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EFFECTS OF STIMULATING COMMUNICATION ON CUSTOMERS' IDEA GENERATION PROCESSES

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ABSTRACT: Sustainable open innovation often has idea generation as a key step. When faced with challenge of stimulating ideation, organizations have few things they are sure about. An experiment was conducted to identify what type of stimulating written communication yields the biggest number of submitted ideas from students as users of educational services from their university. Results show that users generate more ideas when they are presented with specific problems that need solution than when they are generally asked to give any ideas for improvement they have. These results are discussed in the context of stimulating ideation through open innovation software platforms. This research tried to examine possible communication stimuli that may lead to bigger number of submitted ideas by users. In conclusion, the results of this research are applied to the field of open innovation software.
KEYWORDS: Open Innovation, Communication, Effective ideation, Idea Generation

INTRODUCTION

It is not unusual for an innovative organization to face forward difficulties in obtaining ideas needed for successful innovation activities. When users of a product or a service are considered as a source for innovative ideas, organization is faced with even more difficulties, as it lacks control over factors that determine creative thinking that it has over its own employees. Ideas obtained from outside of the organization are often different than those obtained from the inside, as users have different perspective than organization's employees. Nevertheless, big numbers of corporations around the world have established »open« idea management based on communication networks, where all participants can suggest and evaluate ideas [1].

Therefore, every organization that believes its users can give quality input into innovative processes should try to maximize its influence on those users, stimulating them to create and share more ideas. This research tried to examine possible communication stimuli that may lead to bigger number of submitted ideas by users. In conclusion, the results of this research are applied to the field of open innovation software.

STIMULATING IDEATION

Creative thinking and process of ideation - idea creation [2] are of great importance to any innovative organization. Therefore, idea creation should be supported and facilitated throughout the organization, so that every potential, inside or outside of the organization can be used. Idea creators can be guided and stimulated to create ideas individually, in a group, or in a combined method. The first question that may arise is: can individuals produce more ideas, or are focus groups better way to create ideas?

Ideation is mostly a solely activity, with numerous research proving that individuals create more ideas than groups (detailed review in [3]). Johansson [4] also states that numerous literatures imply that individuals produce more ideas and more quality ideas than people working in focus groups. In their experimental research, Bouchard and Hare [5] conclude that group brainstorming inhibits rather than facilitates creative thinking, implying that pooled individual effort is far more productive procedure than group effort.

However, that fact doesn't mean that other people's ideas have no impact on our own creative processes. It simply states that one person should be left alone during initial ideation. In the following steps, individuals should be faced with other people's ideas so they can work on them and be inspired to create even more ideas. This type of stimulation is sometimes referred as "hybrid" or "brainwriting" stimulation, as it combines positive aspects of both individual and group ideation. These techniques rely on individual's influence on other individuals, trying to use peoples' ideas to stimulate other peoples' ideation processes rather than teaming them up to create ideas together. There are

numerous examples of this principle put to actions such as: Nominal-group technique, NHK brainstorming, PIN cards, Brainwriting pool, Brainsketching, Joint notebook, KJ method and the Gallery method [6]. What is common for these methods is that users are presented with another users' ideas witch act as stimuli to think of new ideas or to tweak ideas that are already submitted. This type of stimulation has a great potential, but also asks for a well-thought idea database that is optimized for clear communication of ideas to other users, and for seamless improvisation upon presented ideas. This type of stimulation is also dependent on the number and quality of submitted ideas, which renders it useless if there are few ideas submitted, or if they are ill-conceived.

If an organization wants to have a better grasp on motivating factors for ideation, it must take better control of users' ideation processes, driving them in the preferred direction. Organization can do that either by clearly stating it's need for ideas, or by offering some sort of verbal stimulation to explain what type of ideas it is after for, in a form of questions or possible fields of improvements. Besides that, organization can obtain it's users with lists of known issues or opportunities, hoping that the users will generate ideas that can successfully contribute to the given causes.

EFFECTIVE COMMUNICATION TOOLS USED FOR STIMULATING IDEATION AND USER COLLABORATION

In order to spark ideation and interaction between themselves and their users, organizations are using and developing different tools and methods that can be used to enable and support idea creation. Idea management tools were initially used to enable quality communication between idea makers and idea users, either via real suggestion box or via online idea box (an idea database). Later, these tools have developed different support mechanisms for collaborative idea creation, evaluation and implementation processes and they are used in different organizational programs that could include internal and external users. Many of these idea platforms are focusing on establishing effective communication channels between all users of the platform, hoping that the communication will stimulate users to create new ideas. Some of Web based tools that could increase the performance of the idea creation process are mentioned in the following paragraphs [7] [8] [9] [10].

