Social Media in the Product Development Process of the Automotive Industry: A New Approach

Andreas Klein and Götz Spiegel

Spiegel Institut Mannheim GmbH & Co. KG, Schwetzinger Str. 32, D-68782 Brühl, Germany
`a.klein@spiegel-institut.de`

Abstract. This paper introduces a new methodology for implementing social media monitoring into an important stage of the innovation process within the automotive industry — the prototype stage. The information gathered on social media channels was used for project management, quality management and idea-generation purposes in order to support the parallel development of future generations of electric vehicles. As the project is still ongoing the first general results which show the effectiveness of the methodology can be presented in this paper.

Keywords: Social media monitoring, electric mobility, electric vehicles, product development, social networking sites.

1   Introduction and Theoretical Background

In the project this paper describes social media sources are used in an automotive context in order to support a real-world prototype stage. As the project and the monitoring process are still ongoing and final results will probably be available in autumn 2013, the focus of this paper is on the innovative methodology and a few preliminary results.

The importance of social media as a communication channel for companies is obvious, especially after the spectacular IPO of Facebook at the beginning of 2012. But social media is not only about social networking sites as Kaplan et al. [1] already pointed out. It also includes blogs, virtual worlds, games as well as collaborative projects like Wikipedia and most importantly content communities. Commonly acknowledged by the scientific literature is the usage of social media tools for marketing purposes, e.g., the introduction of the new BMW X1 [2]. The emphasis of such activities lies more or less on an expected increase of public attention and on targeting new customer groups. But often it is also used as an instrument to gain information about the requirements and wishes of the customers. This scientific analysis of internet communities in order to learn more about the members, their mode of communication and the subject of their discussion was very much influenced by the work of Robert V. Kozinets who used ethnographic methods for online communities [3], [4]. These methods are widely applied, e.g., to learn about brand communities of the automotive industry [5]. Social media sources seem to be particularly suited to give input for the innovation process — from the idea creation to virtual product tests [6].

2   Project Description

In 2007 BMW Group´s task force "project i" decided to include electric vehicles at a larger scale into the product portfolio [7]. According to the communicated timeline, BMW is expecting its first series-production full electric vehicle with the BMW i3 at the end of 2013. To achieve this goal, electric prototypes on the basis of existing cars with internal combustion engine were produced and tested in order to gain more experience with electric vehicles. The first converted concept was the MINI E. Several hundred units were produced and internationally tested by private and fleet users between 2009 and 2012 accompanied by an all-embracing scientific research approach in order to learn about the acceptance, requirements and barriers for electric mobility [8]. In this context the BMW Group was closely supported by the German research institute "Spiegel Institut Mannheim".

The second converted vehicle concept introduced by the BMW Group is the BMW ActiveE, derived from the 1-series. In this vehicle, series components for the following series-production electric vehicles like the BMW i3 have already been integrated. After the usual intensive internal testing by BMW regarding technological and safety issues, the car was ready for being shipped to the customers. About 700 units have been shipped to the United States since January 2012 and handed over to customers for 24 months. These pay a monthly leasing fee of 499$ [9].

3   Research Methodology

Because of the nature of the BMW ActiveE trial — the test of a near-to-market technology while the mass-market product is at its final stages of development — two aspects are of major importance for scientific research:

— quality management aspects in order to identify potential product, service or usability problems
— idea generation from the driver community about potential product improvements for enhancing the user experience.

Therefore the research methodology has to meet some requirements. It needs to be flexible and any critical findings need to be communicated to the development departments instantly. Furthermore, it has to be considered that the time of occurrence of quality management aspects cannot be predicted as an electric vehicle is dependent on outer conditions like charging infrastructure, climate conditions etc. Additionally even single problems might have a big impact on the mass-market product and need to be reported to the development teams.

Considering these requirements, in addition to a "classic" market research approach, an additional social media research strategy was developed for the BMW ActiveE. A primary research revealed four adequate social media sources for the later analysis (see table 1). Besides the official BMW ActiveE web forum three additional discussion groups have been founded by BMW ActiveE drivers on social networking

sites. Most members either drive a BMW ActiveE or are very much interested in the product. Many drivers are members of the forum as well of the discussion groups at the same time. All discussion groups are open and can be fully read by the public.

Table 1. Sources for Social Media Analysis[1]

Name	Members	Number of posts	Founder
The BMW ActiveE Forum	1.806	9.709	BMW Group
BMW ActiveE	384	24.367	Private Users
BMW ActiveE San Diego	17	91	Private Users
BMW i3 – ActiveE – Megacity EV	75	139	Private Users

