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MARKETING STRATEGY DEVELOPMENT FOR HYDROGEN IN ENERGETICS: IMPLEMENTATION PERSPECTIVES IN LATVIA

Justs Dimants, University of Latvia, Latvia[1];
Biruta Sloka, University of Latvia, Latvia

Abstract. Hydrogen energy in recent years is developing rapidly all around the world. The promotion and implementation of the product (hydrogen in energetics (power industry)) is one of the most important topics for marketing theory and practice development. Product introduction to the world is encouraged by adapting various marketing strategies, depending on target audience and/or country energy sector specifics and other. Hydrogen in power industry from a scientific point of view in Latvia is being studied mostly by exact sciences and the need for marketing has not been evaluated yet, thus the research in this area has been relatively low. From previous studies of authors, it has been shown that the Latvian society knowledge about hydrogen energy is weak (Dimants et.al. 2011, Sloka et.al. 2012) and it is one of the reasons why the necessity of the marketing concept for hydrogen in power industry implementation has emerged. By using theoretical framework and the practical experience of other countries, authors have developed a marketing concept which is prepared as a basis for marketing strategy for the implementation of hydrogen in power industry in Latvia.

The concept consists of four elements: introduction, research, communication and cooperation. The most important aspects of hydrogen energy introduction are the development of technology, infrastructure adaptation and construction. Most important aspects of the research are social studies and technology (incl. materials) research. Most important aspects of the communication are science communication with society and public education issues. Collaboration is recognized as one of the most important elements – this element currently gains increasing attention. Key aspects of that include partnership development between the various levels of legal persons.

Key words: *marketing, renewable energy, hydrogen energy*

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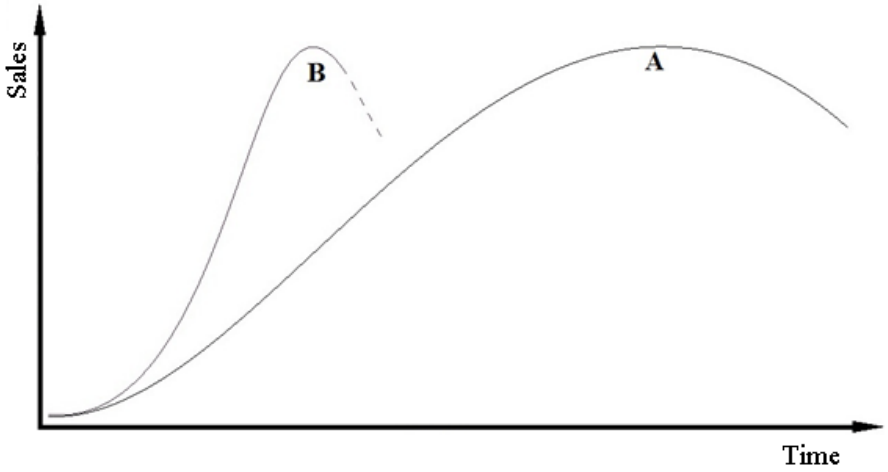
Introduction

By analyzing hydrogen research in Latvia, it was concluded that scientists who are not related to the social sciences are not sufficiently estimating the importance of marketing in hydrogen research, this frequently leads to science communication loss with society (Dimants et. al. 2011). Latvia has not yet extensive experience in economy with hydrogen as a renewable energy carrier.

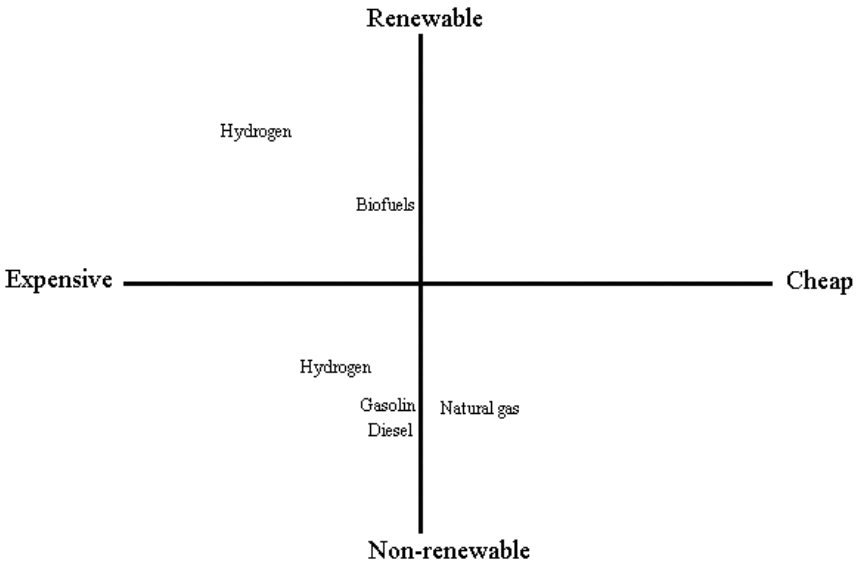
[1] Corresponding author – e-mail address: justs.dimants@lu.lv, telephone: +371 28855966

As in any market, also in hydrogen market consumer behaviour is influenced by various factors, including economic, socio-economic, personal, technological, etc. Power industry's products life cycle is fairly different from other consumer product life cycles, for example, in Figure 1 curve A shows power industry's product's life cycle length, in comparison – curve B shows other consumer products life cycle length, that can greatly differ from curve A.



