

**Louvain School of Management**

# **How to foster creativity in social media contests?**

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## Table of contents

I. Introduction.....	6
1) Engagement on social networks.....	8
a) Consumer engagement on social media.....	8
i) Consumer engagement: definition .....	8
ii) Social media (definition) .....	10
iii) Social media marketing and its impact on consumer engagement.....	12
iv) Engagement behaviour (dimensions) .....	13
b) How to create engagement with social media .....	16
2) Creative contests .....	18
a) Crowdsourcing .....	18
i) Definition .....	18
ii) Crowdsourcing contest .....	20
iii) Configuration of crowdsourcing contest .....	20
b) Co-creation .....	22
3) Creativity.....	24
a) Creativity: Definition.....	24
b) How to generate creativity .....	24
4) Summary of information.....	26
II. Empirical quantitative study .....	27
1) Hypothesis to be tested.....	27
a) Hypothesis regarding the reward received by participants.....	27
b) Hypothesis regarding the emotional engagement from participants.....	28
c) Hypothesis regarding the cognitive engagement from participants.....	28
d) Hypothesis regarding the perception of constraints by participants.....	28
2) Design of the study .....	29
a) Survey design .....	29

## II.

b) Target audience .....	31
c) Collection method.....	31
3) Data analysis .....	31
a) Data coding .....	31
b) Demographic data .....	33
c) Factor analysis of multi-item scales .....	34
4) Analysis and interpretation of the results .....	41
a) Test of the hypotheses.....	41
i) Analysis of H <sub>1</sub> .....	41
ii) Analysis of H <sub>2</sub> .....	47
iii) Analysis for H <sub>3</sub> and H <sub>4</sub> .....	52
iv) Additional analysis (for H <sub>2</sub> -H <sub>3</sub> -H <sub>4</sub> ).....	53
b) Confirmation or refutation of hypotheses (summary) .....	57
c) Discussion.....	57
i) Interpretation of results (theoretical discussion).....	58
ii) Managerial recommendations.....	59
iii) Limitations of this work.....	60
III. Conclusion .....	61
IV. References .....	63
V. APPENDIX .....	71

## Table of content (table)

<a href="#">Table 1: Data coding</a> .....	32
<a href="#">Table 2: Age distribution</a> .....	33
<a href="#">Table 3: Gender distribution</a> .....	33
<a href="#">Table 4: Gender x Age Crosstabulation</a> .....	34
<a href="#">Table 5: Descriptive Statistics “creativity”</a> .....	35
<a href="#">Table 6: KMO index and Bartlett’s test “creativity”</a> .....	36
<a href="#">Table 7: Total variance explained “creativity”</a> .....	37
<a href="#">Table 8: Scree plot “creativity”</a> .....	38
<a href="#">Table 9: Matrix of components resulting from principal component extraction “creativity”</a> ...	38
<a href="#">Table 10: Cronbach’s alpha “creativity”</a> .....	39
<a href="#">Table 11: Summary of factor analyses</a> .....	40
<a href="#">Table 12: Tests of Homogeneity of Variances</a> .....	42
<a href="#">Table 13: Descriptive statistics of opinions on creativity according to the type of reward</a> .....	42
<a href="#">Table 14: Graph of opinions on creativity according to the type of reward</a> .....	42
<a href="#">Table 15: ANOVA test on the opinions on creativity according to the type of reward</a> .....	43
<a href="#">Table 16: Multiple comparisons on the opinions on creativity according to the type of reward</a> .....	44
<a href="#">Table 17: ANOVA: simple linear regression “emotional engagement”</a> .....	48
<a href="#">Table 18: linear regression model summary “emotional engagement”</a> .....	49
<a href="#">Table 19: Coefficients linear regression “emotional engagement”</a> .....	50
<a href="#">Table 20: Graph of linear regression “emotional engagement”</a> .....	51
<a href="#">Table 21: Linear regression analyses (summary)</a> .....	53
<a href="#">Table 22: Multiple linear regression (ANOVA)</a> .....	55
<a href="#">Table 23: Multiple linear regression (Model Summary)</a> .....	55
<a href="#">Table 24: Multiple linear regression (Coefficients)</a> .....	56

<a href="#">Table 25: Summary of hypotheses (confirmation or refutation)</a> .....	57
<a href="#">Table 26: ANOVA: linear regression “cognitive engagement”</a> .....	71
<a href="#">Table 27: Linear regression model summary “cognitive engagement”</a> .....	72
<a href="#">Table 28: Coefficients linear regression “cognitive engagement”</a> .....	74
<a href="#">Table 29: Graph of linear regression “cognitive engagement”</a> .....	75
<a href="#">Table 30: ANOVA test on regression mode “perception of constraint”</a> .....	77
<a href="#">Table 31: Linear regression model summary “perception of constraints”</a> .....	78
<a href="#">Table 32: Coefficients linear regression “perception of constraints”</a> .....	79
<a href="#">Table 33: Graph of linear regression cognitive engagement”</a> .....	80



## **I. Introduction**

We live in an era where companies and brands increasingly seek to stand out in the eyes of their customers. Nowadays, more and more are looking for creativity to meet new demands and cope with new fashions and trends. We can also add that innovation has become a must for firms wishing to prosper at their best and stand out in the competition. Indeed, innovation is considered essential to the strategy and performance of a company.

The search for innovation and creative opportunities is a key factor in developing companies to bring them added value. Indeed, companies have quickly realised that the generation of new ideas cannot be restricted to marketing and development departments (Surowiecki, 2004; Poetz & Schreirer, 2012). With customers seen as a new source of innovation (Fuller, 2010) companies realise that they need to go beyond conventional formats and focus more on consumers, who can bring new ideas and knowledge. To do this, firms will increasingly rely on the creativity and capabilities of customers.

The presence and use of the internet and social networks allow today's companies to better interact with consumers, both in development processes and in more creative phases. We can say today that thanks to these activities, customers are more and more considered major actors, being able to give their opinion about a service or a product, to get involved or to exchange with other customers about products (Reniou, 2009). Companies now seek to create a co-creative situation with their consumers.

Brands are increasingly using creative competitions for their communities or communities linked to co-creation platforms. Their aim is to stimulate the creativity of internal marketing teams in terms of new products. Some companies run creative

competitions via social media. Indeed, companies are using contemporary tools to establish innovation contests, mostly open to all, to have the opportunity to tap into the innovation and originality of the crowd to create new and original products that could meet the new expectations of consumers. The managers of these brands/companies are therefore constantly asking themselves how with these online competitions they can encourage creativity among their participants, to have the most original and revolutionary ideas possible.

The main objective of this thesis is therefore to contribute to the study of the promotion of creativity in social media contests. A good number of studies already exist about creativity and competitions, but here we would like to bring this theme back into the era of time, by trying to add the social media aspect to these competitions. This thesis will therefore be based on the following research question: **“How to foster creativity in social media contests?”**

The aim here is to find factors that could impact the involvement and creativity of participants in an online competition. Among other things, we will measure whether the expectation of a reward for the contest's winners influences participants' creativity. We will also measure whether dimensions of consumer engagement (namely emotional and cognitive engagement) could influence participants and thereby influence their creativity. Finally, we will also measure the participants' perception of the competition's constraints to identify whether they influence their creativity.

To answer this question, we will begin our research with a review of the existing literature. This preliminary work to our analyses will review the current knowledge on engagement and social media. In a global way: through definitions, functions, and implications. We will also study the different types of creative competitions known today. We will then look at creativity and how it can be fostered.

The second part of the work sets out the hypotheses that emerged from the literature review. To verify them, we carried out a survey. We will detail the different stages of our practical part and analyse the results, which will allow us to present the managerial implications and a conclusion linked to the study. The limitations of this work will also be presented.

## **II. Literature review**

### **1) Engagement on social networks**

#### **a) Consumer engagement on social media**

To answer the research question "How to foster creativity in social media contests", companies need to start by looking at customer engagement on social networks. With the rise of the internet and digital, the marketing concept of consumer engagement is increasingly being discussed. Indeed, the increased development of the internet and social networks has given companies the opportunity to interact in real time with their consumers.

#### **i) Consumer engagement: definition**

Let's start by explaining what customer engagement is in general. According to the academic readings the consumer engagement has been defined in various ways (Tsai & Men, 2017). Consumer engagement is an important concept in marketing strategy but at the same time it can be difficult to clearly define, due to the ambiguity of the concept.

Indeed, Raajpoot (2019) explains that one of the main reasons for this ambiguity is that it can only be defined in relation to the context and will therefore have a different meaning depending on the different contexts encountered. Indeed, this concept can have different versions, each focusing on a particular aspect of relationship between the consumer and the brand. Customer engagement (or CE) is seen as an enthusiastic

partnership between an organization and its customers that is based on collaboration with customers and their support (Dissanayake *et al.*, 2019).

Customer engagement can be seen by the company as an assessment of their customers' loyalty to the organization. Indeed, consumer engagement with brand evaluation can usually lead to loyalty behaviour with long-term benefits for a brand (Dissanayake & Ismail, 2015). According to Hollebeek (2011) customer engagement and brand loyalty have a strong connection, moreover engagement (of an online community) according to Dessart *et al.* (2015) leads to an increase in brand loyalty. Customer engagement can also be explained in terms of customer psychology, and which can therefore have an impact on a consumer's loyalty to a brand. Bowden (2009) for example defines customer engagement as a psychological process that will include both emotional and cognitive aspects. Bowden (2009) also sees engagement as a kind of repeated process that starts with customer satisfaction and ends in customer loyalty, where the transition path to this customer loyalty must include calculative and emotional commitment, trust, involvement, and customer delight. Van Doorn *et al.* (2010, p. 253) add that consumer engagement represents a set of "behavioral manifestation toward a brand or firm, beyond purchase, that results from motivational drivers." Still in this psychological connection and loyalty aspect between the consumer and the brand, the author Sedley (2010) gives his definition of consumer engagement as a set of interactions that are repeated and that will ultimately reinforce the investment (emotional, physical, or psychological) that a customer may have in a brand.

Other readings and studies offer definitions of consumer engagement, especially within a virtual community. For example, Brodie *et al.* (2011) explain that consumer engagement within a brand's virtual community can be considered as a set of interactive experiences between consumers and the brand or between other people from this community. The authors Wagner and Majchrzak (2007, p. 20) give an almost identical

definition, indeed according to them the consumer engagement characterizes “intensity of customer participation with both representatives of the organization and with other customers in a collaborative knowledge exchange process”. Furthermore, Lusch and Vargo (2006) believe that interactive customer experiences in collaboration with other actors can represent this aspect of engagement. Brodie *et al.* (2011, p. 107), also define consumer engagement as “a multidimensional concept comprising cognitive, emotional, and/or behavioral dimensions, and plays a central role in the process of relational exchange where other relational concepts are engagement antecedents and/or consequences in iterative engagement processes within the brand community.” Authors Vivek *et al.* (2012, p. 133) see consumer engagement as “the intensity of an individual’s participation and connection with the organization’s offerings and activities, which either the customer or the organization initiates”. Finally, Brodie *et al.* (2011, p. 107) also propose this definition: “Consumer engagement is a context-dependent, psychological state characterized by fluctuating intensity levels that occur within dynamic, iterative engagement processes.”

## **ii) Social media (definition)**

Social media has therefore become a more than useful element for an effective and up-to-date marketing campaign. Indeed, social media is one of the most used tools in marketing communication, whether it is to contribute to brand awareness or consumer engagement. However, to make the best use of these media, it is useful to have a full understanding of their definition and uses.

Regarding the nature of social media, authors Kaplan and Haenlein (2010) describe social media as deeply interactive platforms where either individual users or communities can use them to share, create, edit, or discuss user-generated content. According to these same authors, corroborated by others, we know that these social media can have different platforms. Indeed, we can mention the existence of platforms such as forums with

Microsoft MSDNS, and blogging or microblogging platforms such as Twitter. These authors also add the presence of professional networking platforms such as LinkedIn or Xing, collaborative projects such as Wikipedia, or social networks such as Facebook and Google+ (Kaplan & Haenlein, 2010; Cortizo *et al.*, 2011). The authors Piller *et al.* (2012) add other examples of platforms for these social media and specify that these media can also be in a format, whether it is video platforms like YouTube, or photo platforms like Flickr. It can even be social media in the form of virtual worlds or online gaming.

These platforms according to Piller *et al.* (2012, p. 8) “have been used by large and small firms to improve their internal operations and to collaborate in new ways with their customers, business partners, and suppliers”. However, Culnan *et al.* (2010) point out that these platforms do not bring value in themselves for companies, but rather how these social media platforms are used, and the content created and shared on the platforms that bring value.

Social media allow for the development and highlighting of social interactions, thus revealing a commitment from a community. In the internet age and constant connection, social media allows a brand to establish a dialogue with its community. According to Kim and Ko (2012), social media impact promotional strategies through its content, offering interactive options for customers to engage with brands, firms, and even related communities. In other words, social media have an impact on the relationship between customer co-creators and on the relationship between customers and companies. In addition to this option, Dahlhoff (2016) adds that social media give opportunities for customers to be aware of and motivated towards buying decisions on brands, including being influenced via posts, pins, and tweets.

### **iii) Social media marketing and its impact on consumer engagement**

According to research by Barger *et al.* (2016), 5 elements antecedent are necessary to create customer engagement with social media. Indeed, these elements have an impact on customers and how they might be affiliated with a brand by using internet social media.

The first element that the authors describe is the disposition of customers towards a brand, which can impact customer engagement. The authors call this first element the brand factor. Barger *et al.* (2016, p. 271) state that “six factors related to brands have been investigated in terms of their effects on consumer engagement: brand attitude, brand warmth, for-profit vs non-profit status, word-of-mouth for related brands, spending on traditional advertising and a firm’s commitment to communication technologies.”

The second element that impacts consumer engagement is the arrangement of item-related elements can influence the consumer engagement through web-based networking media, which also involves customer participation in an item or management. These “item-related elements” are the followings: “hedonic vs utilitarian products, new vs updated products, extant product reviews, product quality, and product experience” (Barger *et al.*, 2016, p. 272). We can call this second element the product factor.

The third element according to the authors that can influence customer engagement through social media are customer-related variables. Customers are interested in life on the Internet for a variety of reasons, such as entertainment, need for data, social relationships, influence, incentives, and impression management (Barger *et al.* 2016; Kim & Yang, 2017). In other words, this element is considered the consumer factor. Authors Shao and Ross (2015) note that customers' motivations for engagement with a brand and community can change over time. Indeed, the authors explain that at the very beginning when a customer will want to join and engage in a brand's community on a social medium, it is above all because he will want to find information and socialize. Then,

once the customer is familiar with the community, his first motivation will change to entertainment. After that, the entertainment motivation will no longer be the primary motivation for the customer, what will drive the customer's engagement will be his need to gather information about the brand and the products it offers.

The fourth predecessor item is the content factor, that is, content items that must offer a proposed message and a passionate conclusion. The form and aim of the proposed content can impact the engagement of a brand's consumers. In other words, the authors Barger *et al.* (2016, p. 273) explain that “branded content with which consumers may engage clearly shapes the extent to which consumers do engage”. For example, studies have shown that the attitude customers have towards content is a key factor in their willingness to share on social media (Huang *et al.*, 2013). In addition, customers are more likely to be impacted and attracted by posts that are more emotionally based and storytelling than by a more commercial approach (Swani *et al.*, 2013).

The last factor affecting consumer engagement is the social medium itself. Indeed, the understanding and use of consumer engagement can be optimised and mastered through the use and understanding of the roles of the different social media platforms in place.

#### **iv) Engagement behaviour (dimensions)**

Concerning customer engagement behaviours towards a brand, we have seen that consumer engagement being a varied and ambiguous concept, can be used and described using different contexts. Indeed, according to the authors Kuvykaite and Tarute (2015, p. 654) “these contexts include social networks, value cocreation paradigm, usage of media, consumer experience, loyalty programmes, management of consumer relations, development of brand, engagement to the creation and development processes of products and services, service marketing, consumer behaviour and others.”. However,

despite this large amount of research related to consumer engagement, these same authors believe that the aspect of dimensionality remains a relevant research topic to analyse for consumer engagement.

According to academic readings, the first studies concerning the dimensions of consumer engagement were conducted during 2005 and 2006 (Kuvykaite & Tarute, 2015). Indeed, early research by Patterson *et al.* (2006) states that the dimensions of consumer engagement are dedication, vigour, interaction, and absorption. Also agreeing that consumer engagement was a multidimensional concept, author Vivek a few years later also did some research. Thus, the studies of Vivek (2009) put forward five conceptual dimensions about consumer engagement.

The first dimension is the dimension of awareness, described by Vivek (2009, p. 60) as “being conscious of and having knowledge of the focus of engagement”. The author adds that the more engaged the consumer, the more interested they are in acquiring information and knowledge about the focus of the engagement.

The second dimension is the enthusiasm dimension, described by Vivek (2009) as strong excitement about the focus of engagement. Indeed, concerning the consumer compartment via this dimension, Vivek (2009, p. 60) explains that “engaged consumers are visibly excited about their active participation with an offering or activity. Their enthusiasm encourages them to take risks and overcome difficulties or obstacles in participating”.

