



INTERNET OFFERING OF MASS CUSTOMIZATION AND OPEN INNOVATION IN TOURISM

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Abstract: *The paper is based on acceptance, that if you want to implement the Mass Customization (MC) and Open Innovation (OI) in your business, you have to offer it in a suitable way to the outside environment (OE) and especially your consumers. The innovation is based on challenging existing assumptions and ways of thinking and it is very important to keep informed OE about the possibilities for creative actions, supply them with a suitable environment and provoke them to do that.*

There are two sides: one is consumer (customer) expectations and requests, the other is the company competencies and possibilities for the realization of them. The improvement of the tourist services by the development of integrated knowledge management system is discussed.

Potential possibilities for offering of MC and OI in tourism are investigated and analyzed, and a framework of Internet based MC and OI offering system is proposed.

Key Words: *Tourism, Mass Customization and Personalization, Internet, Knowledge Management*

1. INTRODUCTION

Today the companies have to adopt strategies like Mass Customization (MC), because they are being forced to react to the growing individualization of demand, yet, at the same time, increasing competitive pressure dictates that costs must also continue to decrease. The concept of MC has been discussed in the literature for more than a decade (e.g. Davis, 1987; Kotler, 1989; Pine, 1993; in fact, Toffler, 1970 described the basic idea), but increased practical implementation of this strategy can be found in business only in the last few years. The objective of MC is to deliver goods and services which meet individual consumer's needs with near mass production efficiency (Tseng and Jiao, 1996) [1].

MC and Open Innovation (OI) are closely related. Henry Chesbrough promoted the term OI in his book "Open Innovation: The new imperative for creating and profiting from technology" [2]. He gave the following definition of OI: "Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model". In a world of widely distributed knowledge the boundaries between a firm and its environment have become more permeable and innovations can easily transfer inward and outward.

For tourism Internet offers the potential to make information and booking facilities available to large numbers of tourists at relatively low costs and provides a tool for communication between tourism suppliers and tourists (consumers).

The information technologies are the main enabler for practical implementation of MC and OI. But they are just an enabler. Their influence in the realm of tourism is the subject of much research, but the problems of MC and OI have not been solved rationally yet.

In this work we propose an improvement of the tourist services by the development of integrated knowledge management system: potential possibilities for offering of MC and OI in tourism are investigated and analyzed, and a framework of Internet based MC and OI offering system is discussed.

2. MC AND OI – CURRENT SITUATION

According to [3] MC is a "vision... to perform company's processes in a truly customer-centric manner... resulting in products corresponding to needs of individual customer... without surpluses associated with customization". MC current situation is described in the [3] conclusions as:

- the MC concept has not yet taken off despite its immense potential;

- it have to be payed attention to the gap between research in the MC field and its practical implementation;
- the bulk of the MC focus has been on product design and configuration;
- the supply and logistics aspect which also forms a vital component of MC needs more focus too.

OI contemporary situation is clearly represented in [4]. The finding of a study conducted by Grant Thornton International is that alongside its managers, researchers, and development engineers, a company's most important source of ideas is its own customers. "Almost half of all respondents in the Asia Pacific region said customers were an important source of innovation, compared to 40 % in Western Europe, and 35 % in the U.S. Moreover, a significant proportion of respondents worldwide identified open innovation as successful and a strategy that they will continue to adopt. At 35 %, agreement with this claim was highest in Western Europe, compared to 30 % in North America, the original home of open innovation". The results of this study about the origins of the best ideas and companies opinion about the OI are represented on Table 1 and 2.

3. NONAKA'S KNOWLEDGE CREATION FRAMEWORK

According to Professor Ikujiro Nonaka [5], knowledge creation is a spiraling process of interactions between explicit (codified knowledge that can be transmitted in formal, systematic language) and tacit knowledge (it is highly personal and hard to formalize; it contains subjective insights, intuitions and hunches; it is deeply rooted in and individuals' actions and experience as well as in the ideals, values, or emotions he or she embraces). The differences between these two types of knowledge are shown in Table 3 [6]. The interactions between the explicit and tacit knowledge lead to the creation of new knowledge. Nonaka's SECI knowledge creation model [5] is shown on Fig.1 (SECI come from Socialization, Externalization, Combination, Internalization).

Table 1. *Origins of the Best Ideas*

By region: percentage of companies surveyed	Worldwide	Asia /Pacific	North America	Western Europe
Consumers	41	48	35	40
Heads of business units	35	43	35	28
Employees	33	31	33	34
In-house R&D team	33	30	34	34
CEO	27	24	28	28
Business partners and suppliers	26	31	21	28
Sales	17	17	13	22

Table 2. *Companies' Opinions of Open Innovation*

By region: percentage of companies surveyed	Worldwide	Asia/ Pacific	North America	Western Europe
We have successfully applied the concept and will continue to do so.	33	34	30	35
Have never heard of it.	16	15	19	14
Never considered it - our own intellectual property is too valuable to share.	14	11	14	16
Explored the concept but can't benefit from it.	13	11	14	14
Open innovation is too complicated or expensive for us to adopt.	11	13	9	10
Appointed internal specialists to work on open innovation strategy.	8	8	8	8
Applied it in the past without success and will not consider again.	6	8	5	4

Table 3. *Two types of knowledge*

Explicit Knowledge (objective)	Tacit Knowledge (subjective)
Knowledge of rationality (mind)	Knowledge of experiences (body)
Sequential Knowledge (there and then)	Simultaneous Knowledge (here and now)
Digital Knowledge (theory)	Analog Knowledge (practice)

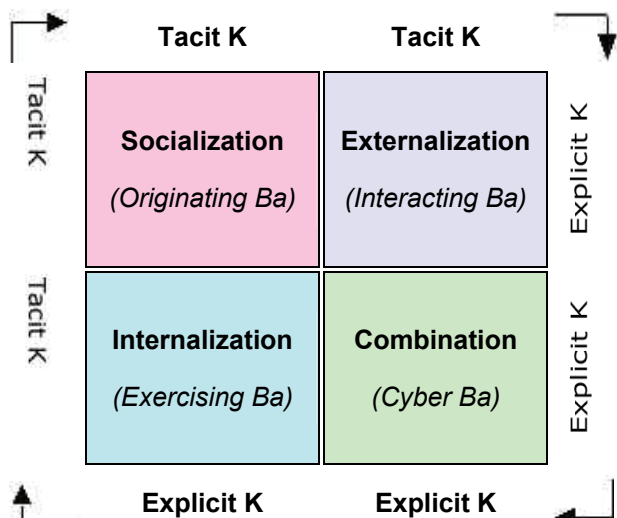


Fig. 1. *Nonaka's SECI Model*

Knowledge creating process consists of 3 elements:

- A. SECI
- B. Ba
- C. Knowledge assets

The knowledge assets (C) are mobilized and shared in 'Ba' (B) whereas the tacit knowledge held by individuals is converted and amplified by the spiral of knowledge through: Socialization, Externalization, Combination and Internalization (A).

The four modes of knowledge conversion interact in the spiral of knowledge creation (A):

A.1. Socialization.

Sharing tacit knowledge through face-to-face communication or shared experience. Without written or verbal instructions, the tacit knowledge is exchanged through joint activities – such as being together, spending time and living in the same environment. An example is an apprenticeship.

A.2. Externalization.

Externalization requires the expression of tacit knowledge and its translation into comprehensible forms that can be understood by others. It is related to the development of concepts, which embed the combined tacit knowledge and which enable its communication.

A.3. Combination.

Combination involves the conversion of explicit knowledge into more complex sets of explicit knowledge. Building a prototype is an example about the combination of various elements of explicit knowledge.

A.4. Internalization.

Closely linked to learning by doing, the explicit knowledge becomes part of the individual's knowledge base (e.g. mental model). This requires the individual to identify the knowledge relevant for one's self within the organizational knowledge. Learning by doing, training and exercises allow the individual to access the knowledge realm of the group and the entire organization.

'Ba' (there is no exact translation of the word) is a difficult concept and can be defined as a shared context in which knowledge is shared, created and utilized through interaction. Various types of Ba are given on the Fig.1 in *Italic* and within brackets:

B.1. Originating Ba.

It is the world where individuals share feelings, emotions, experiences and mental model. Physical and face to face experiences are the key to conversion and transfer of tacit knowledge. Example of the Originating Ba is the shop floor, it enables people to interact with each other and with customers.

However, without physical contact or any socialization, knowledge can be created by using the advanced technology nowadays (for example, the virtual world like Internet with its facilities). The advanced technology nowadays aids to provide easier real time communication.

B.2. Interacting Ba.

Through dialogue, individual's mental models and skills are converted into common terms and concepts. This is the place where tacit knowledge is made explicit, thus it represents the externalization process. Dialogue is key for such conversions. If we use the example with the shop as for originating Ba, interacting Ba can be

explained with the usage of tacit knowledge of local employees for creation of sales forecasts, in dialogue with each other.

B.3. Cyber Ba.

It is a place of interaction in a virtual world instead of real space and time. It represents the combination phase.

Here, the combining of new explicit knowledge with existing information and knowledge generates and systematizes explicit knowledge. The combination of explicit knowledge is most efficiently supported in collaborative environments utilising information technology. And as example about Cyber Ba (again a shop related example): the forecasts of sales are tested against the sales results and are fed back to the local stores.

B.4. Exercising Ba.

This Ba is more of learning process in each individual. Thus, it is important from the knowledge creation in own individual. Exercising Ba supports the internalisation phase. It facilitates the conversion of explicit knowledge to tacit knowledge. Focused training with senior mentors and colleagues consists primarily of continued exercises that stress certain patterns and working out of such pattern. Thus the internalisation of knowledge is continuously enhanced by the use of formal knowledge (explicit) in the real life or in the simulated applications.

The SECI model that correspond to Exercising Ba is Internalization

Example: by using of explicit information, and comparing it to reality, staff of the shop improve their skills and ability to make the forecasts.

Knowledge assets (C) are company-specific resources that are indispensable to create values for the firm. They are the inputs, outputs, and moderating factors, of the knowledge-creating process.

4. TOURISM – SIMULATION AND MODELING

Useful information about the contemporary technology tools for tourism and community planning are represented on [7]. Google Maps, Earth, and SketchUp are a very appropriate examples about the contemporary development of such technologies tools.

Google has recently released the latest and greatest version of their free popular geographic information package. This version bring a whole host of new features, including the ability to make 3D building models for Google Earth, to look at historical imagery, underwater viewing and etc.

Just for testing their possibilities we downloaded Google Earth [8] and about 30 minits after installing it we already had own experimental own mini tour of Sofia city. By using the feature "record a tour" option, which lets you track a session (including zooming and panning) while recording commentary we created a .kmz format file, which can be shared via email, posted on a website or blog, or distributed to anyone else for viewing in Google Earth. On Fig.2 a) and b) below are shown screens parts from the created tour.

This feature assures a very neat way to create your own tours and could be used in all sorts of social media tourism advertising content. We can imagine tourists,

operators, and locals all creating their rich narratives of a location using such kind of functions and tools.

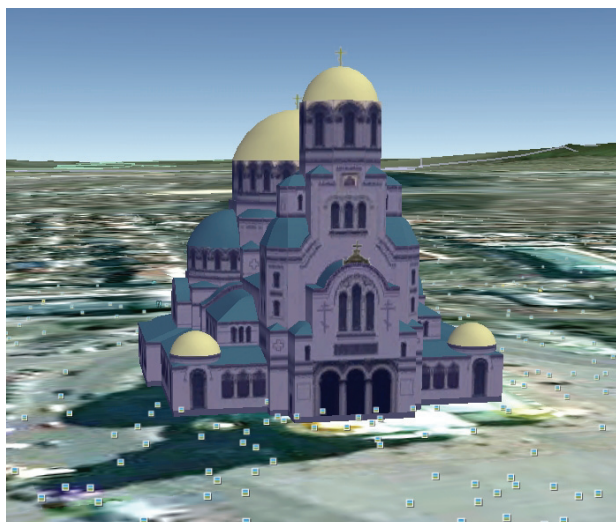


Fig. 2. a) Alexander Nevsky Cathedral

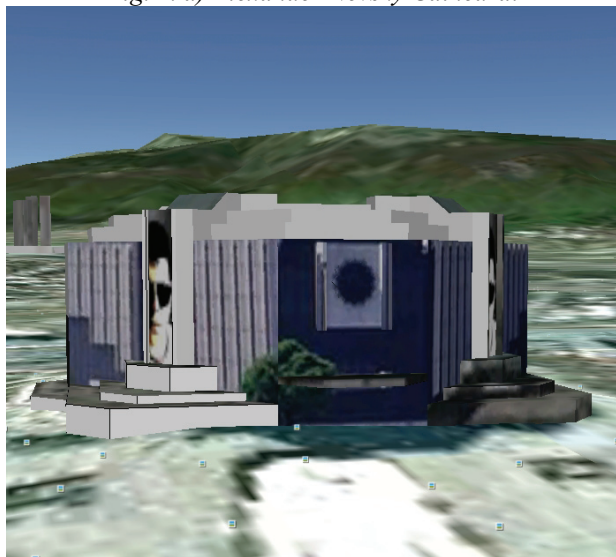


Fig. 2. b) National Palace of Culture

Fig. 2. a), b) Google Earth tour of Sofia city

Our experiment is an example and it shows that nowadays technologies related to tourism give enough facilities for easy preparation of web-based presentations with good quality. It is very easy to put together a tour of your favorite touristic spots. You really need to pick a location with nicely rendered 3-D buildings (like the examples shown on Fig. 2) to be able to communicate much with the tour. So, the development of information technologies is significant and it is very easy to use them for modeling and simulation, but here we have to underline that their integration with other systems and modules is not still rationally realized.

5. INTERNET OFFERING OF MC AND OI IN TOURISM AND WEB-BASED KNOWLEDGE STRUCTURING

Our work aims to improve the tourist services by the development of integrated knowledge management system (with the integration of MC, OI, Simulation and Modeling, calculation and other tools).

Potential possibilities for offering of MC and OI in tourism are investigated and analyzed, and a framework of Internet based MC and OI offering system is proposed.

With our proposal we aim to provoke the creativity of the users (firm's members, consumers, business partners and suppliers) by assuring all necessary Internet technologies for discussions with voting, sending and storing of many kinds of information: video, audio, text, models of products and services and etc. Users have to be informed that the things are not so strongly defined and they have the freedom to propose something different.

We believe that breaking the boundaries between routine and innovative area can be caused easily by collecting and structuring information of any kind of what awaits us after crossing the border (see Fig.3.).

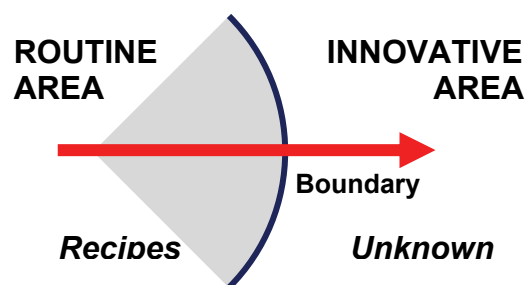


Fig. 3. Innovative action

We also have the objective of creating greater opportunity for the emergence of the barrier following events by implementing the organizational unit of the system to deal with different combinations and flexible management.

The ability to create, transfer, assemble, integrate, protect and exploit knowledge assets is a main factor for the existence and successful work of the companies. The knowledge base of the firm includes its competences, its knowledge of consumer needs and supplier (and/or partners) capabilities [9]. Our work aims to combine the advantages of MC, OI, Nonaka's knowledge creation model and contemporary Web based means for the development of integrated knowledge management system for tourism.

To effectively manage knowledge creation and exploitation, a company has to 'map' its inventory of knowledge assets. Cataloguing is however not enough: knowledge assets are dynamic; new knowledge assets can be created from existing knowledge assets.

Two important constraints in the tourism business are geographical location (place) and time related to the concrete touristic schedule (relative time). They play basic role in the proposed here framework. Innovative proposals or just partial information related to the different geographical locations can be captured through Internet. The firm members, consumers, suppliers and partners can add new information or discuss already published one by the proposed web based system on suitable manner for SECI knowledge creation model. A framework of our proposal is shown on Fig. 4.

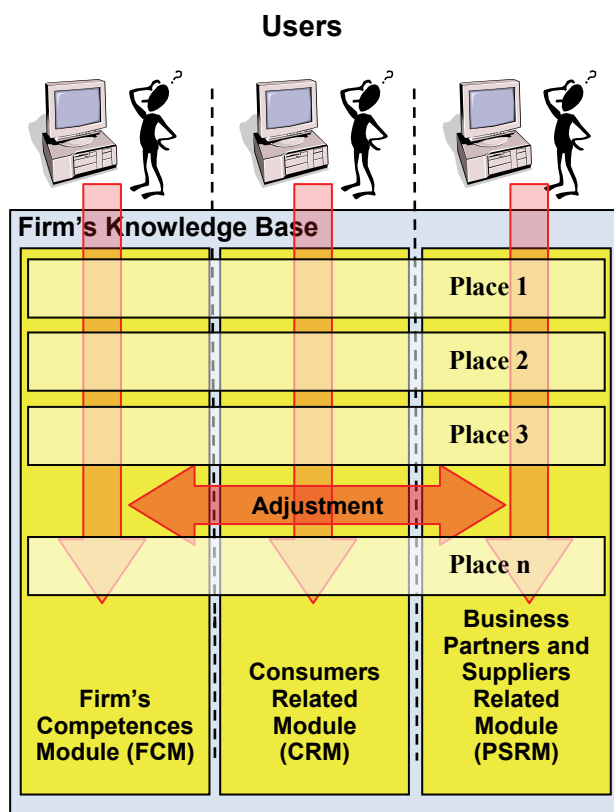


Fig. 4. Knowledge base of firm – a framework of Web based knowledge structuring for Tourism

The realization of such a system, shown on Fig. 4., will provide structured information corresponding to the location and user, which information subsequently can be relatively easily used for calculation of costs, resources and adjustments on time schedule. The innovative proposal (for example new attraction, destination and etc.) can be initiated by every one user and became the real touristic service after users discussion and approval. Following the initiation of an innovative proposal it is necessary to specify the information as it is used to add knowledge until the moment when the proposal become the recipe of routine area.

6. CONCLUSION

Involvement of users in the open innovation process in touristic business by a web-based knowledge structuring integrated environment represents a perspective solution for increase the efficiency of touristic firms in today's competitive global economy. We can conclude by pointing following expected results related to proposed framework for Web-based knowledge structuring:

- our proposal aims to combine the advantages of contemporary information technologies, MC and OI, and knowledge management theories;
- it saves time and costs, reduces the effort in respect to the solving remotely MC and OI problems and improves the quality of touristic services;
- our proposal aims to assure the overcoming of the negative effects of the communicational fragmentation of

the usage of different tools by the development of an integrated environment;

- users' knowledge and direct participation in the MC and OI brings different users' attitudes towards buying decision making.

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