

PERCEIVED QUALITY AND THE CORE VALUES IN THE AUTOMOTIVE INDUSTRY: A CORPORATE VIEW.

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Abstract: This study explores how professionals from the Volvo Car Group and Volvo Group Truck Technology understand their company's core values and transfer these into perceived quality attributes. Traditionally, both of the companies share the same core values: Quality, Safety, Environmental Care, but they transform these values in different ways due to different customer needs. In general, technical quality has been one of the key features in the automotive industry premium segment for many years, but in recent years it has shifted from being the main purchasing criterion into being a basic requirement. Today, maintaining a forefront position in the premium segment of the car industry can only be achieved by delivering products that are perceived by the customers as high quality products. Perceived quality becomes a cutting edge in the competition between car manufacturers. The purpose of this study is to investigate emerging industry trends and make steps towards elicitation, objectification and distribution of issues regarding perceived quality.

Keywords: *core values, perceived quality, product quality, information and knowledge management in product development*

1. Introduction

The automotive industry today is facing tough international competition, especially in the premium segment. It is a common fact in the industry that the greatest advantage can be reached by delivering vehicles that don't only meet the factory's requirements of perfect quality but can even fulfill the customer's perception of "high quality" (Robinson, 2000). Core values play a significant role in this process, since they represent company beliefs and character and are widely expressed on the physical level of the final product. Perceived quality in the automotive industry has dualistic nature. Authors propose to see this structure as: Value Based Perceived Quality (VPQ) and Technical Perceived Quality (TPQ). The VPQ embody total customer experience of the product attributes and external factors (e.g. brand heritage) through the senses and cognition. The TPQ is representing the engineering view, based on the level of individual technical aspects of the product, perceived with the purpose to fulfill customer requirements and competitiveness. Accordingly TPQ is a subset of VPQ. Design processes regarding perceived quality attributes are driven by a set of requirements that need to be fulfilled on the vehicle. Evaluation of these properties is very often subjective, intuitive rather than objective. There is strong demand for methods and tools that will allow the definition and validation of perceived quality related requirements for the complete vehicle. This paper discusses possible

directions of future work in order to fulfill this task. To be able to understand how professionals from both companies communicate the core values to the customers, a number of qualitative in-depth interviews with senior and top management professionals were conducted. The key persons from the Volvo Car Group (VCG) and Volvo Group Truck Technology (GTT) were interviewed, since they define development and the future look of Volvo vehicles. The interviews were followed by a quantitative survey of customers with a number of Volvo car owners as well as semi-trailer truck drivers (Stylidis et al., 2014). In this paper, we focus only on the professional's point of view, since a large amount of data was obtained and experts revealed a number of trends and approaches regarding core values reflection in perceived quality features (that was not covered in the previous paper). After discussing background theory in section 2, we proceed with a description of the study and method, and in section 4 & 5 the results are presented. The final section discusses possible alternative approaches related to the topic, current and possible future trends revealed in this study. It concludes with suggestions regarding future research.

2. Background

In the recent past industry professionals had to deal with simple brand structures, few sub brands and straightforward business strategies. The situation has changed dramatically and brands have become extremely complex. The business environment is also far more elaborate and challenges are on a global level (Aaker and Joachimsthaler, 2000). In order to translate brand core values and successfully transfer them to the customer, there is a need to create a strong identity and express this identity through consistently managing relevant touch points with customers such as awareness, associations, attitude, attachment and activity (Keller and Lehmann, 2003). In the case of the automotive industry, companies communicate with the customer through perceived quality attributes as well. Perceived quality has a connection with multiple aspects of customer's cognition and product properties, such as emotions, aesthetics, semiotics and semantics, Gestalt perception of the design.

In the process of creating product features that will later interact with a customer, the designer or engineer can play the role of communicator. His relation to the customer, through the product attributes, can be viewed as a communication process (Krippendorff and Butter, 1984). Crilly et al.(2004), adapting general communication system (Shannon, 1948), states that “designers have intentions for how a product should appear, the product is manufactured, placed in an environment, perceived by the consumer and finally responded to”. Thus, setting up perceived quality requirements and core values transmission could be identified as the part of the communication model, related to source and transmitter (see Fig.1).

