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DEVELOPING ONLINE CO-CREATION INSTRUMENTS BASED ON A FOCUS GROUP APPROACH: THE E-PICUS CASE

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Abstract **—** The current business environment is in constant change, characterized by increased competition and in order to remain relevant and to create products and services that respond better to the customers' needs and expectations companies need to become more innovative and proactive.
To address the competitive challenges, more and more companies are using innovation co-creation where all the relevant stakeholders are participating across the value chain, from idea generation, selection, development and eventually, even to marketing the new products or services.
The paper presents the process of developing an online co-creation platform, within the framework of a research project, underlying the importance of using a focus group approach for requirements elicitation in IT instruments development.

Keywords **—** Co-creation, Open Innovation, New Product Development, Focus Group

I. INTRODUCTION

In a business environment characterized by a high complexity and dynamicity, continuous innovation and the ability to generate knowledge during the innovation process [1],[2],[3] become major factors of competitive advantage. And in today's world, where the only constant changes, the task of managing innovation is vital for companies of any size in every industry [4]. In this context and taking into account that innovation is not only indispensable but also extremely expensive to manage, a key idea in open innovation is that firms should expand the idea generation process outside the confines of their organization [5], doing the search for external knowledge an important managerial task [6]. Therefore, many firms are experimenting with a variety of ways to increase their ability to innovate by creating synergies between their internal processes and external knowledge sources [7].
In order to become more competitive and to expand their knowledge base, companies increasingly co-create knowledge with external stakeholders during the innovation process [8], [9] and there is a consistent stream of marketing and management literature presenting the way some firms managed to involve in the co-creation process one or more types of stakeholder, by using online technologies and creating co-creation communities. The academic literature abounds in examples of companies such as BMW [10], IBM [11], LEGO [12], Heineken [13], and Dell [14] which have all been successfully leveraging creative ideas contributed by internet users [15].
The emergent concept of innovation co-creation (ICC) has become a term used to describe a significant shift in managerial thinking, from the organization as a unique definer of value, to a more participative process where consumers and the innovative organization together generate and develop new product concepts [16]. From a business perspective, ICC refers to gathering information and insights necessary in the processes of idea generation, development and marketing of new products and services. Customer involvement and co-creation of value involve working anticipatively and interactively with customers to enhance the value customers can get when buying and using new goods and services.
The Internet can be a tremendously valuable instrument for companies in the innovation co-creation process, due to the fact that it can enhance the firms' ability to actively engage costumers in collaborative innovation environments and to keep a constant two-way dialogue with its' stakeholders. That is why companies are becoming increasingly interested in exploiting the open innovation opportunities offered by the new online technologies.
Our paper seeks to present the process of constructing an online co-creation platform for a Romanian company from the electronic consumer goods industry, leader on the Romanian market of Video Intercoms, platform that will be further used in the NPD (new product

development) process of a state-of-the-art Video Intercoms.

II. THE CONTEXT OF THE STUDY

The E-PICUS co-creation platform is being developed through the project *„E-solutions for innovation through customer pro-active involvement in value creation to increase organizational competitiveness (E-PICUS)”*, PN-II-PT-PCCA-2013-4-1811, within the framework of the National Research Program PN II. The research activities are aiming to develop an experimental model for e-solutions of innovation through customer pro-active involvement, using online environments, in product innovation, in order to enhance organizational competitiveness on the global market.

One of the main objectives of the project was to undertake applied research activities, according to the requirements of the actual national and global, economic and social developments, by using the online environments, which would contribute to the development and promotion of innovative solutions and instruments for increasing the competitiveness of the Romanian companies, especially of SMEs, in the global competitive market.

Among the specific objectives of the project are:

1) *To develop an experimental model (E-PICUS) dedicated to customer pro-active involvement in the processes of product innovation and new product development;*
2) *To develop experimental versions of the E-PICUS model, facilitating customer pro-active involvement, by using multiple online environments and to test the model on a generic product, in order to demonstrate its utility for a company from the electronic industry;*
3) *To develop organizational strategies and associated mechanisms for using the E-PICUS model within companies, thus transforming customer pro-active involvement in added value for the global consumer and enhanced organizational performance.*

The major tangible result of the project will be the experimental model E-PICUS, with software applications for multiple online environments, which can be used by companies for product innovation through customer pro-active involvement. Using the software applications of E-PICUS will bring significant competitive advantages to companies, through: reduced innovation time and costs, as a result of consumer involvement by means of online communities, gaining a higher degree of renewal, improvement and diversification of the product portfolio, a increased consumer satisfaction, due to the fact that the users-innovators will suggest and benefit from improvements of the products adapted to their own needs, an increased economic efficiency through extending the product range and satisfying various tastes and needs, while decreasing the innovation costs and a higher rate of information diffusion, by using the online communities.

III. THE DEVELOPMENT PROCESS

In the home automation and security industry, most companies gain a significant competitive advantage based not only on technical product superiority, but also on their capability to interact with their customers and to get better insights regarding their specific needs and expectations and purchasing patterns.

The company ELECTRA, which is a highly innovative Romanian technology company has understood the potential for using the Internet to engage its stakeholders during the NPD efforts and it decided to develop an online co-creation platform in order to engage its stakeholders in a two-way communication process, aiming at improving their products, especially the Video Intercoms, through open innovation.

The development of the co-creation instrument followed the Action Design Research method which consists of four stages supported by seven principles. The stages include: problem formulation, which identifies and conceptualizes a research opportunity based on existing theories and technologies; “building, intervention and evaluation” (BIE), which refers to building the artifact, intervening in the organizational setup, and concurrently evaluating and shaping the artifact according to context; *reflection and learning*, which moves from developing a solution to a particular instance to applying that learning to a broader class of problems; *formalization of learning*, which allows the situated learning from an ADR (Action Design Research) project to be further developed into a general solution for a class of field problems [17].

IV. THE E-PICUS PLATFORM

The process of developing the E-PICUS platform had two separate stages: the first stage consisted of analyzing the existing co-creation online platforms and instruments, followed by a benchmarking analysis, while the second stage was focused mainly on the internal analysis of the company and materialized in several focus groups with members of the research & development, marketing & sales and engineering departments.

The results of the focus groups helped the implementation team design the structure of the platform.

Action Design Research was performed as follows: in the Problem formulation stage there was conducted extensive research that revealed an abundant literature is treating co-creation, online co-creation instruments and platforms, presenting both successful attempts and undergoing projects.

The research team discussions with the corporate partner disclosed the critical importance, in the new product development process, of having better insights from consumers and other stakeholders in order to shape and adjust the product and its marketing strategy.

The corporate partner was actively involved in all the creation and development stages.

In the Building, Intervention and Evaluation phase, the co-creation platform has been designed and developed through an iterative process of 9 stages, modeled and adjusted through constant feedback from the research team, the corporate partners and the stakeholders testing.

The online co-creation platform development largely followed software engineering web principles and the portal components were developed and adjusted in an environment of continuous testing, evaluation, improvement and market responsiveness. In this phase there were conducted three focus groups: two for development purposes and one for testing purposes.

The results of the focus groups assisted the implementation team in identifying useful features, designing the structure of the platform and deciding on the main topics to be included in the co-creation community section: aspects regarding aesthetics and aspects regarding functionality.

The project is at this moment in the reflection and learning stage and the research team is constantly analyzing and evaluating the results obtained through internal and external testing according to the short term and long term goals of the project.

V. USING FOCUS-GROUPS FOR DEVELOPING AND TESTING THE PLATFORM

The importance of requirements elicitation (RE) in Information System Development has long been established and recognized by researchers and practitioners alike because it tries to extract the needs of the system, determining how it will operate [18]. Many authors agree on the fact that eliciting requirements are critical [18],[19] for many reasons: a) it relies on a complex and error-prone communication between stakeholders and analysts; b) stakeholders are not always clear about what they want; and c) analysts may not understand business concepts [20], [21].

