Opening up innovation processes through contests in the food sector

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Abstract

- **Purpose**: The purpose of this paper is to investigate how an adequate mix of technological, organisational and managerial tools might support Open Innovation (OI) processes achieved by contests in the food sector.
- **Design/methodology/approach**: The methodology of this paper is exploratory in nature. Data have been gathered about the 140 innovation contests launched by the best global food brands (2013 BusinessWeek/Interbrand Best Global Brands) over the last decade.
- **Findings**: Our research highlights the main changes that have occurred over the last decade, showing that the choice of platform type for contest launches is often neglected or considered as an ancillary element. Indeed, it is a choice that embeds another set of technological, organisational and managerial tools that strongly influence the collaborative behaviour (and the participation itself) of partners throughout the innovation process.
- **Research limitations/implications**: Companies investigated in this paper consist exclusively of top brands in the sector. Future research should strive to obtain larger samples, develop a set of fine-grained hypotheses, and test them by using appropriate statistical techniques.
- **Originality/value**: This paper fills an inexplicable gap in academic literature due to the fact that food companies are those that mainly use contests in order to implement OI but they are scarcely researched regarding this issue.

Keywords: Open innovation, innovation contest, food sector.

Paper type: Research paper.

1. Introduction

As innovation becomes more democratic, many of the best ideas for new products and services no longer originate in corporate laboratories. On the contrary, they can come from almost anywhere and anyone (see e.g. von Hippel, 2005). Companies can tap into this distributed knowledge and diverse skills by using OI processes. These processes are commonly supported by Web 2.0 technologies, whose role in enabling and favouring the shift towards OI is largely recognised in the literature (Dodgson *et al.*, 2006). Far from a merely technological phenomenon, research on OI

shows that it involves managerial and organisational factors that play a crucial role in the success of an initiative (Chesbrough, 2007; Sieg *et al.* 2010). Finding the right way to organise and manage this process is crucial to reaching the set purpose.

An increasing number of organisations worldwide have adopted innovation contests, and therefore they have become a growing research field for management scholars. These competitions are a kind of reverse auction: prizes are offered and designers bid possible solutions. The value that sponsors receive varies based on the number of participants and the quality of ideas (King and Lakhani, 2013). Despite their growing popularity, the field is still heterogeneous and needs to be better-structured (Hallerstede and Bullinger, 2010), including in regard to terminology and type.

Since shortly after the year 2000, brands have increasingly used innovation contests in several sectors, including technology, cars, fast-moving consumer goods (FMCG), industry/energy, retail, etc. Far from being used only for narrow technical problems, innovation contests represent an open approach to addressing broad problems, such as developing new product concepts and product positioning (King and Lakhani, 2013). According to a report (The State of Crowdsourcing Report, 2015) on contest usage by global leading brands over the last decade, the early days of creative crowdsourcing were dominated largely by technology brands, whereas FMCG companies have overtaken this pioneering sector to constitute the most active sector in 2014. Among these, three companies in the food and beverage sector led the pack in terms of innovation contest usage over the last decade: Coca-Cola, Danone and Pepsi. Despite this and the food sector's economic relevance worldwide, papers dealing with contests in this sector were not found in the entire set of academic literature on innovation contests that have been reviewed. For example, Hallerstede and Bullinger (2010) considered a set of 65 innovation contests, selected in order to represent a large variety of industries, but none are apparently in the food and beverage sector. Adamczyk *et al*. (2012) reviewed 201 publications about contests in a large variety of sectors (including automobile, energy, fashion, information and communication technology, jewellery, leisure and entertainment, lighting, software, sports, etc.) but they scarcely mention the food and beverage sector. Some studies deal with OI in the food sector (Bigliardi and Galati, 2013; Saguy and Sirontinskaya, 2014; Galati *et al*. 2016; Saguy, 2016; Garcia Martinez *et al*., 2014) and also with the use of social media to foster innovation with customers in the same sector (Martini *et al*., 2014), but they are not focused on contests.

Therefore, this gap in the academic literature leads to the research question in focus here: How do global food and beverage brands use innovation contests to involve customers in a variety of creative efforts? Our research objective is to understand how an adequate mix of technological,

organisational and managerial levers might support OI processes in food sector contests. An exploratory research has been conducted on innovation contests launched by top global food brands over the last decade in order to explore how these brands employ different configurations of levers in contests to open up their innovation processes.

The paper proceeds as follows. In the second section, the theoretical background is provided. In the third section, the research methodology is detailed. Next, the empirical evidence is presented. Lastly, the results are discussed and conclusions are drawn.

2. Technological, organisational and managerial levers for innovation contests: state of the art

Organising innovation contests means defining a set of variables: the 'who' issue, i.e. with whom the collaboration should take place (i.e. the contest target group), the 'when' issue, i.e. which phase(s) of the innovation process should be opened (e.g. ideation, selection, prototyping, implementation, etc.), the "where" issue, i.e. where the contest should be hosted (in-house platforms, social media or broker platforms) and the 'how' issue, i.e. how openness should be implemented through the contest. As regards the how issue, a broad set of technological, organisational and managerial levers are available to organisers of innovation contests. This set has been defined as the emergent or intentional system of technological (Information and Communication Technologies, ICT), managerial and organisational tools through which a firm aims to direct the behaviours of their partners, i.e. contest participants along the whole innovation funnel, from idea generation to the commercialisation phase. It is worth noting that:

- all three levers are strongly interconnected. Therefore, the choice of one lever necessarily influences the others.
- compared to other crowdsourcing approaches (e.g. virtual communities for innovation), innovation contests build on the means of competition to enhance the quantity and quality of submissions (Bullinger *et al*., 2010). Nevertheless, there is growing awareness that contests' levers should be defined in order to allow an adequate mix of competition and collaboration (Haller *et al.*, 2011).

As mentioned in the introduction, there is no specific reference in the current literature to contests in the food industry; this paper will therefore refer to technological, organisational and managerial levers in general terms (see Table 1). Current studies do not explicitly refer to levers, but they do examine various elements, which can be identified and labelled as technological, organisational and managerial levers.

<Please insert here Table 1>

2.1. Technological levers

Platform type. There are three possible platform types: proprietary platform/website, social media platforms and broker platforms.

