

MY GALLUS¹ – SUSTAINABILITY THROUGH PERSONALIZATION: MOVING FROM PRODUCT-PUSH TO CUSTOMER-PULL IN THE SHOE INDUSTRY

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ABSTRACT

The structural disadvantage of the European shoe industry of high production cost requires new paradigms of conducting business. We present the approach taken by a European manufacturer of shoes for men that moves towards a more sustainable business model by changing from a product-push approach to a customer-pull. The customer is integrated into the product development process from the very beginning and a learning relationship is established. The use of knowledge-based advisor technology enables a new form of customer requirements elicitation and allows us to efficiently process them. Given a flexible production infrastructure, application of the customer-pull paradigm creates a win-win situation both for customers as well as for manufacturers. Customers get better fitting shoes at nearly no extra price, while manufacturer reach considerable savings in stock and in outdated products. However, the biggest advantage for the manufacturer is accrued over a longer time span, when he is able to better estimate customers' choice and gets first-hand market data.

KEYWORDS

Shoe industry, customer pull, Mass Customization, Open Innovation, knowledge-based advisor systems

1. INTRODUCTION

The European shoe industry is going through structural changes, focusing both on costs and on customer orientation [EuroShoe Project (2002)]. Not "re-action" on effects of change, but rather controlling the change and designing the future become key factors of success in order to ensure sustainability. The submitted "My Gallus" project is taking this active approach and combines strategies of Mass Customization and Open Innovation in order to change the traditional business logic of sales and production. It is not the manufacturer who creates products, puts them on stock and subsequently tries to

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sell them, it is the customer himself requesting his product according to his individual requirements. When applying this customer-pull based business-model, it is crucial to minimize the disadvantages of personalized production, i.e. not exceeding cost or time constraints compared to mass production. Accordingly the objective can be defined as finding a way to offer each consumer personalized shoes at the same price and in the same quality as standardized ones, thereby adding value to the product and minimizing inefficiencies in production and marketing processes. Above that analysis, configuration and interaction would allow a better understanding of customers' behavior and requirements, creating a long term "learning relationship" and integrating the customer to product development ("Open Innovation").

In this paper we will describe the implementation of this concept that requires flexible product architectures, agile manufacturing approaches in production layout, efficient IT-solutions along the entire supply chain and a strategic vision on the company level that integrates all areas of responsibilities. In taking this approach of changing a company's "way of doing business" an individual strategy of Change Management becomes crucial to success and essential throughout the entire project.

The result of "My Gallus" is primarily a fully operational prototype of an interactive and working Mass Customization business model that integrates concepts of the IT-domain like knowledge based advisor systems with aspects of Open Innovation. The outcome is a reference model of customer oriented manufacturing along the supply chain that can be seen as a reference for the manufacturing industry in Austria itself that is facing similar challenges. The physical output of the project, the quasi personalized shoe, might become the "living proof" of Mass Customization in the shoe industry and its "product of the future". The paper is organized as follows: in chapter 2 we discuss the challenges in shoe industry and in the third chapter we give an outline of the My Gallus project, the establishment of a learning relationship between customers and manufacturers and the technical tools applied. Finally, we give conclusions.

2. CHALLENGES IN THE SHOE INDUSTRY

The European Shoe Industry is going through fundamental changes in respect to its markets, its customers' behavior and subsequently in its overall business logics. It is facing previously unknown challenges in order to stay competitive and to maintain production facilities in Europe. In order to understand the continuing structural change and the corresponding reaction of the producers it is essential to look into manufacturing characteristics, market conditions and customers' behavior and expectations. [Brenton, P. et.al. (2000)]

Manufacturing characteristics

Being mainly labor intense, not requesting a specifically skilled working force and not requiring highly technical equipment, shoe manufacturers were outsourcing their production capacities to low wage countries, downsizing labor force in Europe and weakening local markets and economies. In this context the global adaption to different wage levels can not only be seen as companies' effort to increase profits but as a "forced" reaction/adaption to market characteristics and consumer behavior.

