

Digital Innovation in the Job Market: An Explorative Study on Cloud Working Platforms

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Abstract The evolution of the web has produced a broad change in partnerships and collaboration worldwide due to the centrality of internet, a virtual place where actors from different countries can easily meet and exchange information. This new agency model represents the basis for the development of a new entrepreneurial organization where companies can redefine their idea of business in order to make the web instrumental in the creation of a global social network of actors. This model of cooperation is now possible thanks to the creation of the new cloud working platforms that have brought about a revolution in the job market. Main objective of the present work is therefore 1. to analyze and compare, on one hand, three main communities of crowdsourcing (Knowledge or Gig economy) in order to show such evolution, and on the other; 2. to analyze and compare the main platforms of cooperation at distance, in order to identify critical success factors.

Keywords Crowdsourcing · Cloud working · Social network

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1 Introduction

The advent of the digital era 2.0 has introduced many new professional profiles offering the young new job opportunities as for freelancers and company employees (i.e. Community Manager, Search engine optimizer and Web Analyst) [1–3].

The opportunity to be freelancers can be enhanced by the growth of online collaboration portals that are becoming the most peculiar feature of the new economy. Within this frame the above mentioned professional profiles are requested [4, 5].

The essence of the new virtual economy highlights that the evolution of the present social and economical structure is related not only to technology, in the strict sense, but to the way it is being used today [6, 7].

This form of collaborative activity is named to as crowdsourcing and represents a new model of open enterprise, a new way of doing business based on the collaboration with external resources recruited on-line with the help of global communication practices and tools [8–13]. The first definition is ascribable to Howe [14] who defines crowdsourcing as “the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call” [2].

Furthermore, Brabham [15] points out at its peculiarities and defines it as an “online, distributed problem solving and production model” and leverages online networks to: (1) gather information; (2) distribute large-scale tasks that are easier for humans rather than machines to process (e.g. analyzing photos); or (3) solicit ideas or solutions to existing problems as a challenge that can also be vetted by peers.”

In crowdsourcing the companies can externalize their activities to exponentially high number of potential partners by the means of “open calls” [16, 17]. The resulting intellectual capital is formed by the meeting of the actors’ skills working together in order to finalize a common project [8, 10, 18, 19].

Presently, crowdsourcing is used as an umbrella term and refers to a form of collaborative work and sharing of knowledge and ideas via web platforms. The ad hoc development of new digital communities represent a new opportunity for those companies willing to develop their projects, where the best ideas proposed, via open calls, become projects, for the implementation of the company business [20, 21].

The most recent progress of the market and of the career on on-line platforms and websites have lead to consider cloud working as a new trend representing an outstanding opportunity to find, among the web collaborators the perfect profile in a due time, reaching professionals with the most needed skills and knowledge, on-demand, avoiding endless research and unsatisfying results.

By the end of 2014 at least 30 workers, out of a hundred, will be working online while 9 companies out of ten will use these on-line platforms to develop and finalize their projects. Evidence of this is offered by the main operators of the field (Odesk) that have investigated the outburst of distance working: 56 % of the new generation of workers has, in fact, expressed a preference for this accepted way of working at distance, the 87 % is willing to work without hour restrictions.

It is a key question then to understand “how” and “why” the most important communities of crowdsourcing are influencing, with their cloud working practices, recruitment strategies to employ the most qualified profiles.

The increasing interest in the literature concerning the subject is not yet exhaustive about managerial strategic aspects of the new phenomenon [22–24]. It is a fact though that the new dynamics of the job market reveal their relevance and centrality in the numberless experiences, on a global scale, relating to the creation of collaborative platforms offering services in the job market, the most successful of which are obviously located in the United States.

In Europe this new phenomenon encounters many difficulties not only because of the different structure of the job market, but also because this recruitment practice is still only intended to work as a simple notice board. It seems necessary then a change of direction, first creating focused studies (literature), so clearly pinpoint the good practices already adopted, and highlight the potentiality and the probability of success prior to the planning of new useful models, so to help professionals to meet the companies needs in cloudworking. According to this perspective, then, the comparison between the most influential platforms represents then a new opportunity.

2 Methodology

Main aim of the present paper describes and discuss the most recent evolutions of crowdsourcing as a management tool for sharing knowledge through the use of dedicated platforms.

Our investigation focuses on the strategic areas of the placement: the publication of profiles, application procedures and payments.

It adopts a qualitative research method approach based on the case study protocol defined by Yin [25].