The choice of a proprietary platform/website allows internal control of the whole process of sourcing innovation from outside company boundaries. In this case, an organisation goes directly to the external market when seeking to leverage participants' innovation capabilities in order to create new innovations that address organisational needs. In this governance structure, it is up to the sponsor organisation to deal with all financial and legal issues in relation to acquiring the desired capabilities, in addition to developing and maintaining the technological structure, thus transaction costs remain high (Feller *et al.*, 2009). Companies such as Threadless.com have employed dedicated web presences to source innovation and knowledge from those with which the company does not have an existing relationship.

The choice to launch social media contests, e.g. through an ad-hoc Facebook page, leverages existing communities and online environments to source innovation and knowledge from outside company boundaries. In this governance structure, the sponsor organisation maintains control of the process, but the transaction costs are lowered because it adopts existing and free-of-charge technology, and, above all, no community building costs are needed.

The choice of a broker platform externalises the entire process to an intermediary whose job it is to organise contests on behalf of companies (Pénin and Burger-Helmchen, 2011; Schenk and Guittard, 2011). These intermediaries leverage a private community of contributors who participate in contests sponsored by client organisations (Lakhani and Panetta, 2007; Zwass, 2010). These intermediaries count on self-selected crowd contributions for the supply and/or selection of ideas and designs (Brabham, 2013; Lakhani and Panetta, 2007). The following are among the most popular intermediaries: Eyeka, Poptent, Mofilm, Tongal and Zooppa (Roth and Kimani, 2014; Teixeira, 2013; Whitla, 2009). Due to their popularity, intermediaries can rely on perpetually fresh content from diverse sources allowing them to maintain a large amount of control over both the contributors and contest-sponsoring clients (Boudreau and Lakhani, 2013).

Community functionality. Community functionality integrates elements which foster interaction, information exchange, topic-related discussion, community-building, and – if allowed – collaborative design of products. In the actual competitive environment of contests, community functionality therefore facilitates cooperation (Bullinger *et al.*, 2010). Such a set of tools includes, for example, online forums, fan pages on Facebook, messaging services, personal profiles and comments on the submissions of other participants (Piller and Walcher, 2006; Brabham, 2010). As

noted by Füller *et al*. (2011) these functionalities may significantly contribute to enhancing a positive experience on the part of the participants.

Toolkits. Contest organisers may provide a set of tools, which are aimed at lowering contestants' efforts and costs in developing their submissions (Piller and Walcher, 2006; Franke and Schreier, 2002; King and Lakhani, 2013). This set may include: drawing software; mathematical problem-solving software; programming languages; specific software that allows for an easy transfer of the chosen designs to manufacturing (Ogawa and Piller, 2006); tutorials for elderly people (Digmayer and Jakobs, 2012); toolkits for the custom development of integrated circuits and computer chips (von Hippel and Katz 2002) and so forth.

2.2 Organisational levers

Composition of groups. Organisers have to decide whether participation is possible as an individual, a team or both (Smith *et al*., 2003; Boudreau *et al*., 2011; Carvalho, 2009). This choice has an impact on a contest's cooperative orientation (Bullinger *et al*., 2010).

Contest length. Participation in a contest is allowed for a limited period of time, which may range from a few days to more than four months (Boudreau *et al*., 2011; Bullinger *et al*., 2009; Ebner *et al*., 2009). Contests with a complex challenge typically run for a longer time.

Contest mentors/facilitators. By introducing dedicated resources, the company may provide participants with constructive feedback and help to make significant progress in developing their proposals. Furthermore, these resources make participants feel valued and encouraged by the organiser (see, for example, Smith *et al*., 2003)

Problem specification (task specificity). As noted by Terwiesch and Xu (2008), innovation contests may range from problems with clearly specified requirements for a sought-after solution to open calls for solutions to a vaguely specified problem. Erat and Krishnan (2012) claim that the greater an organiser's problem specification is the greater the organiser's satisfaction will be regarding perceived submission quality.

Structural composition. As noted by Bockstedt *et al*. (2014), much of the current literature has studied single submission contests where participants simply provide their unique and final submission and are not provided with intermediate feedback. Indeed, innovation contests are increasingly changing their format. In one of these new formats, contestants reveal their ongoing proposals and thus must weigh the cost of revealing their submissions against the benefits of learning and improving their submissions through emerging contest information. Another format is to split the contest into mini-contests (Moldovanu and Sela, 2006) while keeping submissions blind. The advantage is to increase the probability that only high ability participants enter the "finals", thereby ensuring better results for the organisers.

Information structure. This lever, which is strictly intertwined with the previous, implies choosing whether to provide all information at the beginning of the contest or throughout the contest as the total number of submissions increases and feedback occurs. The former case is primarily investigated in literature, with a few exceptions (Bullinger *et al*. 2010; Bockstedt *et al*., 2014).

2.3. Managerial levers

Rewards. Lampel *et al*. (2012) suggest that offering multiple awards and conferring recognition more widely promotes cooperation among contest participants; on the contrary, having prizes awarded only to the first prize winner and leaving other participants with little to show for their efforts promotes rivalry among participants. The literature usually distinguishes between monetary and non-monetary rewards, which are normally chosen on the basis of the target group (and its related motivation) (Piller and Walcher 2006; Brabham, 2010; Bullinger *et al*. 2009, Füller, 2006; Bullinger *et al*., 2010; Füller *et al*., 2006; Leimeister *et al*., 2009). In some cases, in order to improve the quality of the submission, companies may choose a performance-contingent reward instead of a fixed reward (Terwiesch and Xu, 2008).

Evaluation jury. The literature (Carvalho, 2009; Bullinger and Moeslein, 2010; Ebner *et al*., 2009; Greve *et al*., 2006) identifies two main evaluation modes: expert jury and crowd assessment (or peer review), which are used in conjunction in some cases. According to Grève *et al.* (2006), crowd assessment works best when the products, technologies or social solutions have subjective and intangible personal dimensions that are ignored by innovators bent on technically "sweet" solutions. Mixed methods try to overcome the weaknesses of single methods. For example, crowd assessment provides innovators and innovation stakeholders with important information on how individuals and communities react to innovations, but it is not accompanied by formal analysis. Therefore, it can be used in combination with expert evaluation in which experts clarify and articulate the judgment that emerges from the crowd assessment phase. If crowd assessment is allowed, communication functionalities are provided.

Evaluation criteria. Carefully defining evaluation criteria is essential for companies to exercise a form of output control over the contestants (Hjalmarsson and Rudmark, 2012); however, excessively restrictive criteria may repress participation.

Submission visibility. Some contests allow participants to see each other's submissions while the contest is live. Wooten and Ulrich (2015a) demonstrated that submission visibility generates more submissions by increasing the number of participants and that this effect depends on the setting (single vs. multiple entries). In contrast, seeing other participants' submissions generally results in contest submissions that are more similar to one other.