Market conditions and consumer behavior

The shoe market is changing its macroeconomic structure, going from a sellers' market to a saturated buyers' market. In buyers' markets customer orientation, added value and product differentiation are essentials: Meeting customers' requirements means offering a wide range of products to satisfy highly differentiated customer needs in order to acquire a USP. Still substitutes are easily available and markets are characterized by tough competition and aggressive pricing strategies, further accelerating companies' efforts in minimizing costs. With price as the winning argument, producing shoes in Europe becomes increasingly difficult, being caught in a trap of cost and flexibility of products and production.

Obviously common mass production philosophies are unable to cover the requirements of fast reaction within the production process, easy switching within a huge variety of products and minimizing time-to-customer and costs at the same time. Continuing with standard ways of mass production is not an option; new manufacturing structures are needed and have been found in team work concepts and agile manufacturing approaches that are able to face the challenges of reacting fast and efficiently to customer requirements.

Nevertheless the industry is still relying on its traditional way of doing business by offering products that are pushed on the market and distributed by standard marketing and sales activities. However, adaption to changing environments is not enough; action rather than reaction is required in order to survive. Therefore, the MyGallus project tries to break the existing management paradigm of the shoe industry and to change business logics to "customer-pull" in a way to achieve lasting customer satisfaction by individualization and to grant sustainability to the European shoe industry itself.

3. THE MYGALLUS PROJECT

3.1 Overview

The project targets ensuring sustainable shoe production in Austria. According to [Hammerle et.al. (2003)] the project is oriented towards customers and employees needs as well as towards a sustainable use of resources. As can be seen from Figure 1, there is a closed loop from the customer and requirements elicitation, to individualized products, new production concepts until distribution.

The project encompasses the following steps in detail:

- ✓ Evaluation of the market situation and customers needs.
- ✓ Personalization of shoe products
- ✓ Development of appropriate IT-support at the point of sale – advisor system
- ✓ Product management
- ✓ New flexible production concepts

- ✓ Distribution



Figure 1: Open Innovation cycle encompassing the project

3.2 Customer Lifecycle

Implementing a mass customization concept requires the definition of a solution space for a specific company, offering its products to its customers on its markets. Therefore Gallus' customers and their behavior are most crucial to the success of the project: "Understanding" customers means to accompany them throughout their entire life cycle as consumers of men's shoes. This starts by getting a potential customer's attention for an individualized Gallus shoe. Subsequently, a clear and effective communication of advantages and additional values is a precondition in getting the customers' to invest time in configuration and to "give away" his personal preferences during a customization process.

After attracting the customer to the product and its (possible) features, she/he must not be lost any more: throughout the entire process she/he has to be perfectly serviced through advisory systems, finally leading to the specific product. Customer care continues after purchasing: To establish a relationship by using and evaluating all data gained during configuration will allow to get loyal customers whose satisfaction with the product or service urges other customers to join the cycle and that will make them move through the cycle again and again.

Therefore, throughout the entire project the ETFS (i.e. engage, transact, fulfill and service) customer life cycle model is used as a guideline to fit all components of marketing mix to the specific definition of the My Gallus solution space.