As a third dimension, we have the dimension of interaction, a dimension that is defined by Vivek (2009, p. 61) as an “interchange of ideas, thoughts, and feelings with other people about the engaged consumer’s participation and the focus of engagement”. This dimension is also related to consumer behaviour and commitment. Indeed, Vivek

(2009) describes that the higher the engagement of the consumer, the more open he is to share his feelings, experiences, and opinions with other consumers.

The fourth dimension is that of activity. According to Vivek (2009, p. 60), it represents all the "actions focused on the program or offering the person is engaged in". According to the author, a customer who is engaged will be more likely to participate in engaging activities or transactions.

Finally, the fifth and last option presented by Vivek is the extraordinary experience dimension. This notion of extraordinary dimension is described by Privette (1983, p. 1366) as the "sense of newness of perception and process". Vivek (2009, p. 62) links this dimension to consumer behaviour and engagement by saying that "engagement with an offering or activity always seems new and different to the engaged consumer. When they reflect upon the experience, it seems intense, and refreshing. Such an experience gives the feeling of personal control, and clear focus."

Other studies such as Hollebeek (2011) and Hollebeek *et al.* (2014), analyzed the concept of consumer engagement under 3 other identified dimensions, namely the cognitive (thoughts), emotional (feelings), and behavioral (action) dimension.

Based on Hollebeek's studies, Kuvykaite and Tarute (2015, p. 656) detail this cognitive dimension as representing a "consumer's level of engagement object related thought processing, concentration and interest in specific object". Regarding the emotional dimension, these Kuvykaite and Tarute (2015, p. 656) describe it as a "state of emotional activity also known as the feeling of inspiration or pride related to and caused by engagement object". Finally, the last dimension, the behavioral, is described by Kuvykaite and Tarute (2015, p. 656) as a "state of consumer behavior related to engagement object and understood as endeavor and energy given for an interaction."

## **b) How to create engagement with social media**

Academic research shows that the use of social media can help create engagement for consumers. Indeed, according to Sashi (2012), we know that a customer engaged with a brand becomes a collaborator of this one to bring added-value processes helping to better satisfy their demands and those of other consumers. To create this consumer engagement with the help of social media, Sashi (2012, p. 260) explains that “The interactivity of social media greatly facilitates the process of establishing enduring intimate relationships with trust and commitment between sellers and buyers”. We understand here that the interaction of consumers with social media will lead to their engagement.

The use of social media to create engagement in marketing strategies and campaigns can be guided by the concept of the consumer engagement cycle established by author Sashi (2012). Indeed, according to Sashi (2012) the different steps to achieve a relevant consumer engagement represents according to the author the consumer engagement cycle, a concept divided into seven levels of engagement: connection, interaction, satisfaction, retention, commitment, advocacy, and engagement.

On the topic of connection, Sashi (2012) describes this level as the set of relationships and interactions between a seller and a consumer for the purpose of connecting with each other. The use of modern social media can be an actor in these connections. In fact, according to Sashi (2012, p. 260) "social media greatly facilitate the establishment of connections with a large number and wide variety of individuals and firms." In other words, social media is used by marketers to attract a target audience and increase its reach.

Interaction allows consumers to interact with sellers and other customers (Sashi, 2012). With the help of social media, more modern than traditional means of

communication, these interactions are therefore less restricted in terms of time and space, allowing for faster, continuous communication and interaction with a larger group of consumers or community (Sashi, 2012). Furthermore, Sashi (2012, p. 261) adds that “sellers can play an active role in the formation of these communities using social media supplemented by the tools traditionally used to serve customers. Interactions among sellers and their customers can improve understanding of customer needs”. We understand that social media facilitates communication and interaction between marketers/brands and customers, but also communication from customer to customer.

Regarding the satisfaction level of the engagement cycle, this is only an intermediate and strategic step, but it is still necessary for the consumer to be in constant interaction with the sellers and therefore to be able to carry out the real outcome, namely the consumer engagement (Sashi, 2012). Here, social media with their content can be useful, especially for measuring consumer satisfaction. Indeed, customer satisfaction can be measured in different ways, such as through blog posts (Macario *et al.*, 2013), surveys (Woolley & Peterson, 2012) or analysis from audience’s comments (James *et al.*, 2013).

Regarding retention, we know that represents global satisfaction through time or very positive feelings (Sashi, 2012). The author Sashi (2012, pp. 262-263) also adds that “overall satisfaction over time emerges as a result of repurchases and implies a longterm relationship between seller and customer but not necessarily highly positive emotions for each other. On the other hand, a customer’s highly positive emotions for a seller do not imply that the customer has a long-term relationship with the seller.” Sashi (2012, pp. 263) therefore concludes that “retention may be the result of enduring relationships without emotional bonds or emotional bonds without a long-term relationship”.

Commitment is the result of two dimensions of commitment in a consumer relationship, namely a calculative commitment and an affective commitment (Sashi, 2012). Calculative commitment is the result of a rational decision (such as switching costs

or lack of choice) and results in customer loyalty (Sashi, 2012). Author Sashi (2012, p. 263) adds that calculative commitment " leads to higher levels of customer loyalty and enduring relationships with sellers". In contrast, we have affective commitment which is more emotionally based and is the result of reciprocity and trust in a relationship, and results in consumer delight (Sashi, 2012). Sashi (2012, p. 263) notes that an "affective commitment leads to higher levels of trust and emotional bonds in relationships with sellers."

The advocacy level in the consumer engagement cycle is set up when a delighted customer decides to interact using social media with other consumers to share their positive experiences and feelings about a brand or product (Sashi 2012). The last level, commitment, is put in place when " delighted or loyal customers share their delight or loyalty in interactions with others in their social networks and become advocates for a product, brand, or company, the foundation has been laid for proceeding to the next and perhaps most important step in the cycle, customer engagement" (Sashi, 2012 p. 264). Customer engagement thus amplifies the role of customers by including them in the value creation process as co-creators of value. (Sashi, 2012)

## **2) Creative contests**

### **a) Crowdsourcing**

#### **i) Definition**

Crowdsourcing can be defined in many ways, but here are a few of them. The term crowdsourcing has been defined by the authors Afua and Tucci (2012) as being the outsourcing of a task to a group of people rather than to a person specifically designated for that task, all in the form of a public call for contributions. Crowdsourcing is, according to Brabham (2009), the act of operationalising the wisdom of the crowd and setting up a

process that allows the collective intelligence of online users to be harnessed and used for productive purposes.

Crowdsourcing is a term closely related to similar concepts according to Simula and Ahola (2014), such as collaborative innovation (Sawhney *et al.*, 2005), collective intelligence (Doan *et al.*, 2011), user innovation (Von Hippel, 2005), customer empowerment (Fuchs & Schreier, 2010), open innovation (Marjanovic *et al.*, 2012) and used-generated content (Liu *et al.*, 2011).

The authors Estellés-Arolas and González-Ladrón-de-Guevara (2012) have established a definition that can match and cover all types of crowdsourcing. The definition is the following: The authors Estellés-Arolas and González-Ladrón-de-Guevara (2012) have established a definition that can match and cover all types of crowdsourcing. The definition is the following:

“Crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage that what the user has brought to the venture, whose form will depend on the type of activity undertaken.” (Estellés-Arolas and González-Ladrón-de-Guevara, 2012 p. 197)

## **ii) Crowdsourcing contest**

The number of crowdsourcing competitions on the internet is nowadays on the rise, with competitions being used for both problem solving and product design ideas. (Steils & Hanine, 2016).

These crowdsourcing competitions can bring benefits to the companies and brands that use them, for example the authors Schenk and Guittard (2011) say that these contests can give firms the opportunity to benefit from low-cost resources. Besides, crowdsourcing competitions also allow companies to optimise the degree of market acceptance of one of their products (Rajala *et al.*, 2013). Another advantage is that it can create a win-win relationship with consumers (Djelassi & Decoopman, 2013). According to Fuller (2010), it could also help minimise the failure rate of new product launches.

According to several academic readings, crowdsourcing competitions include design competitions, idea competitions as well as innovation and research tournaments. (Faillant *et al.*, 2016; Boudreau & Lakhani, 2013). Other readings show us in which situations crowdsourcing can be used, such as new product development (Afuah & Tucci, 2012), new idea and innovation creation (Poetz & Schreier, 2012; Piller & Walcher, 2006) or marketing, advertising, and brand building purposes (Burmam, 2010; Whitla, 2009)

## **iii) Configuration of crowdsourcing contest**

Approaches to crowdsourcing innovations can be categorised into two entities, the first being internal crowdsourcing and the second being external crowdsourcing (Vukovic & Bartolini, 2010). Based on academic readings and research on crowdsourcing, authors Simula and Ahola (2014) distinguished four distinct configurations of crowdsourcing used in firms, these four configurations are internal crowdsourcing, community crowdsourcing, open crowdsourcing, and crowdsourcing via broker, the latter three being considered as a kind of external crowdsourcing.

The main idea of internal crowdsourcing in Simula and Ahola (2014, p. 402) is “to leverage the expertise and heterogeneous knowledge of an industrial firm's employees. Arguably, employees possess rich and often tacit information on their firm's customers, the firm's product and service offering, production processes, and many other areas that are vital for the competitiveness of the firm”. Internal crowdsourcing is therefore applied to internal groups of people, usually the employees of a firm.

Regarding community crowdsourcing, Simula and Ahola (2014, p. 402) state that “Community crowdsourcing taps in the expertise of densely connected networks of experts working on a specific topic or challenge. Ultimately, participants become known in community crowdsourcing when the selection or joining process is completed. However, if the call to join the community reaches a sufficiently large audience, it is felt that this network also can be included in crowdsourcing.”

About open crowdsourcing, Simula and Ahola (2014, p. 402) detail that the main objective of this configuration is " to gain access to the brightest of ideas by involving as many actors as possible in the innovation challenge and making it as easy as possible for any actor to contribute. In other words, there is no pre-selection and the call to participate is open to everyone — something that “purists” would claim the only way to run crowdsourcing. In any event, there are several successful examples of open crowdsourcing in consumer industry”.

The last configuration is crowdsourcing via brokers, also known as crowdsourcing via innovation intermediaries (Lichtenthaler & Ernst, 2008) or via innovation broker (Lopez-Vega & Vanhaverbeke, 2009). This configuration, according to (Marjanovic et al., 2012), is based on taking companies that are looking for new ideas or a solution to one of their problems and putting them in contact with an organisation introducing specialised agent, like idea-makers and potential solution providers.

## **b) Co-creation**

Consumer co-creation, being defined as an active, social, and creative cooperation between producers and consumers for the purpose of new product development (Roser *et al.*, 2009; Piller & Ihl 2010), knows different methods on how consumers can contribute to companies to develop new innovative activities. Indeed, according to Piller *et al.* (2012, p. 12) Customer co-creation is a “multifaceted phenomenon. A conceptual typology of customer co-creation shall help to structure the relationships and ties between firms and customers in the innovation process”. This typology is divided into 2 dimensions, the “kind of information” dimension and the “form of exchange” dimension (Piller *et al.*, 2012).

The first dimension is therefore the dimension based on the kind of information that can be provided. In innovation process, according to Piller *et al.* (2012) companies often encounter a lot of uncertainty, especially about their management and technological abilities, but also about their target markets. This information can be divided into two categories, each of them aiming at reducing these uncertainties (Diener & Piller, 2013).

First, we have information based on consumer and market needs, also called need information (Diener & Piller, 2013). This could be, for example, information about the preferences, needs, desires or motivations that consumers and users have about a new product or service (Diener & Piller, 2013). Authors Diener and Piller (2013, p. 14) claim that “better access to sufficient need- related information from customers is increasing the effectiveness of the innovation activities. It reduces the risk of failure. Market/need information builds on an in-depth understanding and appreciation of the users’ or customers’ requirements, operations, and systems”

Then we have the information based on technological solution possibilities, also called solution information (Diener and Piller, 2013). This includes, for example,

information on how to apply technology to turn customer needs into new products and services (Diener & Piller, 2013). Authors Diener and Piller (2013, p. 14) also add that “better technological/solution information enables product developers to engage in more directed problem-solving activities in the innovation process”.

In addition to this kind of information dimension, we have the second dimension, the form of exchange dimension. This dimension according to Piller *et al.* (2012) are based on the incentives that drive external actors to participate in a firm-driven innovation activity. The same authors point out that “co-creation is a voluntarily form of firm-customer-customer interaction. Hence it must be motivated by dedicated incentives so that potential participants are willing to engage in a co-creation offering.” (Piller *et al.*, 2012, p. 12).

Using research from Heyman and Ariely (2004) we can separate this dimension, these co-creation methods (based on the money market) into two parts, namely an economic-exchange and a social-exchange category. Let us specify that the economic exchange will represent the methods where a monetary reward will be offered in exchange for proposing solutions and ideas (Boudreau *et al.*, 2011). The social exchange, on the other hand, will represent methods where the participants will take part in the exchange, but rather with the aim of gaining experience (Harhoff *et al.*, 2003).

By combining the two dimensions mentioned above and their divisions, we can obtain four methods/activities of co-creation. (Piller *et al.*, 2012). These activities/methods are lead-user method, toolkit for customer design, solution contest, and ideation contest (Piller *et al.*, 2012). The lead user is a method that combines solution information with social exchange. By combining information need and social exchange, we have toolkits for user co-design. By combining solution information and economic exchange, we find the technical solution contests. And finally, by combining the need information and the economic exchange, we have the ideation contests. (Piller *et al.*, 2012)

### **3) Creativity**

#### **a) Creativity: Definition**

Salgado (2016) says that creativity is a topic that is little explored by marketing researchers, but according to him creativity is a key skill sought by companies that are essential skill sought by companies that want to understand, organise, and control it and master it. It is indeed at the origin of the of new ideas and is therefore one of the major determinants of innovation (Amabile *et al.*, 1996; Amabile, 1988).

To give a simple definition of creativity, we can say that it is a concept that refers to the production of new and useful ideas or the production of a solution to a problem that is given (Amabile, 1996). However, we should not take the shortcut of considering creativity as a synonym for innovation. In fact, these two concepts are very similar, but there is a subtlety between them. Innovation, for example, is distinguished by being defined as the generation, acceptance, implementation of new ideas, processes, products, or services (Thompson, 1965).

Thanks to these two concepts, we can summarise what characterises a creative idea. Firstly, it must be new, i.e., original, and unexpected according to Sternberg and Lubart (1999). Secondly, a creative idea must also be considered useful, in other words, it must provide practical value and be appropriate to the context (Salgado, 2016).

#### **b) How to generate creativity**

According to Salgado (2016) work on consumer creativity has focused on the antecedents of creativity and creative performance. For example, Burroughs and Mick (2004) focus on the topic of creativity in a problem-solving context, i.e., they argue that situational (e.g., time constraint) and personal antecedents can impact creativity. In addition, the emotional aspect can also influence creativity. Indeed, according to Dahl and Moreau (2007), the pleasure felt during a creative situation may depend on a feeling of

autonomy or competence. Salerno (2009) adds that these feelings influence the formation of creativity.

Rewarding participants can also encourage creativity. Indeed, in a context where competent consumers are increasingly solicited, it has become important to choose rewards well to attract these consumers but also to be able to stimulate their production of creative ideas (Salgado, 2016). For example, according to Eisenberger (1992), monetary rewards would enhance participants' autonomy. The reward would make the participant understand the importance of the task, which would therefore intrinsically increase his motivation and consequently his creativity.

Based on his study and experiences, Salgado (2016) explain that extrinsic monetary and non-monetary (e.g., reputational) rewards play an essential role in the "new product development process", the author also adds that they have a positive impact on creativity. For further clarification, Salgado (2016) also add that there is almost no difference between monetary and reputational rewards in terms of their impact on creativity. In fact, according to Salgado (2016), both types of rewards have an equally important role in the creativity of new products. To conclude on rewards, other authors also agree that rewards increase creativity (Eisenberger & Armeli, 1997; Eisenberger & Aselage, 2009).

However, other authors believe that the presence of rewards may, on the contrary, have a detrimental effect on creativity. Indeed, the presence of an extrinsic reward could have a bad effect on autonomy and motivation. Moreover, according to some studies, rewards for performance and creativity have a negative impact on creativity (Baard *et al.*, 2004; Hennessey, 2003).

According to the literature, the kind of instructions given to participants who are required to produce creative ideas could have a significant impact on the outcome (Dennis

*et al.*, 1996; Volkema, 1983). In addition, some research has shown that giving certain instructions that explicitly require participants to be as creative as possible would increase the originality of the ideas proposed by participants (Chen *et al.*, 2005; Locke & Latham, 2013; Stetler & Magnusson, 2015). This could be explained by the fact that according to Amabile (1998) and Garcia Martinez (2015), using instructions of this style could foster intrinsic motivation as well as commitment of the participants, things that implicitly are elements that foster creativity. Finally, according to the authors Chaffois *et al.* (2015) " Research has shown that by specifying the boundaries of the solution space, using task instructions, the originality of ideas can increase.

#### **4) Summary of information**

In our literature review, we therefore raised the fact that the presence of extrinsic rewards in creative competitions, such as monetary or reputational rewards, could foster participants' creativity for several reasons. However, after some further reading, we also found information that said the opposite. Therefore, to form our own opinion, we will measure in the upcoming study whether promised rewards in a creative competition have a positive impact on the creativity of the participants.

