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Abstract

This paper presents research in progress on the application of the means-end chain (MEC) framework for investigating the customers cognitive structure regarding internet applications. It is argued that the understanding of customer cognition is crucial for the development of sustainable business models. MEC Analysis is seen as a mean to support communication and product design tasks. Based on theoretical considerations about the MEC framework and its limitations the case of an explorative study regarding information portals is illustrated. Data was collected conducting individual laddering interviews via chat with 126 users of a major information portal in Germany. Answers were divided into attributes, consequences, and values. Using content analysis a hierarchical value map (HVM) as the main result of MEC analysis was constructed. The HVM shows that consumers use information portals primarily to feel well informed while saving time collecting information. They do not see personalisation as an important feature. Some merely appreciate it for time saving issues. Suggestions are made on how the results can be used for communications strategy and product design. The obtained concepts of the explorative study will be used as an input to design a standardised online questionnaire.

Keywords: Information portal, means-end chain, online laddering, product design, communications strategy

Introduction

Timmers (1998) conceives a business model as an architecture for product, service and information flows, including a description of the various business actors and their roles, a description of the potential benefits for these business actors, and a description of revenue sources. In this sense a proper understanding of customer needs and potential benefits is vital to design product architectures, information flows, and the set of business actors serving customer needs. We have seen dot.com business models overestimating demand, providing products not needed or just failing to communicate their solutions. This paper presents research in progress on how means-end chain (MEC) methodology might fill this gap.

The MEC framework has been successfully used for over ten years for communications strategy in consumer research (e.g. Reynolds and Gutman 1988, Herrmann 1996a, Vriens and ter Hofstede 2000). Other methods currently discussed for revealing consumer needs assume a specific decision process but do not analyse important concepts in more detail. For example the theory of planned behaviour links attitude with subjective norms and perceived behavioural control influencing intention and ultimately behaviour but does not analyse attitude itself. MEC methodology provides techniques to structurally gain hypothesises on why consumers generate a certain attitude towards a product. The results of MEC analysis, especially the hierarchical value map (HVM), are useful not just for communications strategy but also to consider the communications perspective at the customer during product design.

This article discusses the theoretical foundation of the MEC framework and illustrates its use for internet applications in a case of an explorative study regarding information portals. We claim three contributions to existing research, namely the application

of the MEC framework for websites, the usage of internet chats and online questionnaires as an adequate and cost efficient medium for data collection, and the illustration of the use of results for product design.

Theoretical Background: Means-End Chain

Since the expectancy value model (Rosenberg 1956) it is assumed that the attitude of an individual towards an object is determined by the individuals cognitive structure. The MEC concept is partitioning this cognitive structure in three levels, namely attributes, needs, and values (Gutman 1982). With the aid of personal interviews, in particular the laddering technique, data is collected to map these three levels. Content analysis serves as a basis for quantitative evaluation and graphical representation of the results.

In the last years the qualitative MEC analysis is increasingly an object of scientific debate in marketing (e.g. Herrmann 1996a, 1996b; Grunert and Grunert 1995; Vriens and Hofstede 2000; Wansink 2000). The underlying MEC model for most of the work is the one of Gutman (1982). Consumers learn to associate positive consequences, namely the benefit, with certain decisions, like the choice for a product (Reynolds and Gutman 1988). Personal values allocate a positive or negative valence to these consequences (Rokeach 1973). Thus, a correlation between the concrete and abstract characteristics of a product, the functional and psychosocial consequences and the instrumental and target values is assumed (Gutman 1997). The importance of consequences and attributes is determined by the importance of values (Rosenberg 1956). Therefore consumers are believed to choose certain products because they perceive certain attributes as superior compared to competing products and these attributes are important to them because of the associated consequences. Finally consumers evaluate consequences basing on underlying values.

The criticism expressed on the MEC model refers particularly to laddering interviews as a way of measuring chains. Laddering is a relatively complex task requiring psychologically trained interviewers. It is based on the assumption that consumers can express their cognitive structure. Consumers are asked for distinguishing product characteristics and to reason why these characteristics are important to them. They are then asked to justify their answer again. This process is continued as long as they cannot reason themselves in any more detail. To assist consumers during this process laddering techniques requiring trained interviews are applied (for a further description see Reynolds and Gutman 1988). There are examples were these techniques led consumers to mention cognitive links which they did not know before (Grunert and Grunert 1995). As a personal interviewing technique laddering has all the disadvantages of influencing interactions between the interviewee and the interviewer (interviewer bias). Interview effects arise not only by verbal but also by non-verbal reactions of the interviewer, like nodding or other facial reactions. Besides these disadvantages it is the high effort of fully documenting the interviews that hinders practical realisation.

Case of an Explorative Study Using the Means-End Chain Framework

We applied the MEC framework through a survey of users of a major information portal in Germany with over 4.6 mil. visits per month. The website provides a combination of current affaires, serivices and traditional journalism. The goal was to develop a general understanding of consumers cognitive structure. This understanding can be used to gain first insights for communications strategy and possible new product features for information portals.

In an explorative study 126 website users were interviewed. Respondents where acquired via a pop-up screen that was displayed to every 20th user on the portals homepage. Through this approach, we aimed to ensure an aselect sampling of the total number of users. After being contacted users were directed into a moderated chat waiting room. It was thereby possible to constantly take out users for individual interviews from the pool of waiting respondents. In average each interview lasted 30 minutes to be completed. In less than four days four interviewers working eight hours a day were able to conduct 126 analysable interviews. In analogy to the traditional laddering method developed by Reynolds and Gutman (1988) individual chains were determined via one-to-one interviews. The interviews started by determining important product features of information portals. Respondents were asked for their favorite information portal and why they preferred this website over other portals. Alternatively, they were asked about the advantages of traditional means of receiving news and information like newspapers or TV. Subsequently respondents were questioned to reason why the mentioned attributes were important to them and to justify their answer again. For example, a lot of respondents stated that the up-to-dateness of an information portal would be important for their decision on which portal they would use. They indicated that this was important to them because they felt better informed. Ultimately, they reasoned that feeling better informed would give them more security in the interaction with others.

Using chat interviews for laddering has a couple of advantages over traditional laddering methods using personal interviews. First of all it is more cost efficient, since it takes less time to question a large amount of respondents. The interviewers are less in the need to try to force users to state reasons if they are unable to reason themselves in any more detail. In these cases it is easy to switch to the next respondent. As Grunert and Grunert (1995) criticised traditional laddering methods may force respondents into unnatural cognitive processes compared with the buying decision process. Since it is possible to ask respondents directly after they chose to use a specific information portal this effect can be reduced further and they are more likely to recall their natural decision process. Communication apprehension as the fear of real or anticipated communication can also be reduced compared to face-to-face interviews (see also Montoya-Weiss et.al. 1998; McCorskey 1977). Moving down the chain to more sensitive questions respondents are still open to answer and the problem that they do not want to answer (Reynolds and Gutman 1988) does occur rarely. The internet-chat as a comparably lean medium with low social presence (Short, Williams and Christie 1976, Rice 1993) for laddering gives the interviewer less possibilities to influence users during the interview. In contrary to face-to-face interviews every influence can be documented and considered even after the interview during analysis. The main disadvantages of using chat interviews are the little control of the interview surrounding and the reduced time available for each interview. Respondents could be surfing other websites while answering questions stimulating unnatural answers. Usually, they are not willing to conduct interviews longer than 30 minutes restricting the number of attainable ladders to about four.