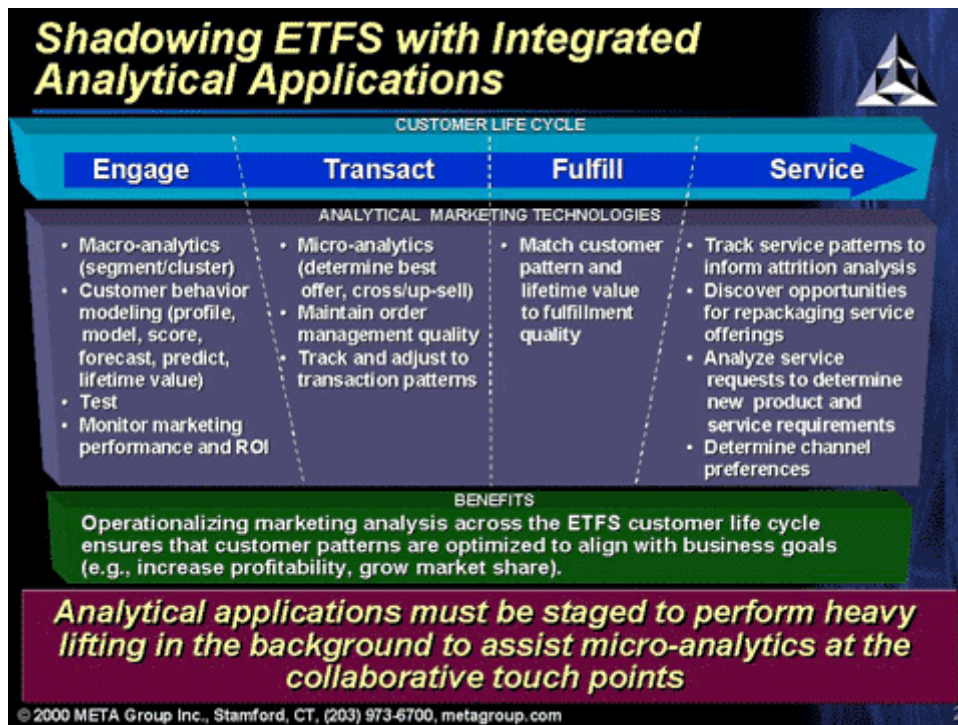


Figure 2: ETFS customer life cycle model [Meta (2000)]

3.3 Personalization and Advisor Systems

In the shoe industry the Mass Customization paradigm is an interesting issue, because of the clear application scenarios and the advantages [Tseng, M. and Piller, F. (2003)] [Pine II et.al. (1993)]. Different initiatives and research projects were initiated with the goal to determine the potentials and challenges of Mass Customization in the shoe industry. However there are only a few realized concepts which were really profitable or feasible for the industry itself, e.g. Nike and Adidas etc.

Our approach tries to find an optimum in the deepness of modularization and individualization of the shoe-product for the customer. So the goal is to offer the customer a quasi individual shoe by determining his or her requirements and demands but using a predefined set of modules and variants of producible shoes. Therefore the changes of the internal production processes and the organization should stay manageable and small.

The new aspect in this approach is to use personalization- and knowledge based advisor technology (Virtual Advisor) to elicit the customers' needs and wishes in an intelligent advisor-dialog. A Virtual Advisor consists of a reasoning engine which is fed with a domain specific knowledge base representing the interactive and personalized recommendation process information. A Web-based frontend enables the user (the customer) to interact with the Virtual Advisor and to consume the product recommendation [Liliana et.al. (2003)].

This automated Virtual Advisor will be used over the different sales channels: internet, self-terminal and as support system for the sales force in the stores. This enables the company a broad application of the new sales support concept and guarantees high usages und utilization.

From the knowledge based advisor technology perspective we try to use the following concepts:

- Advisor dialog: The customers profile and interest is determined by a question and answer dialog generated out of the knowledge base. This concept builds the basis of all other attempts of intelligent user communication.
- Guidance during recommendation: Like in a good real world advise-dialog the advisor will give, based on the answers of the customer, useful hints, tips about the products and their usage. These concepts of guidance and help can be used here for cross- and up-selling.
- Conflict resolution: Often the requirements of the customer are in contrast with the possible solutions supplied by the company. This can be simply the price or other technical incompatibilities. Here the reasoning engine provides mechanisms to notify the customer and help him or here to find a resolution for the conflict.
- Product suggestions and explanation: On the basis of the advisor dialog the reasoning engine can calculate a list of satisfying shoe products. This can be simply the model and the color up to a proposal for the brine type, the bootlace and the ergonomics of the brine. In any case an explanation is given, why these products where chosen and why they are the best choice for the customer.
- Product configurator integration: For the technical resolution of the advisor problem a knowledge based product configurator is used, which is enhanced with new concepts of the Virtual Advisor technology [Blecker, et.al. (2004)].

From the personalization perspective we will try to apply following concepts [Liliana Ardissono et.al. (2002)]:

- Different user groups: The different user groups like teenagers, midlife and retired need to be handled basically different during the advise dialogue. Additionally it is important to distinguish between customers who want to buy a shoe for itself or for another person eg. their child.
- Skill- and experience-level support: Not only the user group, also the individual experience level on shoes and if the shoes of the company are already known is important. A patronize need to be handled different in contrast to a new and uninformed costumer.

- Multi-linguality: As operating on an international market the multi-linguality of the advisor-dialog and the recommendation process is necessary.
- Auto-selection and defaults: For us personalization means, to address the individual, so a mechanism for the auto-selection of open answers and personalized defaults needs to be supported. A retired person won't be asked about teen shoes questions at first time.
- Adaptive User Interface: To offer the customers a very easy and intuitive access to the Virtual Advisor a graphical assistant will be supplied. Additionally personalization and adaptivity in the illustration and the user interface style and behavior need to be supported. This starts with font size and colors and ends with different assistant-characters and a customizable interface for each individual customer.

3.4 Learning from the Customer with Open Innovation

The Virtual Advisor system offers several benefits which can be separated in two areas: the user benefit because of the high quality, 24 hours customer service and the company benefit because of standardized recommendation processes and because the real time information from the customer.

With this advisor technology it is possible to elicit accurate information on the customers profile and interest in a very professional and qualitative way. Each question and answer of a user session is logged into the data repository; moreover all shown hints, conflicts and result presentations are recorded.

In contrast to an ordinary questionnaire, it is possible to learn a lot of personal information about the customer, because he or she has the intention to get a good product recommendation. This very valuable data can be used in different ways to improve the companies' sales- and marketing strategy as well as the product management [Chesbrough, H.W. (2003)].

In the Virtual Advisor system the basic statistics and information are available by default:

- User sessions with the number of successful and canceled interactions
- All questions and answers for each user session
- Hints, tips and conflicts during a user session
- All products and clicked details of a result presentation

Additionally it is possible to use data mining mechanisms to determine associations' rules between the session data like:

- Is there a relation between user groups and product proposals
- Are there cross- and up-selling information which is read very often for a special user group
- Are there questions and answers which occur very often for different user profiles

We see the Virtual Advisor as an excellent application area for the Open Innovation approach [Von Hippel, E (2001)]. All this information, we learn from the customers can be used to improve the marketing material, to learn what are the good arguments and features of the shoe products and where are

potentials for new created product variants. For the knowledge engineers the new knowledge about the customer can be used to improve the Virtual advisor and to fine tune the special personalization aspects for each user group.

3.5 Integration into the overall business model

In the My Gallus project the Virtual Advisor is only one part of the approach to reduce the distance between the customer and the producer. Consequently the overall integration of the advisor system into the existing IT-infrastructure and the adapted business processes is essential for the success of the whole project. From the company view, there are existing IT-systems which assist the internal information management and the production process. The information and processes are very product oriented and specialized on the optimization of time, resources and cost. On the other side there is the customer, who is not interested in the specialties of companies' internals like technical product details and manufacturing processes. Moreover the customer has an individual situation with needs and wishes. He or she wants to get a satisfying solution for the current problem. So there is a knowledge-gab between the abilities and competences of the company and the customer specific needs. Companies must learn to address the customers' needs instead of presenting technical products features and parameters.

As presented in the figure above, the new information lifecycle could look like this: In the middle between the customer and the company view there is a mediator. This mediator in form of the Virtual Advisor tries to communicate with the customer and to transform the customers' requirements to the technical product world to find a matching solution. Therefore interfaces to the customer and an interface to the ERP-System as middleware are needed. From the customer side this is done by the adaptive User interface which offers personalization features to simulate an intelligent selling assistant. The connection to the available products and variants is done by an integration layer in XML technology. Data like shoe models and attributes of the models, as well as the amount and the availableness need to be exchanges so that the Virtual Advisor has an appropriate product basis for recommendation.

If a customer accesses the homepage on the Web he or she will have the possibility to consume the help of the Virtual Advisor. Therefore he or she answers the offered questions and goes through the recommendation process. At the end the advisor will calculate a satisfying solution which matches the customers' needs as well as archives the technical restrictions of the product parameters. Additionally the customer will get an explanation with arguments why the suggested products are the right ones. The customer could order the shoes or get in contact with the nearest merchant to try the product.