We know that consumer engagement must play an essential role in motivating participants in creative competitions, which is why we have dedicated an essential section on consumer engagement development in our literature review. However, we did not find any information on the impact of engaged participants on their creativity. What dimensions of consumer engagement could influence creativity in a branded creative competition? Therefore, we will try to investigate in our study the positive influence of the dimensions of consumer engagement on the creativity of the contest participants.

We have also seen that the creativity of participants can be influenced by the type of instruction given in a competition. Therefore, in our study, we will try to measure the

perception of constraints of the participants during a creative competition, to see if it has a positive impact on their creativity. By carrying out these measurements, we will be able to see if the information found in the instructions can be confirmed with our study sample.

## **II. Empirical quantitative study**

We now come to the second part of the thesis. This part will proceed as follows. Firstly, we will present our hypotheses concerning the fostering of creativity in social media competitions, such as online crowdsourcing. Secondly, we will explain the methodology applied regarding the collection and use of data. Thirdly, we will analyse and interpret the results obtained. Finally, we will present our recommendations, limitations, and our conclusion on this research work.

### **1) Hypothesis to be tested**

As a reminder, here is our research question: "How to foster creativity in social media contests". To try to translate and answer this question, we will establish hypotheses, i.e., statements that can be measured empirically.

#### **a) Hypothesis regarding the reward received by participants.**

According to the marketing literature, encouraging consumer motivation and engagement is becoming a critical point for companies wanting to set up new ideation projects (Boudreau *et al.*, 2011). According to Salgado (2016) it becomes crucial to choose and adapt rewards well to stimulate creative idea generation. To be able to realise this, we will present three crowdsourcing competition briefs in our questionnaires and questions, with three different reward situations. The first will have a situation where there is no reward, the second will offer the winners a monetary reward, and the last one will be a reputation reward.

***H1: Creativity is higher among contest participants when a monetary or reputation reward is expected.***

**b) Hypothesis regarding the emotional engagement from participants.**

In our literature review, we focused heavily on consumer engagement, as we believe that being committed to a brand or a competition must impact on involvement and creativity of participants. That is why we wanted to see if the emotional dimension of consumer engagement could explain or have an impact on the participants' level of creativity.

***H2: Emotional engagement can have positive impact on the creativity of participants.***

**c) Hypothesis regarding the cognitive engagement from participants.**

Still related to consumer engagement, in addition to the emotional dimension, we also wanted to find out whether the cognitive dimension of consumer engagement could influence participants' creativity.

***H3: Cognitive engagement can have positive impact on the creativity of participants.***

**d) Hypothesis regarding the perception of constraints by participants.**

According to the literature we have seen that task instructions can have an impact on the generation of innovative idea, as has explained Chaffois *et al.* (2015). Indeed, these authors have for example explained that bounded and unbounded can have an impact on idea generation. In the next hypothesis, we will measure the participants' perception of constraints to see if this has an impact on their creativity.

***H4: Perception of constraints among participants can positively impact their creativity.***

## **2) Design of the study**

The type of study selected to respond to the problematic of this work will be a quantitative-causal empirical study, which will therefore aim to analyse the effect of an independent variable on a dependent variable.

This study will therefore be based on the use of questionnaires which will aim to measure precise information on the participants' opinion of creativity as well as their perceptions of constraints and their engagement. In short, the aim here will be to see whether certain variables have an impact on the creativity of participants in a social media competition.

### **a) Survey design**

The four independent variables on which we will base our study of creativity in a competition are: Emotional engagement, cognitive engagement, perception of constraints and type of reward. We will therefore see whether these variables have an impact on the creativity perceived by the participants.

The type of questions that will mainly be implemented for this survey will be in the form of Likert scales. It is an attitude scale with response options that allow the consumer to express their feelings. This scale, when it is odd, can give participants the opportunity to answer in a neutral way for certain situations where they find it difficult to admit an opinion. With this scale, a value of 1 corresponds to "Strongly disagree" and a value of 7 equals "Strongly agree", but this will be described in more detail in the next section.

Our questionnaire will be preceded by an online and social media crowdsourcing brief for a drinks brand, the aim of which is to create a new marketing campaign for a new type of energy drink for teenagers aged between 12 and 19. To do this, candidates must

create a digital communication campaign, creating a slogan, a poster, and a promotional film script.

It is important to note that the questions and brief will be the same for all three questionnaires, the only difference between them will be the type of reward obtained by the winners. We will therefore find ourselves sharing 3 questionnaires that are almost identical except for one detail, so we will end up with 3 samples (which will help us to see the impact of the type of reward). It should be noted that simpler socio-demographic questions (such as multiple-choice questions) were also asked in the questionnaires, to have details on our samples (age, gender, etc.)

In summary, our questionnaire will be principally composed of 4 question-items per theme:

- Measurement of emotional engagement (4 items)
- Measurement of cognitive engagement (4 items)
- Measurement of constraint perception (4 items)
- Measurement of creativity (4 items)

Duplicated 3 times, with 3 different subtleties.:

- Scenario 1: The brief states that there is no reward.
- Scenario 2: The brief states that there is a monetary reward. It clearly explains that a sum of money would be given to the winners of this competition. More exactly, 1500 euros would be given for the first, 1000 for the second and 500 for the third.
- Scenario 3: The brief states that there is a reputation reward. It clearly explains that an internship offer will be made to the winners, more precisely a one-year internship will be offered to the first, 6 months for the second and 3 months for

the third. In addition, the names of the winners (top 3) will be posted on the brand's website and social networks.

### **b) Target audience**

This study aimed to find and measure factors that might promote creativity among participants in social media competitions. We, therefore, thought it was wise to base the survey on a large population of adults (so as not to cause legal problems for the organisers). The target age range will therefore be between 18 and 90 years.

### **c) Collection method**

The 3 questionnaires were therefore distributed via several internet channels, including social networks. The main advantage of this type of channel is the speed of getting many responses in a short time. We can also add advantages such as easier geographical dispersion, lower costs, and the fact that participants' anonymity is preserved.

The collection method used is the so-called "snowball" method, which seeks to disseminate a questionnaire to people who will themselves disseminate it to their entourage and so on. The distribution of these questionnaires was facilitated using social networks, notably Facebook.

## **3) Data analysis**

### **a) Data coding**

To be able to proceed with the analyses, we have collected all the data received from our 3 samples in one excel file. We, therefore, have a file where all the answers to the questionnaires are gathered, for more insight, we just added a column to specify the origin of the sample concerning the answers. Basically, with this column, we can know if the

answers come from the situation "No reward", "Money reward" or "Reputation reward". We then imported our excel database into **SPSS**.

To analyse our collected data in the best possible way, we will carry out a coding for our database on IBM SPSS to measure our quantitative and qualitative values. Using the "**Variable view**" sheet in SPSS, we transformed all the '**text**' elements into '**number**' elements and thus recoded the answers. We also specified the type of measurement of our data (i.e., transforming some measurements into interval scales, and others into nominals). All these changes are necessary for the analysis and interpretation of our data and future statistical tests.

Table 1: Data coding

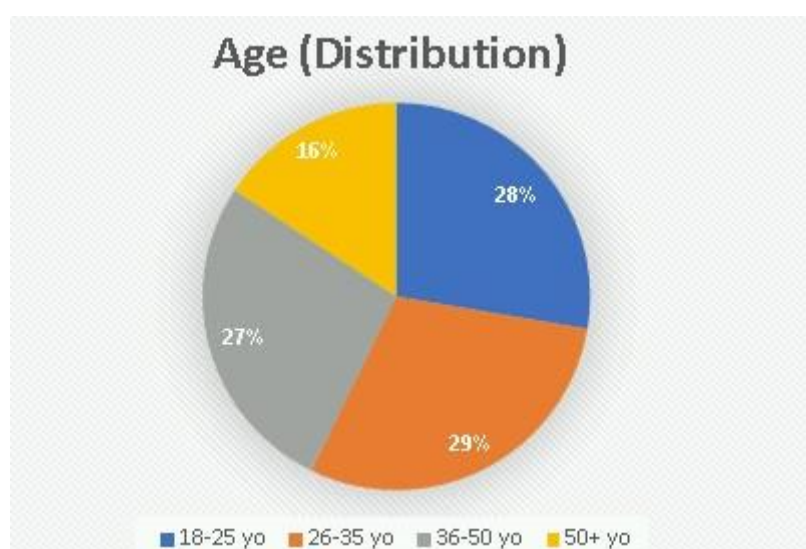
<i>Type of reward</i>	
<b>No reward</b>	1
<b>Reputation reward</b>	2
<b>Money reward</b>	3
<i>Opinion of participants</i>	
<b>Strongly disagree</b>	1
<b>Disagree</b>	2
<b>Somewhat disagree</b>	3
<b>Neither agree nor disagree</b>	4
<b>Somewhat agree</b>	5

Agree	6
Strongly agree	7

## b) Demographic data

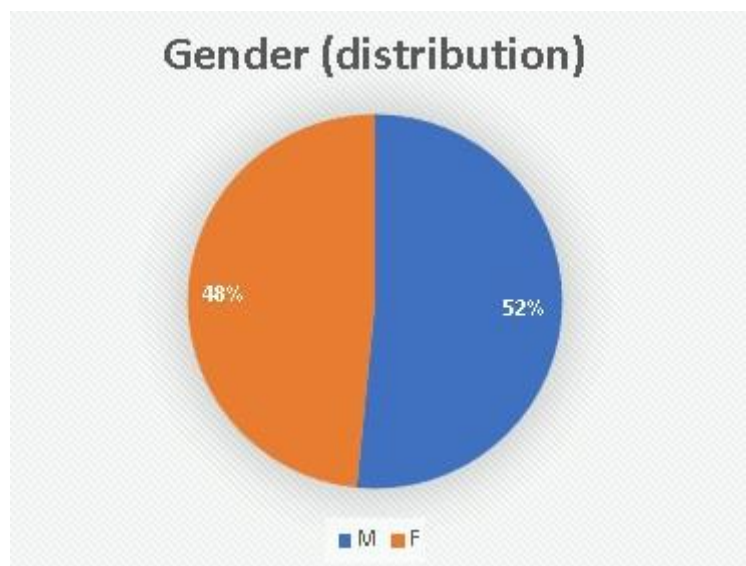
Let us now turn to information about our total sample (**159 participants**). We have divided the sample into four age groups, as follows: 18-25, 26-35, 36-50 and over 50.

Table 2: Age distribution



Looking at the graph on the age distribution of our participants (see table 2), we can see that the distributions are rather balanced, especially for these three groups: 18-25 (28%), 26-35 (29%) and 36-50 (27%). It could be explained by the fact that I tried to share these different questionnaires in as many groups as possible, to have a good heterogeneity of participants. Indeed, these questionnaires were sent among family members, friends, student groups, different sports clubs/associations/scouts, and in companies where I had the opportunity to do internships and student jobs.

Table 3: Gender distribution



Furthermore, by observing the gender distribution (see table 3), we can see that the distribution is quite heterogeneous, with 48% of women and 52% of men.

Table 4: Gender x Age Crosstabulation

Count		Age				Total
		18-25 yo	26-35 yo	36-50 yo	50+ yo	
Gender	Man	24	23	27	8	82
	Woman	20	24	16	17	77
Total		44	47	43	25	159

Finally, we can see that the distributions of participants by age and gender are quite well distributed (see table 4).

### c) Factor analysis of multi-item scales

Factor analysis applies to interval variables. We can perform this analysis on the variables in our study, which are measured with Likert scales. These analyses are used to

group and simplify variables that measure the same idea. It assigns them a '**score**' (summated scale) that simplifies our analyses.

With the help of the SPSS statistical analysis tool "**Dimension reduction**", we will be able to do this analysis for each of the items that measure our variables, which are, as a reminder, emotional engagement, cognitive engagement, creativity, and perception of constraints.

Here are the different steps that need to be carried out during a factor analysis:

- Check that the conditions of the analysis are met; that is to say, to have a KMO index **greater than 0.5** and a significant Bartlett's test **less than 0.05**
- Determine the extraction method to use for the factor analysis
- Determine the number of factors
- Rotate and interpret these factors
- Estimate the reliability of the measurement tool

We will highlight these steps by showing the analysis of the 4 items that are supposed to represent the measure of creativity of the crowdsourcing participants.

### Creativity measurement

- Let us check the conditions of the factor analysis, i.e., the KMO index and the Bartlett's test.

Table 5: Descriptive Statistics "creativity"

Descriptive Statistics			
	Mean	Std. Deviation	Analysis N
Je suis prêt à trouver l'idée la plus originale possible	5,03	1,728	159
Je suis prêt à trouver le plus d'idées possibles	5,03	1,528	159
Je suis prêt à trouver la meilleure solution pour ce concours	5,00	1,547	159
Je suis prêt à regarder au-delà de la vision initiale du problème	5,01	1,443	159

Table 6: KMO index and Bartlett's test "creativity"

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,839
Bartlett's Test of Sphericity	Approx. Chi-Square	700,025
	df	6
	Sig.	<,001

First, we come across the descriptive statistics of the four items we want to link for ease of reference (see table 5). Then, continuing the examination of the tables, we come across the table of **the KMO index** and **Bartlett's test** (see table 6). Here, the aim is to analyse and see if there is a minimum correlation between these items. The KMO indicator increases when the sample size is large enough, when the inter-item correlations are high, when the number of variables is high, and when the number of factors decreases too. Looking at this index (see table 6), we see that the index is **0.839**, which means that the quality of the inter-item correlations is very good.

Next, we can look at the result of Bartlett's sphericity test (see table 6) is significant, as the p-value is equal to **0.001** and is, therefore, less than 0.05. We can therefore reject

the null hypothesis that our data come from a population for which the matrix is an identity matrix. We can therefore reject the null hypothesis indicating that there would be no correlation between our variables. Now that these two conditions have been tested, we can continue our steps.

- Let's determine the extraction method

There are two possible solutions for the extraction method:

- The first method is the "**common factor analysis**", here the factors are going to be estimated based on common variance. The aim is to identify the dimensions that underlie the variables.

- The second method is the "**principal component analysis**". Here is the total variance of the data that will be considered. The aim is to determine the minimum number of factors that will explain the maximum variance of the data to be used in a subsequent multivariate analysis

For our analyses, we will instead focus on a principal component analysis.

- Let's determine the number of factors

It is important to note that the conditions for selecting the number of factors correspond to an initial eigenvalue greater than 1 and a cumulative variance greater than **50%**:

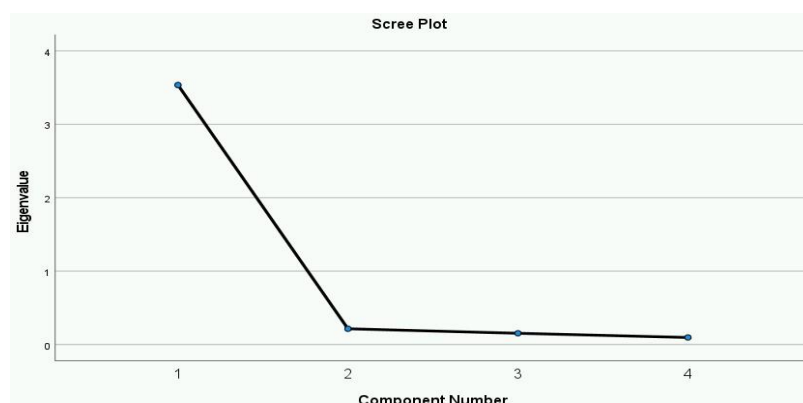
Table 7: Total variance explained "creativity"

Total Variance Explained						
Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,536	88,394	88,394	3,536	88,394	88,394
2	,215	5,368	93,762			
3	,153	3,834	97,596			
4	,096	2,404	100,000			

Extraction Method: Principal Component Analysis.

We will look at the table above corresponding to the total explained variances (see table 7). We notice here, by looking at the cumulative variance percentage and the initial eigenvalues, that there is **one factor** greater than 1. Moreover, we can add that this factor alone explains **88.39%** of the initial information but also three items (see figure 3.5). In short, there is only one factor that stands out here.

Table 8: Scree plot “creativity”



The observation of the “**scree test**” clearly shows us that there is only one factor that covers most of the information (see table 8).

Table 9: Matrix of components resulting from principal component extraction “creativity”

Component Matrix <sup>a</sup>	
	Component 1
Je suis prêt à trouver le plus d'idées possibles	,948
Je suis prêt à trouver l'idée la plus originale possible	,942
Je suis prêt à trouver la meilleure solution pour ce concours	,941
Je suis prêt à regarder au-delà de la vision initiale du problème	,930

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

We can also observe the component matrix table (see table 9). Here, we notice that this component correlates with the four items. Indeed, they have an evolution going in the same direction (i.e., if one increases, the others will also increase).

- Let's do the rotation of factors.

The rotation of factors is done with the aim of maximising upper correlation with lower correlation. However, since in our analysis we only obtained one factor, it is impossible to perform this rotation.

- Let's estimate the reliability of the measurements

Table 10: Cronbach's alpha "creativity"

Reliability Statistics	
Cronbach's Alpha	N of Items
,955	4

We will now look at **Cronbach's alpha** (see table 10), to see how reliable our measures are. It should be noted that a scale is considered reliable when all the elements of the scale converge towards the same response intensity. In other words, when all these responses are correlated with each other and with the total score of the scale. The more reliable our scale is, the more we can consider that these items measure the same idea.