Participant visibility. Several authors have investigated implications of participant visibility on behaviour and have identified mixed results. Specifically, Archak (2010) found that highly rated participants act as inhibitors for contest participation, whereas Boudreau *et al*. (2012) found that effort and performance improve in the presence of superstars (i.e., well known, best-of-the-best competitors).

Feedback. The literature on feedback in contests is scarce (Mihm and Schlapp, 2015). Feedback is likely to foster participation in contests (Lakhani *et al.*, 2007), and this effect may be context-dependent (see e.g., Barankay, 2011). Wooten and Ulrich (2015b) studied the impact of feedback on outcome quality, and they found a positive impact on the average quality of submission.

3. Research methodology

Top food brands were selected for study from the 2013 BusinessWeek/Interbrand Best Global Brands ranking, which comprises the 100 most valuable brands worldwide in all business fields. This study's sample contains the following 15 food brands: Coca-Cola, Pepsi, Kellogg's, Budweiser, Nescafé, Heinz, Danone, Nestlé, Smirnoff, Sprite, Johnnie Walker, Moët & Chandon, Corona Extra, Heineken, and Jack Daniel's. Innovation contests have been identified that the above-mentioned brands organised in time-span[1]: 2006-2015 (see Annex). Among the 15 brands considered, only 11 launched innovation contests. This paper distinguishes between product innovation contests and advertising innovation contests. The former group includes contests aimed at improving or innovating product or packaging features, whereas the latter includes contests aimed at creating innovative marketing actions (primarily advertising). For each of the 140 innovation contests identified, data have been collected in order to investigate the mix of technological, organisational and managerial levers adopted in the food sector. Data have been gathered by studying online contests (i.e., data available on websites where the contests were launched); however, complete data sets were not always available for contests that had already been closed. Secondary data, such as website documents and interviews about the online contests, were also collected. An Internet search was performed using the company name, brand name and the keyword 'contest', or the title of the contest, in order to collect comments and feedback from participants and organisers. Sometimes the term "contest" was used to identify sweepstakes, a form of lottery tied to products sold, and these cases were excluded from the sample. Due to the explorative nature of this study, advanced quantitative methods for analysing data were not used.

[1] The time-span of our empirical research was not decided *a priori*. The first online contest run by a brand in our sample was identified as the "1st Creative Challenge in China" by PepsiCo, from 2006.

4. Empirical Evidence

The following sections present the main empirical evidence that emerged from the research. In addition to being a clear technological lever, the choice of platform type can also be considered an upstream "make or buy" decision. This is mainly motivated by the target the brand aims to reach and the phase of the innovation process the brand wants to open. Analysis of the empirical evidence reveals that each platform type, i.e., broker, social media or proprietary, to some extent determines the range of choices that can be made in terms of levers to adopt. For this reason, it has been decided to organise the empirical evidence by the type of platform chosen. For each kind of platform, we will show the main technological, organisational and managerial levers activated by the brands in the sample.

In the following, examples will be used to highlight the synergy that emerged between levers and platform type. First, some descriptive statistics of the sample are provided. Then, this paper describes the main technological, organisational and managerial levers employed in OI processes through the brands' contests with reference to the different kinds of platforms adopted.

4.1 The sample

Two main types of contributions were required by the innovation contests identified: creative contributions to innovate products/services, from new product ideas to full concept development, and creative contributions for new marketing and communication activities, from ideas to fully functional solutions (i.e., ads ready to be aired). Figure 1 shows the number of advertising and product innovation contests launched per year over the timespan considered. The data show that the number of advertising innovation contests always exceeds the number of product innovation contests and that this difference increases over time.

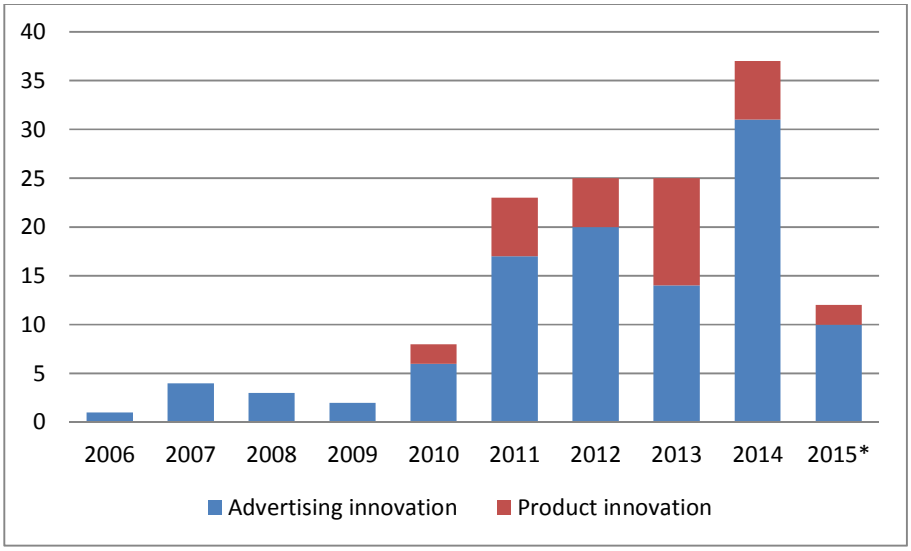

Figure 1: Number of advertising and product innovation contests per year (*data collection stopped in August 2015).

Figure 2 shows the distribution of contests over the three platforms. As the data reveal, the vast majority of contests are launched on broker platforms, followed by social media platforms. In our sample, only a small fraction of contests were launched on proprietary platforms and only by two brands in the sample.

