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Bernhard Goldberger

University of Vienna, bernhard.goldberger@prolytic.com

Gernot Wörther

University of Vienna, gernot.woerther@ec3.at

Michael Weber

University of Vienna, michael.weber@ec3.at

Michaela Denk

University of Vienna, michaela.denk@ec3.at

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An STP-Approach Focused on Customer Preferences for Mobile Business Applications

Bernhard Goldberger^{1,2}, Gernot Wörther¹, Michael Weber¹,
and Michaela Denk^{1,3}

¹EC3 – E-Commerce Competence Center, ²Prolytic,

³University of Vienna, Austria

bernhard.goldberger@prolytic.com, {gernot.woerther, michael.weber, michaela.denk}@ec3.at

Abstract

This paper presents an empirically validated approach to decide whether to launch a ready developed product. Although it is best to integrate customer preferences in the development of a new product, this is not always done in everyday business. The method described was successfully applied in such a case. It assists decision makers twofold: First, a swift and cost efficient scan of ready developed products is demonstrated in order to sort out potential failures. Second, the collection and evaluation of empirical data with the help of a statistical software tool is illustrated and demonstrated by its application in a recent mobile R&D project. The featured approach enables decision makers to eliminate weak products and to increase the quality of launch decisions for promising products by the employment of a marketing decision model.

Keywords: *new product development, success factors, market segmentation*

1. Introduction

The mobile business industry has seen many downturns in recent years. Although there were plenty of promising forecasts dealing with revenue growth in mobile data service things did not work out as expected. This has led to a discussion whether a techno-centric or customer-centric approach is more suitable to develop and position mobile business applications successfully.

Obviously, in a market economy the customer wishes and preferences should be at the centre of attention when a new product is developed and launched. Technology is essential for innovations; nevertheless it is only a means to an end (cf. Mattern, 2003). Ideally, the integration of preferences of the customers should be considered in a very early stage of the new product development process, best before the actual product is developed as stated for instance by Hultink et al. (2000).

However, in practice, decision makers may face the problem that a product which is already developed has to be positioned on the market without the possibility to change the attributes of the product they should launch. The featured approach was developed to assist such decision makers and help them to decide whether and how they should launch a new product. The emphasis of the approach is to decide in the beginning, by means of a swift and cheap assessment, if further investigation pays off and – if so – to collect meaningful data for decision making.

First, success factors from a customer perspective were identified and the opinion of professionals was investigated in an expert survey conducted in the years 2001 – 2004. Based on these findings generic success factors were identified which can be divided into two groups: ‘must have’ factors, which are essential for every successful product and ‘should have’ factors, increasing the likeliness of success.

Second, a customer survey was conducted to determine the customers’ needs and wants before placing the new product on the market. The survey was analysed by making use of a software tool to determine the product-specific customer perception. Based on these findings, a conclusion about the acceptance of potential customers can be drawn and market simulations become feasible.