The SPSS statistical function 'Scale reliability' finds Cronbach's alpha. If it is higher than 0.7 and close to 1, we can declare that the consistency of the scale is sufficient. Here, our alpha is **0.955**, very close to 1, so very satisfactory. We can therefore say that the measurement tool is very reliable.

### Other measurements

Now that we have shown the steps of factor analysis, using the items of the "creativity" family. We will make these same analyses for the scales measuring the perception of constraints, emotional engagement, and cognitive engagement. Below is a table summarising all the factorial analyses for these variables (see table 11).

Table 11: Summary of factor analyses

	KMO Index	Bartlett's test	# of extracted factors	Variance explained by extracted factor(s)	Cronbach's Alpha	# of elements
Creativity	0.839	0.001	1	88.394	0.955	4
Emotional engagement	0.827	0.001	1	89.450	0.960	4
Cognitive engagement	0.794	0.001	1	84.266	0.937	4
Perception of constraints	0.720	0.001	1	73.607	0.838	4

#### 4) Analysis and interpretation of the results

Now that the hypotheses have been made, we can move on to the analysis of the data. With the help of the IBM SPSS statistical software, we will be able to confirm or reject our hypotheses.

##### a) Test of the hypotheses

###### i) Analysis of $H_1$

As a reminder, the hypothesis is the following:

***H<sub>1</sub>: Creativity is higher among contest participants when a monetary or reputation reward is expected.***

To test this hypothesis, we will perform a 1-factor ANOVA. With X (the factor) being the nominal non-metric value, namely the type of reward. Y being the interval metric, the participants' opinion of their creativity, their desire to be the most creative for this contest.

We must therefore make the following hypotheses:

- **H<sub>0</sub>**: The means of participants' views on their creativity are equivalent regardless of the type of reward promised.
- **H<sub>1</sub>**: The means of the participants' opinions on their creativity are different depending on the type of reward promised.

Before we start interpreting the results from the ANOVA, we must check the homogeneity of the variances using the Levene's test. To verify this, we will set out the following assumptions:

- **H<sub>0</sub>**: All variances are equal.

- **H<sub>1</sub>**: All variances are not equal.

Table 12: Tests of Homogeneity of Variances

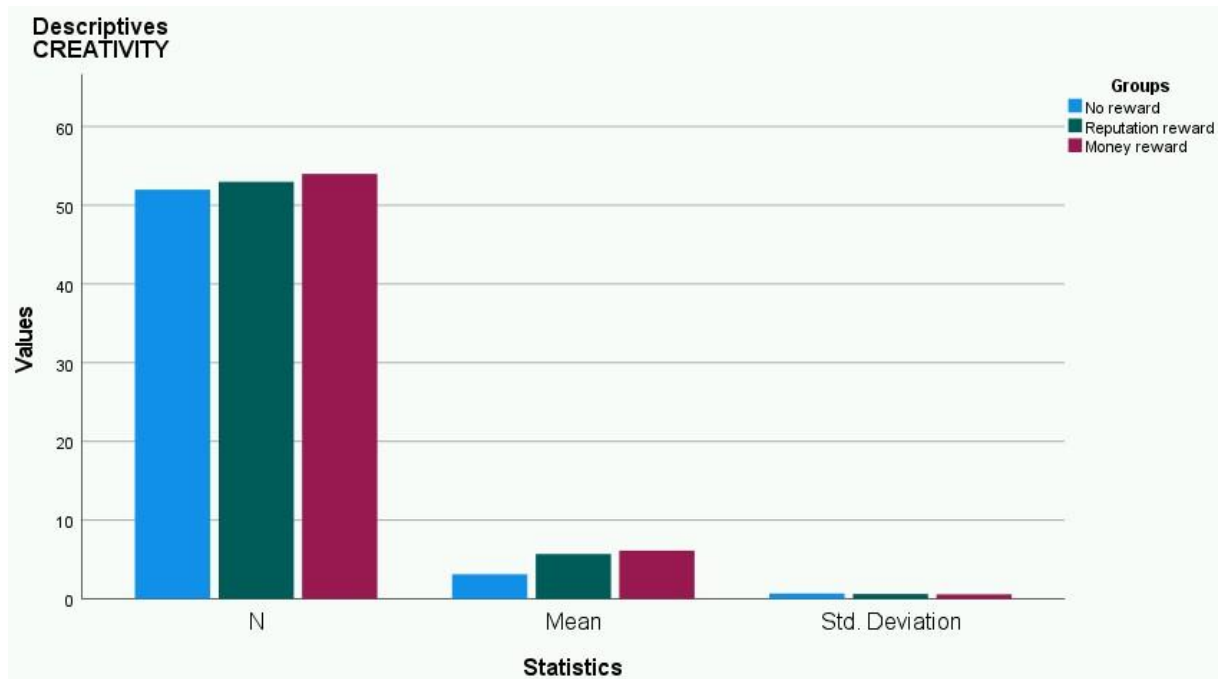
		Levene Statistic	df1	df2	Sig.
CREATIVITY	Based on Mean	,383	2	156	,683
	Based on Median	,456	2	156	,635
	Based on Median and with adjusted df	,456	2	149,942	,635
	Based on trimmed mean	,392	2	156	,676

By observing the homogeneity test (see table 12), we notice that the p-value is **0.683**, which is more than 0.05. We can therefore translate this as the fact that this test is non-significant, which means that the hypothesis of homogeneity of variances has been respected (non-rejection of “H<sub>0</sub>: all variances are equal”).

Table 13: Descriptive statistics of opinions on creativity according to the type of reward

CREATIVITY	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
No reward	52	3,1346	,70269	,09745	2,9390	3,3302	2,00	5,25
Reputation reward	53	5,7075	,62929	,08644	5,5341	5,8810	4,00	7,00
Money reward	54	6,1389	,58613	,07976	5,9789	6,2989	5,00	7,00
Total	159	5,0126	1,47011	,11659	4,7823	5,2428	2,00	7,00

Table 14: Graph of opinions on creativity according to the type of reward



It is wise to look at the descriptive statistics (see table 13 and 14), to highlight the number of responses per sample (we see here that this number is not always equal between the 3 samples), but also to have an overview of the different means and the standard deviation.

Table 15: ANOVA test on the opinions on creativity according to the type of reward

**ANOVA**

CREATIVITY

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	277,492	2	138,746	338,283	<,001
Within Groups	63,983	156	,410		
Total	341,475	158			

As the homogeneity of variances is respected, we can therefore turn to the interpretation of the ANOVA table. (Note that if we had come across a heterogeneity of variances, we should have been sceptical about the accuracy of the ANOVA and should

have looked at a Welch test instead). Here, the table (see table 15) shows us the intergroup effect (effect due to the categorical variable) and the intra-group effect (effect of the variation within each group). It also shows us the total of the two effects for the sum of squares and degrees of freedom.

Note here that the p-value is equal to **0.001**, so it is less than 0.05. This means that we reject the  $H_0$  “the means of participants' views on their creativity are equivalent regardless of the type of reward promised”. We understand that the opinion on the creativity of the participants differs according to the kind of reward expected. In other words, there is a significant relationship between participants' creativity and the type of reward.

The analysis of variance shows us that there are differences between the groups, but we could go into more detail. Indeed, this analysis does not show us where the differences lie. To compensate for this lack, we can do post-hoc tests (of equal variances assumed) with for example Bonferonni, Tukey or Scheffe comparisons

Table 16: Multiple comparisons on the opinions on creativity according to the type of reward

Multiple Comparisons							
Dependent Variable: CREATIVITY							
	(I) Type of reward	(J) Type of reward	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	No reward	Reputation reward	-2,57293*	,12500	<,001	-2,8687	-2,2771
		Money reward	-3,00427*	,12443	<,001	-3,2987	-2,7098
	Reputation reward	No reward	2,57293*	,12500	<,001	2,2771	2,8687
		Money reward	-,43134*	,12383	,002	-,7244	-,1383
	Money reward	No reward	3,00427*	,12443	<,001	2,7098	3,2987
		Reputation reward	,43134*	,12383	,002	,1383	,7244
Scheffe	No reward	Reputation reward	-2,57293*	,12500	<,001	-2,8819	-2,2640
		Money reward	-3,00427*	,12443	<,001	-3,3118	-2,6968
	Reputation reward	No reward	2,57293*	,12500	<,001	2,2640	2,8819
		Money reward	-,43134*	,12383	,003	-,7374	-,1253
	Money reward	No reward	3,00427*	,12443	<,001	2,6968	3,3118
		Reputation reward	,43134*	,12383	,003	,1253	,7374
Bonferroni	No reward	Reputation reward	-2,57293*	,12500	<,001	-2,8755	-2,2704
		Money reward	-3,00427*	,12443	<,001	-3,3054	-2,7031
	Reputation reward	No reward	2,57293*	,12500	<,001	2,2704	2,8755
		Money reward	-,43134*	,12383	,002	-,7310	-,1317

Here, the multiple comparison table (see table 16) will allow us to observe in more detail the different averages according to its sample. The very first column includes each group that is going to be compared with the second column representing the other groups that will be compared with the first column. It is therefore easy to understand that in the 3rd column "Difference in means" we observe the differences between the groups, the differences between the means. Then we have the columns where we find the standard error and the level of significance associated with these comparisons.

By looking specifically at the results in the difference-in-means column, we see a small asterisk. This means that we are dealing with a difference in mean that is significant, we can also see that the differences are significant by checking if the p-value is less than 0.05 (here on our table we see that each p-value depending on the comparison are between 0.001 and 0.003). A further subtlety is that there are several comparisons and results that are inevitably repeated as each group is tested against the others.

In our table, we can see that our three groups differ from each other. Indeed, we can see that the average creativity for the "No reward" group differs significantly from the average for the "Money reward" group and the "Reputation reward" group. The average creativity of the "Money reward" group differs significantly from the average of the "No reward" and "Reputation reward" groups. And the average of the "Reputation reward" group differs significantly from the "No reward" and "Money reward" group.

For further clarification, here are the detailed differences:

- "No reward" mean - "Reputation reward" mean =  $3.13 - 5.70 = -2.57$

Significant difference (P-value < 0.05) → Rejection of  $H_0$ : the means for "No reward" and "Reputation reward" are different

- "No reward" mean - "Money reward" mean =  $3.13 - 6.13 = -3.00$

Significant difference (P-value < 0.05) → Rejection of  $H_0$ : the means for "No reward" and "Money reward" are different

- "Reputation reward" mean - "No reward" mean =  $5.70 - 3.13 = 2.57$

Significant difference (P-value < 0.05) → Rejection of  $H_0$ : the means for "Reputation reward" and "No reward" are different

- "Reputation reward" mean - "Money reward" mean =  $5.70 - 6.13 = -0.43$

Significant difference (P-value < 0.05) → Rejection of  $H_0$ : the means for "Reputation reward" and "Money reward" are different

- "Money reward" mean - "No reward" mean =  $6.13 - 3.13 = 3.00$

Significant difference (P-value < 0.05) → Rejection of  $H_0$ : the means for "Money reward" and "No reward" are different

- "Money reward" mean - "Reputation reward" mean =  $6.13 - 5.70 = 0.43$

Significant difference (P-value < 0.05) → Rejection of  $H_0$ : the means for “Money reward” and “Reputation reward” are different

To interpret all these results, we understand that the type of reward impacts the participants' opinion on their creativity. Indeed, with a mean creativity rating of **3.13**, we can consider that participants who do not receive a reward do not really agree (3 = “Somewhat disagree” on the Likert scale) that their situation (no reward) can favour their creativity and push them to be as creative as possible. The group of participants who had a monetary reward for the winners in their situation had an average creativity score of **6.13**. It means they are willing to be as creative as possible (6= Agree) if a monetary reward is expected. And for the group of participants with an expected reputation reward, we have a mean of **5.70**. They would also agree that this type of reward would encourage them to be more creative (5 = Somewhat agree; but figure 5.7 tends to "6 = Agree")

In the end, with all these analyses, we can interpret that the type of reward expected can have an impact and foster the creativity of participants in online crowdsourcing competitions. Indeed, we realise that out of our 3 samples, the only group that is not favourable to push their creativity, to be as creative as possible, is the group where **no reward** is expected. On the other hand, for the two other samples where a **monetary or a reputation** reward is expected, we notice that the participants are ready to be as creative as possible. We can even state based on our averages that, in the eyes of the participants, a **monetary reward** would encourage creativity a little more than a **reputation reward**. We can therefore **affirm** our first hypothesis “**Creativity is higher among contest participants when a monetary or reputation reward is expected.**”

## ii) Analysis of $H_2$

As a reminder, the hypothesis is the following:

***H<sub>2</sub>: Emotional engagement can have positive impact on the creativity of participants.***

To test this hypothesis, we will perform a linear regression. With X being an interval metric variable: participants' emotional engagement (1= Strongly disagree; 7 = Strongly agree). With Y also being an interval metric variable: participants' opinions on their creativity for the competition (1= Strongly disagree; 7 = Strongly agree).

$$Y = \beta_0 + (\beta_1 * X)$$

A linear regression will help us to know if it is possible to "predict" the creativity of participants through their emotional engagement. To do this, we need to make these two hypotheses:

- $H_0: R^2 = 0$
- $H_1: R^2 \neq 0$  and
- $H_0: \beta_1 = 0$
- $H_1: \beta_1 \neq 0$

Let us examine the relevance of the regression model.

Table 17: ANOVA: simple linear regression "emotional engagement"

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	295,246	1	295,246	1002,698	<,001 <sup>b</sup>
	Residual	46,229	157	,294		
	Total	341,475	158			

a. Dependent Variable: CREATIVITY  
b. Predictors: (Constant), Emotionalengagement

The first thing to do when observing the results appearing in SPSS is to check whether the model with the predictor explains significantly more variability of the dependent variable than a model without the predictor. In other words, we need to check

on the null hypothesis that there is no relationship between our dependent variable (Y) and our independent variable (X). So, to do this, we look at the ANOVA table (see table 17).

In our table (see table 17), the F-value here is **1002.698** and is significant because the p-value is equal to **0.001** and therefore less than 0.05. This means that the probability of obtaining an F-value of this size by chance is less than 0.05%. This means that the probability of obtaining an F-value of this size by chance is less than 0.05%. Therefore, we can reject the null hypothesis mentioned above. We can conclude that there is a statistically significant relationship between the dependent variable and the independent variable. In other words, we can **reject "H<sub>0</sub>: R<sup>2</sup>=0"**, which amounts to saying that there is a linear regression model. We can therefore conclude that the model with predictor predicts the variable Y better than the model without predictor.

Let us evaluate the data fit of the regression model.

Table 18: linear regression model summary "emotional engagement"

<b>Model Summary<sup>b</sup></b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,930 <sup>a</sup>	,865	,864	,54263

a. Predictors: (Constant), Emotionalengagement  
b. Dependent Variable: CREATIVITY

When our model, therefore, provides a significant improvement, as explained above, we can determine to what extent the data fit the model. In other words, it is, therefore, possible to quantify and measure how well our model represents the dispersion of the points in the linear regression graph.

To make these observations, we can look at the model summary table (see table 18). By looking at it, we can find the index R, which represents the value of the multiple correlations of the model. It corresponds to the (combined) correlation of all the

"independent variables" of the model with the "dependent variable". It is also crucial to know that multiple correlations, called R, are interpreted the same way as a simple correlation, called r. However, as here we have only one independent variable (emotional engagement) in our model, its coefficient will be identical to that of r.

In our table (see table 18), the value of "the multiple correlation coefficient" equals **0.930**. We find this data under the "R" column. We can understand that this value is (well) fitted to the model. By squaring the correlation coefficient, we obtain the "R<sup>2</sup> value", equal to **0.865**. This result indicates the proportion of the variability of the dependent variable Y, by the regression model (by the variation of X). This can finally be translated into the fact that the emotional involvement of the participants can explain about **86%** of the variation in creativity.

#### Let's assess the parameters of the regression model

Table 19: Coefficients linear regression "emotional engagement"

Coefficients <sup>a</sup>										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	,973	,135		7,231	<,001	,708	1,239		
	Emotionalengagement	,892	,028	,930	31,665	<,001	,837	,948	1,000	1,000

a. Dependent Variable: CREATIVITY

This last table (see table 19) will show us the parameters concerning the equation of our regression model. With these parameters, we can develop the equation of our regression line. To do this, we will base ourselves on the non-standard coefficients, commonly called Beta. Our "Beta coefficient" will be tested according to the null hypothesis mentioned above " $H_0: \beta = 0$ ". It will allow us to know if our independent variable contributes significantly to the model. A significant independent variable, therefore, contributes to the fact that our model brings a significant improvement regarding the explanation of the variability of the dependent variable.