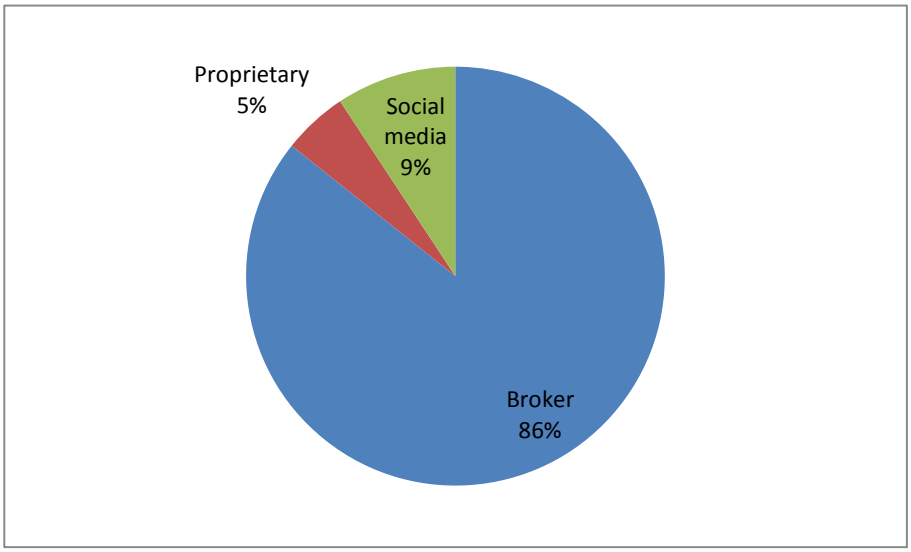

Figure 2: Distribution of contests on the three main platform types.

Figure 3 shows the distribution of contests over the main broker platforms.

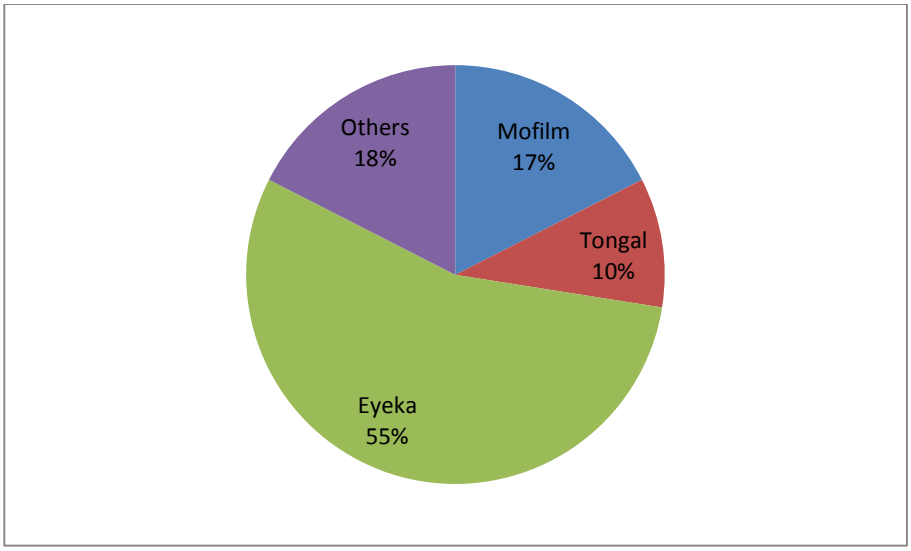

Figure 3: Distribution of contests over the main broker platforms.

Since broker platforms are emerging as the standard choice in the sector, following section provides some examples of how the main levers are implemented with reference to the three dominant broker platforms.

4.2 Broker platforms

The choice to launch a contest on a broker platform seems to be motivated by the desire to reach a professional audience and to take advantage of the competence and peculiar technological, organisational and managerial tools provided by these intermediaries. In the sample considered, brands increasingly turned to broker platforms - above all to Eyeka, Mofilm and Tongal, which mediate access to external innovation actors (see Figures 2 and 3). In fact, the analysis of contest winner profiles, which are normally available once the contest is completed, revealed that it was creatives, with specific skills related to the contest type (mainly filmmakers, graphic designers and creative writers), who participated in or won several of the contests. As regards the purpose, about 78% of the contests launched on broker platforms were aimed at innovation in advertising and the remaining 22% at innovation in production. As concerns the phase of the innovation process open to external actors, contests on broker platforms mainly aim to involve participants in the advanced phase, i.e., prototyping and fully functional solution development (Smith *et al*., 2003; Ebner *et al*., 2009). Moreover, the quality required of contributions is generally high, that is these contests frequently call for video or animation that competes for presentation at prestigious international film festivals. For example, this is the case with contests launched on Mofilm, which are always connected to international events such as the Cannes Lions international advertising festival or Goafest, an Indian advertising festival aimed at Asia.

Specific tools of the main broker platforms will now be considered, with reference to the main levers they allow to be activated. Technological levers associated with broker platforms involve several community functionalities that are normally provided. These functionalities are aimed at building a vital community of creatives who learn from each other, share skills and develop over time. For example, Eyeka offers a special feature called the Feedback Circle, which provides contest contributors an opportunity to browse accepted entries and exchange feedback and comments with other creators. At the end of eligible contests, the Feedback Circle is made available to creators who had at least one entry accepted. On Tongal, each project is usually characterised by vibrant forums and, in the production phase (innovation contest submission and selection on Tongal operate in multiple phases, production in a final one), all members are encouraged to participate actively in the community by carefully examining submissions in order to predict winners. The most accurate forecast is awarded a prize. Members are also involved in distributing the videos and promoting their favourite ones. The most viral video is awarded a prize, and both creator and community "marketer" win. Tongal distinguishes itself from most crowdsourcing platforms by the fact that no one can win without building on the ideas and contributions that came before (or after) their own. Finally, Mofilm aims at creating connections, as well as a sense of belonging inside the community, by offering functionalities such as crew builder, which allows participants to find crew members to include in their video projects, specifying the location and role they are looking for. Moreover, Mofilm offers members the opportunity to earn money through licensing their unused footage to businesses and other filmmakers. In order to promote continuous improvement of the community, Mofilm rewards each member that refers a friend to the community who goes on to win a contest with $500. Mofilm community-building events are promoted and managed half online and half offline. Mofilm offers community members a physical space in Los Angeles, the LAStudio, where a series of events are hosted with the aim of inspiring, educating and connecting the community. It is also possible to book a free, fully-functional production studio online in order to execute a video project. The space is made available on a first-come, first-serve basis.

Beyond community functionalities, broker platforms generally provide contestants with several toolkits that are either freely available or under Creative Commons Licensing, such as a stock music library, photo images and other design elements (brushes, vectors, icons, etc.). In addition to this, Mofilm offers a dedicated platform, Momusic, which provides filmmakers with a wide range of services, such as music strategy consulting, crowdsourcing original compositions and supporting Mofilm creators with an extensive library. The platform also includes an innovative editing toolkit that makes it easy to sample and test songs with films.