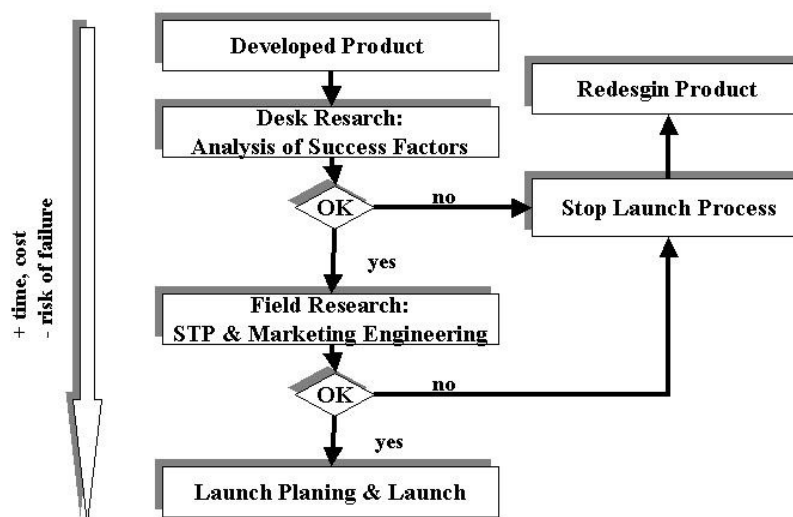


Figure 1: The Assessment Process

The assessment process starts with a ready developed product. In the first step, the success factors from a customer perspective are analysed by the decision maker. This first assessment aims at understanding the product from a customer’s point of view and to determine the potential of a new product. If the analysis shows that the product suffers serious deficiencies, the launch process can be stopped and a redesign process initiated. The biggest advantage of this first step is that ill-designed products can be rejected in a time and cost efficient manner at an early stage of the launch process. If the desk assessment of the new product delivers promising results, a field research has to be conducted in a second step, supplying the empirical basis for further analysis. Starting from the empirical findings, state of the art software-based marketing engineering has to be employed to ensure launch success. Following this approach, unpromising products can be eliminated cost-efficiently in an early stage and auspicious products can be

launched professionally due to the employment of state of the art marketing methods. The assessment process is visualized in Figure 1.

In section 2 the empirical studies about mobile commerce and success factors for mobile business applications are presented. Section 3 discusses the STP approach and provides a short review of marketing engineering. The application of the featured approach is presented in the following section and finally section 5 summarizes the most significant findings.

2. Analysis of Success Factors

The initial point of the described approach is the success factor analysis which is based on results of empirical research, especially on a series of expert surveys, described in section 2.1., as well as on desk-based research, which is in line with the empirical findings, summarized in section 2.2.

2.1 Mobile Commerce Expert Surveys

Since 2001, the authors have conducted expert surveys to get insights into the actual status of m-commerce, its progress, to derive key success factors and to make international comparisons. Surveys have been carried out in Finland (2001 until now), Austria (2002 and 2003), Hong Kong (2002) and Slovakia (2003). Finland was chosen as it is commonly seen as a forerunner in the use of mobile technology (cf. for instance Denk, Wiesbauer, 2004). Austria was included in the survey based on its geographical location and its focus on advanced technology as an industrial driver. Hong Kong was selected as one of the regions with highest mobile penetration rate (app. 80%) in Asia. Eventually, Slovakia was considered as one of the emerging European mobile commerce markets. Although expert responses are only available for one year for Hong Kong and for Slovakia, respectively, they are mentioned here, since derived success factors do not really differ among the four countries. For a discussion of the results of the Austrian and Finnish surveys from 2002 and 2003 (cf. Denk, Wiesbauer, 2004, and Wiesbauer, 2004).

The target groups were set to include 50 industry experts and decision makers from companies offering m-commerce products and/or services, and consulting, financing and/or infrastructure in the area of m-commerce. In addition, researchers were included in the group of experts in Austria. Collectively, the two target groups represent a valid sample as they are in continuous touch with the m-commerce market.

The Finnish and Hong Kong expert surveys were carried out with web questionnaires. In Austria both, paper and online questionnaires were used. The Slovak survey was performed via personal interviews. The potential respondents were contacted via e-mail and/or by phone, and in the case of Austria and Slovakia also in face-to-face meetings. In order to increase the response rate and as a token of appreciation, summary reports of the results were made available for the respondents. In general, response rates ranged from approximately 40% to 50%, while the Slovak survey only showed ca. 20%. The questionnaire was made up of three consecutive parts: (i) general acceptance of m-commerce; (ii) m-commerce companies and customers; (iii) information about the company taking part in the survey. Analysis was conducted via SPSS and Excel and encompassed simple frequency tables, cross tabs, independence tests as well as the corresponding diagrams for the visualization of the findings.

