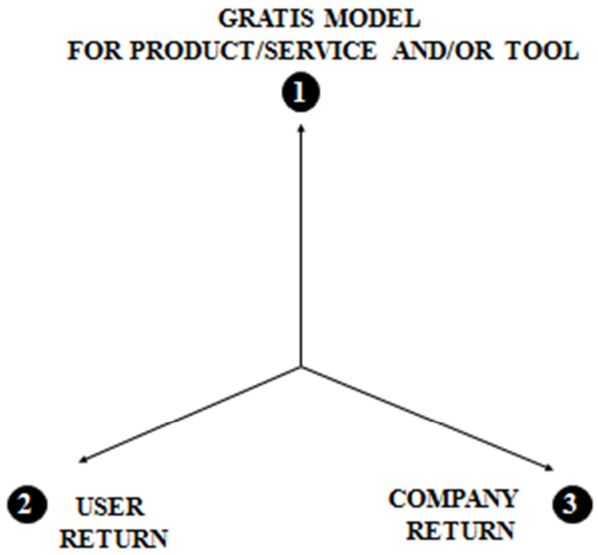


Figure 3 *– Framework of analysis*

The case where there is no product/service or tool (35,34%) refers to the communities. The case when the product/service and the tools are both for free is really rare: only two sites fulfill these requirements: Wikipedia and Linux. Both are OE where the product/service (in the first one the knowledge and in the second the software) are for free, and also the tools to realize them are open. In both the cases, the OE use the mechanism of financing from other companies (donations to Wikipedia) and Linux uses also the mechanism of reputation (Linux software is well known, and the company can gain money by consulting or particular features of the software).

The majority of the cases finds itself in the area where the user pays for the product but not for the auxiliary tool (50,00%). In this case, many of the results are in reality combinations of different business models. For example, the company return coming from another company and the personalization (8,62%) is often combined with

reputation, or the money from direct customer is often combined with both personalization and no monetary reward as reputation or social motivations (10,34%) or with directly paying the user (3,45%). The no monetary rewards for user are particularly important in this case.

Finally, there is also the possibility to have a freemium tool (some basic features are for free but then the user has to pay for a premium version).

Table 3 – *Three-dimensional analysis*

a - GRATIS PRODUCT AND GRATIS TOOL

GRATIS PRODUCT AND GRATIS TOOL		**USER RETURN**				1,72%	2
		Personalization	Money to user	IPR sharing	No monetary		
COMPANY RETURN	Money from customer						
	Other company				1,72%		
	Reputation/attention				0,86%		
	Contribute/Work						

b - PAY-PRODUCT AND GRATIS TOOL

PAY-PRODUCT AND GRATIS TOOL		**USER RETURN**				50,00%	58
		Personalization	Monetary reward	IPR sharing	No monetary reward		
COMPANY RETURN	Money from customer (direct)	24,14%	3,45%		24,14%		
	Other company	8,62%	4,31%	1,72%	18,97%		
	Reputation/attention	6,03%	0,86%	1,72%	23,28%		
	Contribute/Work	5,17%	0,86%	0,86%	21,55%		

c - FREEMIUM TOOL

FREEMIUM TOOL		**USER RETURN**				12,93%	15
		Personalization	Money to user	IPR sharing	No monetary		
COMPANY RETURN	Money from customer (premium)	6,03%		0,86%	5,17%		
	Other company	1,72%	4,31%	2,59%	6,03%		
	Reputation/attention	2,59%		0,86%	2,59%		
	Contribute/Work	0,86%		1,72%	0,86%		

The considered OEs do not base their strategy on the contemporary use of totally gratis or partially gratis final products with the possibility of an auxiliary gratis service/product in the various innovation phases. There are the possibilities of paying a product and having the tool for free, and the possibility that the tool is itself a freemium product, all these possibilities can be obtained by mixing precise business models.

There are two atypical cases: Linux and Wikipedia, that give both the product and the tool for free. These two models exploit at most the characteristics of the wiki platform, combined with a model of total gratis (total free of charge) both in the final product assigned to user both in the support (auxiliary) product.

DISCUSSION

Basing on literature and 116 web-platforms scanning and empirical analysis, we developed a theoretical framework which offers a systematization of the key building blocks of the Open Enterprise business models (innovation perspective, user perspective, company perspective, product perspective). This work propose a systematization of the emerging gratis web-based business models by proposing a general and unique framework, marking each business model by its main characteristics, advantages and disadvantages and supplying a scheme of its business dynamics.