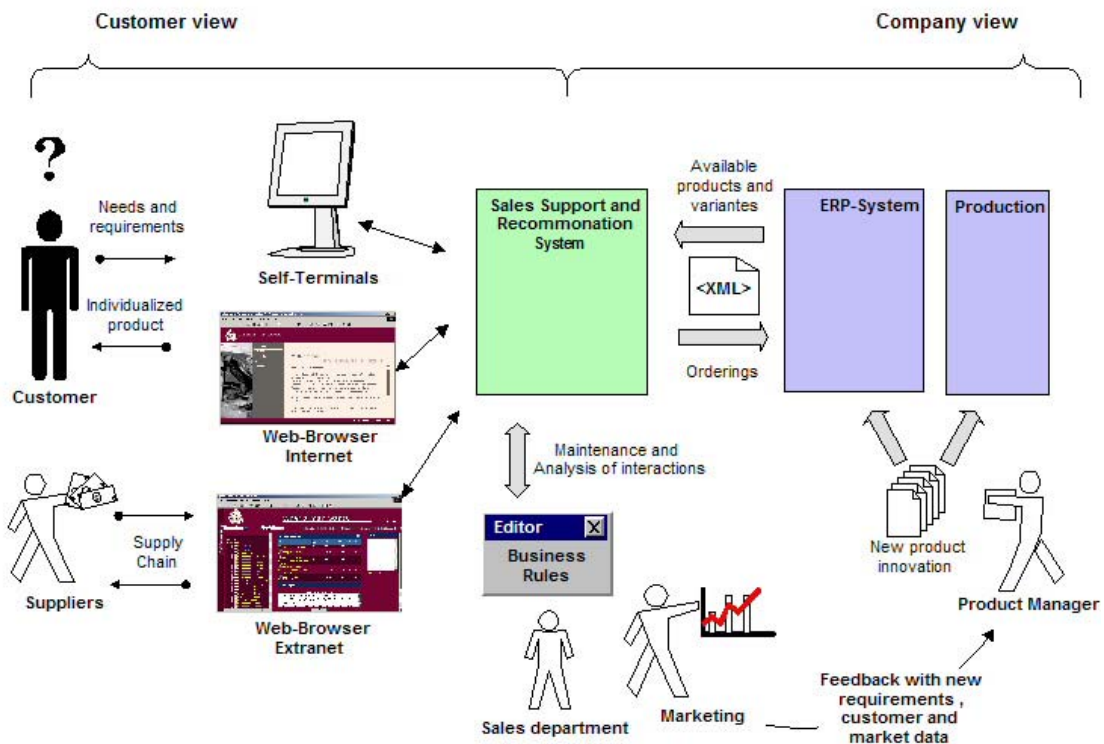


Figure 3: Integrated view on the My Gallus interaction scenario

For the company, the Virtual Advisor will enable new potentials because of the intermediate and realtime information for the customer sessions and the seamless integration into the existing ERP-System. So the Sales department will be able to maintain and manage the recommendation process by themselves, and can change the sales strategy and occurrence easily. This will make them more flexible and guarantee a unique presentation and communication of the products information to the customer. The Marketing is able to analyze the customer sessions and develop new marketing strategies and to provide the Product Management with useful information of the customers desires. With the customer information about his or here situation and requirements, the Product Manager will be able to design more suitable products and features with less efforts and expense. These new created products will enter in the production process and therefore are again available in future recommendation results of the Virtual Advisor system. So the information lifecycle is closed and a continuous loop of improvement can be facilitated.

4. CONCLUSIONS

The My Gallus project presented in this paper is a good example, how an industry that has to cope with harsh structural problems and disadvantages can create new value and new opportunities by changing the way of their business and creating additional value both for the customer as well as for the manufacturer. We are confident, that the results of this project will serve as a lighthouse for fashion industry and foster also new opportunities in other industries.

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