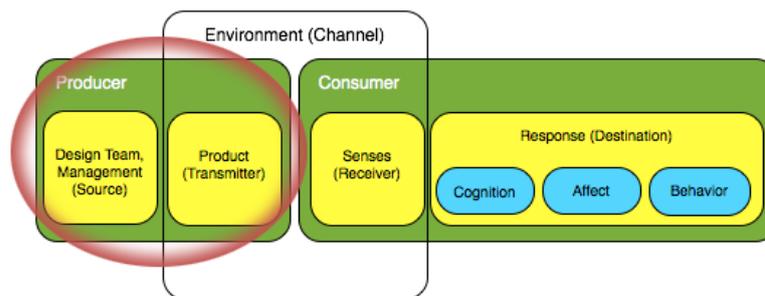


Figure 1. Basic framework for design as the process of communication, adapted from Crilly et al. (2004)

Appearance is one of the product features that is quite often assessed subjectively and is directly linked to visual aesthetics. Muller (2001) analyzed different flows of aesthetic appreciation theory such as: numerical aesthetics, minimalist aesthetics, psychological aesthetics and semantic aesthetics. These flows provide different points of view regarding aesthetics and the presented study revealed, among the other things, the trend of simplification of complex technical systems while presenting them to the customer. Implementation of such a strategy could actually lead to underestimation and

misjudging of the final product by the customer. Berlyne's theory, presented in the 1960s, states that the optimum grade of complexity exists and it is perceived as most appreciated by the customer. Any extreme complexity values are way less attractive (see Fig.2)

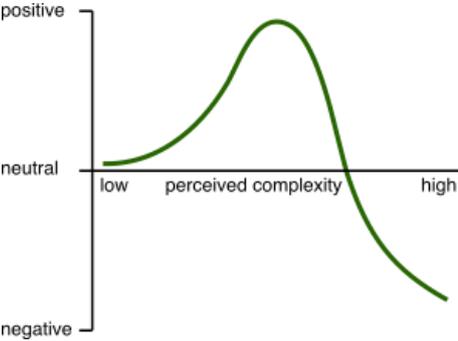
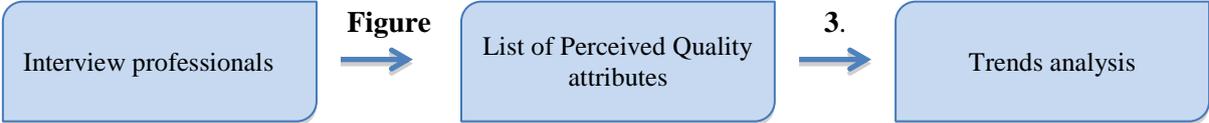


Figure 2. The relationship between perceived complexity and the degree of attractiveness according to Berlyne. (Muller, 2001) Adapted from Warell (2001).

Nevertheless, evaluation of aesthetic features still remains highly subjective and key points of evaluation are based on experience and intuition of designers or engineers (Ranscombe et al., 2012). Kansei affective engineering presents methods that translate the subjective emotional response of the customer to the product attributes and characteristics (Nagamachi, 2002). Despite Kansei engineering supporting the understanding of subjective product attributes, the overall implementation process is quite implicit, time consuming and does not provide an evaluation of subjective product features and attributes (Eckert et al, 2014). Another important aspect related to quality impression is the gestalt perception in design. The phenomenon of gestalt was initially studied by Austrian and German psychologists in the late 19th century, and established the study field of “gestalt psychology”. Koffka (1935), defined this principle as: “The whole is 'other' than the sum of its parts.” Monö (1997) defined product gestalt as: ”a discernible whole; an arrangement of parts so that they appear and function as a whole which is more than the sum of parts”. It could be presumed that perceived quality attributes are not present in entirety as isolated factors, but they influence one another. Nevertheless, perceived quality requirements set up as multidimensional tasks and establishing methodology regarding objective measuring of attribute relations, are the subject of future research.