One of the methods commonly used for requirements elicitations in IT development are focus groups, due to their ability to provide deeper understanding of a specific issue and provide insight into how people think and perceive the issue and as a result, focus groups have the potential to provide significant insights about phenomena of interest to IS researchers [22].

In the platform development phase, during October 2015 and November 2015, two focus groups were conducted with different sets of participants from the company: one with members from the research & development department and one with members of the marketing & sales department. The aim of both focus groups was to identify approaches for the development of the co-creation platform in order to better respond to the company's specific knowledge needs.

Both focus groups had between 6 and 9 participants and were conducted at the company headquarters in a proper room that allowed no interruptions and the possibility to audio record the sessions.

Each session began with an overview of the research project objectives and the format and rules of the group session. This was followed by a general description of the co-creation platform and the way this instrument is intended to be further used by the company in the NPD process. This was followed by 120 minutes of further discussions, following the moderation guide which had three sections covering aspects regarding useful features of the platform, aspects regarding product (Video Intercom) functionalities and aspects regarding product aesthetics in which further insight from costumers is needed for further development. At the end of each session, participants were invited to submit any further input directly to the researchers outside the focus group setting on email.

After creating the structure and the design of the platform the research team conducted another focus group for testing purposes.

The potential participants in the focus groups received an email invitation where they were presented the goal of the focus group and the activities needed to be performed for testing purposes: accessing the platform, browsing through all the platform pages: Home, About us, How it works, Active projects, Terms & Conditions, accessing the active links, creating a user account, completing the questionnaires, accessing the community section to vote, comment and add new projects and to complete the tester questionnaire.

During this specific focus group participants were invited to use the platform as regular users, create an account and navigate the website: comment and evaluate active projects, propose modifications of existing projects and add new products for debate.

The focus group moderation guide aimed to determine whether the information provided on the platform is precise and sufficient, if the main menu is clear, if the platform is user-friendly and easy to navigate, if users are able to find the information in a precise and timely manner and if the links are properly working and.

All focus groups were recorded in order for researchers to be able to analyze and evaluate the data.

The analysis of the focus groups was done through content analysis.

VI. SUMMARY OF FOCUS GROUPS RESULTS

The results obtained in all three focus groups helped the implementation team identify useful features, design the structure of the platform and decide on the main topics to be included in the active projects section and in the co-creation community section: aspects regarding aesthetics and aspects regarding functionality.

The aspects regarding the aesthetics included for debates in the co-creation platform were: the color of the interior terminal, keys viewing options, icons options, while the aspects regarding functionality were: additional security features and communication options for breaking and entering.

Users also have the possibility to add new projects and ideas in the co-creation community section, which, after are being reviewed by the research & development representative of the company are made available to all users for comments and debates.

When asked what features were most important in order to promote a better involvement from users, all the participants emphasized reliability, user-friendliness and easiness in covering all the navigation steps: creating an account, completing the questionnaires and accessing the co-creation community.

The testing focus group offered support for the technical implementation team both for bug fixing and for adding new features as adding the possibility for the user to insert pictures with their comments or new project ideas or a search button.

This research is undergoing and the co-creation platform is available at www.e-picus.com/aplicatie.

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REFERENCES

[1] P.E. Bierly, F. Damanpour, M.D. Santoro, The application of external knowledge: Organizational conditions for exploration and exploitation in *Journal of Management Studies*, 46 (3), pp. 481–509, 2009.

[2] R.M. Grant, Prospering in dynamically-competitive environments: Organizational capability as knowledge integration, in *Organization Science*, 7 (4), pp. 375–387, 1996.