- The analysis shows the emergence of business models connected to the transfer of products/services in a total or partial gratis way to customers or companies, which successively will use hardware and software in an upgraded pay version (freemium model). Anyhow, the classical model of the internet (the two-sided market) still remains the most popular one.
- If we consider the personalization of a product by the user, the company normally gives for free the auxiliary tool in order to sell to the user a personalised final product.
- There is a strong emergence of a business area connected to the increase of reputation/attention and to the contribute for a cause or for a specific theme, in order to promote it to as many people as possible using the NPD phases.
- From the other side, the no monetary reward for user becomes more and more a strategy for the company to attract people that freely share ideas and contribute to the OE.
- As regards the clusters referred to the gratis model, the absence of tools is connected to the Intermediary Platforms (24,39%), Innovation Services or Platforms for entrepreneurs (7,32%) and Freelance platforms or Product Design (12,20%).
- The open hardware combines the gratis models in the NPD phase with the wiki platform (e.g. Arduino) but gives for free only the design for example, and not the total product. In this way, the final product is a value added in terms of
- The combination of “gratis” models and the characters of the wiki platform, finalised to the creation, codification and sharing of knowledge in a collaborative way, conducts to contradictions on the effective economic return (Linux model and Wikipedia model).

In general, the entire market is still under development and far away from being consolidated. The future will show which OIA has the right business model and successful projects to survive on that market. In line with Diener and Piller (2009) the market of intermediaries for open innovation is rather young. More than 80% of the OIAs have been founded later than 2000. Today, new providers of open innovation methods and services are constantly emerging. Others are going out of business at the same time. Some fields, like offering brainstorming platforms and access to user communities, are highly competitive. There are a few already well established accelerators like Hyve, Idea Crossing, InnoCentive, Nine Sigma, Your Encore, Yet2.com.

As regards innovation, their main characteristics, advantages/disadvantages in terms of contribution in the companies’ collaboration for innovation is strictly connected with the typology of platform and the product/service offered.

- The only “gratis product and gratis tool” model examples are connected to *Peer Production* OE, Linux and Wikipedia.
- The *Open CPU*, the *Open graphics card*, the *Open electronics part and components*, the *Open wireless hardware* use both a combination of “pay-product and gratis tool” model and “freemium tool” model.
- The *Open Design with CPU,* the *Open computers*, the *Open telephones,* the *Open Agriculture and Energy,* the *Building and Housing, Furniture,* the *Entertainment, Fashion, Leisure and Learning,* the *Open Food,* the *Open Health,* the *Open Mobility, the Open Production,* the *Creative platforms* use only the “pay-product and gratis tool” model.
- The *Intermediary Platforms*, the *Innovation Services*, the *Platforms for entrepreneurs,* the *Product Ideas* and the *Consortium* use the “freemium tool” model combined with “no tool” model, while there is no “freemium tool” model alone.

CONCLUSIONS

The present work clarifies the context of open innovation with gratis contributes and the landscape of the actual and emergent business models. The empirical analysis of 116 OE highlighted the existence of many and different gratis business models, deeply connected to the innovation focus. Moreover, the indirect revenues system and the non monetary market (the gratis model) based on users’ and companies’ reputation result as key drivers for open enterprises’ business modelling and for an effective promotion of a long-term and innovation-oriented strategic cooperation.

The four Anderson (2009)’s business models are not able to explain the phenomenon of the web-based innovation with business models based on gratis final product/service or auxiliary tools. The actors of the gratis web-based innovation can be:

- open enterprise (OE)
- stakeholders / other companies (S)
- user innovator (UI)
- customer (C)
- premium customer (P)

and the possible fluxes are:

- product (PR)
- tools (T)
- money (€)
- reputation (R) (and no monetary reward in general – as ideology, creativity, knowledge sharing, etc.)
- contribute/work (W)
- intellectual property right sharing (IPR)

Starting from a *product perspective*, there are four main perspectives on gratis business models:

1. “gratis product and gratis tool” model;
2. “pay-product and gratis tool” model;
3. “freemium tool” model;

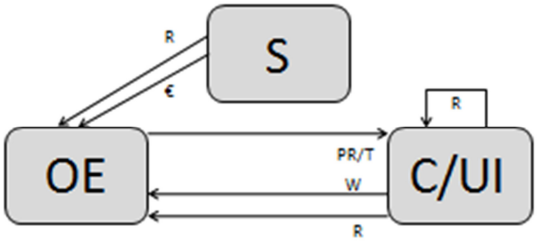
4. “no tool” model.

These can be connected to the *user perspective* and the *company perspective*. In this line, the identified business models are shown in Figure :

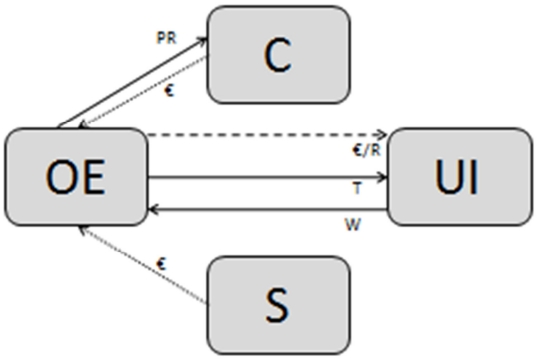
- FREE 1: total gratis;
- FREE 2: free tool and product for payment with money and reputation to user innovator;
- FREE 3: free tool and product for payment with IPR sharing and reputation and contribute;
- FREE 4: freemium model with money and reputation to user innovator;
- FREE 5: freemium model with IPR sharing and reputation and contribute.

Figure 4 – *The five gratis business models*

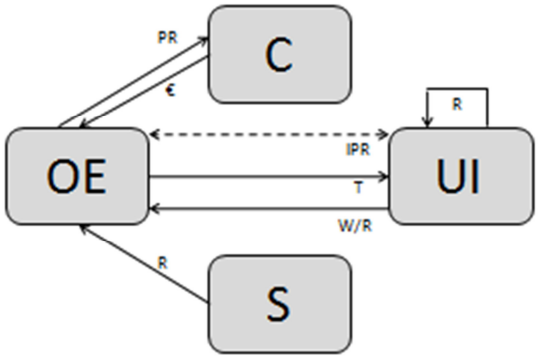
a - FREE 1 gratis product and gratis tool (see Table 3.a)



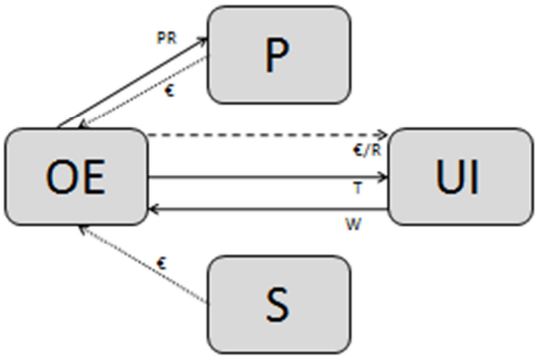
b – FREE 2 Pay-product and gratis tool and reputation (see Table 3.b)



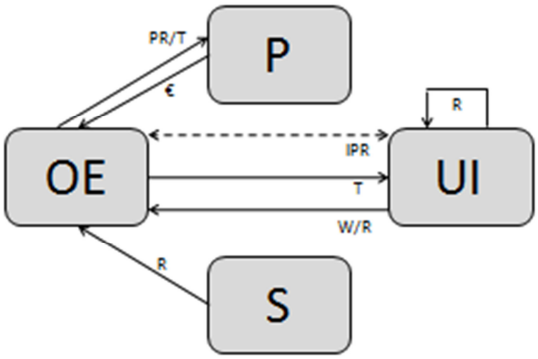
c – FREE 3 Pay-product and gratis tool and IPR sharing (see Table 3.b)



d – FREE 4 Freemium tool and reputation (see Table 3.c)



e – FREE 5 Freemium tool and IPR sharing (see Table 3.c)



Effective business modelling are challenging to develop, and specifically referring to innovation a "right" design can foster innovation. The right degree is not absolute, but is linked to the specific typology of OE and product.

Moreover, the open and gratis business models for web-based innovation platforms (Open Enterprises) emerge from 2000 and are more and more diffusing, changing the Internet competition, still based on the two-sided market but the freemium model is a rising business model.

In the cases of open and gratis business models, beside gratis, innovation can be fostered by reputation (approaches *a*, *b* and *d*) or IPR sharing (approaches *c* and *e*). The first approach (FREE 1) is clearly the total case of gratis (both for product and tool), fostered by non monetary rewards (reputation and ideology in Linux case and knowledge sharing in Wikipedia case) but is a really difficult business model to build and let emerge, because it needs a critical mass to be diffused, and especially is strongly connected with an immaterial product or "bits product" (i.e. knowledge or software). Taking the open view of the business model requires a different view toward IP. IPR sharing can play an important role in the development of an effective business model too (FREE 3 and 5). The user innovator can be encouraged to participate in the innovation project, but the main disadvantage in this line is that IPR is not enough: there is always a combination of IPR sharing and money rewarding coming from direct customers. Finally, another important mechanism behind gratis business model is reputation and in general not monetary rewarding. As in FREE 2 and 4, the user innovator is sometimes paid directly with money, but the most effective platforms[4] are the ones driven by reputation, because the user innovator is driven to participate freely to innovation activities in order to contribute creatively

[4] We used a proxy with measures of traffic ranking (Alexa Traffic rank), Sites Linking in and Pageview/User.

and to increase the knowledge of his innovation abilities and competences from the community itself.