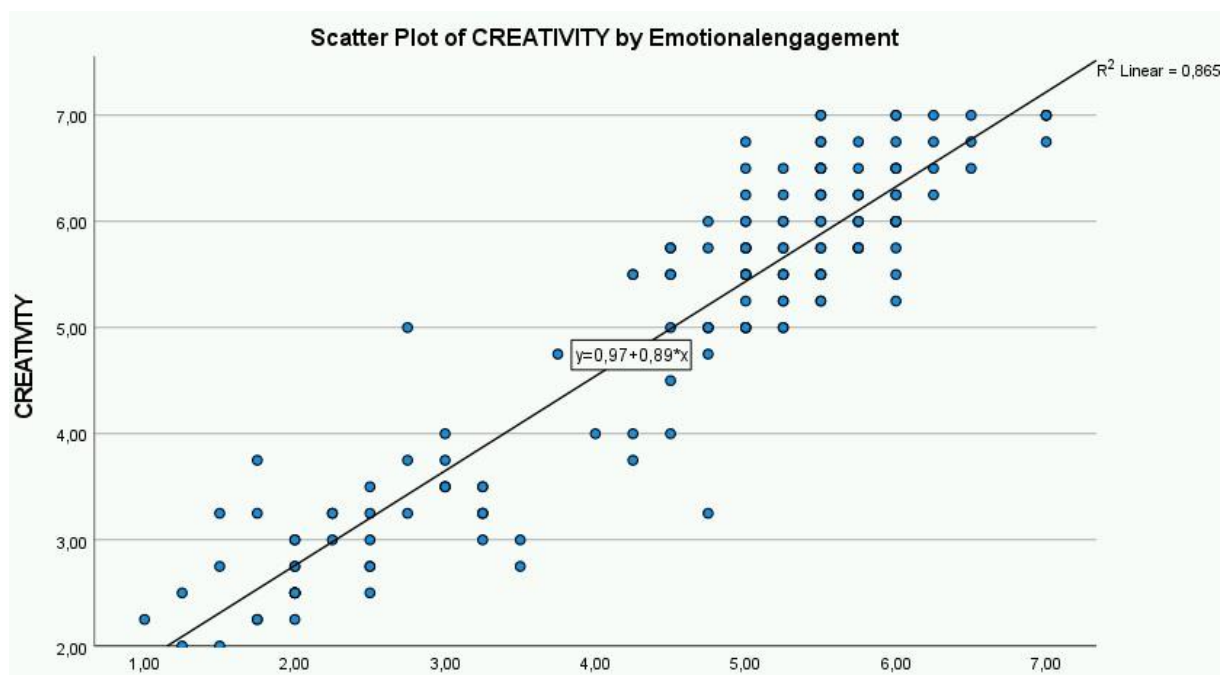
The table (see table 19), therefore, shows us the parameters of the model (the Beta values) and their significance. The non-standardised coefficients allow us to reconstruct the equation of the regression line. The y-intercept here is the Beta value of the first row ("constant") of the table. The slope is indicated by the Beta value of our independent variable (second line, "emotional engagement") In our example:

- $Y_{\text{predicted}} = \beta_0 + (\beta_1 * X)$
- Predicted value of participants' creativity = **0.973** + (**0.892** \* emotional engagement of participants)
- The coefficient  $\beta_0$  therefore represents the y-intercept (constant). It is the predicted value of y when x = 0. The coefficient  $\beta_1$  is called the slope. This is the change in Y when X changes by one unit. Our equation above tells us that the slope ( $\beta_1$ ) is equal to + 0.892. This explains that for every increase of 1 in the "emotional engagement" score (X), there is an increase of 0.892 in the participants' creativity score.

The column "standardised coefficients" indicates the value of the correlation coefficient. The coefficient sign (- or +) tells us the direction of the relationship between the independent and the dependent variable. Here, the standardised coefficient is 0.930, which means a positive relationship (as a + sign) between our two variables.

Then we have the "Sig" column (see table 19), and we will be able to test the null hypothesis "H0: B1=0". Here we see that the p-value is equal to **0.001**, so it is less than 0.05. It means that we **reject "H0: B1=0"**, so we understand that the contribution of emotional commitment is significant in predicting the creativity of participants.

Table 20: Graph of linear regression "emotional engagement"



To interpret our results, we understand that there is ultimately a relationship between our dependent variable (creativity) and our independent variable (emotional engagement). Indeed, looking at the linear regression graph, we see that a large proportion of our points all seem to cluster around our imaginary line (see table 20). Thanks to the analysis of this regression and the hypothesis tests, we can therefore confirm that the dependent variable of emotional engagement can significantly contribute to (predicting) the creativity of the participants in our competition. With this model, we can say that in general for our participants, an (good) emotional engagement score (favours) impacts creativity, as this engagement increases, so does creativity. We can therefore accept our **“H<sub>2</sub>: Emotional engagement can have positive impact creativity among participants”**.

### iii) Analysis for H<sub>3</sub> and H<sub>4</sub>

Now that we have shown how to analyse a linear regression for our H<sub>2</sub>. We will do the same analysis steps for our H<sub>3</sub> and H<sub>4</sub> which both require a simple linear regression.

As a reminder, the hypotheses are:

***H<sub>3</sub>: Cognitive engagement can have positive impact creativity among participants***

***H<sub>4</sub>: Perception of constraints among participants can positively impact their creativity.***

For H<sub>3</sub>, we will have X as an interval metric: participants' cognitive engagement (1= strongly disagree; 7 = strongly agree). Y being also an interval metric variable: participants' opinion on their creativity for the competition (1 = strongly disagree; 7 = strongly agree). For H<sub>4</sub>, we will have X being an interval metric variable: participants' opinions on their perceptions of constraints (1= Strongly disagree; 7 = Strongly agree). With Y also being an interval metric variable: participants' opinions on their creativity for the competition.

We will therefore summarise in a table all the important information for analysing these regressions (see table 21). We have summarised our hypotheses that required simple linear regression in the same table for the sake of clarity. But you can of course find all the complete analyses and interpretations of H<sub>3</sub> and H<sub>4</sub> in the appendix of this work (see appendix 1 and 2)

Table 21: Linear regression analyses (summary)

	F-value (Anova table)	P-value (Anova table)	H <sub>0</sub> : R <sup>2</sup> =0	R	R square	P-value (Coefficient table)	H <sub>0</sub> : β <sub>1</sub> =0	Y = β <sub>0</sub> + (β <sub>1</sub> * X)
H <sub>2</sub>	1002.698	0,001	Rejected	0,93	0.865	0,001	Rejected	Y = 0,973 + ( 0,892*X)
H <sub>3</sub>	753,462	0,001	Rejected	0,91	0.828	0,001	Rejected	Y= - 0,488 + (1,111*X)
H <sub>4</sub>	32,823	0,001	Rejected	0,18	0.032	0,001	Rejected	Y = 2,876 + ( 0,381*X)

#### **iv) Additional analysis (for H<sub>2</sub>-H<sub>3</sub>-H<sub>4</sub>)**

Following the simple linear regression analyses of H<sub>2</sub>, H<sub>3</sub> and H<sub>4</sub>, we saw that these three independent variables (emotional engagement/cognitive engagement/constraint

perception) did have a positive influence on our dependent variable (participants' creativity).

Since these three hypotheses have the same dependent variable, namely the variable "creativity of the participants", it may be possible for a deeper analysis to perform a "multiple linear regression". It will allow us to compare the impact of these three independent variables on each other and will help us to know which of the three has the most significant influence on the dependent variable.

For this multiple linear regression, we will therefore have Y being an interval metric variable: participants' opinion on their creativity for the competition (1 = strongly disagree; 7 = strongly agree). We will have  $X_1$  being an interval metric variable: participants' emotional engagement (1= Strongly disagree; 7 = Strongly agree).  $X_2$  as an interval metric: participants' cognitive engagement (1= strongly disagree; 7 = strongly agree). And  $X_3$  being an interval metric variable: participants' opinions on their perceptions of constraints (1= Strongly disagree; 7 = Strongly agree).

$$Y = \beta_0 + (\beta_1 * X_1) + (\beta_2 * X_2) + (\beta_3 * X_3)$$

Still with these hypotheses to be respected:

- $H_0: R^2 = 0$
- $H_1: R^2 \neq 0$  and
- $H_0: \beta_n = 0$
- $H_1: \beta_n \neq 0$

Let us examine the relevance of the regression model.

As with the simple linear regression analysis, we will check the ANOVA table (see table 22). By looking at the p-value, we can tell whether there is a regression model or not. Here we see that the p-value is 0.001, less than 0.05, so we can reject the null hypothesis “ $H_0: R^2 = 0$ ”, so we can say that a regression model does exist.

Table 22: Multiple linear regression (ANOVA)

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	303,967	3	101,322	418,707	<,001 <sup>b</sup>
	Residual	37,508	155	,242		
	Total	341,475	158			

a. Dependent Variable: CREATIVITY  
b. Predictors: (Constant), Perceptionofconstraints, Cognitiveengagement, Emotionalengagement

Let us evaluate the data fit of the regression model.

In the following table (see table 23), we can look at the Adjusted R Square column to explain the percentage of the total variation in Y explained by X1 X2 and X3. Here we see that we are at 0.888, which means that 88.8% of the total variation in participants' creativity is explained by emotional engagement, cognitive engagement, and perception of constraints.

Table 23: Multiple linear regression (Model Summary)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,943 <sup>a</sup>	,890	,888	,49192

a. Predictors: (Constant), Perceptionofconstraints, Cognitiveengagement, Emotionalengagement

### Let's assess the parameters of the regression model

Now that we know that our model is significant and that it explains a good percentage of the variance. We can use the next table (see table 24) to construct the regression equation to predict a value of Y.

By looking at the coefficients in our table, we can establish the following equation:

$$\begin{aligned} \cdot \text{ Predicted value of participants' creativity} &= 0.092 + (0.564 * \text{Emotional engagement}) \\ &+ (0.458 * \text{Cognitive engagement}) + (0.017 * \text{Perception of constraints}) \end{aligned}$$

It is thus understood from this equation that the coefficients also inform us about the degree to which the predictor influences the dependent variable. Looking at the coefficients, we notice that the coefficient of X1 "emotional engagement" is the highest, and therefore this variable is the one that most impacts the creativity of the participants (Y). Following this logic, we understand that emotional engagement has the most impact on creativeness, followed by cognitive engagement, with the perception of constraints having the least impact on the dependent variable.

We can also confirm this by observing the t-value and the p-value. These tell us whether the coefficient is significant, whether each variable contributes significantly to the model. Indeed, the higher the t-value and the smaller the p-value, the more the predictor contributes to the model. With a t-value 9.369 of and a p-value of 0.001, emotional engagement is the most influential variable on participants' creativity. Next comes cognitive engagement with a t-value 5.983 of and a p-value of 0.001. And finally, comes the perception of constraints which does not really have a significant coefficient because its t-value is only of 0.294 and its p-value is 0.769 (higher than 0.05)

Table 24: Multiple linear regression (Coefficients)

		Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	,092	,346		,265	,792	-,593	,776		
	Emotionalengagement	,565	,060	,588	9,369	<,001	,446	,684	,180	5,566
	Cognitiveengagement	,458	,077	,376	5,983	<,001	,307	,610	,180	5,558
	Perceptionofconstraints	,017	,057	,008	,294	,769	-,096	,130	,967	1,035

a. Dependent Variable: CREATIVITY

## b) Confirmation or refutation of hypotheses (summary)

Here is a short summary of our interpretations of our 4 hypotheses:

Table 25: Summary of hypotheses (confirmation or refutation)

H1	<b><u>Confirmed</u></b>
H2	<b><u>Confirmed</u></b>
H3	<b><u>Confirmed</u></b>
H4	<b><u>Confirmed</u></b>

## c) Discussion

In the previous section, we reviewed the results of our quantitative study and confirmed or rejected the hypotheses put forward earlier. As these assumptions were based on our review of the existing literature, we had certain expectations.

These analysed hypotheses were based on certain points in our literature review, so we had certain expectations about the results. In addition, through this reflective work, we will try to provide some managerial advice and address the limitations of this work.

### **i) Interpretation of results (theoretical discussion).**

We, therefore, studied the creativity of participants in an online crowdsourcing competition on social media. We established that this creativity could have an impact thanks to different factors. Firstly, we looked at whether certain rewards given to the winners could stump creativity. Secondly, we looked at whether being emotionally engaged with the brand/competition (about one of the dimensions of consumer engagement) could stimulate this creativity. Still concerning the dimensions of consumer engagement, we investigated whether the cognitive engagement of participants could also foster creativity. Finally, we wanted to measure the participants' perception of constraints, to see if this could also impact their creativity.

For our first hypothesis on reward types, we saw that the creativity means were highest for the samples with monetary and reputational rewards (6.13 and 5.7). The score for the "no rewards" group was much lower in comparison (3.13). As a reminder, these means are means of participants' opinions on their creativities. These were computed by averaging our "Likert scale" scores, where figure 1 is "Strongly disagree", and figure 7 is "Strongly agree". We instinctively expected this kind of result. Moreover, we had seen in the literature and other studies that rewards were used to foster creativity and participation. As an example, we can quote Salgado (2016) saying that the presence of monetary and non-monetary rewards (reputation) can positively impact creativity.

Regarding the following two hypotheses, which we have confirmed through our study, we knew from the beginning of this work and thanks to the knowledge learned during our course at LSM, that having participants committed to a brand or a product would motivate and involve them. Thus, having participants who are emotionally and cognitively involved would enhance their creativity if they were to compete for a brand to which they are very committed.

For the last hypothesis, we had seen in our literature review that instructions and tasks could have an impact on creativity. We found this information in the writings of Chaffois *et al.* (2015). Therefore, in our survey we wanted to measure the participants' perceptions of constraints. The results obtained in our survey were surprisingly like the information we had found in our reading. Indeed, despite the presence of a linear regression model, we found that the independent value "perceptions of constraints" did not predict the dependent value "creativity" of the participants. As a reminder, we found an  $R^2$  of 0.032, which means that only 3% of the total variation of our dependent variable was explained by this independent variable.

## **ii) Managerial recommendations**

Finally, based on the analysis of our hypotheses, we could give some managerial advice for future creative competitions on social media. Firstly, based on our results, we believe that offering an extrinsic reward (monetary or not) may be an idea to foster creativity. In addition, offering a reward may implicitly make the participants understand the importance of the contest and thus indirectly increase their involvement. Furthermore, recommending an intrinsic reward system for these competitions may help to reduce the distrust that participants and co-creators may have towards these contests. Moreover, using a monetary reward of fair value for the work requested, for example, may motivate participants to come up with creative ideas, as they will not feel that they are being "used" by the firms (as opposed to contests that do not offer rewards). If a reputation reward is noted in the competition's brief it could also motivate some profiles of participants to be as innovative and creative as possible, as some people will be more in search of social recognition and reputation.

As the second piece of advice following our analysis, we can advise the organisers of these competitions to select participants. For example, make a preregistration, then ask

these pre-registered people to answer surveys to evaluate their commitment and attitude towards the brand. The aim is to have a precise selection of participants really committed to the brand and thus involved and ready to be as creative as possible.

In short, in order to obtain a wide range of creative and diverse results in competitive innovation and crowdsourcing competitions, we recommend firms to motivate participants both intrinsically (through commitment and enjoyment of the competition) and extrinsically (through rewards for valuable work and recognition).

### **iii) Limitations of this work**

We can say that this work may have some limitations. First, even if carrying out an online questionnaire allowed us to reach a certain number of people in a short time, this kind of distribution may be subject to certain biases. For example, we cannot systematically ensure that our participants understand all the questions.

Furthermore, the consequences of having this distribution which will sooner or later have a snowball effect may also impact the representativeness of our sample. Even if we were lucky in receiving heterogeneous repartitions for most of the samplings, we could have ended up with over-or under-represented categories.

Still, concerning our samples, we ended up with +- 50 participants for our three samples, thus 159 participants for the total. It is basically a little sample. Given our small sample size, we cannot be sure that the opinions gathered by our survey can truly represent the general opinion of an entire population. For example, currently we have our sample of 159 people (let's call it sample A), let's imagine that we restart our study from scratch, and we propose it to a new sample of 150 brand new people (a sample B), it could be that the opinions of this new sample B are completely different from our old sample A. This can be explained due to one of the disadvantages of the concept of creativity, the difficulty to measure creativity. Indeed, as it is based on subjective notions, it is hard to

measure it objectively. As a result, it would be interesting to do a similar survey on a larger sample to have conclusions applicable to the Belgian population, or even to the international population. Or we rather could try to propose a survey with more objective measures of creativity if we can identify them.

If we had had more time to carry out these surveys, it would have been nice to be able to carry out different briefs and different online competitions. Several competitions on different types of products to see if (regardless of the product or brand) our hypotheses' results are still relevant to other contests. Furthermore, it would also have been helpful to run this contest and not just ask for the opinions of our participants. To do this, we could have set up a jury system that could have scored the proposals and evaluated the participants' creativity. Perhaps this could be done as part of a research project for a future PhD student in marketing.

Finally, the product for this creative competition is based on a familiar product to everyone, a drink. But what about brand/product competitions requiring much more technicality from our participants? Can we take a lambda person for a car design contest or an app creation contest, for example?

### **III. Conclusion**

The aim of this study was to add to the literature about creativity in social media contests. The literature was relatively extensive, and we aimed to gather evidence on specific variables that promote creativity in contests. We discussed the impact on participants' creativity of the type of reward, the emotional and cognitive dimensions of participants' involvement and their perceptions of constraints.

Given the importance of social media nowadays and the constant quest for innovation among brands, we thought it would be interesting to investigate this subject.

Indeed, more and more brands and companies are turning to their customers to ask for their opinions and ideas on the future innovative products that could best meet their future demands.

Based on the results of our study, we believe that it might be appropriate to take this research further. For example, it would be interesting to carry out this study internationally, or to carry out this survey with several types of brands.