Source: author's construction based on the theoretical assumption of the product life cycle theory

Fig. 1. **A theoretical energy product (A) life cycle compared to traditional product (B) life cycle**



Source: author's construction based on the consumer's perception theory – Value-Based Marketing & Pricing, Competitive Marketing Strategy (Gale, 2006) through December 2012 (Eurostat, 2012), the average energy prices in Europe

Fig. 2. **Energy market through price comparison consumer perception matrix**

The main difference between both curves is time expression. Power industry's products development, introduction and also other phases may be several times longer comparing to a conventional product's overall life cycle. That is why life cycle stages in the development phase are greater in time and investment expression, according to the product life cycle theory (Levitt, 1965). Given the geographic, demographic, economic and social division in the country, Riga is the most suitable place to introduce hydrogen technologies. Considering, that majority of public is not introduced with hydrogen energy technologies; it is rather difficult to assess the future market size, as well as to segment the market with more detailed characteristics. Estimating market by consumer's needs and desires two factors were chosen: resource price and sustainability. In consumer perception matrix currently existing fuel comparison with hydrogen is shown (Figure 2). It reflects that hydrogen can be produced from renewable, as well as from non-renewable resources, wherewith in matrix it is displayed depending on the resource origin and costs. The lowest price can be achieved by producing hydrogen from non-renewable resources, whereas the ideal trajectory of development would be for an initial period to produce hydrogen using non-renewable resources, gradually moving towards the use of renewable resources for hydrogen production.

Currently hydrogen that is produced from natural gas is from 50 to 100% more expensive than gasoline. This price could be compensated by improving the efficiency of fuel cell cars. It is expected that by year 2020 hydrogen fee will fall to 2 dollars less than gasoline price. Marketing research is collection, processing, analysis and distribution of information in order to identify marketing opportunities and problems, develop and evaluate marketing activities and improve the marketing process (Praude, 2011). Thus information obtained in marketing research should be used for marketing activities development, estimation and also efficiency assessment. In The University of Latvia hydrogen technologies are studied in three faculties (Economics and Management Faculty of Physics and Mathematics, and Faculty of Biology (Kleperis et. Al., 2011), which may be the future basis for an alternative energy training course development.

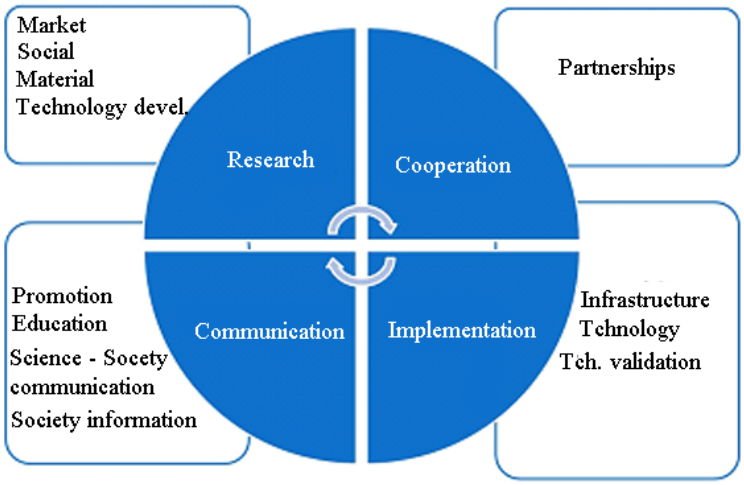
By studying the development of the marketing mix there are different views on the topic. Australian author recommends that a new social marketing model that includes the other strategies employed in social marketing beyond product, price, place and promotion, and is also able to incorporate a more consumer oriented approach in which relational thinking, and a strategic and holistic approach to behavior change, would be beneficial to the field. Whilst not claiming to provide a perfect iteration of such a model, Gordon calls for a debate over what form such a model may concludes that the dominant four Ps marketing mix is no longer fit for purpose in contemporary social marketing. Mainstream marketing has identified that a focus on the firm, profits and transactions is no longer appropriate, with updated models of the marketing mix having been devised. Social marketing should also embrace change and advancement in relation to the marketing mix (Gordon, 2011) Marketing mix is used in order to progress the goals in target market. Researches show that different firms apply different levels of every one of these elements in marketing mix. These differences are also seen from one country to other country which liaises on can be referred to differences between nations culture, economic growth, product standards, distribution channels, communication strategy and pricing strategy (Kotler, 2002). These assumptions prove that the marketing mix elements can be changed depending on the goals to be achieved. For the success of the hydrogen wide introduction on the market it is absolutely necessary to provide the citizens with:

- Clear indication of the benefits and disadvantages of the technologies that are to transparently communicate by continuous and intensive information measures through all the available public channels (newspapers, media, schools to create from the very beginning the adequate framework, etc.).
- Consistent subsidies that help the market take-off especially during the introduction period.
- Involvement of the users, especially the ones that have already tested the technologies in terms of spreading their experience to other people, as the real experience can weight more than any

marketing campaign. Assure that retailers and service providers are committed to the H2 diffusion as their enthusiasm or reluctance about the new technology is crucial for the success of the market introduction, since they are vital for a durable satisfaction of the final users (Di Mario F. et. al. 2002).Re-tooling the marketing mix in social marketing can offer emancipation from the narrow confines of the four Ps framework. This suggestion is not a new one, and is not as radical as it first seems. Indeed, returning to the thoughts of Borden and Culliton, we see that they recognized the role of using available ingredients, adapting the recipes of others and sometimes inventing new ingredients. They did not propose that marketers remain within the narrow confines of a deterministic marketing mix, but explore different variables and combinations. Yet as the marketing discipline developed, the dominance of the four Ps model proposed by McCarthy ensued. Recently, the marketing discipline has begun to re-consider the toolkit. Social marketing appears to have lagged behind somewhat. Furthermore, efforts to expand the four Ps have appeared simplistic, clumsy, and displaying a strange predilection towards alliteration, naming six, seven then perhaps a limitless number of Ps? (Gordon, 2011).

Research results and discussion

In Latvia's case marketing concept has developed, which is prepared as a basis for marketing strategy for the implementation of hydrogen in power industry in Latvia, proposals for marketing model maintaining, as well as elaboration forerun concerning energy and transport sectors are necessary. Authors offer a marketing conceptual model (see Fig. 3) in which a major role is given to the interaction between the four working-dependent factors – research, public relations, collaboration and implementation. It is proposed to adapt marketing complex (4P) for given factors.



Source: author's construction based on O.C. Ferrell (Ferrel O. C.) and M. Hartlaina (M. Hartline) marketing theory.

Fig. 3. **Conceptual marketing mix model of implementing hydrogen energy Latvia**

Marketing activities' precise defining is one of the most important processes for operational marketing model.

Research – The technologies still has to improve meaning efficiency, costs and other applications. Research is needed for further development.

Cooperation - persuasive and regular advertising offers new business areas and new application (Brohman B., 2006). Cooperation's between private, government and scientific institutions up to now are one of the most effective tools used to implement technologies.

Implementation In the long term marketing campaigns are targeted on the successful implementation of energy efficient housing (Brohman B., 2006).

Communication Acceptance of energy modernisation should become mainstream, which needs sympathy and interest for energy saving to provide base for changing consequences (Brohman B., 2006). Acceptance, in its broader meaning, will include issues related to the changes in behavior that will be required to take up hydrogen technologies (for instance, due to the different safety risks posed by hydrogen), the added benefits (in terms of comfort and convenience) they will bring to consumers, their costs (both in monetary terms and as environmental consequences), their effectiveness in tack-ling energy and environmental problems, and the overall regulatory and institutional framework in which they will be embedded. Acceptance, in other words, refers to the extent to which the different types of hydrogen economies fit with established ways of life and align with people's 'views of the world' – the social and environmental values, needs, aspirations and expectations. Acceptance, finally, is dynamic and will be subject to change as the hydrogen economy – whatever this may be – unfolds (Ricci M., 2008). Some people within the political and public domain claim that providing people with adequate information will more or less automatically ensure more positive evaluations of emerging technologies. 'One-way' provision of information to the public at large can however be criticized harshly (Achterberg, 2010) the same can be said for having adequate hydrogen knowledge and supporting hydrogen technology.

Conclusions

Previous research has shown that marketing mix has become variable and potential for changes to achieve proposed goal. Presented conceptual marketing mix for hydrogen implementation consists of four elements which most closely represents required actions for hydrogen energy implementation in power sector with in development stage as it is in Latvia. Marketing activities precise defining is one of the most important processes for operational marketing model. The traditional marketing mix is experiencing changes and it is still useful to use for conventional product introduction. Hydrogen energy life cycle is comparatively larger then everyday product life cycle; witch encourages more detailed approach to each stage of the life cycle. Perhaps adapted marketing mix should be used for initial launch of energy product, like hydrogen. The implementation of these four marketing elements - Research, Collaboration, Implementation and Communication could promote increase of the public support and technology acceptance. After transition to a market development the traditional marketing mix could be applicable.

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