In this case transcripts of the conducted laddering interviews were gathered using chat log files and analysed applying the traditional method suggested by Reynolds and Gutman (1988). With this method answers were divided into attributes, consequences, and values and categorized further to a number of 42 different concepts employing content analysis. The absolute number of concepts and the number of linkages between concepts (the reasoning of consumers) was counted to construct the HVM.
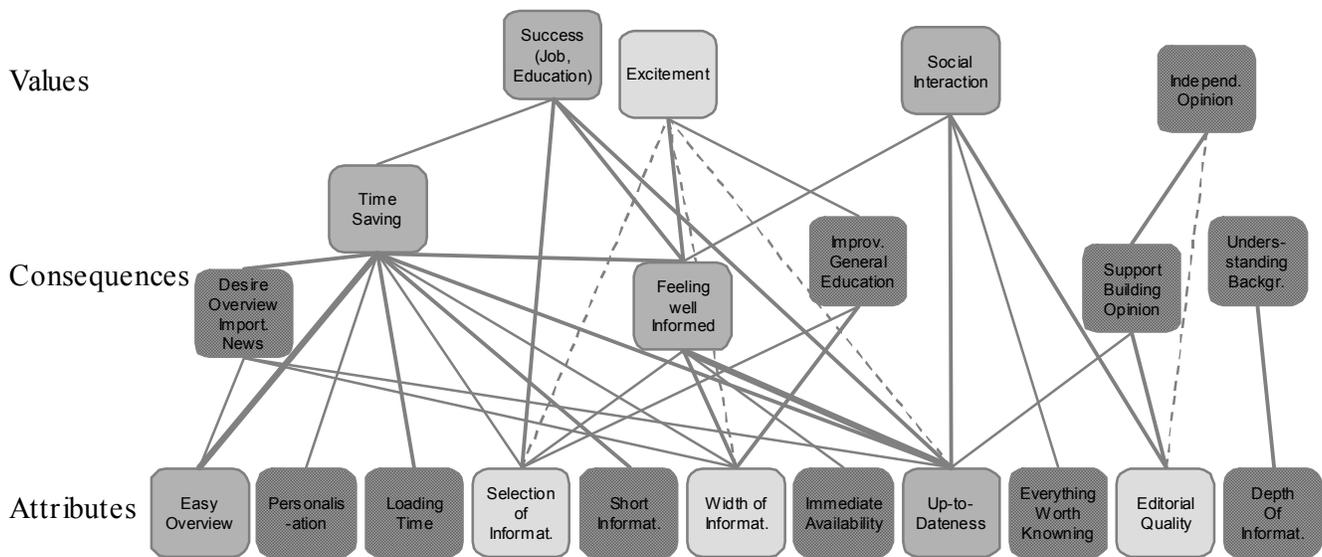

Figure 1. HVM Regarding Information Portals

The HVM is used to summarize the main results of the laddering study conducted and shows the attributes-, consequences- and values-level of the MEC framework. On the chart often named constructs are represented by bold lines and shadowed concepts. At this state the HVM is not ment to be an estimate of the aggregate cognitive structure and the economy-of-storage assumption (Chang 1986) is not applied. Redundant connections are drawn as well. For example, it is believed that the connection between "Up-to-Dateness" and "Success" as a redundant link to "Up-to-Dateness", "Feeling well Informed" and "Success" is showing additional information about the conducted interviews (see also Grunert and Grunert 1995).

Interesting conclusions can be derived directly from the HVM. For example when asked about important features of information portals very few respondents mentioned "Personalisation". "Personalisation" is only believed to save time using information portals. Users do not feel better informed because they get the "information they personally need" as some information portals are communicating today. The key concepts in this case are "Feeling well Informed" and "Time Saving". Users check information portals several times a day for news. Because these websites are usually "Up-to-Date" and grant an "Easy Overview" of relevant

information users feel well informed while not having to spent a large amount of time on information gathering. Being well informed in this way is felt to be helpful for success on the job or in education.

Communication will be most personally relevant and compelling when it provides a strong link between attributes, consequences, and values of dominant chains (Reynolds and Whitlark 1995). Information portals need to be communicated as the linkage between concepts, e.g. between "Up-to-Dateness", "Feeling well Informed" and "Success". But communicating along these kind of existing significant chains is only one option for information portals. Since these chains could already be tapped by competition it might make sense to try to alter the cognitive structure of consumers. This can be achieved by strengthening the link between presently weak associations (e.g. "Personalisation" and "Time Saving"), developing new meanings by communicating new links or by developing new attributes and communicating them. For example, distributing important news over instant messenger systems might be a product innovation that makes news immediately available to users, thereby enabling them to save the time to repetitively visit portal sites (new link between "Immediate Availability" and "Time Saving"). New attributes might be added, like the possibility to instantly interact (via instant messages) with friends about the latest news. In this sense HVMs can be used as an important input to consider the communications perspective on the customer while using creativity techniques to find new product features.

Contributions and Future Research

In analogy to the traditional model the value of the MEC framework for internet applications has been demonstrated. We used chat interviews for data collection. The obtained nominal variables were not as amenable to statistical analysis as quasi metric variables obtainable via standardised questionnaires would be.

Therefore, the obtained concepts of the explorative study will be used as an input to design a standardised online questionnaire (for a similar approach see Hofstede, et.al. 1998). It will be possible to question a greater sample and to determine the significance and strength of each linkage and the significance of each concept. Data will be amenable to clustering techniques enabling the clustering of consumers according to cognitive structure as opposed to sociodemographic data. Important chains can be characterised with further data supporting the development of communications strategy.

In conclusion, this technique will enable a cost efficient and reliable way of determining consumers cognitive structure for internet applications. MEC results will not substitute the need for creativity in communication or product design but will complement it as an important input to consider the customers perspective during these tasks.

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