In terms of organisational levers, broker platforms generally devote dedicated resources (i.e., facilitators) to help participants in their creative efforts and to assure their idea meets the brief, the brand's requirements and other criteria. Indeed, creators on Eyeka and Mofilm are coached by a Creative Director to make sure that their final work is on-brand and ready to be aired. Moreover, in order to educate the community and improve the quality of submissions on a continuous basis, broker platforms normally guarantee that every winner receives professional feedback on their submissions from the brands' marketing managers, brand directors, and media, design and innovation experts. Mofilm also offers creatives support in handling negotiation, licensing and copyright issues by leveraging its extensive industry relationships. Brands sometimes look to source a short number of high quality on-brand content. For example, on Eyeka and Tongal, this usually happens through a three-phase process. In the first phase, brands look for an ad or campaign idea based on a suggested topic. In this phase, key visuals, story boards, synopses or, in the case of Tongal, a 140-character idea explanation, are accepted. In the second phase, the community is called to "pitch" the best ideas from the first phase by submitting more fleshed-out narratives. In the third phase, polished videos are created based on the winning pitches and a jury of judges selects the top five for a cash award. Task specification is an organisational lever that can be analysed through the complexity and refinement of the contest brief. Briefs on broker platforms are generally complex and detailed and clearly specify what kind of submissions the brands expect to receive and what they do not want to receive. Frequently examples are provided of what a "good" contribution could look like and, on the contrary, of what kind of contributions would be considered as "déjà vu".

In terms of managerial levers, when a contest is managed by broker platforms, rewards always include a monetary part. In case of Mofilm, the reward also includes a trip to the location where the contest event is held. Indeed, Mofilm leverages its members' awareness and sense of belonging to a community of creatives when it promotes participation in a contest connected to the Cannes Lions Festival: "For one glorious sunshine and rosé wine filled week in June, Cannes, in the South France, is the center of the creative universe and you could be there too." In contrast, Eyeka is more focused on monetary prizes and leverages this aspect by publishing the following information on its homepage for creators: "In the past 6 months more than 300 creators from 46 countries were awarded by brands and received €690,000 in prizes!" On Tongal, prizes are always monetary and their amount and number is jointly decided by the broker and the contest sponsor. Apart from the prizes, some platforms, i.e., Eyeka and Mofilm, offer production grants to selected creators to kick-start the production of their videos. There are some differences among the main broker platforms in

terms of the evaluating jury. On Eyeka and in Tongal, winning media are selected by a panel of judges composed of professionals from the client's company. On Mofilm, the first review is made by the broker platform, which then creates a shortlist for the brand to judge. Evaluation criteria are normally clear and restrictive; they include careful evaluation of production quality, concept, and adherence to the brief. In some cases, the community is called to express its preference on finalist submissions. Community preferences generally do not influence the jury, but the community's preferred submission is highlighted on the platform and may receive a special prize. Reputation building in the community is an important managerial lever that is connected to the use of brokers. Similar features are made available by the different platforms to celebrate the best contributors. Eyeka's Leaderboard shows the top 500 creators in the last quarter on the basis of the points won during the period. Every time a creator wins, participates or is active on Eyeka, his/her creative score increases and gives him/her access to invitation-only challenges and an official certificate is available for him/her to download. On the success story page, the "creator of the month" can share his/her story with the creative world. Mofilm's "Hall of Fame" and Tongal's "Leaderboard" work in a similar way. Moreover, an annual awards ceremony, called the Tongies, was started by Tongal in 2014. The purpose of the Tongies is to recognise the Tongal community by giving awards to work done on Tongal during the previous calendar year. The Golden Mobi offered by Mofilm has a similar purpose.

4.3 Social Media Platforms

The choice to launch a contest on the social media channel seems to be motivated by the desire to reach a large and young audience and to leverage community innovation power, which is typical of OI networks, more than individual competitiveness. In fact, in our sample several contests on social media specifically target teenagers or students. These contests take advantage of social media technology to tap into crowd creativeness, as it is freely available and allows connection to millions of users. In terms of the purpose, about 62% of the contests launched on social media are aimed at innovation in advertising and the remaining 38% at innovation in products. Concerning the phase of the innovation process made open to external actors, contests on social media aim to involve people mainly in an early phase, i.e. idea generation (Murphy and Kumar, 1997). The required degree of elaboration of contributions is generally low, that is these contests generally call for textual descriptions of rough ideas or sketches.

In terms of technological levers, social media do not provide users with sophisticated toolkits for developing contributions. In some cases, the product logo or image is downloadable for inclusion in the contribution. On the contrary, community functionalities, which are typical of social media, are

leveraged across multiple sites and applications. Contests launched on social media normally allow, and encourage, participants to share submissions with their contacts on social channels, as well as comment and sometimes vote on each other's contributions. In some cases, social media collaboration and networking functionalities are employed to facilitate joint creative efforts. For example, in the "Heineken Limited Edition Design Contest", which was an international competition to redesign the green bottle, submissions were required to come from pairs, so individuals had the possibility to link up online with a like-minded design partner. Once they finalised their own design, participants were to upload it to the Heineken Facebook page and connect with other participants to create both sides of one bottle. Participants were generally invited to follow updates on their different social channels, such as Twitter, Pinterest and Flickr.

Concerning organisational levers, collective participation is frequently allowed and incentivized in line with the above-mentioned community functionalities. The type of brief is quite simple and broad, making problem specification rather low. In advertising innovation contests, participants are frequently invited to submit a video or a text to express their feelings about the product or to describe their experience with the product, without specific constraints or pre-arranged drafts. For instance, in the Nescafé Cappuccino contest launched on Nuffnang – an advertising community blog - bloggers are asked to write posts with the title: "Nescafé Cappuccino is the most indulgent coffee I've ever had!" In the case of product innovation contests, briefs are also simple and broad. In the above-mentioned Heineken bottle design case, the brand invited participants to celebrate its 140th year by creating a bottle that symbolises how people around the world will connect in the next 140 years. The brief is simple and broad: "Anyone can choose how to interpret the spirit of global connectedness through symbolic language, without specific constraints for example on colours or subjects."