In complete agreement, experts from industry and research from all four countries emphasized the importance of increased user orientation. Research and development should primarily focus on the analysis of user requirements and preferences and the development of useful services. There is no market for products and services that fail to

meet customer needs. Experts identified the perceived lack of value-adding applications among customers and the lack of perceived commercial profit as well as uncertainties about future opportunities among companies as major barriers for a rapid expansion of mobile commerce. Besides their minor perceived usefulness, existing services are often complex to use due to inconvenient devices and user interfaces. Displays are small, data entry is cumbersome and user instructions are typically missing or unclear which poses a problem in particular for users in the age group 40+. According to the experts, especially younger customers are only willing to adopt new products and services if they offer substantially new possibilities. Quite obvious, low costs were also among the most influential aspects for the usage of services.

From the experts' point of view, apart from already successful services like SMS and MMS or the download of ring tones and icons, in particular mobile payment, m-ticketing, information services such as the retrieval of timetables and flight schedules, location based services, navigation, localisation and mobile GIS, gambling and betting, games and adult content services are promising fields for future mobile applications.

Summarizing the experts' opinions, the following four main success factors for mobile products and services can be identified: (i) the (perceived) ease of use, i.e. low complexity of services and devices, including high usability and user friendliness, (ii) the perceived usefulness, (iii) the innovative character, and (iv) the expense factor. Consumer surveys carried out in Finland 2002 to 2004 are in line with these findings (cf. Carlsson, 2005, Walden, 2005).

2.2 Success Factors of Mobile Applications

The literature on mobile business is full of success factors for mobile applications (e.g. Silberer, Wohlfahrt, Wilhelm, 2001, Giordano, Hummel, 2005). However, many of them are high level definitions making it very hard for decision makers to take them into consideration when they have to decide about new product launches in everyday business. For this reason this paper discusses a framework of success factors that is easy to grasp and focuses on customer preferences, in line with the work of Zobel (2001). These success factors as well as the general need to increase customer orientation are in accordance with the empirical evidence presented in section 2.1. Nevertheless, the introduced framework can only be the first step in the market launch decision process. If a new product passes this first assessment, it is essential to conduct an empirical validation and analysis of the gathered data as described in the subsequent sections. Success factors are divided in two categories: (i) shall-have factors that should be covered by new mobile business applications thereby increasing the likeliness of adoption, and (ii) must-have factors that are imperative for successful products.

2.2.1 Shall-Have Factors

Social relationships: Humans are social beings. They interact constantly with each other and social relationships are a vital part of life. The mobile phone is perfectly suited to satisfy the need of maintaining social relationships. Services that support social relationships are likely to be successful.

Power: One important aspect of social relations is status which is strongly related to power. Two types of power can be distinguished: Power to access and power to execute. The first type of power refers to the possibility to intervene in other people's life, as for instance parents influencing the life of their children. But also the limitation of the power to access can be useful. One famous example are SMS (Short Message Service). They provide the opportunity to communicate without giving the receiver the chance to reply directly. This way unpleasant information can be communicated. For example a study

among children in Austria found that, apart from fun, the possibility to avoid real-time interaction is one of the most important motivations for the usage of SMS (Wörther, 2004). The power to execute is related to ubiquity. With a mobile phone it is possible to give commands and place orders from almost everywhere at any time. This feature of mobile services is especially interesting for impulse shopping or mobile ticket applications.

EQM (easier, quicker, more): Easier means that solutions that are simpler and/or more convenient are accepted by customers. One good example for “easier” is the phonebook of cell phones (compared to typing in the complete number when you call someone). Quicker refers to the opportunity to fulfil customer needs faster than traditional products. One of the reasons why e-mails are common nowadays is that they are faster than traditional letters. More is related to the fact that humans tend to maximize their benefits. Thus they will welcome every new product allowing them to increase their benefit.