3. Description of the study

A qualitative study, containing semi - structured interviews with automotive industry professionals from the Volvo Car Group and Volvo Truck Technology in order to gather their opinion on perceived quality and future trends was performed. Interviews revealed a list of product attributes that represent core values, in the respondent’s opinion (see Fig 3).



Procedure scheme of the case study

3.1. Participants

Six professionals on the level of director and vice president were interviewed during this study. With the assumption that highly skilled professionals with great experience in the automotive industry, both domestic and international, could provide us with comprehensive data regarding core values transfer to perceived quality attributes. The interviewees represent a global marketing and branding perspective, since both companies operate globally and respondents are key persons who define the future look of Volvo.

3.2. Method

The average length of each interview was nearly 40 minutes. Samplings were created intended to disclose interviewees understanding of the core values, reveal communication strategies and demonstrate implementation of those strategies in perceived quality attributes. Professionals were asked the same set of questions, since VCC and GTT share the same core values. In the beginning, the questions were quite generic and broad, for example: “How do you communicate your core values to your customers?” or “Do you think that you succeed in defining the product you want to build with perceived quality attributes?” The consecutive questions focused more intently on the relation of perceived quality attributes regarding each of the core values. During the interviews additional questions were sometimes asked, in order to explore topics widely and determine perceived quality attributes clearly. For example: “What attributes are most important for quality?” or “What attributes regarding safety are the most communicative for the customers?”(Stylidis et al, 2014). Interviews were voice recorded and transcribed to text. Text analysis was performed with NVivo – a qualitative data analysis computer software package.

3.3. Results

The data delivered by the interview analysis, divulged important information regarding communicative strategies in both companies and even explained divergences between VCG and GTT branding strategies. We were able to compile a list of perceived quality attributes that coincide with the core values. Finally, the interviews highlighted future trends regarding core values expression in perceived quality attributes.

4. Volvo Car Group

The interviews revealed that all players in the premium car segment had achieved a certain level of quality, so it is not a differentiator anymore (see Fig 4). Some of the professionals say that there is a need to change methods of communication. On the other hand, the question of how to communicate quality is very tricky. In some cases attempts to communicate quality in premium segment could be interpreted as lack of quality.

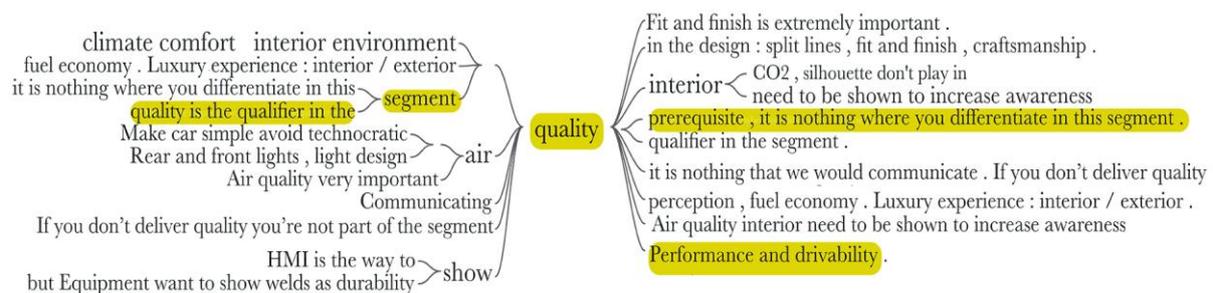


Figure 4. Word tree representing interviews analysis regarding term “Quality”

Professionals believe that exterior design is one of the major buying factors. On one hand Volvo cars represent contemporary Scandinavian design with easy floating lines, very calm and peaceful image, not too many details. Professionals say that solidity and durability of the car are extremely important too. On the other hand technical perceived quality is communicated in the design and manufacturing elements such as split lines, fit and finish, craftsmanship, level of NVH (noise, vibration, harshness). Additional factors such as car performance and drivability (handling, steering, breaking), security, off road capability together with the running cost are very important too. One of the emerging factors of perceived quality is HMI - human machine interaction. HMI helps to avoid driver distraction and leads to a reduced amount of accidents. Volvo also has Sensus Connected Touch infotainment system. The system provides the customer with an integrated 7-inch display touch screen that can be used even when wearing gloves and offers voice-activated Spotify connection integrated into a car. It contains

