

Extended Abstract

THE INFLUENCE OF CROWDSOURCING IN BUSINESS DECISION-MAKING: A RISKY SHIFT?

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Objectives. *Understanding the influence of crowdsourcing in decision-making in business. For innovative companies the generation of new ideas and products is crucial for the vitality of the enterprise in today's globalized and rapid markets. In the past businesses creativity has been outsourced (especially in advertising), but it has always been controlled by the management. With digital crowdsourcing platforms, also the control is completely outsourced. We want to investigate if this lack of control affects the decision making process.*

Methodology. *We start with the definition of crowdsourcing and its utilizations in business. We then use the Herbert A. Simon paradigm for decision making (intelligence > design > choice) to understand how the process changes with the implementation of crowdsourcing as a method. We conducted a series of interviews to the Ceo of the company object of the study, transcribed the text and analyzed it from a narrative perspective.*

Crowdsourcing is a method used to distribute work to a large number of workers also called 'the crowd'. Among the various use of crowdsourcing, we are interested in the analysis of crowdsourcing as a business tool to co-create designs and other projects and the involvement of the crowdsourcing process in decision-making.

In business, crowdsourcing is thus a new open innovative model that is not confined to acquiring knowledge, but it is reaching other significant areas of the organization, such as the decision making process. In this research we want to stress the fact that the crowd (made of unknown and often unprofessional individuals) participate indirectly but actively in the decision-making process.

In a globalized and increasingly competitive market, companies need more ideas 'out of the box'. This is why a method such as crowdsourcing easily answers to these needs and problems. The attention gained by this method is broadly used both by large corporations and small and medium enterprises (SMEs). Crowdsourcing is not a new method. In the past, companies used it for completing various tasks and solve problems, especially internally. Externally, companies used to outsource. But crowdsourcing is different. Thanks to the internet, crowdsourcing has become an efficient way of collecting alternative solutions to problems. Digital platforms allow firms to easily and rapidly make a call and request ideas. The most famous platforms contain today thousands of applications by designers and engineers all over the world. This practice changed the way companies generate new ideas for products and services. More and more enterprises decide to trust unknown and sometimes unprofessional designers rather than known and professional designers with whom they have worked with in the past. This radical shift to the crowd changed inevitably the decision making process. We are interested in the way the process of decision making changes with the incorporation of practices of crowdsourcing. In this extended abstract we analyze a specific case: the creation of the new Coca-Cola aluminium bottle for Autogrill, an Italian company in the food and beverage market, by Elite, a SME based in Italy. A mix methodology has been utilized: the results come from 3 different interviews with Giulio Bertolo, the CEO of the company and a questionnaire with 18 questions.

Elite is a SME based in Italy working in the cycling industry since 1979. Elite employees 51 workers, 15 of which are engineers working in the R&D department showing the vocation of the company for innovation. Every year Elite creates and sell around 15 new products from bottles to bike holders for cars to indoor machines for the cycling training. A part from the cycling industry, the business also works in the Promotion sector, selling one single product to one single client: Autogrill, a food and beverage Italian company listed on the stock exchange market. Elite produces every year from 500.000 to 1 million Coca-Cola branded bottles for the client Autogrill. Since 2004, starting from Easter until the end of the summer, Autogrill promotes the selling of Coca-Cola drinks with an aluminium Coca-Cola branded bottle consumer can re-use to drink. Every year Autogrill makes a contest for chosen companies to send ideas to produce the bottle. Since 2007 Elite wins the contest every year. Elite has always created designs and ideas internally thanks to the R&D department. After 10 years, in 2017 Elite decided to 'shift to the crowd' and make an online competition for the production of the Coca-Cola promotion bottle for the client Autogrill through an italian crowdsourcing digital platform, desall.com. Elite uploaded the request on the crowdsourcing platform and received 463 ideas in 6 months (14 April 2017 - 15 September 2017). Then evaluated them and chose the 12 best ideas to propose to the client. Finally Elite won the contest and started the production of the Coca-Cola bottle created externally in crowdsourcing. We want to analyze the motives behind this managerial choice of shifting to the crowd and how it affected the decision making process of a SME company that relies on the internal R&D department for the creation of new products and services.