It represents an exploratory study based on the documentary analysis [26, 27]. In particular, it is aimed at a critical reconnaissance survey of the potentialities offered by cloud working and by the new web community of professionals.

In the final part of the present work, a multiple comparison between the main platforms offering this service is presented.

The platforms considered been selected according to parameters concerning the number of users and sales volume, that in the context of gig economy offer companies and professionals advanced services for a possible collaboration in real time at larger scale. Previous studies [28, 29] and personal experiences complete our survey.

The output of the survey represent a starting point, and possibly the guidelines, for further investigations on crowd working, for political leaders and for all the users of the web that will use electronic resources.

3 Analysis of the Main Types of Crowdsourcing

The main categories of crowdsourcing are determined according to problem solving approaches, classified in the literature as “discovery and management of knowledge”.

The premise of this category is that the heritage of knowledge necessary to users (organization or enterprise) exists but is not organized according to specific needs. So an efficient research within an online, well-organized community, can transform it into an available resource. The crowd environment stimulates, by consequence, the on line community to discover new ideas necessary to the companies to implement their projects and business activity.

The difference between this type of crowdsourcing and the so called “common-based peer production”, gathering together denominators of specific contents (the most famous example is Wikipedia), is that in this type of platforms information is filtered upstream by the organization managing the platform.

A good example is represented by the master plan Peer-to-Patent Community Patent Review [30] realized by the American USPTO and the New York Faculty of Law. Its goal was to implement the visibility of the state of the art report on knowledge “prior art”, instrumental in the recognition of the originality of the invention. Basically, the patents of the organizations involved in the online collaboration were posted online along with other users conducting pre-patent activities to acknowledge the existence of similar inventions in industrial sectors of interest.

Broadcast search is a type of crowdsourcing where information shared by the online community is oriented towards specific problem solving activity. The supply and demand of specific profiles are conducted within the online community where the enterprises require services, as for example the development of the design of new products related to the activity of discovery, such as new chemical formulas. The peculiarity of this type of on-line working environment is represented by the search of knowledge instrumental in solving specific problems. One pitfall here can be represented by the complex nature of a problem that makes the solving problematic.

The Peer-Vetted Creative Production type allows to share information in a working environment where the idea, the solution or the innovative product are popularized among a large audience of users operating simultaneously. Accordingly, the best solution is usually the most widely appreciated. By consequence, a validation process positively informs the new market strategies also taking into account the users' need.

One huge problem for the companies is represented by the management of the increasing overall volume of data. The growth of the number of crowd platforms, identified as Distributed Human Intelligence Tasking type, offers a paid service for the management of small volumes of data. The research helps the companies in the gathering and selection of knowledge so to split the problem in less complex units resulting in more manageable information on the part of the crowd. The most

Table 1 Main types of crowdsourcing (*Soruce* Our elaboration)

Type	Description	Reference
Knowledge discovery and management	Organization of tasks in crowd, through gathering of information in common formats and baskets	Peer-to-Patent— peertopatent.org
		SeeClickFix— seeclickfix.com
		Mobile: Ushahidi (alert of international crisis)
		Mobile: (alert) Peer water exchange peerwater.org
		Mobile: mCollect (alert on prices)
Broadcast search	Organization of tasks in crowd: topic problems	InnoCentive— innocentive.com
		Goldcorp challenge
Peer-vetted creative production	Organization of tasks in crowd: creation and selection of information	Threadless—threadless.com
		Doritos crash the super bowl contest crashthesuperbowl.com
		Next stop design— nextstopdesign.com
Distributed human intelligence tasking	Organization of tasks in crowd: analysis large volumes of data	Amazon mechanical turk—mturk.com
		Subvert and profit— subvertandprofit.com
		Mobile: text eagle (microtasks)

widely known example is offered here by Amazon Mechanical Turk and its mobile version, Text Eagle, where softwares are tested, browsers are tagged, and simulation tests for web activities are presented (for online videogames etc.) (Table 1).

3.1 Cloud Working

Communities of cloud working enable the enterprises to employ the most qualified profiles according to their own needs and requirements, and to establish a collaboration without meeting physically and avoiding a long-term commitment.

The basic operating principle of cloud working comes from the e-commerce with the difference that while in the e-commerce users can shop on line, cloud working users can, instead, offer and exchange knowledge and ideas. All that results in a new flexible form of job on demand (Table 2).

Table 2 Comparison between E-commerce and cloud working (*Source* Our elaboration)

	Step 1	Step 2	Step 3
E-Commerce	Search	Select	Pay
Cloud working	Employ	Check	Pay

Table 3 Main crowdsourcing platforms

Platform	Description
Odesk Inc.	American Limited liability company established in 2005, with legal residence in Redwood City, California
Elanca Inc.	American Limited liability company established in 1998, with legal seat in Montain View, California. Initially developed as a technology for supporting virtual work, in 2006 sold its enterprise software division and has developed instead its current web-based platform online
Freelancer Ltd.	Australian Limited company established in 2009. It has acquired several online job companies over the years (GetAFreelancer in 2009, EuFreelance in 2009, Freemarket in 2010, LimeExchange in 2010, Freelancer.de in 2011, Scriptlance in 2012, vWorker in 2012, Zlecenia.przez.net in 2014 e Warrior forum in 2014) becoming the largest crowdsourcing and outsourcing online company

The largest platform in Europe is Twago (Team Work Across Global Offices) established in Germany in 2009 (www.Twago.com). Notwithstanding the fact that it is the largest platform of European crowdsourcing, it has not so far obtained the expected results that would enable it to compete with the other communities in this field.

The cloud working platforms we are considering in the present discussion are summarized in Table 3. In particular, Odesk and Elance will be analyzed separately, ignoring their recent merger, because they maintain separate web domains.

Data available on web platforms show the number of users and of published projects in 2013. While Elance also shows the total amount of projects published since the very start of the company, Freelance only shows the number of projects (competitions included) published in the portal.

All data are reproduced and compared in Table 4.

Data show that the largest platform, Freelancer, although established later than its two main competitors, has acquired several companies, as mentioned above, that have contributed to the enlargement of the present platform.

Table 4 Comparison between the dimension of Odesk, Elance and Freelancers (*Source* Our elaboration)

	Odesk	Elance	Freelancer
Nr. of freelancers	5 millions	3 millions	10.9 millions
Nr. of clients	1 million	1.8 millions	
Nr. of published projects	1.3 millions in 2013	1,214 millions in 2013 4 millions in total	5 millions in total ^a

^aData referred to Freelancer Ltd. result from the total of acquired platforms

Table 5 Strategies of freelancers and companies (*Source* Our elaboration)

Freelancers	Companies
<p>Publish profile Freelancers register and publish their profiles. In it they describe their specific knowledge, their work experience and establish their own work hours and wage. The web site also proposes some tests proving the qualification of applicants that also less experienced freelancers can show their technical skills to the companies offering the post</p>	<p>Publish a project Companies publish their offers (development of a software, writing of an article, design of a logo, etc....) indicating the task, the required skills, workhours and maximum wage</p>
<p>Candidacy in cloud working The platform offers the freelancers the possibility to search among many proposals and opt for the most convenient offer according to their own skills. Freelancers can also be selected and employed directly by the clients</p>	<p>Employ a freelancer Several professionals apply and the company, after a careful selection of profiles, decides for a web interview</p>
<p>Payment The employee is paid when the work is done</p>	<p>Monitoring Activity An employee monitoring software is used to check the progress of the activity This monitoring software proves with screenshots if the work is being done</p>
	<p>Pay the Freelancer Payment is done at the time of delivery Employers can also give their feedback about the work and the professional activity</p>

These platforms have a social character and are structured as communities where users, professionals or companies, register and collaborate. The main actions carried out by freelancers and companies are synthesized in Table 5.

Internal reports show that the most required knowledge in this market refer to business planning (40 %), 1. for example the development of apps for smartphones and tablets, for the web and of special software for the companies; 2. Design and multimedia (44 %); 3. Marketing and e-commerce and technical support for the administration (70 %); 4. Writing and translation (66 %). Other required profiles are: legal and financial consultants and engineers.

Another phenomenon to put into evidence is that 90 % of the cost for the employment of freelancers is increased from 4 categories, with specific informatic skills, to the present 35 categories. These data bears testimony to the transdisciplinary trend of the last 5 years, also involving fields traditionally not directly related to the ICT.

It is worth noticing that feedback represents a key element in the building of the reputation of a freelancer. In so far that, it has a huge impact on his/her evaluation and on the employer. In order to increase the level of communication of the quality of the activities Freelancer.com presents a dedicated section to launch contests with

Table 6 Comparison between Odesk, Elance and Freelancer commissions (Source Our elaboration)

Odesk	Elance	Freelancer		
10 %	8.75 %	Concession	Employers (%)	Freelancers (%)
		Free	3	10
		Intro	3	10
		Basic	3	10
		Plus	3	10
		Standard	0	5
		Premium	0	3

a monetary prize, where candidates make proposals and present their projects to the companies.

A commission is charged by Odesk and Elance that receive a royalty payment at fixed rate, when the project is done, whilst. Freelancer charges separately the employer and the employee (Table 6).

3.2 Volumes of Costs

The high volume of costs related to collaboration on platforms is constantly increasing. In particular, a high volume of costs has been increasing from 2009.

The volume of costs of Odesk has increased up to 9 times the original value in 2009 (“The rise of online work”, Odesk, 2013) The costs for Elance have raised from \$80 millions to \$140 millions in 2011 and gone up to \$290 millions in 2013 (elance.com). Freelancers had 500 projects published in November 2009 and 5 millions in 2013. This generated a total cost of 15 billion dollars (freelancer.com) though all freelancers data result from the total of all acquired platforms. It is difficult therefore to estimate the real volume of projects published on the web. The volume of total costs since the start of the activity are included and compared in Table 7.

Within a market that only in 2012 generated a volume of costs of one billion dollars, for which the analysts of Staffing Industry estimate a volume of costs of 5 billion dollars in 2018 [31–34], data show that the three platforms together have contributed with 3.5 billions dollars. Freelancer publishes its yearly results where the EBITDA (Earnings before interest, taxes, depreciation and amortization) is of \$1.2 millions in 2013 and of \$0.8 millions in 2012. The final growth has then been of 53 % between 2012 and 2013 [35].

Table 7 Comparison of amount of costs of Odesk, Elance e Freelancer (Source Our elaboration)

	Odesk	Elance	Freelancer
Total volume of costs	\$1+ billions	\$1+ billion	\$1.5 billions

4 Discussion and Conclusions

Clowdworking offers the employers an opportunity to externalize their activities via web and represents for the employees the chance to manage their working life.

In the US this phenomenon is rapidly growing, on the contrary, in Europe the spreading of this model of cloud working is still delayed by the difficult process of digitalization around the continent, as demonstrated by the volume of investments. Il ritardo è dovuto alla scarsa.

The delay is due to the poor quality of the broadband connection that has revealed a different trend according to the strategies adopted by the different European countries. However, the uneven contribution of each single depends mostly on the existence of a severe and persistent discrepancy in the adoption of digital divide in the member nations [36]. Thank to the adoption of Digital Agenda in Europe, the use of internet has increased of 11 %, due to the digital development in countries with a low number of users, such as Greece, Romania, Ireland, Portugal, Czech Republic and Croatia. The most virtuous among the European countries, such as the Netherlands, Denmark, Sweden and Luxemburg, have now reached the share of 90 % in the use of the web. Besides, the share of the European population of non-users, about 20 %, is still too high. The broadband and high speed internet was in fact available for the 62 % of European users in 2013, more than double the share of 2010, notwithstanding the persistent difficulties in the rural areas of the continent [37].

Due to the recent appearance of web platforms, their present dimensions suggest that the system can easily attract, year after year, a considerable number of users and the propensity of the new generations towards this new employing model shows that in the next future all industrialized countries will benefit of the digital progress introduced.

This study contributes to the literature in two ways. On one hand, it confirms and validates the phenomenon of crowdsourcing and the present change in recruitment strategies of qualified profiles; on the other, it helps identifying the critical success factors of these platforms.

Among the key elements for the development and the affirmation of communities of cloud working we find: motivation, the element that enables a worldwide contact with users; a great investment of resources and time, necessary to support the growth of the community, and great investments on reputation, that is to encourage ethical behaviour instilling a sense of trust in the users.

As for this latest question, the perception users have of the lack of ethical behavior in ongoing business affairs, can seriously damage both the image and the work of the community, causing a possible failure of the project. This is why feedback is necessary for the improvement and success of the network.

The level of performance of a platform is also influenced by the interaction between the actors that offers the employees the chance to get a wider audience and, possibly, a better wage and, on the other, to improve their motivation. In this sense, the variables emerging concern mainly the validation process, on the part of the

companies, of skills, past experience and the level of satisfaction or feedback of the profile.

Transparency and credibility are central and instrumental in building an actor's reputation with a consequent increase of validation and wage.

Finally, cloud working, and in general terms the (Knowledge) Gig economy, represents a rapidly growing phenomenon [35, 38], an occurrence that could replace, in the short time, the traditional job market, with the only exception of those activities requiring manual work.

Future research could focus on a benchmarking study in European countries to identify the characteristics and the degree of satisfaction of the advisor to better understand social changes and future developments.

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