browser and navigation systems as well. Since Volvo analyze a profile of its customers, they are aware that people who buy Volvo are highly educated business people who do not necessarily prioritize their car in first place. The car is a tool for these customers and this tool should not play the role of an additional stress factor. A conclusion drawn by Volvo professionals shows a movement towards intuitive interfaces. Volvo cars were traditionally perceived as safer cars. Safety is one of the company’s brand heritages and core values. “We could stop talking about safety and still customers will perceive that.” - says one of the Volvo professionals. But it seems that today, having good passive safety is not enough to put a car manufacturer among the leaders. Safety issues have moved very fast from passive safety (cage, construction) to active safety. It is a known fact that the majority of traffic accidents are caused by human error, so Volvo’s new approach in active safety is to prevent accidents rather than develop systems that help the driver during the accident. Professionals are trying to find new approaches regarding safety. Volvo is moving the dialogue away from “it helps you”, to the “it makes you an even better driver”. The goal is to communicate safety in a more supportive way (see Fig 5).

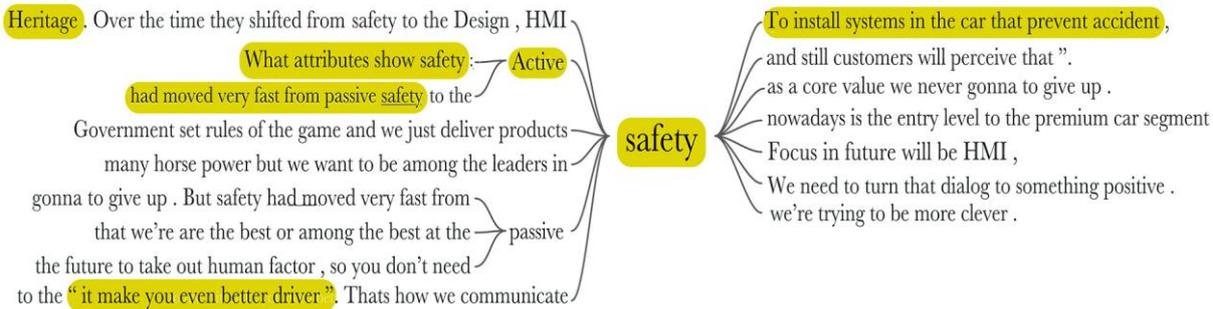


Figure 5. Word tree representing interviews analysis regarding term “Safety”

Another important factor is customization of the car for different markets. Perceived quality can be understood differently in different markets. Volvo Cars is a global company, but Sweden is a separate segment for them as it has over 22% of the market share. Volvo works actively to satisfy the needs of their Swedish customers, but in Sweden Volvo is the mass brand. whereas in the rest of the world Volvo is positioning as an expensive luxury brand. That fact creates a conflict. Today Volvo produces simpler versions for a Swedish market, and more exclusive versions for their other markets. Therefore there is a need to understand how to communicate Scandinavian design and values to the rest of the world more effectively. In order to improve perceived quality Volvo Cars chooses to create sub brands and clustering. Individual features are very difficult to sell so Volvo puts them together in clusters. A good example that portrays such an approach is the sound systems installed in new Volvo cars. Volvo has several sound packages ranging from basic to premium including famous sound system brands such as Bowers and Wilkins and Harman/Kardon. These brands already have a reputation on the market so the perceived quality of the Volvo sound systems increases accordingly. Another example, could be a collaboration with Philips regarding interior light design in the vehicles. There is also an idea to frame different features together that appeal to the target audience as the car designed to satisfy their purposes and to support their everyday activities. Further developing the idea of clustering, Volvo Cars has a number of their own sub brands such as City Safety, BLIS, Sensus Connected Touch, Drive E powertrain. They believe that this approach simplifies customer understanding of the technical data and increases perceived quality. To sum up, VCG is clustering perceived quality attributes mostly under three major categories: Scandinavian design, strength in every sense and contemporary luxury experience.