[3] K. Kazadi, A. Lievens, D. Mahr, Stakeholder co-creation during the innovation process: Identifying capabilities for knowledge creation among multiple stakeholders, in *Journal of Business Research* Volume 69, Issue 2, pp. 525–540, February 2016.

[4] H. W. Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press, p. xvii, 2006.

[5] J. West, A. Salter, W. Vanhaverbeke, H. Chesbrough, Open innovation: the next decade, in *Research Policy*, 43, pp. 805–811, 2014.

[6] K. Laursen, A. Salter, Open for innovation: the role of openness in explaining innovation performance among the UK manufacturing firms in *Strategic Management Journal*, 27, pp. 131–150, 2006.

[7] D. Secchi, M. Neumann eds., *Agent - Based Simulation of Organizational Behavior*, Open Innovation Networks and the Role of Intermediaries: An Agent-Based Simulation (chapter), pp 329-344, 2016.

[8] W.D. Hoyer, R. Chandy, M. Dorotic, M. Krafft, S.S. Singh, Consumer cocreation in new product development, in *Journal of Service Research*, 13 (3), pp. 283–296, 2010.

[9] D. Mahr, A. Lievens, V. Blazevic, The value of customer co-created knowledge during the innovation process, in *Journal of Product Innovation Management*, 31 (3) pp. 599–615, 2014.

[10] S. Avasilcai, E. Galateanu (Avram), Innovation through developing consumers communities. Part II: Digitalizing the innovation processes, in *IOP Conf. Series: Materials Science and Engineering* 95, 2015.

[11] V. Blazevic, A. Lievens, Managing innovation through customer co-created knowledge in electronic services: an exploratory study in Journal of the Academy of Marketing Science, 6 (1) pp. 138–151, 2008.

[12] D. Zwick, S.J. Bonsu, A. Darmody Putting consumers to work: 'Co-creation' and new marketing governmentality**,** in *Journal of Consumer Culture*, 8 (2), pp. 163–196, 2008.

[13] S. Avasilcăi, G. Rusu, Co-Creation Value Through Customers' Proactive engagement: A Case Study on Heineken in *Annals Of The University Of Oradea, Fascicle of Management and Technological Engineering* ISSUE #2, 2015.

[14] L. Alexa, M. Alexa, S. Avasilcăi, An Empirical Research On Open Innovation And Co-Creation: The Ideastorm Project By Dell in *Review of Management and economical Engineering*, Volume 13, No. 4 (54), 2015.

[15] M. L. Hsin-Hsuan, Willemijn van Dolen, Creative participation: Collective sentiment in online co-creation communities, in *Information & Management*, Volume 52, Issue 8, pp. 951–964, December 2015.

[16] N. Ind, N. Coates, The meanings of co-creation, *European Business Review*, 25 (1), pp. 86–95, 2013.

[17] M. Sein., O., Henfridsson, S., Purao, M., Rossi and R., Lindgren, Action Design Research. *MIS Quarterly*. 35, 1, 37–56, 2011.

[18] D., Zowghi, C., Coulin, Requirements Elicitation A Survey of Techniques, Approaches and Tools. In Aybüke Aurum & Claes Wohlin (Eds.), Engineering and Managing Software Requirements. Berlin: Springer, 2005.

[19] M., Sadiq, M. Shahid, A., Shabbir. Adding Threat during Software Requirements Elicitation and Prioritization. *Journal of Computer Applications*, 1(9), 2010.

[20] D., Avison, G., Fitzgerald, Information systems development: methodologies, techniques and tools. New York, NY: McGraw-Hill, 2006.

[21] C., Farinha, M., Mira da Silva, Requirements Elicitation With Focus Groups: Lessons Learnt, *Proceedings of the 21st European Conference on Information Systems*, 2013.

[22] F., Belanger, Theorizing In Information Systems Research Using Focus Groups, *Australasian Journal of Information Systems*, Volume 17 Number 2, pp. 109-135, 2012.