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Crowdsourcing is a method dealing with the process of outsourcing work and seeking ideas to an extend and usually unknown group of people also defined as the Crowd. This group of workers are usually external to the organization. The first to use the term crowdsourcing has been Jeff Howe (2006) on an article published in Wired magazine. He defined it as the “function once performed by employees and outsourcing it to an undefined ... network of people in the form of an open call”. Crowdsourcing is a concept related to other key ideas. We will describe them briefly to define the phenomenon. Open innovation: companies can and should use external ideas in addition to internal ones to facilitate innovation, share risks and improve productivity and competitiveness (Chesbrough, 2011). Co-creation: the joint effort of producers and consumers aiming at developing new products and services (Prahalad, Ramaswamy, 2000). Collective intelligence: how the wisdom of the crowd can increase innovation (Surowiecki, 2004). User innovation: individual users and consumer users innovating to make products they want without manufacturer or producer assistance (Von Hippel, 2005). Open source: crowdsourcing is an application of the open source principles: users freely access, use, modify and redistribute software products and their source code under a public license. In this extended abstract we deal specifically with the co-creation process and the change of decision making in business.

In the last years online crowdsourcing has gained a lot of interest in management literature as a tool to solve problems and complete tasks companies find difficult to cope with due to high competition, quick changes and new needs in the markets. But this specific method is not new in business. In the past companies has run competitions to “engage end users to contribute towards certain enterprise functions, such as advertising campaigns design and specific problem resolution challenges”. Enterprises also use crowdsourcing “to access scalable workforce online”. (Vukovic, 2009).

Recent literature shows how crowdsourcing can become an effective tool for enterprises to improve the performance by opening their business models. In doing so, the R&D costs are reduce by the incorporation of external knowledge. Defining open innovation business models, Henry Chesbrough (et al. 2006) focuses on the difference between value creation and value capture: “A business model defines a series of activities that will yield a new product or service in such a way that there is net value created throughout the various activities. Second it captures values from a proportion of those activities for the firm developing the model”. We are interested in this specific difference because crowdsourcing platforms allow to overcome this critical limit of open innovation business models: the platform we analyzed (desall.com) in this research allows only the “winner” of the competition to obtain a financial gain. This model also has a specific and practical implication for the actors who participate to the competition: the entrepreneurial risk relies more on the participants than on the enterprise. The tension (Bonaccorsi et al. 2006) created by the spread between value creation and value captures is thus dissolved. We wanted to stress on this matter because it defines the specificity of crowdsourcing as a particular and very efficient tool for open innovation.

The crowdsourcing platform is a website that allows on one side the Requestor to submit a specific request for a new design or idea and on the other side to the Provider to participate to a competition. The process is the following: the Requestor submits a task request (with a so-called ‘brief’, a word coming from the advertising language) and specify the acceptance criteria into the crowdsourcing platform. The crowdsourcing process is initiated. The Provider accepts the call and send ideas and designs to the platform in exchange of monetary reward and/or a royalty. In this extended abstract we analyze the role of a specific crowdsourcing platform: desall.com (other similar platforms we analyzed are: 99designs.com, threadless.com, made.com, polyvore.com). This platform manages the competition, ensures the Providers successfully complete the task requested by the Requestor. And finally ensures that, in the case of collaboration between the Requestor and the Provider, the Requestor pays the reward and/or the royalties to the Provider. Among the many crowdsourcing platforms that work specifically with a competition model (for a more extensive literature see Vukocik, 2009).

The reasons why companies shift to the crowd are various. Firms want to find solutions to difficult problems; they have internal limited resources; they lack the time or the money to complete a specific task so they prefer to outsource it. Crowdsourcing also provides an answer for managerial decision making. Customers, employees and business partners contribute to the resolution of a problem. Crowdsourcing online platforms allow strangers (sometimes even non-professionals) to participate to the resolution of the problem giving new perspectives, ideas, designs. In literature there is a wide range of studies on the successful stories involving the creation of solutions through crowdsourcing methods, but few on the managerial decision-making of the reason why companies decide to shift to the crowd.

In this extended abstract we adopt the Herbert A. Simon decision process model in order to understand the external role of the crowd in the internal decision making of the company. The model includes three phases before the actual implementation of the decision: intelligence, design, choice. Intelligence is the phase of information gathering and sharing for the purpose of problem solving. Design is the phase of generating ideas and alternative solutions. Choice is the phase of evaluating the generated alternatives and then recommending or selecting the best course of action. How does the crowd change this process for a business?