5. Volvo Group Trucks Technology

GTT shares the same core values and has a similar approach regarding perceived quality as VCG. Although customer demands are very specific and the relationship between company and customer is often a business-to-business model. When we are talking about GTT customers, there are individual owners and truck fleet owners. This fact should always be taken into consideration. GTT are positioning themselves in the premium segment. Their closest competitors are Scania and Mercedes, and in a similar way to cars, lack-of-defects quality is the prerequisite in the segment. Most often quality in trucks on a physical level is represented by durability and reliability. These attributes are strongly associated with uptime. GTT professionals translate quality into benefits for the customer. The quality impression that Volvo Trucks professionals are trying to communicate in the best possible way is a complex concept. Broadly speaking, it includes: robustness, gaps and flush, surface fit and finish, functionality and comfort impression. As the equivalent to technical perceived quality, GTT communicates quality impression. Robustness means that there is no free play between the parts of the truck. The customer's perception regarding robustness lies in the design of the truck. The gaps between all parts should be constant and not unparallelled. It is most important to have the same gap all over, and not be able to see anything through the gaps. However, in some areas, it is not good to not have gaps. For example, in construction trucks if the gaps are too small it might give the impression that these parts can be easily damaged. Surface fit and finish is normally represented by homogeneity among the parts and colors. Functionality and comfort impression are affected by the feel of anything on the truck that a customer can move, turn or twist. It also includes proper sound feedback suited to the operation. In a similar way to the car manufacturers, GTT created sub brands in order to increase perceived quality of their products and technologies. Human machine interaction systems play a significant role in measuring perceived quality of the trucks. The dashboard must have reliable interface and should work even if the driver is wearing work gloves. Indicators of the major functions should be visible, e.g. engine brakes are visible under the steering wheel. GTT accumulates information that's important for a driver in one spot – the driver information display. When it comes to communication it works on a global basis. Volvo sells trucks in more than 140 countries with different customer needs. It means their requirements are reflected in truck features. Historically, reliability was the most appreciated perceived quality feature. A truck operator must for example, have confidence that the engine will start under any conditions. Customers have more tolerance for functionality and durability (how often there is a need to change a spare part). Interviewees mentioned that today customers are very aware of all technical aspects regarding the truck. GTT professionals pay special attention to communicating positive environmental features. Traditionally trucks are poor representatives of environmental friendliness. For GTT the basis of communication with clients is an Environmental communication Platform. This platform establishes the direction of what GTT does in terms of marketing. It shows some focus areas like exhaust emissions, energy and climate. Special attention is given to energy in communication and marketing. Environmental friendliness is perceived as very high if customers drive something unique, for example, hybrid or methane-diesel trucks. To summarize we can say that GTT professionals have been focusing on communication of the five major perceived quality attributes: uptime, innovation, after sale care, fuel efficiency and driver environment.

6. Discussion

Interviews with VCG and GTT professionals disclosed core values communication strategies along with current trends regarding perceived quality. Both companies operate as premium brands, and data shows that they are seeking new ways to communicate core values. Simply producing vehicles with good passive safety features or communicating quality as the core value straight out is not enough. This confirms Robinson's assumption that high quality becomes a prerequisite, entry ticket to the segment (Robinson, 2000). On the other hand, in some cases, attempts to communicate quality in the premium segment could be interpreted as lack of quality. Professionals understand that under such a condition, perceived quality can't be underestimated. Although to be able to challenge the customer's demands they have to know which aspects of perceived quality they need to focus on. So far there is no clear answer. As an outcome of the JD-Power study, one of the most important studies in the automobile industry, the "attractiveness" of a car influences the customer's judgment about a product