Entertainment: There are two types of entertainment: “scheduled” entertainment, such as visiting a theatre, and entertainment during niche times, for example when waiting for public transport. In such time slots a mobile phone can be the perfect entertainment or gaming console.

Security: Security is one of the most important needs of humans. In Maslow’s hierarchy of needs security is the second most important, just behind physiological needs. With a mobile phone it is possible to call for help anytime and by the use of localization technologies the caller does not necessarily need to know where she/he is. Another crucial aspect is transmission security, for instance to avoid fraud and eavesdropping in mobile payment applications.

2.2.2 Must-Have Factors

In addition to the should have factors there are four must-have factors every mobile application has to fulfil in order to be successful.

The 3 minute value: The average WAP application takes five minutes. In Japan the popular i-mode applications last for less than one and a half minutes on average (cf. Dean, Sirkin, 2000). The time a customer uses an application may vary from country to country. However, it is quite evident, that a mobile application has to produce a clear, perceived value for the customer within a short period of time. As a rule of thumb the value should be delivered within 3 minutes.

Simplicity: A mobile application should be simple in two ways. First, it should be easy to handle and the customer should be able to use the application intuitively, thus the usability has to meet the customer’s standards. Second, also the offered product or service has to be simple and the user should have a precise idea what she or he buys. In short, the application has to be in accordance with the limited possibilities of a mobile device.

Additional benefit: For a successful service it is essential that the customer perceives a clear additional value. There are several types of additional values. For example fun, cost saving, time saving or location based additional value.

Customer friendly tariff structure: The willingness to pay for new technologies and new applications is limited since the customer cannot clearly judge the additional benefit a new application yields. This is especially true for B2C markets where the customers tend to be more price sensitive. For this reason a customer friendly price structure, preferably with a price model that eases diffusion of a new application, is essential (Wörther, 2004).

The success factors discussed in this section are summarised in the figure below. The distinction between shall-have and must-have factors is particularly relevant since shall-

have factors increase the likeliness of success and only one factor has to be met, while all must-have factors are imperative for successful applications.

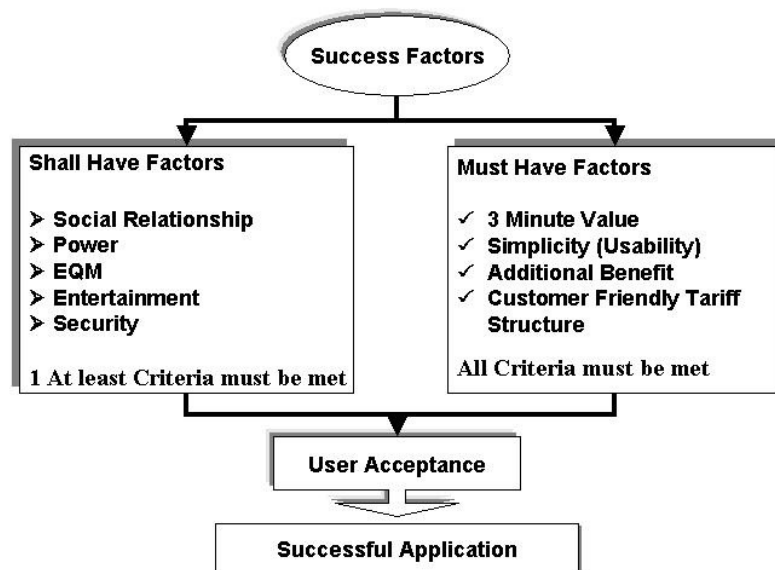


Figure 2: Success Factors for Mobile Business Applications

In the featured approach the above discussed success factors are the first pillar of the decision process. If one or more shall-have factors and all must-have factors are favourable it is advised to investigate the new product further and to employ marketing engineering methods as described in section 3 and 4. If this first desk based analysis reveals deficiencies the product assessment process has to be stopped to avoid sunk costs and a redesign of the product should be initiated.

3. Segmentation, