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Developing High-Tech Marketing Capabilities through Online Collaborative Learning

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***Abstract*—Developing marketing capabilities in response to competition under volatility, uncertainty, complexity, and ambiguity of high-tech markets is the constant urge for high-tech firms nowadays. Creation of online collaborative communities can be an efficient tool for high-tech companies to capture, adapt and internalize knowledge and information needed for enhancing their organizational capabilities. The key factor of success in this process is ensuring learner's active involvement.**

Keywords – high-tech marketing; marketing capabilities; computer supported collaborative learning; learning management systems, online collaborative workspaces, SaaS

I. INTRODUCTION

As HBS researchers Rowland Moriarty and Thomas Kosnik suggested in 1989, the high technology sectors are characterized by the unusually high uncertainty in the domains of markets and technologies [1]. This statement is widely recognized as the beginning of the systematic research in the field of high-tech marketing discipline. To be more precise, modern high technology markets can be better described by volatility, uncertainty, complexity, and ambiguity model. Leaders of organizations that better perform under such circumstances demonstrate skills to dynamically sense changes in the business environment and respond to them with focused, fast and flexible actions [2]. Simultaneously, important determinants of relatively higher financial performance within high technology sectors include marketing, R&D, and operations capabilities, along with interactions among them [3]. Adapting marketing capabilities in response to accelerating complexity of markets by applying computer supported collaborative learning tools at online collaborative workspaces becomes the trend for high-tech firms nowadays. While there is a wide offer of existing CSCL cloud solutions and methods that can be used for developing high-tech marketing capabilities, ensuring learner active participation in such initiative is the area that requires research.

II. THEORY FRAMEWORK

A. Marketing Capabilities

The definition of marketing capabilities is derived from the resource based view (RBV) theory, in which capabilities represent the combination of physical, human and organizational resources that predetermine the abilities of the firm to develop and execute a set of activities in order to achieve a desired objective [4]. It is acknowledged that there is no sense to expect marketing strategies, whatever brilliant they are, to be successfully implemented with inadequate marketing capabilities [5].

There are several views on the essence of marketing capabilities. Some authors define marketing capabilities as the activities and the processes, involving market research, strategy, planning and evaluation, aimed at reaching the satisfaction of consumers' preferences [4]. According to other researchers marketing capabilities are identified as the integrative processes designed to apply the collective knowledge, skills, and resources of the firm to the market-related needs of the business, enabling the business to add value to its goods and services and meet competitive demands [6, 7]. One more view regards marketing capabilities as a set of competences, processes, tools and organizational practices [5]. Merging these three approaches marketing capabilities can be viewed as a combination of knowledge, skills, processes, tools, and organizational practices that are necessary for satisfactory performing corresponding marketing operations according to outlined strategy.

B. Continuous improvement of marketing capabilities

When marketing capabilities are unique, are value creating, and are difficult to copy then they form the basis for achieving strategic competitive advantage. Moreover, studies provide evidence that marketing capabilities contribute to explaining firm performance [8], while competitors from similar markets typically are expected to advance similar marketing capabilities [6].

The question of how firms acquire and improve their capabilities is given an increased attention in the literature [9]. There are different approaches to answer this question. According to total quality management (TQM) concept this can be achieved by implementing continuous improvement and business process reengineering [10]. Knowledge management is another perspective that casts further light on the development and utilization of dynamic capabilities and operational capabilities [11], while balanced scorecard [12] and learning organization [13] concepts emphasize learning as a critical area for building of marketing capabilities. In particular, some authors highlight importance of learning from alliance and partners for building firm capabilities [14, 15], while others suggest to use case study method in order to capture and diffuse tacit and explicit business process knowledge through work-based learning in knowledge-intensive organizations [16]. Benchmarking is also recognized as a widely used learning mechanism for identifying and enhancing valuable marketing capabilities [17]. Recent adaptive capabilities view suggests that companies are trying to close their capabilities gap faster than competitors by applying vigilant market learning, adaptive experimentation, and "open" marketing capabilities [18]. Market orientation is also enhancing process of building individual marketing capabilities [8]. The development of marketing capabilities requires an interdepartmental integration as a combination of interaction and collaboration [19]. Thus, the common notion is that marketing capabilities are emerging through the collaborative learning effort at the workplace.

C. Emergence of online collaborative workspaces

The primary idea of online collaborative workspaces is to provide teams with a common space to coordinate and deliver their workflow [20]. Further rapid expansion of this idea is based on applying cloud computing architecture that refers to both the applications delivered as online services that are called

Software-as-a-Service (SaaS), and the datacenter hardware and systems software that facilitate those services [21, 22]. Since the emergence of the cloud computing there is reported a fast growing number of SaaS providers in last decade [23]. Marketing is one of such business areas vastly attracting SaaS providers where experts recorded recently more than 100 new cloud collaborative solutions that include external promotion software, customer experience software, marketing management software [24, 25]. The abundance of marketing automation groupware leads to establishment of new marketing job – marketing technologist [26]. Social media technologies are adding value and productivity by facilitating organizational collaboration both internally and with external suppliers and partners [27]. Businesses have started to deploy social networks internally to encourage the sharing of best practice and facilitate cross-department and overall employee collaboration [28]. Nevertheless, the process of creating effective collaborative learning communities in an online environment is vulnerable to many circumstances and factors that need further study [29]. In particular, this is a problem for high-tech SMEs who lack internal capacity for developing their marketing capabilities through creating corporate learning communities.

III. CREATION OF COLLABORATIVE E-COMMUNITY FOR DEVELOPING HIGH-TECH MARKETING CAPABILITIES

Creation of online collaborative community is achieved by attracting participants and ensuring their active participation in collaboration. For studying the online collaboration management process in case of high-tech marketing capabilities development we have chosen the experiment method. As the framework for describing this process the collaboration management cycle model is applied [30].

One of the important prerequisites for future learners' involvement is the proper selection of SaaS provider and collaboration model that correspond with target audience characteristics and collaboration objectives. The target audience of the experiment includes high-tech SMEs and marketing professional services providers who should be accessed through open social networks.

The social networks that have the highest penetration of business audience are Facebook and Linkedin [31]. Both Facebook and Linkedin allow establishing a community group, while Facebook offers also the option of community page creation. In terms of experiment one of the advantages of Facebook pages is a feature called "Page insights" that provides administrators with engagement metrics.

As mentioned above, high-tech marketing is characterized by VUCA environment. It is widely recognized that an appropriate learning approach for identifying and enhancing valuable marketing capabilities in such circumstances is case-based reasoning [32, 16]. Therefore, the online workspace for the study purposes was established as a Facebook page of collaborative community for sharing cases in high-tech B2B Marketing best practices [33]. The page short name is G2GMCC.

By case here we understand a documented description of a live business situation or problem, and its solution. Such cases can contain textual, video, or photo information arranged in such a way that page reader can understand the cause and effect relationship within the described operation in the particular marketing process area. In other words this is a practical example that illustrates marketing knowledge.

At the moment of study the observed online resource featured thirty six links to high-tech marketing cases distributed among different marketing capabilities as shown at TABLE I.

TABLE I. DISTRIBUTION OF CASES ACCORDING TO HIGH-TECH B2B MARKETING CAPABILITIES MODEL

Process Area	Marketing capabilities	Number of cases
Intelligence	Foresight; Scenarios; Trend watch; Client Collaboration; Marketing Research; Client business analysis	2
Development (Planning)	Strategy; Brand; Product; Value Proposition & Pricing; Customer service	8
Creative Production	Design; Video; Photo; Print; Content; Web; Blogging; Gifts, Souvenirs, Promotional items	8
Marketing Campaign	Tradeshows; Web/Social Media; Conferences/RTs; Events, Roadshow, Experiential Marketing; Customer Training & Development; Traditional Media; Sales Promotion; Leads generation; Sales & CRM; PR; Stakeholder Relationship Management; Post-Sales Engagement	14
SCM	Agile Chains	1
Marketing Management	Market Orientation; Revenue model; Marketing KPI; Business processes; Coordination of R&D, marketing and production; SCRUM; Learning; HRM; Marketing Automation Software	11

The collaboration management cycle that is applied for creating community includes four phases [30]:

- Phase 1: Collect interaction data
- Phase 2: Construct a model of interaction
- Phase 3: Compare the current state of interaction to the desired state
- Phase 4: Advise/ guide the interaction

Interaction data that was collected during Phase 1 shows that G2GMCC counts 42 fans on Facebook and has an average engagement rate – 22% – that's much higher than similar pages have including TechCrunch, The Creators Project, Mashable, Entrepreneur Magazine, VentureBeat, SmartPlanet, TechRepublic and B2B Marketing with the average engagement rate of 3,5%. The engagement rate is calculated by using Facebook's "People talking about this" (TAT) metrics – the number of unique people who have created a story about the page within one week such as liking page, posting to page's wall, liking, commenting on or sharing one of page's posts, etc. Negative trend is that during two weeks of observation G2GMCC engagement rate dropped 3 times.

The community of page fans is international: Ukraine – 27 fans, USA – 4, United Kingdom – 3, Germany – 2, Romania – 1, Israel – 1, Slovakia – 1, Italy – 1, Russia – 1, Slovenia – 1. The page fans have diverse demographic characteristics according to age and gender as shown in TABLE II.

Facebook also provides statistics on the page reach, which is the number of unique people who saw any content linking to the page during a week. According to this statistics during the period of observation the average G2GMCC reach was 324

people, among which 27% were reached more than 5 times. The average number of unique page visitors per week was 32.

TABLE II. DEMOGRAPHICS OF G2GMCC PAGE FANS

Age group	Female	Male
13 – 17	0%	0%%
18 – 24	11,9%	7,1%
25 – 34	16,7%	14,3%
35 – 44	7,1%	19%
45 – 54	4,8%	7,1%
55 – 64	0	2,4%
65+	2,4%	2,4%

Besides the TAT indicator, the engagement of page visitors can be assessed by the number of the people clicking on page posts in a period of 28 days after their publication, and by the number of interactions with the posts such as liking, commenting or sharing. Correspondingly, G2GMCC received 64 clicks on its posts, and 34 interactions by 9 unique visitors. Other engagement characteristics include 8 posts of page visitors, and 8 "likes" from other Facebook pages.

Overall, the collected interaction data suggests that created collaborative online community is currently at the ad hoc stage, when interaction processes are chaotic and involvement incentives for visitors are rare and not clear.

The next phase of collaboration management cycle involves selecting and computing one or more higher-level variables to construct a model of interaction. The starting step in this process is to specify the value proposition that the collaboration offers, and describe it with the help of metrics. The value proposition of G2GMCC to its audience consists in the support it should provide for marketing capabilities development. Thus G2GMCC page has to facilitate productive collaboration between marketing officers and R&D professionals from high-tech SMEs who are trying to close their marketing capabilities gap by attempting vigilant market learning as well as searching for solutions and advice from their counterparts in marketing services firms [18].

This underlies the defining and corresponding metrics of three target groups where first two are primary: (1) marketers; (2) R&D professionals; (3) service providers. The online community must be developed both by attracting new visitors and retaining the old audience belonging evenly to all three target groups. To achieve better international collaboration page should also aim to attract multinational audiences that means keeping the limit of not more than 20% of fans from the same country. Next indicator is the minimal TAT value that allows sparkling meaningful collaboration given the right balance between groups. According to preliminary estimation this indicator is in the range of 100 people that is proved by statistics of such similar pages as PRNewswire or Siliconrepublic.com.

Second set of metrics should describe the content. The most convenient indicator for this is virality – a percentage of people who have interacted with your post either by liking, sharing or commenting it out of total number of unique people who have seen it.

And, finally, third set of indicators should assess the frequency of collaborations according to their type, such number of cases recommended or submitted by page fans, number of problem questions asked and number of comments that generate new knowledge per month.

The Phase 3 comparison of the current state of interaction to the desired state is presented in TABLE III.

TABLE III. COMPARISON OF THE CURRENT STATE OF INTERACTION TO THE DESIRED STATE

Variable	Current State	Desired State
TAT	10	>100
Multinationality, % of fans from the same country	64% (Ukraine)	20%<
Percentage of interactions generated by primary audience, %	15%	>60%
Best virality, %	6%	>10%
Capability enhancement interactions per month	3	>30
Total interactions per 28 days	42	300

As it is evident from TABLE III. the current state of G2GMCC interactions is far below the desired state. This means that the theoretical concept behind the creation of learning community cannot be nor justified neither rejected by the current results of the experiment. Providing the mere content that is relevant for capabilities development is not enough for involving corresponding audiences in collaboration. Process of creating collaborative learning communities in an online environment proved to be vulnerable to many circumstances and factors. This implies the need for further research of the collaboration management lifecycle.

The final phase recommendations suggest the major remedial actions to follow:

- focus on communicating to the primary audiences of the advantages of case-based learning for high-tech b2b marketing capabilities development;
- provide more practical examples of marketing capabilities development;
- annotate the case properly: describe the situation in the question form, solution, emphasize the key points of difference;
- find the way to systematizing the cases by tagging them;
- abide common Facebook moderation and audience building tips;
- suggest incentives for the organizations where primary audience work;
- adopt agility in collaborative lifecycle management by monitoring the results of the remedial actions and acting on them.

It is expected that further growth of collaboration on the G2GMCC page can be explained by some of the suggested remedial actions or by their combination.

CONCLUSIONS

VUCA conditions of high-tech marketing suggest that companies should strive to develop their marketing capabilities in the agile way. This can be facilitated through the peer collaborations in the social networks. Nevertheless, the process of creating effective collaborative online community does not have enough theoretical background. Moreover, the suggested application of case-based learning method for online

collaboration in marketing capabilities development needs further elaboration. Further research will be focused on finding the major drivers for achieving effective marketing capabilities development through online social collaboration.

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