As regards managerial levers, submissions are frequently visible and commentable by other participants. Participant identities or profiles are also visible. Brand fans from across the globe are frequently tasked with voting on their favourite submissions, and only a limited set of finalists are judged by a jury of experts. This is the case in the examples of the Heineken bottle design and the Nescafé Euro design contest on Facebook. In the case of Heineken, the number of "likes" determines the six finalists – out of more than 30,000 entries from 100 countries - which were then judged by a technical jury of top international designers. In the case of the Nescafé Euro design contest, which was aimed at customising the graphics of the new Nescafé Dolce Gusto coffee machine, social network members were called to compete against each other in an area comprising 19 European countries. The competition was divided into two distinct contests. The first stage was

at the national level, during which the 10 most-voted designs in each individual country were evaluated by a jury. The judges selected one of the top 10 to represent the nation at the international level. The final stage of the competition was therefore a real European championship, with 19 finalists, ending with a special event in Milan, Italy. During the final evening, which was streamed live on Facebook, the machine with the most votes and the machine selected by the technical judges were announced and were to be produced as a Nescafé Dolce Gusto limited edition. In other cases, such as Heinz's "Top This TV" on Youtube or Danone's "Poster design contest" on Facebook, the brand jury shortlisted a number of finalists – 5 for Heinz and 7 for Danone - and the winning entry was chosen by public voting (and judges' decision for Danone). Rewards were mainly non-monetary. For example, in the case of the Heineken bottle design contests, the winner had the opportunity to enter the history of the brand by seeing his/her design become reality as Heineken's Limited Edition bottle. Similarly, in the case of the Coca Cola "This is AHH" video contest, the winning clips were featured in a national Coca-Cola TV ad. In some cases the reward was an object, such as an Apple iPad in the Danone "Poster design contest" or a Canon 600 camera in the Danone "Film making contest". In some cases, the reward was a mix of monetary and non-monetary recognition. This is the case, for example, in Heinz's "Top This TV" contest which awarded a first prize of €57,000 and the opportunity for the winning ads to be aired at the national level.

4.4 Proprietary platforms

Even though only two proprietary platforms were found in our sample, it is worth spending a few words on this option. The company that primarily relied on a proprietary platform in order to organise its contests is Heineken with its Heineken Ideas Brewery. The platform was launched in 2012 and used to launch four innovation contests. Heineken currently relies on brokers' platforms and social networks to launch new contests and has since adopted another proprietary platform, Heineken Innovators Brewhouse, in order to collaborate with consumers on a regular and continuative basis. The choice of a proprietary platform seemed to be driven initially by the desire to control some levers better. A few examples will illustrate this point.

Their first contest aimed at looking for sustainable ideas in beer packaging. The contest was kicked off with a live-streamed 48-hour challenge. An industrial designer, who had pioneered 3D prototyping, and one of the contest judges were shown developing potential solutions to Heineken's challenge. They interacted with the audience in order to provide inspiration and suggestions. In this contest, the organisational lever of contest facilitator was adopted, taking advantage of the characteristics of the proprietary platform that allowed the brand direct communication with

aspiring participants. The method chosen by the brand, a live-streaming broadcast by a popular industrial designer, aimed at exciting the audience and promoting high level contributions.

In two contests, the processing and selection of ideas were carried out in two steps: identifying a shortlist of finalists and organising a co-creation workshop. During the workshop, a team of experts collaborated with the innovators in a co-creation phase by analysing their proposals and helping in development until the winning idea was identified. Furthermore, two sequential contests (the 60+ challenge) were organised in order to take advantage of and build on consumer insights (in terms of attitudes and needs) identified during the first contest. In these cases, the organisational levers of structurally composing a contest in multiple stages and organising two cascading contests were adopted to obtain final level contributions that perfectly fit the brand's character and expectations. To this purpose, the brand's experts took advantage of the peculiarity of a proprietary platform to work in a team with selected participants and co-create the final submission. This working method seems to move away from the contest itself and look at a more collaborative solution, such as the one the brand developed later, i.e., an innovation platform on a continuous basis.

For their 60+ contest, Heineken presented a compilation video, which functioned as a brief. The video presented four different themes in the main target group, which in this case was the 60+ age group. The idea was to provide contest participants with help in choosing which theme they wanted to focus on for their final ideas. This was an unusual way the platform allowed to provide participants with informative insights to help them better understand the task.

No official motivation has been provided by the company to explain why only four contests were organised on that platform. The following hypotheses can be formulated: scarce visibility (compared to contests launched on broker platforms or social networks), difficulty in approaching professional creatives (these contests were targeting Heineken consumers visiting the platform), and high maintenance and development costs for limited and sporadic use.

5. Discussion and Conclusion

Our research objective was to investigate how an adequate mix of technological, organisational and managerial levers might support OI processes achieved by means of contests in the food sector. Thus, this paper thoroughly investigated how this openness is implemented in the sector, focusing our attention on the set of technological, organisational and managerial tools firms use in contest design and management to drive or influence the behaviours of their external partners (i.e., contest participants).

This research provides a number of academic contributions and managerial implications. Firstly, as regards academic contributions, it fills an inexplicable gap in the academic literature. Indeed, food companies are those that mainly use contests to implement OI (The State of Crowdsourcing Report, 2015) but they are scarcely researched on this issue. Secondly, it highlights the main changes that have occurred over the last decade. For example, in line with other sectors (Ibidem), advertising innovation contests increased more, when compared to product innovation contests. This could mean that companies have converged to consider the crowd more effective in providing new communication suggestions and stimuli, rather than product-related ideas. Again, in line with other sectors (Ibidem), broker platforms resulted the prevailing choice among food companies, followed by social media and proprietary platforms, which indeed appear to be a residual and declining choice (specifically, in our sample, representing only six cases). Moreover, research did not find any broker platforms specifically tailored to food contests. This is unlike what has happened, for example, with crowdfunding platforms, where actors specialised in food are increasingly entering the scene. This means that market actors have not currently identified sufficient distinctive elements in food contests to justify specific investments in the field, which also seems to emerge from our empirical evidence.

As regards managerial implications, this research has shown that the choice of platform type used to launch contests, which is often neglected or considered as an ancillary element, is indeed a choice that embeds a set of other technological, organisational and managerial tools that strongly influence the collaborative behaviour (and the participation itself) of partners throughout the innovation process. In fact, proprietary platforms seem to open collaboration channels mainly with brand lovers and social media with the broader crowd, whereas broker platforms seem to have become the new business model to engage with the creative class. Thus, in order to get submissions which are fully functional solutions by professionals in the creative sector, it is strongly advisable to turn to broker platforms to launch contests.