We will also note that this study brings us more knowledge in the field of interactive marketing and innovation. By learning more about the use of social media, crowdsourcing, and co-creation competitions in brand marketing. But above all, we have learned more about the consumer's attitude towards several criteria that we can classify as psychological and consumer insights. Indeed, it is important to note that our study found that in addition to perception, intrinsic motivations (such as commitment) in the consumer/participant could influence their creativity. Extrinsic motivations (rewards) could also come into play.

#### IV. References

- Afuah, A., & Tucci, C. L. (2012). Crowdsourcing As a Solution to Distant Search. *Academy of Management Review*, 37(3), 355–375. <https://doi.org/10.5465/amr.2010.0146>
- Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39(5), 1154–1184. <https://doi.org/10.2307/256995>
- Amabile, T. M. (1988). From individual creativity to organizational innovation. In K. Grønhaug & G. Kaufmann (Eds.), *Innovation: A cross-disciplinary perspective* (pp. 139–166). Norwegian University Press.
- Amabile, T., & Amabile, T. (1996). *Creativity in context*. Boulder, Colo: Westview Press.
- Amabile, T. M. (1998). How to kill creativity? *Harvard Business Review*, 76(5), 76–87.
- Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic Need Satisfaction : A Motivational Basis of Performance and Well-Being in Two Work Settings<sup>1</sup>. *Journal of Applied Social Psychology*, 34(10), 2045-2068. <https://doi.org/10.1111/j.1559-1816.2004.tb02690.x>
- Barger, V., Peltier, J. W., & Schultz, D. E. (2016). Social media and consumer engagement: a review and research agenda. *Journal of Research in Interactive Marketing*, 10(4), 268–287. <https://doi.org/10.1108/jrim-06-2016-0065>
- Boudreau, K. J., Lacetera, N., & Lakhani, K. R. (2011). Incentives and Problem Uncertainty in Innovation Contests: An Empirical Analysis. *Management Science*, 57(5), 843–863. <https://doi.org/10.1287/mnsc.1110.1322>
- Boudreau, K. J., & Lakhani, K. R. (2013). Using the crowd as an innovation partner. *Harvard Business Review*, 91(4), 60-140.
- Bowden, J. L. H. (2009). The Process of Customer Engagement: A Conceptual Framework. *Journal of Marketing Theory and Practice*, 17(1), 63–74. <https://doi.org/10.2753/mtp1069-6679170105>
- Brabham, D. C. (2009). Crowdsourcing the Public Participation Process for Planning Projects. *Planning Theory*, 8(3), 242–262. <https://doi.org/10.1177/1473095209104824>

- Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. (2011). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, 66(1), 105–114. <https://doi.org/10.1016/j.jbusres.2011.07.029>
- Burmann, C. (2010). A call for ‘User-Generated Branding’. *Journal of Brand Management*, 18(1), 1–4. <https://doi.org/10.1057/bm.2010.30>
- Burroughs, J. E., & Glen Mick, D. (2004). Exploring Antecedents and Consequences of Consumer Creativity in a Problem-Solving Context. *Journal of Consumer Research*, 31(2), 402–411. <https://doi.org/10.1086/422118>
- Chaffois, C., Gillier, T., Belkhouja, M., & Roth, Y. (2015). *How task instructions impact the creativity of designers and ordinary participants in online idea generation*. (). St. Louis: Federal Reserve Bank of St Louis.
- Chen, C., Kasof, J., Himsel, A., Dmitrieva, J., Dong, Q., & Xue, G. (2005). Effects of Explicit Instruction to “Be Creative” Across Domains and Cultures. *The Journal of Creative Behavior*, 39(2), 89–110. <https://doi.org/10.1002/j.2162-6057.2005.tb01252.x>
- Cortizo, J. C., Carrero, F. M., & Gómez, J. M. (2011). Introduction to the Special Issue: Mining Social Media. *International Journal of Electronic Commerce*, 15(3), 5–8. <https://doi.org/10.2753/jec1086-4415150301>
- Dahl, D. W., & Moreau, C. P. (2007). Thinking inside the Box: Why Consumers Enjoy Constrained Creative Experiences. *Journal of Marketing Research*, 44(3), 357–369. <https://doi.org/10.1509/jmkr.44.3.357>
- Dahlhoff, D. (2016). The Challenge for Luxury Retailers: Figuring Out Digital Opportunities. In *Online Luxury Retailing: Leveraging Digital Opportunities: Research, Industry Practice, and Open Questions*. Philadelphia: Wharton School, Baker Retailing Center
- Dennis, A. R., Valacich, J. S., Connolly, T., & Wynne, B. E. (1996). Process Structuring in Electronic Brainstorming. *Information Systems Research*, 7(2), 268–277. <https://doi.org/10.1287/isre.7.2.268>
- Dessart, L., Veloutsou, C., & Morgan-Thomas, A. (2015). Consumer engagement in online brand communities: a social media perspective. *Journal of Product & Brand Management*, 24(1), 28–42. <https://doi.org/10.1108/jpbm-06-2014-0635>
- Diener, K., & Piller, F. (2013). *The market for open innovation*. (). <https://doi.org/10.13140/rg.2.2.24961.35682>

- Dissanayake, D.M.R. & Ismail, N. (2015). Relationship between Celebrity Endorsement and Brand Attitude: With Reference to Financial Services Sector Brands in Sri Lanka, Conference proceedings, International Conference on Business & Information (ICBI), 1- 22.
- Dissanayake, D. M. R., Siriwardana, A., & Ismail, N. (2019). Social Media Marketing and Customer Engagement: A Review on Concepts and Empirical Contributions. *Kelaniya Journal of Management*, 8(1), 71. <https://doi.org/10.4038/kjm.v8i1.7592>
- Djelassi, S., & Decoopman, I. (2013). Customers' participation in product development through crowdsourcing: Issues and implications. *Industrial Marketing Management*, 42(5), 683-692. <https://doi.org/10.1016/j.indmarman.2013.05.006>
- Doan, A., Ramakrishnan, R., & Halevy, A. Y. (2011). Crowdsourcing systems on the World-Wide Web. *Communications of the ACM*, 54(4), 86-96. <https://doi.org/10.1145/1924421.1924442>
- Eisenberger, R. (1992). Learned industriousness. *Psychological Review*, 99(2), 248-267. <https://doi.org/10.1037/0033-295x.99.2.248>
- Eisenberger, R., & Armeli, S. (1997). Can salient reward increase creative performance without reducing intrinsic creative interest? *Journal of Personality and Social Psychology*, 72(3), 652-663. <https://doi.org/10.1037/0022-3514.72.3.652>
- Eisenberger, R., & Aselage, J. (2009). Incremental effects of reward on experienced performance pressure: positive outcomes for intrinsic interest and creativity. *Journal of Organizational Behavior*, 30(1), 95-117. <https://doi.org/10.1002/job.543>
- Estellés-Arolas, E., & González-Ladrón-de-Guevara, F. (2012). Towards an integrated crowdsourcing definition. *Journal of Information Science*, 38(2), 189-200. <https://doi.org/10.1177/0165551512437638>
- Faullant, R., Holzmann, P., & Schwarz, E. J. (2016). Everybody is invited but not everybody will come — the influence of personality dispositions on users' entry decisions for crowdsourcing competitions. *International Journal of Innovation Management*, 20(06), 1-20. 1650044. <https://doi.org/10.1142/s1363919616500444>
- Fuchs, C., & Schreier, M. (2010). Customer Empowerment in New Product Development. *Journal of Product Innovation Management*, 28(1), 17-32. <https://doi.org/10.1111/j.1540-5885.2010.00778.x>
- Füller, J. (2010). Refining Virtual Co-Creation from a Consumer Perspective. *California Management Review*, 52(2), 98-122. <https://doi.org/10.1525/cm.2010.52.2.98>

- Garcia Martinez, M. (2015). Solver engagement in knowledge sharing in crowdsourcing communities: Exploring the link to creativity. *Research Policy*, 44(8), 1419–1430. <https://doi.org/10.1016/j.respol.2015.05.010>
- Harhoff, D., Henkel, J., & von Hippel, E. (2003). Profiting from voluntary information spillovers: how users benefit by freely revealing their innovations. *Research Policy*, 32(10), 1753–1769. [https://doi.org/10.1016/s0048-7333\(03\)00061-1](https://doi.org/10.1016/s0048-7333(03)00061-1)
- Hennessey, B. A. (2003). The Social Psychology of Creativity. *Scandinavian Journal of Educational Research*, 47(3), 253–271. <https://doi.org/10.1080/00313830308601>
- Heyman, J., & Ariely, D. (2004). Effort for Payment. *Psychological Science*, 15(11), 787–793. <https://doi.org/10.1111/j.0956-7976.2004.00757.x>
- Hollebeek, L. D. (2011). Demystifying customer brand engagement: Exploring the loyalty nexus. *Journal of Marketing Management*, 27(7–8), 785–807. <https://doi.org/10.1080/0267257x.2010.500132>
- Hollebeek, L. D., Glynn, M. S., & Brodie, R. J. (2014). Consumer Brand Engagement in Social Media: Conceptualization, Scale Development and Validation. *Journal of Interactive Marketing*, 28(2), 149–165. <https://doi.org/10.1016/j.intmar.2013.12.002>
- Huang, J., Su, S., Zhou, L., & Liu, X. (2013). Attitude Toward the Viral Ad: Expanding Traditional Advertising Models to Interactive Advertising. *Journal of Interactive Marketing*, 27(1), 36–46. <https://doi.org/10.1016/j.intmar.2012.06.001>
- James, K. J., Albrecht, J. A., Litchfield, R. E., & Weishaar, C. A. (2013). A Summative Evaluation of a Food Safety Social Marketing Campaign “4-Day Throw-Away” Using Traditional and Social Media. *Journal of Food Science Education*, 12(3), 48–55. <https://doi.org/10.1111/1541-4329.12010>
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59–68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Kim, A. J., & Ko, E. (2012). Do social media marketing activities enhance customer equity? An empirical study of luxury fashion brand. *Journal of Business Research*, 65(10), 1480–1486. <https://doi.org/10.1016/j.jbusres.2011.10.014>
- Kim, C., & Yang, S. U. (2017). Like, comment, and share on Facebook: How each behavior differs from the other. *Public Relations Review*, 43(2), 441–449. <https://doi.org/10.1016/j.pubrev.2017.02.006>
- Kuvykaitė, R., & Tarutė, A. (2015). A Critical Analysis of Consumer Engagement Dimensionality. *Procedia - Social and Behavioral Sciences*, 213, 654–658. <https://doi.org/10.1016/j.sbspro.2015.11.468>

- Lichtenthaler, U., & Ernst, H. (2008). Innovation Intermediaries: Why Internet Marketplaces for Technology Have Not Yet Met the Expectations. *Creativity and Innovation Management*, 17(1), 14–25. <https://doi.org/10.1111/j.1467-8691.2007.00461.x>
- Liu, Q. B., Karahanna, E., & Watson, R. T. (2011). Unveiling user-generated content: Designing websites to best present customer reviews. *Business Horizons*, 54(3), 231–240. <https://doi.org/10.1016/j.bushor.2011.01.004>
- Locke, E.A., & Latham, G.P. (Eds.). (2012). *New Developments in Goal Setting and Task Performance* (1st ed.). Routledge. <https://doi.org/10.4324/9780203082744>
- Lopez-Vega, H., & Vanhaverbeke, W. (2009, November 26). Connecting open and closed innovation markets: A typology of intermediaries. Unpublished. Retrieved from [http://mpra.ub.unimuenchen.de/27017/1/henry\\_lopez-vega\\_2 .pdf](http://mpra.ub.unimuenchen.de/27017/1/henry_lopez-vega_2.pdf)
- Lusch, R. F., & Vargo, S. L. (2006). Service-dominant logic: reactions, reflections and refinements. *Marketing Theory*, 6(3), 281–288. <https://doi.org/10.1177/1470593106066781>
- Macario, E., Krause, C., Cooke Katt, J., Caplan, S., Stevens Payes, R., & Bornkessel, A. (2013). NIDA engages teens through its blog: lessons learned. *Journal of Social Marketing*, 3(1), 41–55. <https://doi.org/10.1108/20426761311297225>
- Marjanovic, S., Fry, C., & Chataway, J. (2012). Crowdsourcing based business models: In search of evidence for innovation 2.0. *Science and Public Policy*, 39(3), 318–332. <https://doi.org/10.1093/scipol/scs009>
- Patterson, P., Yu, T., & De Ruyter, K. (2006). Understanding customer engagement in services. In *Advancing theory, maintaining relevance, proceedings of ANZMAC 2006 conference* (pp. 4–6). Brisbane
- Piller, F. T., & Walcher, D. (2006). Toolkits for idea competitions: a novel method to integrate users in new product development. *R and D Management*, 36(3), 307–318. <https://doi.org/10.1111/j.1467-9310.2006.00432.x>
- Piller, F.T./Ihl, C. (2010): *Open Innovation with Customers – Foundations, Competences and International Trends*, Expert Study commissioned by the European Union, The German Federal Ministry of Research, and Europäischer Sozialfond ESF, Aachen.
- Piller, F., Vossen, A., & Ihl, C. (2012). From Social Media to Social Product Development: The Impact of Social Media on Co-Creation of Innovation. *Die Unternehmung*, 66(1), 7–27. <https://doi.org/10.5771/0042-059x-2012-1-7>

- Poetz, M. K., & Schreier, M. (2012). The Value of Crowdsourcing: Can Users Really Compete with Professionals in Generating New Product Ideas? *Journal of Product Innovation Management*, 29(2), 245–256. <https://doi.org/10.1111/j.1540-5885.2011.00893.x>
- Privette, G. (1983). Peak experience, peak performance, and flow: A comparative analysis of positive human experiences. *Journal of Personality and Social Psychology*, 45(6), 1361–1368. <https://doi.org/10.1037/0022-3514.45.6.1361>
- Raajpoot, Nusser and Ghilni-Wage, Beth (2019) "Impact of Customer Engagement, Brand Attitude and Brand Experience on Branded Apps Recommendation and Re-use Intentions," *Atlantic Marketing Journal*: Vol. 8 : No. 1 , Article 3.
- Rajala, R., Westerlund, M., Vuori, M., & Hares, J. P. (2013). From Idea Crowdsourcing to Managing User Knowledge. *Technology Innovation Management Review*, 3(12), 23–31. <https://doi.org/10.22215/timreview/750>
- Reniou F. (2009), Opérations Participatives des Marques : Pourquoi et Comment Faire Participer les Consommateurs ? Thèse de doctorat en sciences de gestion, Université ParisDauphine.
- Roser, T., Samson, A., Humphreys, P., & Cruz-Valdivieso, E. (2009). *New pathways to value: Co-creating products by collaborating with customers*. LSE Enterprise.
- Salerno, A. (2009). L'expérience créative du consommateur: le rôle de l'orientation motivationnelle dans l'activité de loisir créatif. *Recherche et Applications En Marketing (French Edition)*, 24(1), 69–92. <https://doi.org/10.1177/076737010902400104>
- Sashi, C. (2012). Customer engagement, buyer-seller relationships, and social media. *Management Decision*, 50(2), 253–272. <https://doi.org/10.1108/00251741211203551>
- Sawhney, M., Verona, G., & Prandelli, E. (2005). Collaborating to create: The Internet as a platform for customer engagement in product innovation. *Journal of Interactive Marketing*, 19(4), 4–17. <https://doi.org/10.1002/dir.20046>
- Schenk, E., & Guittard, C. (2011). Towards a characterization of crowdsourcing practices. *Journal of Innovation Economics & Management*, n°7(1), 93–107. <https://doi.org/10.3917/jie.007.0093>
- Sedley, Richard (2010), "4th Annual Online Customer Engagement Report 2010" (available at <http://issuu.com/richardsedley/docs/customer-engagement-report2010/>).
- Shao, W., & Ross, M. (2015). Testing a conceptual model of Facebook brand page communities. *Journal of Research in Interactive Marketing*, 9(3), 239–258. <https://doi.org/10.1108/jrim-05-2014-0027>

- Simula, H., & Ahola, T. (2014). A network perspective on idea and innovation crowdsourcing in industrial firms. *Industrial Marketing Management*, 43(3), 400–408. <https://doi.org/10.1016/j.indmarman.2013.12.008>
- Salgado, S., & de Barnier, V. (2016). Favoriser et récompenser la créativité du consommateur dans le processus de développement du nouveau produit : comment motiver ces consommateurs qui participent à des concours de créativité ? *Recherche et Applications En Marketing (French Edition)*, 31(3), 97–121. <https://doi.org/10.1177/0767370116629109>
- Steils, N., & Hanine, S. (2016). Creative contests: knowledge generation and underlying learning dynamics for idea generation. *Journal of Marketing Management*, 32(17–18), 1647–1669. <https://doi.org/10.1080/0267257x.2016.1251956>
- Sternberg, R. J., & Lubart, T. I. (1999). The concept of creativity: Prospects and paradigms. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 3–15). Cambridge University Press.
- Stetler, K. L., & Magnusson, M. (2015). Exploring the Tension between Clarity and Ambiguity in Goal Setting for Innovation. *Creativity and Innovation Management*, 24(2), 231–246. <https://doi.org/10.1111/caim.12102>
- Surowiecki, J. (2004). *The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations*. Doubleday & Co.
- The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations. (2004). *Journal of Economic Literature*, 42(4), 1183.
- Swani, K., Milne, G., & P. Brown, B. (2013). Spreading the word through likes on Facebook. *Journal of Research in Interactive Marketing*, 7(4), 269–294. <https://doi.org/10.1108/jrim-05-2013-0026>
- Thompson, V. A. (1965). Bureaucracy and Innovation. *Administrative Science Quarterly*, 10(1), 1–20. <https://doi.org/10.2307/2391646>
- Tsai, W. H. S., & Men, L. R. (2017). Consumer engagement with brands on social network sites: A cross-cultural comparison of China and the USA. *Journal of Marketing Communications*, 23(1), 2–21. <https://doi.org/10.1080/13527266.2014.942678>
- van Doorn, J., Lemon, K. N., Mittal, V., Nass, S., Pick, D., Pirner, P., & Verhoef, P. C. (2010). Customer Engagement Behavior: Theoretical Foundations and Research Directions. *Journal of Service Research*, 13(3), 253–266. <https://doi.org/10.1177/1094670510375599>
- Vivek, S. D. (2009). A scale of consumer engagement (Doctoral dissertation). Department of Management/Marketing, University of Alabama

