

Innovation through Cross-fertilization

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Abstract. Enterprises pursue innovation in terms of products, processes, market. In relation to market innovation, the paper presents a technique of exploration of new markets based on the participation of an organization’s members in sharing their knowledge of extra-curricular domains. The technique has been experimented in a Small/Medium Enterprise (SME) with good results, also in terms of knowledge sharing within the job community. The interest of the technique goes beyond the exploration of new market segments, as a by-product of it, that is the approaching of people to new domains, can enable a cross-fertilization between non-contiguous conceptual structures in terms of hints and ideas of lateral thinking nature

Keywords: cultural integration, lateral thinking, self-organizing conceptual structures

1 Introduction

Beside product and process, also market innovation can provide a boost to any organization’s business. In general it is easier to manage a new market segment with existing products, rather than having to change the way a product is manufactured or organize different supply channels, as with other types of innovation. Globalization, that practically opens the whole world as a playing field for everyone, favours this search for market segments not tapped before.

It is possible that addressing a new market with a current product the opportunity of introducing new features arises, so that a market innovation triggers in turn product and process innovations, setting in place a virtuous cycle capable of putting the organization on the forefront of its business domain.

This paper presents a method for organizing the survey of new market segments, that has been tested in a SME and has given interesting results. The method is based on the participation of the organization’s employees, in sharing their knowledge of extra-curricular domains, on the base of their hobbies.

There are interesting side advantages in its application, in terms of a better integration of the organization’s “culture”, an enrichment of the shared knowledge, and a possible exploitation of lateral thinking.

2 Problem statement

The address of novel market segments can be highly dispersive because of the wide scope of dimensions (territorial, cultural, age-base, etc.) in which an existing product or service could be effectively introduced.

For each of these dimensions an adequate knowledge of the existing “local” status is required, in order to rapidly pinpoint the outstanding elements, the main trends, the historical legacies, the fashions, and so on.

An enterprise, particularly a SME, cannot afford a systematic exploration of all the possible dimensions of a new market, and can miss some interesting possibility of expanding its total share of the market.

3 The original experiment

Ten years ago I was consulting to a small software house, specialized in decision making systems for enterprises and Public Administration agencies. The management decided to look for new application sectors of the company’s skill, that was very advanced, mainly as a way of diversifying its customer’s portfolio. I suggested to involve all the employees in this market survey, taking advantage of the knowledge that each of them had for specific technical, cultural, social domains different from our main business, by virtue of their extracurricular interests.

The basic idea was that all persons normally cultivate one or more hobbies that in some way are connected with their job, either because they are sort of playful extensions, or because are very distant in terms of required skill, physical challenges, context. In either cases it is realistic to find relations between the issues characteristic of their job and those addressed by their hobbies.

The idea was presented to the employees (all experts in SW programming and requirements analysis, plus a couple of administrative persons) and received a very positive feedback.

5 employees were selected, among the ones that proposed their intention to actively participate, on the base of the type of their interest. The idea was that of testing the viability of the procedure in respect of a wide spectrum of different perceived conceptual “distance” between job and hobby.

The selected interests were:

- Computer art (fractal images, landscape renderings, etc.)
- Music
- Photography
- Wine tasting
- Local politics

As can be judged by the selection, art was the most popular domain of choice, probably because of the type of job domain.

The procedure devised for mining business hints from these external domains was the following:

- a) each person prepared a presentation to their colleagues of his/her interest. At the end of each presentation a short brainstorming took place, in order to assess possible issues, related to each field, that could be addressed by application SW solutions.
- b) A second session for each presentation, after one or two weeks, was prepared by persons that had individuated some interesting topics candidate for additional analysis

Two of the individuated topics were chosen by management (one related to the requirements of casting agencies, stemming from the photography hobby, and the second related to the problems of local politic actions) and pursued for market research actions. Of these the one related to casting agencies resulted in an interesting prototype.

The very interesting byproduct of this exercise was the sharing within the company of what at that time we called “lateral knowledge”, that is knowledge not directly focused on one’s usual business.

4 Promoting Creativity

The exercise presented highlights one aspect of innovation that is worth being further explored, that is the ability of concepts and processes pertaining to a given domain, to suggest innovations in processes of another domain. In other words what we called lateral knowledge can be fruitfully integrated into one’s existing models.

The original goal of the experiment was in fact the exploration of a sector, with the aid of someone knowledgeable, in order to ascertain if some kind of SW application could be proposed as a useful tool. This possibility in itself represents an innovation, in terms of exploring a market segment not considered before. It was effectively exploited in the case presented, and can be easily replicated in any organization.