Searching for external contributes for innovation is a complex task and requires new processes and models in order to succeed. In the open innovation context, the gratis business model can drive the search for innovation activities for Open Enterprises: when ideas and innovations connect directly to company's business model, they create additional power and leverage for the other parts of strategy. It is early to speak about "best practices", but a map can help in understanding how the companies are experimenting how best serve this new market area. Five gratis business models can be identified, where the elements like gratis, IPR sharing and reputation are the key points to attract sources of ideas (user innovators), favour collaboration and contamination and permit to turn ideas into value.

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APPENDIX

1	**Open CPU**	Gumstix
2		Open SPARC
3		opencores
4		Coreboot
5	**Design that include a CPU**	Arduino
6		SquidBee
7		BalloonBoard
8		Plaice
9		ASoC
10	**Graphics card**	Open Graphics Project
11		Project VGA
12	**Other elettronics part and components**	Ethernut
13		Etherrape
14		ExpressPCB
15		Free IO
16		Manticore
17		Octopus USB
18	**Open computers**	ECB ATmega32/644
19		OLPC XO-1
20		Open OEM
21		Simputer
22		Via OpenBook
23	**Open telephones**	Free Telephony Project
24		Maemo
25		Open Handset Alliance
26		Open Moko
27	**Open wireless hardware**	Open Router
28		Sun SPOT
29	**Agriculture, Development, Energy, Environment, and Sustainability**	AKVO
30		Build-It-Solar
31		Canuckle
32		OSCirrus
33		SHPEGS Open Energy Project
34	**Building and Housing, Furniture**	Grid Beam Building System
35		Movisi Open Design Furniture
36		Open Architecture Network
37	**Entertainment, Fashion, Leisure and Learning**	Aibo Hack
38		Niketalk
39		PlaymoBeach
40		Lego Factory
41		Pleo
42		Ravelry
43		Zero Prestige
44		Zoybar
45	**Food**	CandyFab Project
46	**Health**	BioBricks
47		OpenStim
48		Open Prosthetics Project
49	**Mobility: Vehicles**	DIY Drones
50		EDAG Open Source Light Car
51		Microkopter
52		Open Source Green Vehicle
53		Sahkoautot
54	**Production**	Multimachine
55		Ronen Kadushin Open Design
56	**Intermediary Platforms**	Innocentive
57		sourceforge
58		TekScout

59		99design
60		Inventnow.org
61		Ideastorm
62		Kluster
63		Zooppa
64		Fellowforce
65		IdeaConnection
66		Yet2.com
67		IdeaMagnet
68		Ninesigma
69		Innovation Exchange
70	**Innovation Services**	Big Idea Group
71		spigit Enterprise
72		Idea Crossing
73		Sense Worldwide
74		Pharmalicensing
75		HumanGrid
76	**Platforms for entrepreneurs**	CambrianHouse
77		Incuby
78		Ideawicket
79		WhyNot -
80	**Freelance platforms**	odesk
81		elance
82		Guru
83		Ki Work
84		Amazon Mechanical Turk -
85	**Creative**	Spreadshirt
86		Threadless
87		cafepress
88		Ponoko
89		zazzle
90		Sellaband
91		Artistshare
92		TopCoder
93		IStockPhoto
94	**P2P Crowdsourcing Platforms**	BrainReactions
95	**Product Ideas**	P&G connect&develop
96		Hyve
97	**Branding**	Spreadshirt Logo Design Contest
98	**Product Design**	Peugeot
99		Nespresso
100		Muji -
101		mycustomer
102		Fluevog
103	**Peer Production**	CrowdSpirit
104		Linux
105		Wikipedia
106	**Universities**	iBridge Network
107		Science Commons
108	**Miscellaneous**	Eureke medical -
109		Picnic Green Challenge
110	**Consortium**	Metaforesight
111		IBM Microelectronic
112		Bluetooth Consortium
113	**Elite circle**	Ideo Design Community
114		Alessi design community
115		Brainstore
116		Veel Design