Secondly, the empirical evidence reveals that the adoption of specific levers - of a technological, organisational and managerial nature - is favoured by and, sometimes enabled by, the platform chosen. Therefore, managers should be aware that the use of specific levers may be possible or convenient on a specific platform, while unusual or impossible on another, depending on the peculiarity of the platform and its habitual target. Among the organisational levers connected to the choice of platform, this research finds, for example, problem specification. The literature (see Erat and Krishnan, 2012) claims that the more detailed an organisers' problem specification, the greater their satisfaction about perceived submission quality will be. Nevertheless, common people often do not have the skill set required to understand complex problem specifications. Therefore, managers

should take into consideration that briefs (which this paper used as a proxy of problem specification) should be detailed and information-rich on broker platforms, yet less detailed and complex on social media and proprietary platforms. Among managerial levers, some differences in the evaluation criteria defined on broker platforms with respect to those defined on social media or proprietary platforms have been identified. The literature (see e.g. Hjalmarsson and Rudmark, 2012) claims that excessively restrictive criteria may repress participation. Managers should remember that in the case of broker platforms - where the goal is not the quantity but the quality of submissions - restrictive evaluation criteria should be the rule. On the contrary, on social media or proprietary platforms, evaluation criteria should not be even mentioned or expressed in general terms. Among the technological levers connected to the choice of platform, the toolkit is a relevant aspect. Managers should provide sophisticated tools tailored to professional users on broker platforms, whereas, on social media or proprietary platforms, where the goal is to engage the crowd or brand lovers, toolkits could be absent and, if present, should be focused on community functionalities.

Lastly, based on empirical evidence, managers should use different types of platforms in a complementary way to address a variety of targets (brand lovers, common people and professionals) and obtain differing contributions (from ideas to fully functional solutions). As underlined in the literature, hosting contests on proprietary platforms is a time-consuming and resource-demanding endeavour (Brandt and Dimberg, 2015). This may supersede the advantages connected to a higher degree of autonomy in defining contest characteristics and to the development of the company's internal capabilities for how to conduct OI (Boudreau and Lakhani, 2013). This may help to explain why one of the two proprietary platforms used to host contests, in the sample considered, was "converted" into a platform to collaborate with consumers on a regular and continuative basis. In fact, in this way, management effort is less concentrated, ideas and innovative solutions are submitted without temporal constraints and the company takes up to eight weeks to make the decision whether or not to follow up and pursue the idea. This seems a reasonable choice in order to nurture and grow external innovation potential over time.

Limitations of this research are acknowledged and conclusions should be considered in this context, also bearing in mind that the companies investigated in this paper consist solely of top brands in the sector. Future research should strive to obtain larger samples, develop a set of fine-grained hypotheses, and test them by using appropriate statistical techniques. A quantitative-based approach could beneficially complement the qualitative insights provided in the present research and provide practical guidelines to developing an adequate mix of technological, organisational and managerial levers in support of OI processes. Furthermore, it could be fruitful to conduct interviews with some

of the organisers in the contests examined in order to assess the validity of our findings and collect data about further developments after the contest, in line with the suggestion of Juell-Skielse et al. (2014).

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Annex

<Please insert Table 2>

Technological levers	Organisational Levers	Managerial levers
Platform type	Composition of groups	Rewards
Community functionality	Contest length	Evaluation jury
Toolkits	Contest mentors/facilitators	Evaluation criteria
	Problem specification (task specificity)	Submission visibility
	Structural composition	Participant visibility
	Information structure	Feedback

Table 1: Technological, organisational and managerial levers, based on Bockstedt *et al.*, 2014; Bullinger and Moeslein, 2010; Hjalmarsson and Rudmark, 2012; and Juell-Skielse *et al.*, 2014.

BRAND	CONTEST TITLE	YEAR	PLATFORM	PLATFORM TYPE	PURPOSE
Budweiser	Designated driver	2008	Poptent	Broker	advertising innovation
	Protecting the environment	2008	Poptent	Broker	
	King of beer	2013	Zooppa	Broker	
	"___is hard, rita's are easy"	2014	Tongal	Broker	
	Bud light cinco de ritas	2014	Tongal	Broker	
	Bud light rita mixology	2014	Tongal	Broker	
	Bud light ritas unexpected fun	2014	Tongal	Broker	
	Bud light's "up for whatever	2014	Tongal	Broker	
	Twist of summer refreshment	2014	Tongal	Broker	
Coca Cola	Virtual thirst	2007	Second Life	social media	advertising innovation
	Impossible IS Possible	2009	Eyeka	Broker	
	Cannes 2010	2010	Mofilm	Broker	
	Coca Cola's mobile app challenge	2010	Brandappchallenge.com*	proprietary	product innovation
	Energizing refreshment	2010	Eyeka	Broker	advertising innovation
	Interpreting Coca Cola as an energizing refreshment	2010	Eyeka	Broker	
	Zero compromise	2010	Jovoto	Broker	product innovation
	Brand App Challenge	2011	Brandappchallenge.com*	proprietary	
	Coca Cola can design	2011	Eyeka	Broker	
	Coke Zero at Cannes 2011	2011	Mofilm	Broker	advertising innovation
	Design + Award	2011	Jovoto	Broker	product innovation
	Coca Cola Crazy contest	2012	Mofilm	Broker	advertising innovation
	Coca Cola Light's video contest	2012	Mofilm	Broker	
	Live positively	2012	Mofilm	Broker	
	Open Happiness	2012	Mofilm	Broker	

	Show us the last time you did something for the first time	2012	Eyeka	Broker	
	When will happiness strike next	2012	Mofilm	broker	
	Cannes 2013	2013	Mofilm	Broker	
	Coke value	2013	Mofilm	Broker	
	Coke Zero	2013	Mofilm	Broker	
	African Safari video contest	2014	Mofilm	Broker	
	Coca-Cola China print	2014	Eyeka	Broker	
	Coca-Cola China video contest	2014	Eyeka	Broker	
	Moment of happiness	2014	Talent House	Broker	
	Myths	2014	Eyeka	Broker	
	Open Opportunities	2014	Artemisia	Broker	
	Positive Conscious Choice	2014	Mofilm	Broker	
	Recycle Challenge	2014	OpenIDEO	Broker	
	This is AHH	2014	Twitter	social media	
	Vending machine	2014	MindSumo	Broker	
	Cannes Lions 2015	2015	Mofilm	Broker	
Danone	Daily dose of Actimel	2010	Zooppa	Broker	advertising innovation
	Create a tv ad for Danone yogurt	2011	Eyeka	Broker	
	Danone community	2011	Zooppa	Broker	
	Danone Danio's video contest	2011	Brandfighters	Broker	
	Design a pack for Vitasnella, the women's yogurt	2011	Eyeka	Broker	product innovation
	Have fun with yogurt, 365 days of the year	2011	Eyeka	Broker	advertising innovation
	Loving your tummy	2011	Eyeka	Broker	
	Say yes	2011	Ideabounty.com	Broker	