by up to 25% (Lieb et al. 2008). Therefore, the exterior design plays a significant role for car manufacturer as well as for the truck manufacturer. In the case of VCG it is expressed by Scandinavian design, whereas for GTT, it is part of an innovation platform they communicate. The vast development of the HMI systems will be expanded and developed even more, plus it will change its role from a supportive feature to being an actively perceived quality component. HMI systems help to avoid driver distraction and will lead to a reduced amount of accidents. Professionals believe that touch screens will increase the size and unification of the infotainment systems will come in the form of a communication platform. Again the question of platform compatibility and integration with customer's personal communication devices will be raised, regarding this matter. In the case of GTT it is built into Dynafleet, the web-based transport information system, for greater profitability. Such a system already has the ability of real-time location of vehicles, their fuel consumption, messages, driving time, service intervals and much more. All of the above shows that truck manufacturers are communicating driver environment, innovation and fuel efficiency among major perceived quality attributes. They need to communicate core values in a way that will trigger customer emotions. In the case of truck fleet owners, better quality will result in bigger value, whereas individual customers look more on the vehicle appeal since they associate themselves with the truck. Thus, truck owners nowadays are highly aware of technical novelties on the market, clustering helps to sell to the customer. Communicating environmental care for both companies is not an easy task. If VCG speak about low emission that will immediately affect customer's profit whereas GTT communicates environmental friendliness through different grill design or different vehicle paint. The study shows that ways of communication with customers regarding technical details of the vehicle and its characteristics have dramatically changed. Interviews revealed a significant shift from technocratic ways of presentation into more emotional approaches that fulfil the customer's needs. VCG express such emotions through perceived quality attributes grouped in three categories: contemporary Scandinavian design, strength in every sense and contemporary luxury experience. GTT communicates to the customers' five major attributes: uptime, innovation, after sale care, fuel efficiency and driver environment (see Fig 6).

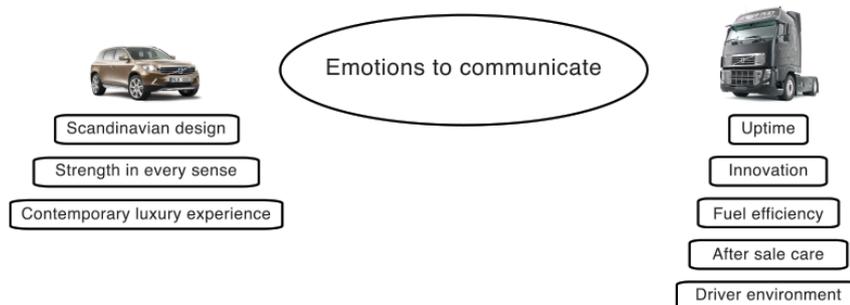


Figure 6. Major perceived quality attributes that are communicated to customers by professionals

Despite the utility intent of the trucks and their subsequent requirements, GTT professionals work a lot with quality impression that stands as another definition of technical perceived quality. In order to receive an emotional response from the customer both companies choose to create sub brands and features clustering. Yet the question of which perceived quality attributes engineers have to focus on is still open. So far there is no method or tool for objective justification of perceived quality requirements. Better understanding of the importance of perceived quality attributes, as well as deeper knowledge, will benefit professionals' ability to truly understand the customer's needs and demands.

7. Conclusions and future work.

Considering the valuable information we obtained from the interviews, it is understood that more studies have to be performed in order to evaluate core values communication strategies and perceived quality related requirements. Similar studies demand to be designed with other automotive companies working in the premium segment. Compiling knowledge not only from the senior level professionals,

but mid range engineers and designers working within a narrow field of perceived quality attributes, could help to better understand certain product properties. There is a need to investigate further the importance for each of the perceived quality attributes derived. Possibly some methods from ethnographic research could be used for perceived quality features evaluation, such as photo-elicitation (Schaeffer and Carlsson, 2014). There is certainly a need to develop design practices regarding quantification of subjective product properties (Eckert et al., 2014), like perceived quality attributes. Understanding the factors that influence utilisation of the ideas and design processes at the corporate level is absolutely vital for design creativity and successful realization of the perceived quality requirements in the early design stages.

To conclude this discussion, emotions were considered very personal in the past and could not be replicated. But it seems in the modern world car manufacturers are trying to find ways to build emotions around their products. The study shows that characteristics and factors, which reflect the core values for VCG and GTT, have changed over time. Both companies increasingly realize the importance of perceived quality as the key differentiator and selling factor. Understanding of perceived quality attributes and its importance can improve the product development process.

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