The core instrument is a data base with all posts and comments assigned to 55 different categories. On a weekly basis all new posts are transferred manually into the data base. The categories include a simple sentiment analysis (positive/neutral/negative) and a more detailed view on all vehicle related aspects. A special focus lies on new aspects that bring electric vehicles to the customers, e.g., regenerative braking or battery
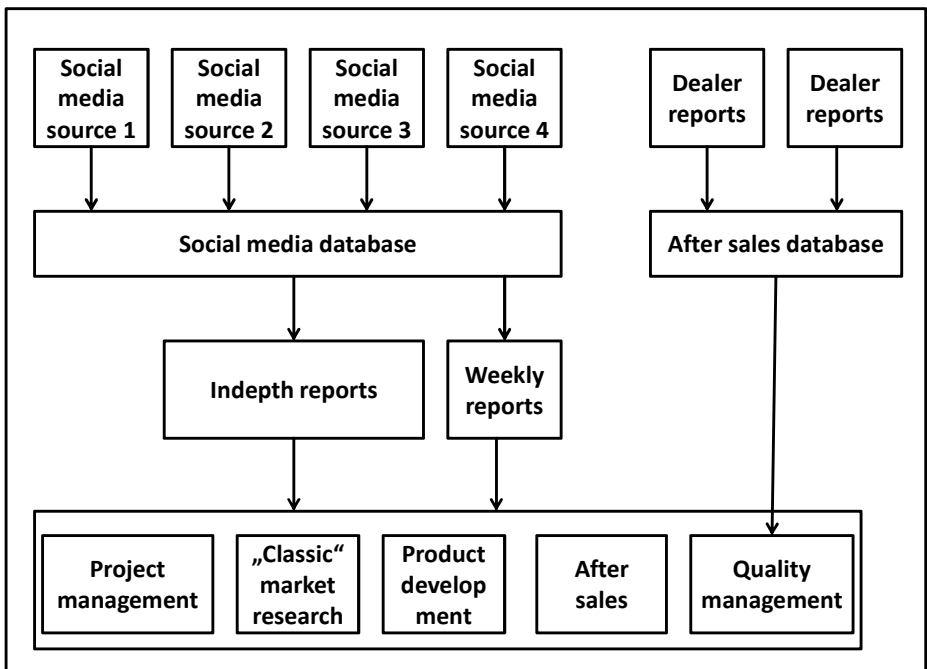
Fig. 1. Social Media in the research process

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[1] In February 2013.

lifetime. The database provides the possibility to run in-depth data analysis for certain topics and to identify trends. In order to track the project progress, to early identify critical project developments, and to generally get direct insight into the topics of current users' discussions, a weekly report including a summary of the most important discussions and reported problems on the monitored social media channels is generated.

While the most important stakeholders for the results within BMW are the development and quality management departments, the weekly reports also provide for the project management and after sales departments the possibility to gain nearly instantly direct insight into the customers' most important discussed issues and thus to react if necessary (see Fig.1.). And finally, the social media insights also provide a potentially valuable source of qualitative data for the development of the accompanying "classic" market research.

4   Results

While comparing the user activity on the official BMW ActiveE forum and the most important discussion group, it is obvious that although more people have subscribed to the forum the more active communication is on the social networking group.[2] The discussion on the four social media channels can roughly be divided into three categories:

— social communication about events, e.g., motor shows/meetings with other users
— discussion about problems/product-related questions/help from other drivers.
— statistics about driven miles/used electricity for BMW ActiveE.

While each of the categories applies to the forum and the social networking groups equally, the direction of the discussion on the social networking groups is more within the users, while the posts on the forum mostly aim at BMW, e.g., desired improvements for future vehicles. From the sentiment analysis it is difficult to draw a "balanced" picture of the advantages and disadvantages of the product as positive attributes are mostly expected while negative attributes contain a certain news value and are therefore reported more often. So a proper assessment of the vehicle features has to be carried out by the accompanying "classic" market research.

Nevertheless, it is a good tool to identify potential product problems. To give an idea of the effectiveness of the methodology for quality management, the findings from the social media sources have been compared to the information collected by the conventional quality management process in a BMW internal after sales database. The after sales database is based on the service data from the dealers. So if BMW ActiveE customers encounter a vehicle problem and ask the dealers for help, the dealers would use the after sales database for support.

Within a monitored period of the first nine months the BMW quality management team thereby identified 39 product-related problems which occurred at least twice. The social media analysis meanwhile revealed 35 different product-related problems. These problems did not all demand a stopover at the garage but influenced the

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[2] Nardi et al. give a good description of the motivation for activity on social media sites [10].

product experience in a negative way. About 32 problems were already covered by the dealer reports. One reported problem with the vehicle door could not be validated by the BMW engineers. Two problems had only been identified with the support of the social media analysis and could be tackled by quality management measures. One serious problem was already known but the frequency of occurrence was a lot more than previously expected by the experts.

In order to gain new product ideas, an in-depth analysis of the four social media sources identified 23 new ideas or suggestions for the BMW ActiveE or electric vehicles in general. Thereof 12 ideas have already been part of the product strategy for the successor, the i3. About eight ideas are currently in a review process by the development departments. Only three ideas had been declined because of not fitting to the product strategy.

Finally, the social media monitoring also turned out to be a valuable source for the project management. So far the weekly report is currently subscribed by more than 130 involved experts from different departments throughout the entire BMW Group, involving project management, development, communications and sales.

5   Review of the Social Media Monitoring Research Methodology

To summarize, the described methodology has a number of advantages and disadvantages.

Advantages:

— nearly real-time feedback on the product from the users' perspective over the trial period
— non-intrusive methodology; users explain problems in their own language; topics are set by the users themselves
— cost-effective compared to other near real-time "classic" market research methodologies
— useful way to gather qualitative feedback as input for a later broader quantitative market research design.

Disadvantages:

— no exact quantitative results about the occurrence of problems or about the opinion on ideas possible, because only a subset of the users post on social media channels
— no "balanced" picture of the product; the communication is rather more problem-driven.

6   Conclusion

Although social media monitoring during the product prototype stage contributed a significant part to the collected information, it did not provide the full picture. It is

therefore rather an important element than a full replacement of a broader "classic" research strategy. Furthermore, it was very helpful to do the research with a high-involvement product such as a new electric vehicle which also attracts rather tech-savvy customers who are more likely to use social media channels. Finally, the limited number of participants in the trial also limited the amount of data, which facilitates the analysis process.

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