The process of a new idea generated in crowdsourcing flows as follows: a Requestor owns a problem. The Requestor briefs the problem to the crowd through a digital platform (Intelligence). The task is accepted by the crowd. The crowd provides the solutions (Design). The Requestor evaluates and decides which solution to choose (Choice).

In the specific case of Elite creating ideas to answer the Autogrill contest, the Intelligence phase is not crowdsourced. The Design phase is totally under the control of the crowd. At last the Choice phase is again not crowdsourced. The only phase where the crowd is relevant is the second one, the Design phase.

The Design phase involves the idea generation, the co-creation, and the creativity. The purpose is “to tap the power of the collective intelligence of the crowd to increase innovation” (Bonabeau, 2009). The Design phase can be processed through two different types of crowdsourcing: the collaborative and the competitive. The business case we analyzed falls into the competitive model. This is a model companies use to find solutions to a problem they cannot sol-

ve or they want to have a 'out of the box' alternative. The winner (Provider of the solution) is prized with a reward. Elite offered 3.000 euros (and no royalties) to the winner of the competition.

In detail, in the H.A. Simon's model for decision making, the Intelligence phase follows specific steps: the firm detects the problem or the opportunity. It clears the understanding of the stimulus that triggers this process. It searches for the problem comparing the reality to the standards. It measures and evaluate the differences to determine whether there is any problem or not. And finally it formulates the problem to find a solution to.

The Design phase occurs when the problem has been formulated. The decision maker gathers data about the solution. It designs alternative solutions to solve the same problem. It outlines the solutions that are meant for analysis of their suitability alone. In this phase, creativity and innovation play a significant role.

The third and last phase of the decision making process is the Evaluation, when all the possible solutions are compared against one another to find out the most suitable solution. In this phase the best solution might be selected using quantitative tools like decision tree analysis or qualitative tools like the six thinking hats. The evaluation phase is crucial and critical because of three reasons: each possible solution present a different scenario; the problem itself may have multiple objectives; the outcomes are uncertain. In this landscape, firms are used to control the whole process of decision making.

To analyze the different stages, we adopted the framework presented by Chiu et al. (2014) for the crowdsourcing process for decision making in business (a framework adopted from the one used by Aral et al. (2013)). This model presents 4 basic components: the task, the crowd, the process, the evaluation. In the desall.com website, the task is presented by a company (Requestor) to solve a problem related specifically to design. Companies are not looking to solve a problem they cannot solve internally, but rather they are looking for new and different ideas. The Requestor has to define clearly the task through a brief. This first step is entirely owned by the Requestor.

The second component is the crowd. The crowd are the external workers who the company refers to to outsource the completion of the task. In desall.com the crowd might include experts, professionals, non professionals, customers. There is no rules on the definition of the size of the crowd: it might be an individual designer or a large company. From the interview with the Ceo of Elite, the decision making process for choosing one solution to another is not related in any case to the size of the Provider. For the company there is no difference from a large designer studio to an individual in proposing a solution to the task. Nor the geography has any relevance. Solutions came from all over the world. In fact the winner of the competition is Italian, but the Ceo stated that "it is just a case. We have had great ideas and projects especially from Brazil and India. But it is the client that has the final word". Finally, we want to note that the client Autogrill didn't know that the ideas were crowdsourced.

The third component is the process. The process of crowdsourcing to support decision making "involves a flow of information, interactions and control, and collaboration" (Chiu et al., *ibid.*). The company uploads the brief and initiate the Design process. From that moment the firm stops executing any task but waits for the Providers to upload ideas and projects through the platform. The process then goes back to the firm that evaluates which ideas are the best fit, and finally announce to the winner the reward (fourth component: the evaluation). In the Elite case, the evaluation was first done by the company (12 solutions were proposed to the client out of 270. The crowdsourcing platform decided to exclude 213 ideas because they were not in line with the brief). Secondly the evaluation has been done by Autogrill, the client of Elite, that chose 1 design out of 12.

The managerial aspect of the choice of shifting to the crowd is related to the organization considerations when crowdsourcing is the best option. We conducted a series of narrative interview to the Ceo of Elite company to assess some topics we think are relevant for the decision of using crowdsourcing as a tool to generate new ideas. The questions we posed are the following: why using crowdsourcing as a tool for innovation? Which task is suitable to be crowdsourced (design and/or engineering)? What kind of crowd needs to be recruited (expert or non experts)? How to evaluate the process and outcome of crowdsourcing? Crowdsourcing has shown as a method to save expenses compared to using internal workforce? Will crowdsourcing be a standard model for future generation of ideas?

The answers reflect a need of new ideas detached from the usual thinking process. As the Ceo explained

"A company that works for decades on finding new ways of designing a product finds it hard to create new solutions because the workforce is affected by a relevant bias: the product is well known".

The answer of the Ceo to the question why Elite decided to shift to the crowd is the following:

"We have the need to think 'out of the box'. We needed to have new ideas completely unconditioned from the product design. We design bottles since 1979 and it is hard to find new relevant ideas today. Crowdsourcing brought some designs that are apparently unrealistic but that hide new perspectives and new ways of thinking. This is exactly what we were looking for".

The aspect of having alternative solutions is the reason why Elite applied to the crowdsourcing platform. The Elite contest received 463 ideas but the design platform eliminated 203 because they did not fit with the brief, and finally sent to the Requestor 270 ideas. These projects were diverse on the level of complexity. Some were very simple drawings probably sent by non-experts, some others were actual 3D models ready-to-use. The Ceo said that while choosing which idea to present to the client there was no difference between the presentation of a drawing and of a technologically advanced solution, the company was just looking for a "new perspective". Actually some drawings were chosen among the 12 that have been presented to the client (despite Elite internally transformed the drawings in 3D models before the presentation).

For the company, crowdsourcing has not been a money-saver tool. But this was not an intent of the company. The method of crowdsourcing a design has been a successful utilization of a new digital technology for the company. The difference in the decision-making process is reflected in the following sentence:

“You have to brief in a stricter way than you usually do with a supplier that you know. You don’t know what the crowd might understand. We rewrote the brief many times to make it clear and concise”.

This sentence shows that in the process of crowdsourcing the Intelligence phase of the Simon’s process of decision making changes: the instructions (brief) has to be more precise than before. The management needs to maintain a higher degree of control because once it is published, the brief will not be changed. The same insight is shown also on the last phase of the decision-making process with the following sentence:

“Once you have all the ideas on the table, you need to create a matrix where to put your requests. Ideas are too many, you need to have a method for evaluation”

We believe that the previous sentence shows that the third phase of the decision-making process, the Choice, just like the first needs stricter control. Much more than in the case of idea-generation with the traditional paradigm of the R&D proposing solutions to problems.

In the interview, the Ceo stated that crowdsourcing will slowly become a standard process for idea generation in the company. The R&D department constitutes 29% of the total amount of employees. This demonstrates the focus of the company on innovation. Despite this, the Ceo will rely on the crowdsourcing method to create new ideas and to answer to the requests of innovation. The R&D will work more on the Intelligence and on the Evaluation phases and less on the central Design phase. For future applications, Elite’s Ceo will count on crowdsourcing as a new challenge:

“We will now try to crowdsource a more complex product. Design is a easier task to complete. Engineering is different. We will apply again this year with desall.com, but if the level of complexity is too high, we will look elsewhere. Probably we will create our own platform for receiving alternative solutions to our requests”.

During the interview, the management of the company admitted that the innovation is generated in the central part of the decision making process. Through crowdsourcing, this crucial phase has been completely demanded to the crowd. The lack of control from the enterprise is the basic principle of the Design phase in a digital crowdsourcing platform. Managers need to be aware of that while applying to a crowdsourcing campaign. Thus, the first phase (Intelligence) and the last phase (Choice) need a stricter control to balance the central phase where control is lacked.

When explained the Simon’s process for decision making and the stress on the degree of control, the Ceo answered that:

“We are aware of the fact that we need to lose the control of the central phase of the process. But this actually goes with all creative process that you outsource. I would rather stress the fact that the first phase becomes more relevant than ever. It seems that our job will be becoming, rather than good engineers, good communicators”.

We described the results of this extended abstract in Figure 1 and Figure 2. In Figure 1 the process of decision making presents two actors: the Requestor (the company requesting a solution to a problem) and the Provider (the crowd as the source that provides solutions). In the first phase the main component is the task published on the platform. In the Design phase the most important component is the process, when the ideas are generated. The third phase of the Choice sees the evaluation as the main component. In these three phases, the company owns the control only during the first and the last phase. But the crucial phase of the design, when the process is built, sees the company as a control-free agent. If the company would control the second phase, the providers (the crowd) would not be able to provide solutions to the requestor. Digital crowdsourcing platform are built for the company not to have the control in the design phase.

Process of Decision Making / Degree of Control	Intelligence	Design	Choice
Control	Requestor (Company)	Provider (Crowd)	Requestor (Company)

Process of Decision Making / Degree of Control	Intelligence	Design	Choice
Lack of control	Provider (Crowd)	Requestor (Company)	Provider (Crowd)
Components	Task	Process	Evaluation

Figure 1

With a questionnaire we wanted to grasp the difference between the two variables that seemed more relevant in the decision making process: control and creativity. To do so we asked the Ceo of the company Elite to answer to 9 questions regarding the decision making process and to give a rate from 1 to 5 (1 = very little; 5 = very much). The same 9 questions regarded the decision making process with and without the incorporation of crowdsourcing (CS) for a total of 18 answers. The questions were the following: what is the degree of control and creativity needed with and without crowdsourcing during:

Intelligence 1: detection of the problem or opportunity

Intelligence 2: understanding of the stimulus that triggers the process

Intelligence 3: formulation of the problem

Design 1: gathering data about the solution

Design 2: designing alternative solutions

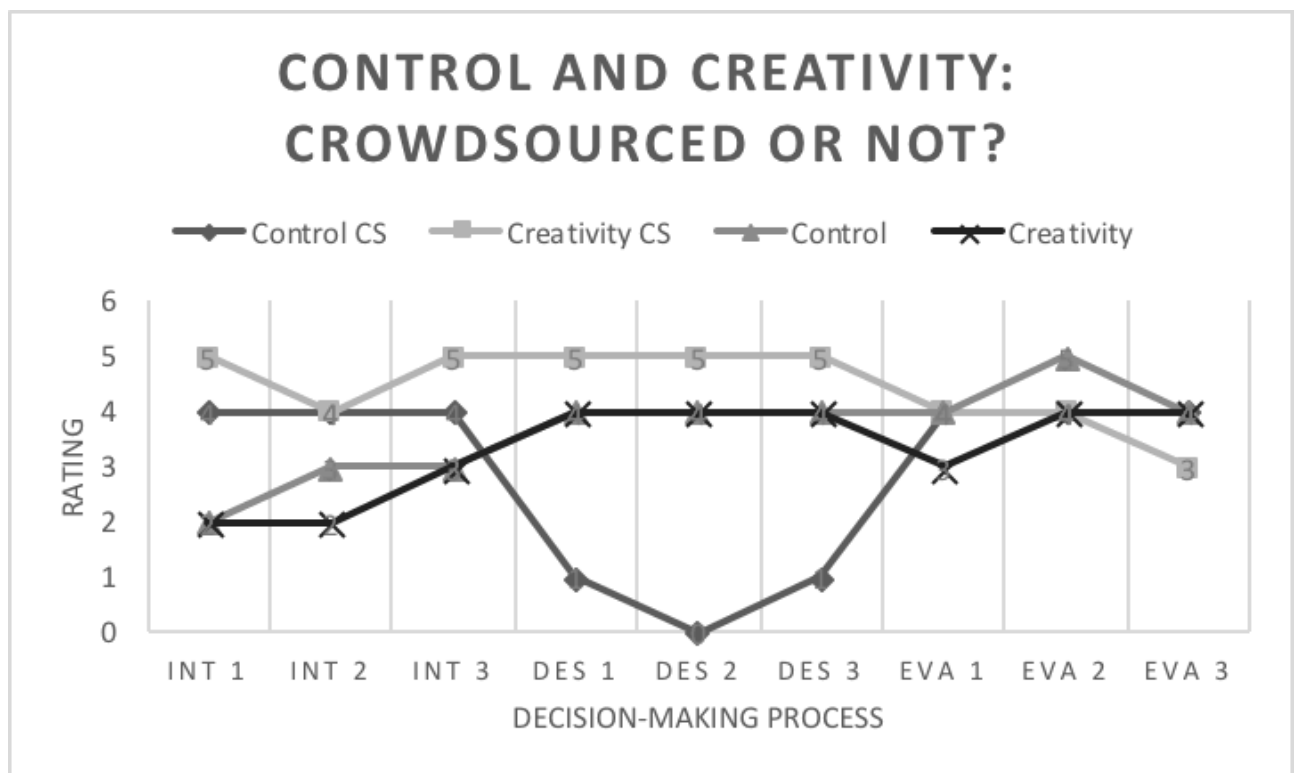
Design 3: outlining the solutions that are meant for analysis of their suitability alone

Evaluation 1: comparing solutions against one another

Evaluation 2: using quantitative / qualitative tools for analysis

Evaluation 3: choosing one or more solutions

The results are shown in Figure 2



The results show clearly that all the variables follow a linear path a part from the control variable in case of crowdsourcing. In this case the lack of control is supported by a higher degree of creativity. Indeed the total sum of

points gathered by the creativity variable in case of crowdsourcing is significantly higher than the same variable in case of non-crowdsourcing process by the rate of 42 versus 31. The control variable in case of crowdsourcing sums a total of 27 points against 31 in case of non-crowdsourcing process. We can also identify the very same quantity of points between control and creativity in case of non-crowdsourced process (31 and 31). We argue that this happens because of a decades-long and well-known process of generating new ideas within the company. On the contrary, the new crowdsourced process to generate new ideas has a significant distance of total points between creativity (42) and control (27). This shows that despite the creativity is outsourced in the second phase, the managers have to enhance the level of creativity in the first and the last phase.

Findings. The process of crowdsourcing new ideas is completely demanded to unknown (and sometimes unprofessional) individuals. This affects the whole process of decision making for the management. The company has to rely the most important phase of decision (the Design) to a crowd that is impossible to control. For companies, the lack of control in the central phase of the decision-making process is the prerogative of using crowdsourcing technologies. On the other hand the first and the last phases of the decision-making process need to rely to a stricter control by the management to allow the achievement of a result and avoid further risks.

The crowdsourcing method for innovation in business is gaining increasing interest. In a globalized, complex market such as the one companies face today, the generation of new ideas and the implementation of new products and services are a must. We analyzed just a single case, not sufficient to achieve relevant conclusions, but we believe it is a good starting point for a deeper analysis of the phenomenon of digital crowdsourcing in business. We wanted to focus on design crowdsourcing platforms because among the various platforms, we think it is the best fit for idea generation for enterprises. In literature there are few papers and studies that analyze the impact of crowdsourcing in decision-making in business and this is our objective.

In the case of a crowdsourcing idea, the decision making process of H. A. Simon we used as a framework, the Intelligence and the Choice phases are not crowdsourced. Only the central phase of the Design is crowdsourced. We might add that it is entirely crowdsourced. This is a risk for the company because such a vital phase is not controlled in any way and it might bring to a relevant effort with no results: creating and following a crowdsourcing campaign is time and money consuming, and if the result is not suitable, the entire operation is a waste. The Elite case we analyzed through a series of interviews to the CEO and a questionnaire show that the choice of shifting to the crowd is a successful utilization of the new method of crowdsourcing only if managers let the crowd create freely, if the control is enhanced in the first and last phase and if creativity within the company is also enhanced.

The conclusion is that for managers the crowdsourcing method affects considerably the decision making process: out of 3 phases, the second one (Design) is completely controlled by the Provider and not by the company. Managers should be aware that when deciding to implement new ideas through a crowdsourcing digital platform, the Intelligence and Choice phases have to have a deeper control and a deeper creativity. This is the way many companies are transforming their idea-generation practices. Crowdsourcing means less control by the company that leads to more ideas, more thoughts 'out of the box', more space for innovation and more risk. But this process has to be well defined: the management has to confine the crowdsourced phase between two strictly controlled and creative shoulders: the early intelligence and the final decision.

Research limits. This study is an extended abstract based on the recent literature on crowdsourcing in business. The limitations are based on the fact that the study has been conducted on a single company and on a single crowdsourcing platform in the specific industry of design.

Practical implications. This extended abstract shows how enterprises should reconsider their decision-making process as a more free and less controlled method for generating new ideas and receive unexpected solutions to problems, while implementing new forms of control in the first and last phases of the decision-making process. The crowdsourcing platform is structured as a tool that doesn't allow the company to control the Design process. Scholars might continue the study of decision-making in business through crowdsourcing analyzing different companies in different sectors and with a relevant number of cases for a quantitative analysis.

Originality of the study. In literature there is a limited amount of researches that study the impact of decision-making in cases when crowdsourcing is the tool for innovation. This extended abstract studies the transformation for the management in the decision-making process while using digital crowdsourcing platforms.

Key words: crowdsourcing, decision making, narrative interview, storytelling

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