	Show us how you can enjoy more of life with Actimel	2011	Eyeka	Broker	
	Show us why it is your favourite yogurt	2011	Eyeka	Broker	
	Take a small step to win big with Actimel	2011	Eyeka	Broker	
	You are How you eat	2011	Eyeka	Broker	
	Give us a peep of your pleasurable eating personality	2011	Eyeka	Broker	
	Aqua	2012	Eyeka	Broker	
	Can you bring Dino the dinosaur to life?	2012	Eyeka	broker	
	Danissimo Me-moment	2012	Eyeka	Broker	
	Danone Signature	2012	Eyeka	Broker	
	Danone's "Obstgarten pro challenge"	2012	Brandfighters	Broker	
	Infuse silhouettes yogurt's packaging with kindness and diversity	2012	Eyeka	Broker	product innovation
	Mizone	2012	Eyeka	Broker	advertising innovation
	Share Danette's pleasures!	2012	Eyeka	Broker	
	Show us your morning routine with Actimel helps you get ready and prepared for a great day	2012	Eyeka	Broker	
	Water Tweens	2012	Eyeka	Broker	
	When you feel good inside, how does it show on the outside?	2012	Eyeka	Broker	
	Yogi Sip	2012	Eyeka	Broker	

	Activia happy belly: show us a happy belly looks like	2013	Eyeka	Broker	
	Engage and empower pregnant women with an essential app from Aptamil	2013	Eyeka	Broker	product innovation
	Help young moms have a serene first year with their baby	2013	Eyeka	Broker	
	Film making contest	2014	Facebook	social media	advertising innovation
	Poster design contest	2014	Facebook	social media	
	Danone Manifesto Project	2015	Tongal	Broker	
Heineken	Heineken limited edition design contest	2011	Facebook	social media	product innovation
	Invent a new Heineken experience	2011	Eyeka	Broker	
	Make strongbow gold cider the must have drink in a bar	2011	Eyeka	Broker	advertising innovation
	Heineken ideas brewery global draught beer challenge	2012	ideasbrewery.com	proprietary	
	The 60+ ideas challenge	2012	ideasbrewery.com	proprietary	product innovation
	The sustainable packaging challenge	2012	ideasbrewery.com	proprietary	
	60+ Challenge	2013	ideasbrewery.com	proprietary	
	Heineken engagement	2013	Eyeka	Broker	
	Heineken future bottle design challenge 2013	2013	Facebook	social media	
	Heineken unlock legend	2013	Eyeka	Broker	
	Light up the dark with a new Heineken contest	2013	Eyeka	Broker	
	Your future bottle remix challenge	2013	Facebook	social media	
	8 1/2 Short film	2014	Tongal	broker	advertising innovation
	Iconic bar design competition	2014	Tumblr	social media	product innovation
Heinz	Second Top this TV	2007	Youtube	social media	advertising innovation

	Top this TV	2007	Youtube	social media	
Jack Daniel's	What's your thinking about drinking	2011	Poptent	broker	advertising innovation
	Introduce a lighter version of Jack Daniel's to young adults	2013	Eyeka	broker	
Kellogg's	Bring to life how Kellogg's helps give kids a better start to the day	2014	Eyeka	broker	advertising innovation
	Kellogg's music	2014	Eyeka	broker	
	Kellogg's new product	2015	Eyeka	broker	product innovation
	Marvel's avengers age of ultron	2015	Tongal	broker	advertising innovation
Nescafé	Euro design contest	2012	Facebook	social media	product innovation
	Reinvent instant coffee, cafè style	2012	Eyeka	broker	
	Awaken to life	2013	Mofilm	broker	advertising innovation
	Dazzle us with your new concept for the ideal cup of coffee	2013	Eyeka	broker	product innovation
	Better Togheter	2014	Tongal	broker	advertising innovation
	Cappuccino blogger contest	2014	Nuffnang	social media	
	Nescafé fresh start	2014	Eyeka	broker	
	Nescafé Fresh Start	2014	Eyeka	broker	
	Turn coffee into a hip, sought-after chinese new year gift	2014	Eyeka	broker	
	Nescafé Gold Blend Kokufukame	2015	Eyeka	broker	
	Red cup machine	2015	Eyeka	broker	
	Nescafé cafè viet	2015	Eyeka	broker	
Nestlé	Love 100 grand	2007	Poptent	broker	advertising innovation
	KitKat contest	2008	Zooppa	broker	
	Me & my Milo	2011	Eyeka	broker	
	Cereal box	2013	Eyeka	broker	product innovation
	Lil' drums	2013	Poptent	broker	advertising innovation

	MILO +	2013	Eyeka	broker	product innovation
	Lifesavers	2014	Eyeka	broker	
	Milkybar	2014	Eyeka	broker	
	Nestlé good lifers	2014	Eyeka	broker	
	Next generation water bottles	2014	Mindsumo	broker	
	Rolo	2014	Mofilm	broker	advertising innovation
	Crunch Cereals	2014	Eyeka	broker	
	Nestlé breakfast	2014	Eyeka	broker	
	Teach mums - print	2014	Eyeka	broker	
	Teach mums - video	2014	Eyeka	broker	
	Liebst du es süss?	2015	Atizo	broker	
	Can you bring KITKAT up a notch?	2015	Eyeka	broker	product innovation
	Crunch Pitch the next video	2015	Eyeka	broker	advertising innovation
	Lion Cereals	2015	Eyeka	broker	
Pepsi	1st creative challenge in China	2006	Eyeka	broker	advertising innovation
	London film festival	2009	Mofilm	broker	
	Rome 2010	2010	Mofilm	broker	
	Shangai festival 2010	2010	Mofilm	broker	
	Taj Mahal 2011	2011	Mofilm	broker	
	The coke challenger	2011	Brandfighters	broker	
	2012 Pepsi calendar	2012	Behance	broker	
	Pepsi taste	2013	Eyeka	broker	
	Pepsi twist	2013	Eyeka	broker	
	Unexpected contest	2013	Mofilm	broker	
	Pepsi and Marco's pizza	2014	Tongal	broker	
	Pitch Festival	2015	Tongal	broker	
Smirnoff	Smirnoff Machine	2012	Facebook	social media	advertising innovation

	Reinventing Culture	2013	Mofilm	broker	
	Smirnoff Ice	2013	Eyeka	broker	product innovation
	Can you create the next new and exciting Smirnoff ice flavors?	2013	Eyeka	broker	

Table 2: Contests organised in time-span 2006-2015