Even more interesting than the search of new market segments is the generation of innovative ideas that can be produced by the conceptual cross-fertilization between domains.

A pictorial rendering of the cultural reaching from the organization is provided by Figure 1.

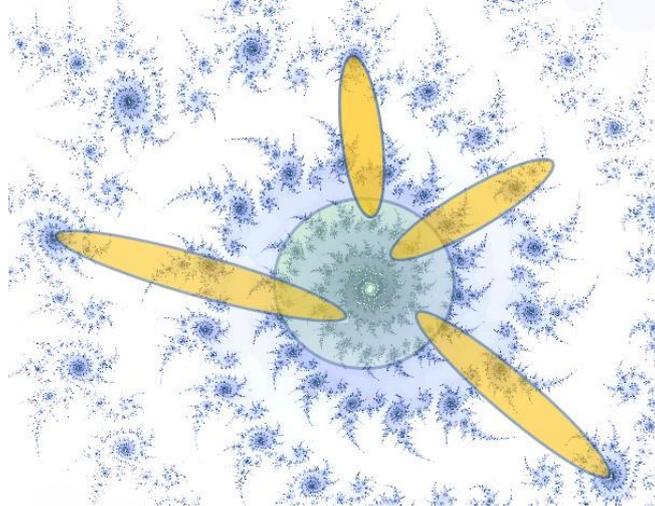


Figure 1: Integration of different cultural clusters

4.1 Integration of Conceptual Structures

Generally a Knowledge Base is modeled as a network of nodes (concepts), structured in hierarchies (connections of sub-concepts in many levels) with many cross links between hierarchies. The connections are semantically classified.

The overall picture of such a network looks fractal and scale-free [1]. It means that at any scale of observation of a network sector, you can see a small number of “hubs” – nodes with many connections – and a larger number of nodes with few connections. Social webs are good examples of this structure.

What is particularly interesting is that recent researches [2] suggest that this model resembles closely the physical structure made of groups of neurons in our brain: each group fixes a specific concept. From other earlier researches [3], [4] we know that neurons have connections to other ones (through synapses) that are reinforced in proportion to the frequency of their use, that is to the degree of semantic affinity, the number of times that one concept recalls another.

People working in an organization, during the course of time integrate their own cultural structure with concepts proper of the business sector of the organization, and this is the positive effect of job training and experience. Inevitably the pre-existent structure and the new concepts interconnect, so that there is a sort of semantic osmosis between one’s personal culture and the business one.

Another interesting characteristic of our mind’s conceptual structure is its apparent self-organizing capability, that anyone has experienced every time he/she has had a “ha ha!” episode: you are analyzing various aspects of an issue, and all of a sudden all the examined pieces that up to that moment were precariously hanging in your mind, magically connect to each other and form a logical thought process.

In any case, when we address a problem we generally apply to the situation at hand preexisting (to the instance) mental models, that by experience we deem useful and effective for finding a solution, and we select a specific model because at that time we trust it. Of course in case the model does not prove effective the rational thing to do is to relive the situation, ascertain if the choice and the application of the model have been correct, and in case update the model itself.

4.2 Cross-fertilization effects

Lateral thinking (see for instance [5]) is one experimented way of triggering new ideas in a traditional domain: the technique is based on the assumption that any new concept, when it is considered by a person in light of his/her existing cultural mindset, has the capability of self-connecting to existing concepts, even beyond the conscious control of the person.

Just debating the various issues existing in the new conceptual domain (with the aid of someone that has some degree of relevant familiarity) enables these connections, that probably not immediately but in subsequent discussions, can trigger innovative ideas.

5 Conclusions

The proposed technique can be adopted, and adapted, by any organization in order to extend its “culture”, that means its field of play as a producer, consumer, trader, by leveraging on the personal culture of its members.

Many interesting advantages can be individuated in this integration of multiple cultures that have in any case a common ground, that is the organization’s mission.

First of all is the practical availability of entry points into communities more or less culturally different. To use a metaphor, it is like connecting with residents of other countries that talk our language and understand our needs, rather than sending exploration parties in those territories, with all the risks of misunderstandings, miscommunications, cultural problems.

A second advantage is the opportunity for the components of an organization of talking about their interests, contributing to the community’s knowledge enrichment, and seeing these interests possibly in a new light.

A third opportunity is that of triggering new interests within the community, as the integration of two or more different conceptual clusters can easily trigger additional curiosity and willingness to explore.

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