- Vivek, S. D., Beatty, S. E., & Morgan, R. M. (2012). Customer Engagement: Exploring Customer Relationships Beyond Purchase. *Journal of Marketing Theory and Practice*, 20(2), 122–146. <https://doi.org/10.2753/mtp1069-6679200201>
- Volkema, R. J. (1983). Problem Formulation in Planning and Design. *Management Science*, 29(6), 639–652. <https://doi.org/10.1287/mnsc.29.6.639>
- von Hippel, E. (2005). Democratizing innovation: The evolving phenomenon of user innovation. *Journal Für Betriebswirtschaft*, 55(1), 63–78. <https://doi.org/10.1007/s11301-004-0002-8>
- Vukovic, M., & Bartolini, C. (2010). Towards a Research Agenda for Enterprise Crowdsourcing. *Lecture Notes in Computer Science*, 425–434. [https://doi.org/10.1007/978-3-642-16558-0\\_36](https://doi.org/10.1007/978-3-642-16558-0_36)
- Wagner, C., & Majchrzak, A. (2007). Enabling Customer-Centricity Using Wikis and the Wiki Way. *Journal of Management Information Systems*, 23(3), 17–43. <https://doi.org/10.2753/mis0742-1222230302>
- Whitla, P. (2009). Crowdsourcing and Its Application in Marketing Activities. *Contemporary Management Research*, 5(1), 15–28. <https://doi.org/10.7903/cmr.1145>
- Woolley, P., & Peterson, M. (2012). Efficacy of a Health-Related Facebook Social Network Site on Health-Seeking Behaviors. *Social Marketing Quarterly*, 18(1), 29–39. <https://doi.org/10.1177/1524500411435481>

## V. APPENDIX

### Appendix 1: Analysis of H<sub>3</sub>

#### Analysis of H<sub>3</sub>

As a reminder, the hypothesis is the following:

#### **H<sub>3</sub>: Cognitive engagement can have positive impact creativity among participants**

A linear regression will be used to test this hypothesis. With X as an interval metric: participants' cognitive engagement (1= strongly disagree; 7 = strongly agree). Y being also an interval metric variable: participants' opinion on their creativity for the competition (1 = strongly disagree; 7 = strongly agree).

$$Y = \beta_0 + (\beta_1 * X)$$

Linear regression will help us to understand whether it is possible to "predict" participants' creativity by their cognitive engagement. To achieve this, we must make these two hypotheses:

- H<sub>0</sub>: R<sup>2</sup> = 0
- H<sub>1</sub>: R<sup>2</sup> ≠ 0 and
- H<sub>0</sub>: β<sub>1</sub> = 0
- H<sub>1</sub>: β<sub>1</sub> ≠ 0

Let us check the relevance of the regression model.

Table 26: ANOVA: linear regression "cognitive engagement"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	282,591	1	282,591	753,462	<,001 <sup>b</sup>
	Residual	58,884	157	,375		
	Total	341,475	158			

a. Dependent Variable: CREATIVITY  
b. Predictors: (Constant), Cognitiveengagement

First, we will make sure that the model with the predictor explains significantly more variability in the dependent variable than a model without the predictor. We, therefore, need to test the null hypothesis that there is no relationship between our dependent variable Y (creativity) and our independent variable X (cognitive engagement). To do this, we look at the ANOVA table (see table 26).

In the table (see table 26), the F-value here is **753.462** and is significant because the p-value is equal to **0.001** and therefore less than 0.05. This means that the probability of obtaining an F-value of this size by chance is less than 0.05%. In conclusion, we can reject the null hypothesis mentioned above. We can state that there is a statistically significant relationship between the dependent variable and the independent variable. That is, we must **reject "H<sub>0</sub>: R<sup>2</sup>=0"**, which concludes that there is a linear regression model. We can therefore state that the model with predictor predicts the variable Y better than the model without predictor.

Let us check the data fit of the regression model.

Table 27: Linear regression model summary "cognitive engagement"

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,910 <sup>a</sup>	,828	,826	,61242

a. Predictors: (Constant), Cognitiveengagement

When our model thus brings a significant improvement, as described above, we can evaluate how well the data fit the model. This means that it is possible to quantify and measure how well our model represents the dispersion of the points on the linear regression graph.

We can focus on the summary table of the model (see table 27). With this, we have the index R representing the value of the multiple correlations of the model. It corresponds to the (combined) correlation of all "independent variables" in the model with the "dependent variable". It is also good to know that multiple correlations (R) are interpreted in the same way as a simple correlation (r). However, as we have only one independent variable (cognitive engagement) in our analysis, its coefficient will be identical to that of r.

Looking at this table (see table 27), we see that the value of the "multiple correlation coefficient" 0.910. We find this figure in the "R" column. We can deduce that this value fits the model (well). Squaring the correlation coefficient, we have the "R square", which equals 0.828. This result shows the proportion of the variability of the dependent variable Y, by the regression model (by the variation of X). This shows that the cognitive engagement of the participants can explain about 82% of the variation in their creativity.

Let's evaluate the parameters of the regression model

Table 28: Coefficients linear regression "cognitive engagement"

Model		Coefficients <sup>a</sup>								
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-,488	,206		-2,365	,019	-,895	-,080		
	Cognitiveengagement	1,111	,040	,910	27,449	<,001	1,031	1,190	1,000	1,000

a. Dependent Variable: CREATIVITY

With this table (see table 28) we will see the parameters concerning the equation of our regression model. With these parameters we can then develop the equation of our regression line. To do this, we will look at the non-standard coefficients, commonly called Beta. Our "Beta coefficient" will be tested under the null hypothesis mentioned above "H<sub>0</sub>:  $\beta = 0$ ". It will allow us to know if our independent variable contributes significantly to the model. Knowing that a significant independent variable therefore contributes to the fact that our model brings a significant improvement regarding the explanation of the variability of the dependent variable.

From the table above (see table 28) we will therefore have our model parameters (the Beta values) and their significance. The unstandardized coefficients allow us to create the equation for the regression line. The y-intercept is where the Beta value indicated on the first row ("constant") of the table. The slope is indicated by the Beta value of the independent variable (second row, "cognitive engagement")

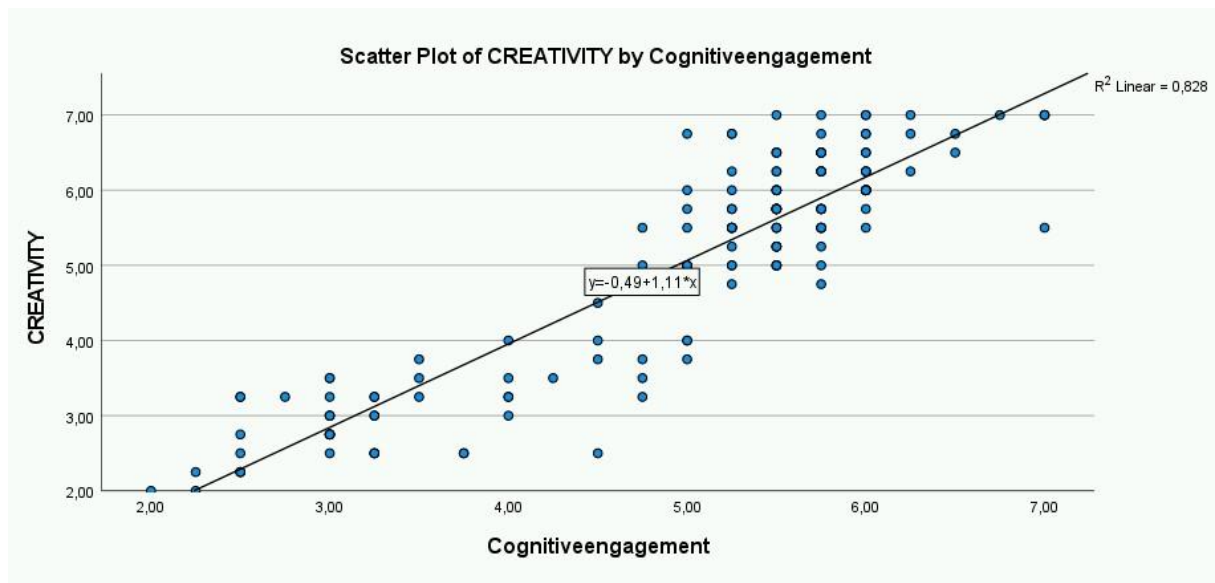
- $Y_{\text{predicted}} = \beta_0 + (\beta_1 * X)$
- Predicted value of participants' creativity = **-0.488** + (**1.111** \* cognitive engagement of participants)
- The coefficient  $\beta_0$  therefore represents the y-intercept (constant). It is the predicted value of y when x = 0. The coefficient  $\beta_1$  is called the slope. This is the change in Y when X changes by one unit. Our equation above tells us that the slope ( $\beta_1$ ) is equal to + 1.111. This explains that for every increase of 1 in the

"cognitive engagement" score (X), there is an increase of 1.111 in the participants' creativity score.

The column "standardised coefficients" indicates the value of the correlation coefficient. The sign of the coefficient (- or +) tells us the direction of the relationship between the independent variable and the dependent variable. Here, the standardised coefficient is 0.910, which means a positive relationship (like a + sign) between our two variables.

We also have the "Sig" column (see table 28). Thanks to this column, we will be able to test the null hypothesis " $H_0: \beta_1=0$ ". Here we see that the p-value is equal to **0.001**, so it is less than 0.05. It means that we **reject " $H_0: \beta_1=0$ "**, so it explains that the contribution of cognitive commitment is significant in predicting the creativity of participants.

Table 29: Graph of linear regression "cognitive engagement"



To interpret our results, we understand that there is ultimately a relationship between our dependent variable (creativity) and our independent variable (cognitive engagement). Indeed, looking at the linear regression graph, we see that a large

proportion of our points all seem to cluster around our imaginary line (see table 29). Thanks to the analysis of this regression and the hypothesis tests, we can therefore confirm that the independent variable of cognitive engagement can significantly contribute to (predicting) the creativity of the participants in our competition. With this model, we can say that in general for our participants, a (good)cognitive engagement score (favours) influences creativity. As this engagement increases, so does creativity. We can therefore accept our “**H<sub>3</sub>: Cognitive engagement can have positive impact creativity among participants**”

## **Appendix 2: Analysis of H<sub>4</sub>**

### **Analysis of H<sub>4</sub>**

As a reminder, the hypothesis is the following:

***H<sub>4</sub>: Perception of constraints among participants can positively impact their creativity.***

To test this hypothesis, we will perform a linear regression. With X being an interval metric variable: participants' opinions on their perceptions of constraints (1= Strongly disagree; 7 = Strongly agree). With Y also being an interval metric variable: participants' opinions on their creativity for the competition.

- $Y = \alpha + \beta X + \text{error}$

Indeed, as explained above, we want to know if the participants' opinions on their creativity can be explained by their perception of the competition's constraints. To do this, we need to make these two hypotheses:

- $H_0: R^2 = 0$
- $H_1: R^2 \neq 0$  and
- $H_0: \beta_i = 0$
- $H_1: \beta_i \neq 0$

Let us examine the relevance of the regression model.

The first thing to do when examining the results is to check whether the model with a predictor explains significantly more variability in the dependent variable than a model without a predictor. In other words, a decision must first be made about the null hypothesis that there is no relationship between the dependent variable and the independent variable. To make this decision, it will be necessary to interpret the results of the ANOVA table (see table 30) to analyse the variances.

Table 30: ANOVA test on regression mode “perception of constraint”

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	100,101	1	100,101	32,823	<,001 <sup>b</sup>
	Residual	475,754	156	3,050		
	Total	575,854	157			

a. Dependent Variable: Creativity (opinion from participants)  
b. Predictors: (Constant), Perception of constraint (opinion from participants)

For a model to be relevant, the improvement obtained with the independent variable must be large and the residuals between the observed values and the regression line must be small. In this table SPSS (table 30) provides the sums of squares and the mean squares. The calculation of the F-value is done automatically, and the associated significance level is in the last column.

The F-value is **32.823** and is significant because the p-value is equal to **0.001** and therefore less than 0.05. It should therefore be understood here that the probability of obtaining an F-value of this size by chance is less than 0.05%. This leads us to reject the null hypothesis mentioned above. We, therefore, conclude that there is a statistically

significant relationship between the dependent variable and the independent variable. In sum, we must reject " $H_0: R^2=0$ ", which means that there is a linear regression model. We can therefore state that the model with a predictor predicts the variable Y better than the model without a predictor.

Let us check the data fit of the regression model.

Table 31: Linear regression model summary "perception of constraints"

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,180 <sup>a</sup>	,032	,026	1,45069
a. Predictors: (Constant), Perceptionofconstraints				

If our model offers a significant improvement, as described above, we can go and see how well the data fits the model. This implies that it is possible to quantify and measure how well our model represents the dispersion of the points on the linear regression graph.

Looking at the summary table of the model (see table 31). We find the index R representing the value of the multiple correlations of the model. It corresponds to the (combined) correlation of all "independent variables" of the model with the "dependent variable". Note that multiple correlations (R) are interpreted in the same way as a simple correlation (r). But since here there is only one independent variable (perception of constraints) in our analysis, its coefficient will be identical to that of r.

Still based on this table (see table 31), we have that the value of the "multiple correlation coefficient" is 0.180. This figure is in the "R" column. By squaring the correlation coefficient, we have the "R-squared", which is equal to 0.032. This result shows the proportion of the variability of the dependent variable Y, by the regression model (by

the variation of X). This shows that the participants' perception of constraints can explain about 3% of the variation in their creativity.

Let's evaluate the parameters of the regression model

Table 32: Coefficients linear regression "perception of constraints"

		Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2,876	,939		3,062	,003	1,021	4,730		
	Perceptionofconstraints	,381	,166	,180	2,293	,023	,053	,709	1,000	1,000

a. Dependent Variable: CREATIVITY

Thanks to the following table (see table 32) we will have the parameters for the equation of our regression model. With these parameters we can then develop the equation for our regression line.

We will look at the non-standard coefficients, commonly called Beta. Our "Beta coefficient" will be tested under the null hypothesis mentioned above " $H_0: \beta = 0$ ". It will allow us to know if our independent variable contributes significantly to the model. Knowing that a significant independent variable therefore contributes to the fact that our model brings a significant improvement regarding the explanation of the variability of the dependent variable.

Continuing to look at this table (see table 32) we find our model parameters (the Beta values) and their significance. The unstandardized coefficients help us to get the equation of the regression line. The y-intercept is where the Beta value shown in the first row ("constant") of the table is. The slope is indicated by the Beta value of the independent variable (second row, "perception of constraints").

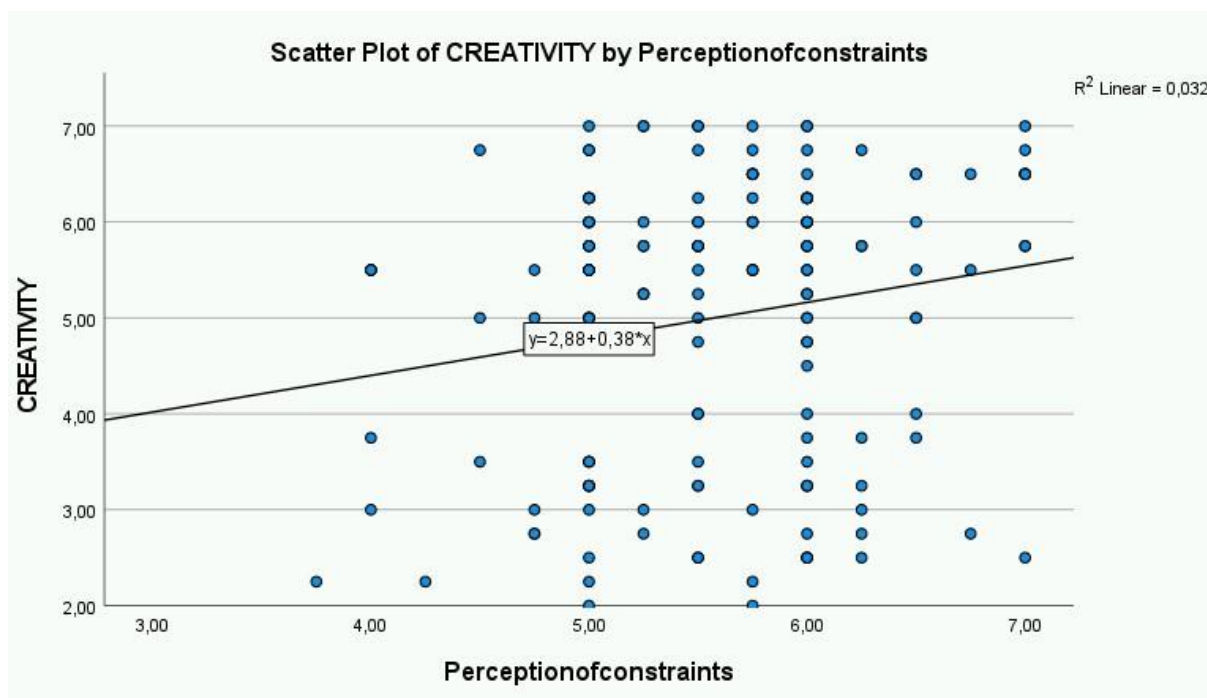
- $Y_{\text{predicted}} = \beta_0 + (\beta_1 * X)$

- Predicted value of participants' creativity =  $2.876 + (0.381 * \text{participants's perception of constraints})$
- The coefficient  $\beta_0$  therefore represents the y-intercept (constant). It is the predicted value of y when  $x = 0$ . The coefficient  $\beta_1$  is called the slope. This is the change in Y when X changes by one unit. Our equation above tells us that the slope ( $\beta_1$ ) is equal to + 0.381. This explains that for every increase of 1 in the "perception of constraints" score (X), there is an increase of 0.381 in the participants' creativity score.

The column "standardised coefficients" indicates the value of the correlation coefficient. The sign of the coefficient (- or +) tells us the direction of the relationship between the independent variable and the dependent variable. Here, the standardised coefficient is 0.180, which means a positive relationship (like a + sign) between our two variables.

We also have the "Sig" column (see table 32). Thanks to this column, we will be able to test the null hypothesis " $H_0: \beta_1=0$ ". Here we see that the p-value is equal to **0.023**, so it is less than 0.05. It means that we **reject " $H_0: \beta_1=0$ "**, so it explains that the contribution of participants' perception of constraints is significant in predicting the creativity of participants.

Table 33: Graph of linear regression cognitive engagement"



To interpret our results, even if our hypothesis above tells us that there is a linear regression, I find after observing the graph of the linear regression (see table 33), that the perception of the constraints does not help enough to predict the creativity of the participants. Indeed, when we look at the graph, we see that the points do not seem to cluster around our imaginary line. To support this, we can take the  $R^2$  result, which is 0.032, which means that only 3% of the total variation in Y is explained by the variation in X. However, we have seen from the analysis of our tables that despite everything this independent variable is still significant. So, this independent variable of constraint perception does ~~not~~ contribute ~~enough~~ to participants' creativity, but at a weak extent. Despite these low results, we can thus say that our null hypotheses have been respected, there is still an influence of this variable, admittedly very slight, but still present and observable.

In other words, we can say that in general for our participants, the constraint perception score does slightly and positively influence their creativity. We can therefore **confirm our**

**H4: Perception of constraints among participants can positively impact their creativity.**

### **Appendix 3: Survey (situation 1: No reward)**

Bonjour, dans le cadre de la réalisation de mon mémoire de fin d'études à la Louvain School of Management, j'aimerais avoir votre avis concernant un concours de crowdsourcing. Vous serez confronté à un exemple de brief/instructions pour le concours, concernant lequel je vous demande de répondre aux questions de la manière la plus réaliste possible. Il n'y a pas de bonnes ou mauvaises réponses, je souhaite simplement avoir votre avis. Le questionnaire dure 5 minutes, et vos réponses resteront bien sûr anonymes et confidentielles.

#### Contexte

Coca-Cola vous invite à participer à un défi unique : imaginer la campagne de lancement d'une nouvelle boisson énergisante pour les adolescents de 12 à 19 ans.

Coca-Cola est l'une des marques les plus connues au monde par les adolescents, qui associent cette boisson à un bon moment. Comme Coca-Cola est apprécié par toutes les classes sociales et tous les groupes d'âge, les adolescents aiment le boire avec leur famille, leurs amis ou lorsqu'ils sont seuls. Par conséquent, Coca-Cola est devenu plus qu'une simple boisson gazeuse, à savoir un symbole d'amitié et de bonheur de bonheur. Les adolescents sont toujours à la recherche de sensations fortes - lorsqu'ils explorent le monde, poursuivent leurs rêves ou affirment simplement leur identité. En ce qui concerne l'achat de nourriture ou de boissons, les adolescents aiment les campagnes surprenantes, qui sont en accord avec leur identité culturelle.

#### Challenge ?

Elaborer et proposer une campagne de communication numérique pour le lancement de la nouvelle boisson énergisante Coca-Cola.

#### Comment ?

En inventant un slogan, en développant une affiche conceptuelle et en imaginant un scénario de film. Les supports de communication doivent être captivants et montrer efficacement que la consommation de cette boisson est un moment unique.

### Récompense

Pas de récompense »

## **Appendix 4 : Survey (situation 2 : Reputation reward)**

Bonjour, dans le cadre de la réalisation de mon mémoire de fin d'études à la Louvain School of Management, j'aimerais avoir votre avis concernant un concours de crowdsourcing. Vous serez confronté à un exemple de brief/instructions pour le concours, concernant lequel je vous demande de répondre aux questions de la manière la plus réaliste possible. Il n'y a pas de bonnes ou mauvaises réponses, je souhaite simplement avoir votre avis. Le questionnaire dure 5 minutes, et vos réponses resteront bien sûr anonymes et confidentielles.

### « Contexte

Coca-Cola vous invite à participer à un défi unique : imaginer la campagne de lancement d'une nouvelle boisson énergisante pour les adolescents de 12 à 19 ans.

Coca-Cola est l'une des marques les plus connues au monde par les adolescents, qui associent cette boisson à un bon moment. Comme Coca-Cola est apprécié par toutes les classes sociales et tous les groupes d'âge, les adolescents aiment le boire avec leur famille, leurs amis ou lorsqu'ils sont seuls. Par conséquent, Coca-Cola est devenu plus qu'une simple boisson gazeuse, à savoir un symbole d'amitié et de bonheur de bonheur.

Les adolescents sont toujours à la recherche de sensations fortes - lorsqu'ils explorent le monde, poursuivent leurs rêves ou affirment simplement leur identité. En ce qui concerne l'achat de nourriture ou de boissons, les adolescents aiment les campagnes surprenantes, qui sont en accord avec leur identité culturelle.

### Challenge ?

Elaborer et proposer une campagne de communication numérique pour le lancement de la nouvelle boisson énergisante Coca-Cola.

Comment ?

En inventant un slogan, en développant une affiche conceptuelle et en imaginant un scénario de film. Les supports de communication doivent être captivants et montrer efficacement que la consommation de cette boisson est un moment unique.

Récompense ?

1<sup>er</sup> 1500 eur / 2<sup>ème</sup> 1000 eur / 3<sup>ème</sup> 500 eur. »

**Appendix 5: Survey (situation 2: Money reward)**

Bonjour, dans le cadre de la réalisation de mon mémoire de fin d'études à la Louvain School of Management, j'aimerais avoir votre avis concernant un concours de crowdsourcing. Vous serez confronté à un exemple de brief/instructions pour le concours, concernant lequel je vous demande de répondre aux questions de la manière la plus réaliste possible. Il n'y a pas de bonnes ou mauvaises réponses, je souhaite simplement avoir votre avis. Le questionnaire dure 5 minutes, et vos réponses resteront bien sûr anonymes et confidentielles.

Contexte

Coca-Cola vous invite à participer à un défi unique : imaginer la campagne de lancement d'une nouvelle boisson énergisante pour les adolescents de 12 à 19 ans.

Coca-Cola est l'une des marques les plus connues au monde par les adolescents, qui associent cette boisson à un bon moment. Comme Coca-Cola est apprécié par toutes les classes sociales et tous les groupes d'âge, les adolescents aiment le boire avec leur famille, leurs amis ou lorsqu'ils sont seuls. Par conséquent, Coca-Cola est devenu plus qu'une simple boisson gazeuse, à savoir un symbole d'amitié et de bonheur de bonheur. Les

adolescents sont toujours à la recherche de sensations fortes - lorsqu'ils explorent le monde, poursuivent leurs rêves ou affirment simplement leur identité. En ce qui concerne l'achat de nourriture ou de boissons, les adolescents aiment les campagnes surprenantes, qui sont en accord avec leur identité culturelle.

Challenge ?

Elaborer et proposer une campagne de communication numérique pour le lancement de la nouvelle boisson énergisante Coca-Cola.

Comment ?

En inventant un slogan, en développant une affiche conceptuelle et en imaginant un scénario de film. Les supports de communication doivent être captivants et montrer efficacement que la consommation de cette boisson est un moment unique.

Récompense ?

1<sup>er</sup> stage d'un an chez Coca-cola / 2<sup>ème</sup> stage de 6 mois / 3<sup>ème</sup> stage de 3 mois. + Votre nom sur le site de coca-cola et ses réseaux (pour le top 3) »

## **Appendix 6 : Survey (questions)**

Dans quelles mesures êtes vous d'accord avec ces affirmations.



Q2a) Au cours d'une journée de travail normale, je consacrerai beaucoup d'attention à ce concours.

Q2b) Au cours d'une journée de travail normale, je serais absorbé par cette compétition.

Q2c) Au cours d'une journée de travail normale, mon esprit se concentre sur la compétition suivante.

Q2d) Je suis prêt à passer une bonne partie de mon temps libre sur la réalisation de cette compétition.





Quel âge avez-vous \*

- 18-25 ans
- 26-35 ans
- 36-50 ans
- 50+ ans

Quel est votre sexe? \*

- Masculin
- Féminin

### Appendix 7 : SPSS (Database)

	Q1Aengemo	Q1Bengemo	Q1Cengemo	Q1Dengemo	Q1Eengog	Q1Fengog	Q1Gengog	Q1Hengog	Q1Ipercontr	Q1Jpercontr	Q1Kpercontr	Q1Lpercontr	Q1Mcreativity	Q1Ncreativity	Q1Ocreativity	
1	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Agree	Agree	Somewhat ...	Somewhat ...	Neither agr...	
2	Somewhat ...	Neither agr...	Neither agr...	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Agree	Agree	Agree	Agree	Somewhat ...	Neither agr...	Neither agr...	
3	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Strongly a...	Strongly a...	Agree	Agree	Somewhat ...	Neither agr...	Neither agr...	
4	Disagree	Disagree	Disagree	Disagree	Somewhat ...	Somewhat ...	Neither agr...	Somewhat ...	Agree	Agree	Agree	Agree	Disagree	Somewhat ...	Somewhat ...	
5	Somewhat ...	Somewhat ...	Neither agr...	Somewhat ...	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Agree	Agree	Somewhat ...	Somewhat ...	Disagree	Somewhat ...	Neither agr...	
6	Somewhat ...	Neither agr...	Neither agr...	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Agree	Agree	Agree	Agree	Neither agr...	Neither agr...	Neither agr...	
7	Somewhat ...	Disagree	Disagree	Strongly di...	Somewhat ...	Neither agr...	Neither agr...	Somewhat ...	Agree	Agree	Agree	Agree	Disagree	Disagree	Somewhat ...	
8	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Agree	Agree	Somewhat ...	Somewhat ...	Somewhat ...	
9	Somewhat ...	Somewhat ...	Disagree	Somewhat ...	Somewhat ...	Somewhat ...	Neither agr...	Neither agr...	Strongly a...	Strongly a...	Agree	Somewhat ...	Neither agr...	Neither agr...	Somewhat ...	
10	Somewhat ...	Disagree	Disagree	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Agree	Agree	Agree	Agree	Somewhat ...	Somewhat ...	Disagree	
11	Neither agr...	Neither agr...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Disagree	Somewhat ...	
12	Disagree	Disagree	Strongly di...	Strongly di...	Disagree	Disagree	Somewhat ...	Disagree	Agree	Agree	Somewhat ...	Agree	Disagree	Disagree	Disagree	
13	Disagree	Disagree	Disagree	Strongly di...	Somewhat ...	Somewhat ...	Disagree	Disagree	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Strongly di...	Disagree	Somewhat ...	
14	Disagree	Disagree	Disagree	Disagree	Somewhat ...	Disagree	Disagree	Somewhat ...	Somewhat ...	Agree	Agree	Somewhat ...	Disagree	Somewhat ...	Somewhat ...	
15	Somewhat ...	Disagree	Disagree	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Somewhat ...	Neither agr...	
16	Neither agr...	Neither agr...	Neither agr...	Neither agr...	Neither agr...	Neither agr...	Neither agr...	Neither agr...	Agree	Strongly a...	Strongly a...	Agree	Neither agr...	Neither agr...	Neither agr...	
	Typeward	Age	Gender	CREATIVITY	Cognitiveengagement	Emotionalengagement	Perceptionofconstraints									
1	No reward	26-35 yo	Woman	3,50	4,75	3,00	5,50									
2	No reward	18-25 yo	Man	3,75	5,00	4,25	6,00									
3	No reward	36-50 yo	Man	3,75	4,75	3,00	6,50									
4	No reward	50+ yo	Man	2,50	3,25	2,00	6,00									
5	No reward	36-50 yo	Man	3,25	3,25	4,75	5,50									
6	No reward	26-35 yo	Woman	4,00	5,00	4,25	6,00									
7	No reward	26-35 yo	Man	2,50	4,50	2,00	6,00									
8	No reward	18-25 yo	Woman	3,25	3,25	3,25	5,50									
9	No reward	36-50 yo	Woman	3,75	4,50	2,75	6,25									
10	No reward	36-50 yo	Man	2,75	3,00	2,50	6,00									
11	No reward	18-25 yo	Man	3,00	3,00	3,50	6,00									
12	No reward	36-50 yo	Woman	2,00	2,25	1,50	5,75									
13	No reward	50+ yo	Woman	2,25	2,50	1,75	5,00									
14	No reward	26-35 yo	Man	2,50	2,50	2,00	5,50									
15	No reward	50+ yo	Woman	3,50	3,00	2,50	5,00									
16	No reward	26-35 yo	Woman	4,00	4,00	4,00	6,50									

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Q1Aengemo	Numeric	1	0	Je suis enthousiaste à l'idée de travailler pour ce concours	{1, Strongly ...	None	8	Right	Scale
2	Q1Bengemo	Numeric	1	0	Je suis intéressé par ce concours	{1, Strongly ...	None	8	Right	Scale
3	Q1Cengemo	Numeric	1	0	Je suis me sens positif quant à ma participation à ce concours	{1, Strongly ...	None	8	Right	Scale
4	Q1Dengemo	Numeric	1	0	Je suis fier de ma participation à ce concours	{1, Strongly ...	None	8	Right	Scale
5	Q1Eengcog	Numeric	1	0	Je consacrerai beaucoup d'attention à ce concours	{1, Strongly ...	None	8	Right	Scale
6	Q1Fengcog	Numeric	1	0	Je serai absorbé par ce concours	{1, Strongly ...	None	8	Right	Scale
7	Q1Gengcog	Numeric	1	0	Mon esprit se concentre sur ce concours	{1, Strongly ...	None	8	Right	Scale
8	Q1Hengcog	Numeric	1	0	Je suis prêt à passer mon temps libre sur ce concours	{1, Strongly ...	None	8	Right	Scale
9	Q1Ipercontr	Numeric	1	0	Les instructions n'étaient pas trop nombreuses	{1, Strongly ...	None	8	Right	Scale
10	Q1Jpercontr	Numeric	1	0	Les instructions étaient claires	{1, Strongly ...	None	8	Right	Scale
11	Q1Kpercontr	Numeric	1	0	Les instructions n'étaient pas trop contraignantes	{1, Strongly ...	None	8	Right	Scale
12	Q1Lpercontr	Numeric	1	0	Les instructions m'aident à la réalisation des tâches	{1, Strongly ...	None	8	Right	Scale
13	Q1Mcreativity	Numeric	1	0	Je suis prêt à trouver l'idée la plus originale possible	{1, Strongly ...	None	8	Right	Scale
14	Q1Ncreativity	Numeric	1	0	Je suis prêt à trouver le plus d'idées possibles	{1, Strongly ...	None	8	Right	Scale
15	Q1Ocreativity	Numeric	1	0	Je suis prêt à trouver la meilleure solution pour ce concours	{1, Strongly ...	None	8	Right	Scale
16	Q1Pcreativity	Numeric	1	0	Je suis prêt à regarder au-delà de la vision initiale du problème	{1, Strongly ...	None	8	Right	Scale
17	Type reward	Numeric	1	0	Type of reward	{1, No rewar...	None	8	Right	Nominal
18	Age	Numeric	1	0	Age distribution	{1, 18-25 yo...	None	8	Right	Nominal
19	Gender	Numeric	1	0	Gender distribution	{1, Man}...	None	8	Right	Nominal
20	CREATIVITY	Numeric	8	2		None	None	12	Right	Scale
21	Cognitiveen...	Numeric	8	2		None	None	21	Right	Scale
22	Emotionale...	Numeric	8	2		None	None	21	Right	Scale
23	Perceptiono...	Numeric	8	2		None	None	25	Right	Scale

Abstract :

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