- *User Toolkits (Lego, NikeId, etc.) as part of an Internet based corporate initiatives for Open Innovation Challenges, are defined as a novel way for manufacturers to access innovative ideas and solutions from users (Piller&Walcher, 2006). Users are obtained with on-line user-friendly co-creation tools and user design platforms, while enabling them to be engaged in co-creation process in a playful way. At the same time these tools allow companies to identify key developers by observing consumers' behavior and to collect data on users' preferences, motivations and issues.*
- *Collaborative idea creation: idea generation tool enables idea aggregation and communication between host and the community. All community members can post and see ideas that were shared. Every participant can help idea creation - giving feedback on every idea by commenting and voting on it. These functionalities represent learning motivators for participants and they show great implications of great importance for organizations.*
- *Integration into online communication software (chat or email options): facilitating the communication on ideas and attaching idea creation to a real time conversation enables the brainstorming between distant participants, allowing them to communicate on possible solutions and ideas that they wouldn't normally think of.*
- *Honor roll lists: they may act as internal motivators for idea sharers (company recognition, reputation, enhancement of user status, other users recognition or competition) to share ideas and to give feedback.*
- *Rich idea submission form: enrichment of a problem formulation by enabling options to link photos, drawings or files to a problem description helps ideation process. The person who is sharing an idea has better communication channel to pass his suggestion and is not limited to using words only.*
- *On line markets: possibilities to buy actions on markets for an idea with virtual or real money are advanced voting mechanisms that forces the members to engage in idea evaluation and its amelioration.*
- *Advanced search engine / tag cloud / Web Semantic technologies: they facilitate the access to the community knowledge and profiling of participants according to their profile descriptions and/or contributions, or linking similar ideas. These functionalities can help community to grow and segment into groups based on areas of interest.*
- *Social networks are relevant for open innovation efforts as they are enabling companies to further build their networks and to better access to an interaction with innovation stakeholders (enabling Self-Marketing for participants, Social propagation of a content reinforced with options to retweet, like, repost, etc., possibilities to learn from the community). Creation of specified groups, the use of specific hash tags for a chat on Twitter, engagement of participants into conversations, making the content more visible in social circles, creation of users profiles, creation of trust by engaging in relevant discussions or by sharing the relevant content, etc. inside as well as outside the organization - not only increases the number of ideas but also the range of perspectives resulting in greater diversity or variability of those ideas.*

All of the fore mentioned tools are designed to motivate users to create maximum number of ideas, but they are trying to achieve that with two different focuses: either by engaging user into co-development of a product, where he is focused on the product properties, or by engaging user into communication with other subjects, where the focus is on bigger number of ideas. As it was previously indirectly stated, the former focus is easier to achieve and sustain, as it only needs user's attention on a desired product. The latter focus is harder to achieve and sustain as it requires user's interaction with other users, with a multitude of other factors that can influence the idea generation stage.

RESEARCH METHOD

In order to identify what type of communication can yield the biggest number of ideas, a whole series of research should be designed to cover different aspects of communication processes. This paper presents one research aimed to identify the organization-to-user written communication as a stimulus for ideation.

The sample consisted of second year students of Engineering management, at Faculty of Technical sciences, Novi Sad, Serbia. The students of only one class were chosen, in order to control possible influential variables such as specific knowledge and perspective that students from different classes may have. There were 132 students observed with 21 years in average, 72 female and 50 male. These students were observed as users of (an educational) service provided by one organization.

An experimental research was conducted that targeted organizational communication towards its users. Its aim was to identify what type of written communication is most suitable for stimulating users to produce more relevant ideas for service improvement. The mode of written stimulus was manipulated as an independent variable, while number of ideas suggested as well as their suitability was observed. Three categories of the independent variable were chosen:

- *Control group had received only general instruction to produce and share ideas that could improve educational and relevant processes at their institution;*
- *Experimental group 1 had received instruction to produce and share ideas that could improve educational and relevant processes at their institution with a list of 9 possible areas of improvement such as "environmental issues", "improvement of teaching activities" and "communication between teachers and students";*
- *Experimental group 2 had received instruction to produce and share ideas that could improve educational and relevant processes at their institution based on 9 presented existing, real problems. Some of these problems were: "The Faculty spends a lot of money for printing papers", "The Faculty spends a substantial amount of electricity" and "Students lack knowledge and experience that students in other countries have".*

Students were randomly assigned to one of these three groups and were given an empty form to write all the ideas they can come up to. They had 45 minutes to complete this task and they were working individually, without any interaction with the other participants or with the instructor.

The dependant variables were:

- *Total number of shared ideas;*
- *The number of shared ideas that were evaluated as suitable for the organization by an unbiased evaluator. The efficacy and cost/benefit aspects of ideas were not evaluated, only their general relevance to the improvement of organizational services.*

Statistical software SPSS v.17 was used to enter the data and to search for significant differences. Analysis of variance (ANOVA) was used, with LSD and Tamhane procedures used for post-hoc analyses.

RESULTS AND DISCUSSION. Total number of shared ideas

The initial ANOVA analysis, calculated for the total number of shared ideas per group, has reported significant differences between the observed groups.

With the following post-hoc tests, it is concluded that all three groups differ significantly between each other.

Table 1. Compared means of total ideas per group, using ANOVA with LSD post-hoc test (significant at .05 level)

(I) Experimental treatment	(J) Experimental treatment	Mean Difference (I-J)	Std. Error	Sig.
Control group	Areas of improvement	-4.297*	.924	.000
	Real problems	-6.238*	.897	.000
Areas of improvement	Control group	4.297*	.924	.000
	Real problems	-1.941*	.905	.034
Real problems	Control group	6.238*	.897	.000
	Areas of improvement	1.941*	.905	.034

It can also be seen that the participants that generated ideas while being stimulated with real problems had shared most ideas, while those that received only general instruction had shared the least number of ideas (table 1). Graphic illustration of these findings, presented on picture 1, also gives a clear picture of different effects that three types of verbal stimulation have on total number of shared ideas.

It can be easily seen that the respondents who had been stimulated with the list of real problems had outperformed the other two groups, with more than 12 ideas in average. The respondents in the control group had shared only half of that number of ideas in average.

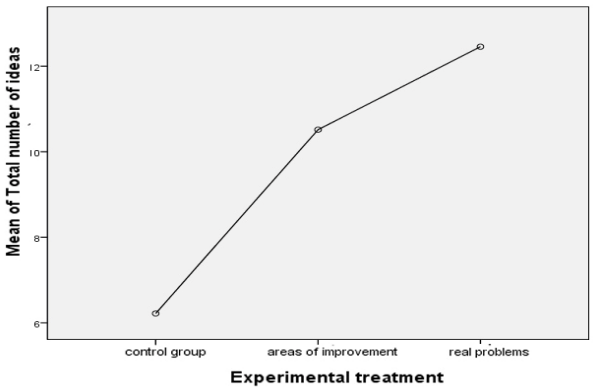

Figure 1. Compared means of total ideas per group

NUMBER OF IDEAS EVALUATED AS SUITABLE

The next ANOVA analysis, calculated for number of shared ideas evaluated as suitable per group, has also reported significant differences between the observed groups.

With the corresponding post-hoc tests, it is concluded that all three groups differ significantly between each other.

It can also be seen that the participants that generated ideas while being stimulated with real problems had shared most ideas evaluated as suitable, while those that received only general instruction had shared the least number of ideas (table 2).

Table 2. Compared means of suitable ideas per group, using ANOVA with Tamhane post-hoc test (significant at .05 level)

(I) Experimental treatment	(J) Experimental treatment	Mean Difference (I-J)	Std. Error	Sig.
Control group	Areas of improvement	-3.196*	.750	.000
	Real problems	-6.652*	.801	.000
Areas of improvement	Control group	3.196*	.750	.000
	Real problems	-3.456*	.904	.001
Real problems	Control group	6.652*	.801	.000
	Areas of improvement	3.456*	.904	.001

Graphic illustration of these findings, presented on picture 2, also gives a clear picture of different effects that three types of verbal stimulation have on number of shared ideas that were evaluated as suitable.

As well as with the total number of shared ideas, it can be concluded that the respondents who had been stimulated with the list of real problems had outperformed the other two groups, with around 12 ideas in average. The respondents in the control group had shared less than half of that number of ideas in average.

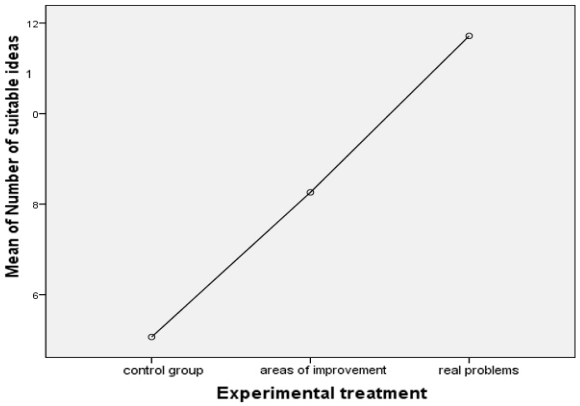

Figure 2. Compared means of suitable ideas per group

DISCUSSION

The presented results have strongly suggested that various methods of written verbal communication can stimulate idea generation in different extents. While the simple, general instruction (to produce and share ideas that could improve service that the organization) provides relatively modest stimulation for ideation, it appears that specifying that instruction amplifies the effect that it has on the idea creators.

These findings suggest that, in order to stimulate users to create ideas to a greater extent, organization has to clearly state the type and direction of ideas it is willing to receive. Simply asking users to share all ideas that they have is a suboptimal solution, as it fails to stimulate them in a way that more concrete questions can.

The explanation that lies beneath these results is relatively simple - users are concentrated on those aspects of service improvement that they find relevant, not being aware of some other perspectives. Any kind of list that reminds them of some other aspects can only bring more ideas. However, giving general areas of improvement shows to be suboptimal as well, since users fail to improvise in their ideation relying only on abstract categories. Being stimulated with specified and clearly stated existing problems is the most optimal method, as users can improvise on very tangible topics.

CONCLUSIONS

All of the results presented above send a clear message that communication as a written stimulus for ideation should be as specific as possible. This conclusion relates to ideation software and idea management platforms. It is suggesting that organizations that use them should incorporate a communication path for the organization to input the possible fields of improvement and concrete problems that need to be addressed. Leaving only an empty general form for users to fill is not

enough; organization needs to offer challenges to it's users in order to harvest the biggest number of ideas it can use.

These challenges can be parallel to each other, or they can be organized in consecutive campaigns. They should be offered to the service users whenever possible, interacting with other relevant online communication activities. The presented problems that need creative ideas should be integrated into other online contents, social networks and communication software. Organization that needs ideas for improvement should always have a clearly defined set of problems that can be addressed by users. Some sort of "problem challenges" can even be started by the organization, with a problem bank that will place relevant problems to the users, stimulating them to share even more ideas.

REFERENCES

[1.] *Nalebuff, B., Ayres, I. (2004). Encouraging Suggestive Behavior. Harvard Business Review, 82, 12.*

[2.] *Toubia, O. (2006) Idea Generation, Creativity and Incentives. Marketing Science, 25(5): 411 – 425.*

[3.] *Diehl, M., W. Stroebe. (1987) Productivity loss in brainstorming groups: Toward the solution of a riddle. Journal of Personality and Social Psychology, 53 (3): 497-509.*

[4.] *Johansson, F. (2004). The Medici Effect. Harvard Business School Press.*

[5.] *Bouchard, T. J., Hare, M. (1970) Size, performance, and potential in brainstorming groups. Journal of Applied Psychology, 54: 51-55.*

[6.] *VanGundy, A. B. (2007) Getting to innovation: how asking the right questions generates the great ideas your company needs. New York, AMACOM.*

[7.] *Antikainen M., Mäkipää M., Ahonen M., (2010),"Motivating and supporting collaboration in open innovation", European Journal of Innovation Management, Vol. 13 Iss: 1 pp. 100 – 119.*

[8.] *Anadiotis G., Alexopoulos P., Kafentzis K., Konstantinou E., Stankovic M., and Waeckerle M.. (2011) Semantics-powered Virtual Communities and Open Innovation for a Structured Deliberation Process. In Workshop on Semantics for Governance and Policy Modelling, ESWC.*

[9.] *Piller, F. T., Walcher D. (2006) Toolkits for idea competitions: a novel method to integrate users in new product development, R&D Management, 36, 3 (June): 307-318.*

[10.] *Kajmakoska B., Koeck A. M., Willfort R., (2010), Computer-based solutions for Open Innovation processes. In 4th International Conference on Mass Customization and Personalization in Central Europe, Novi Sad. 88-95.*

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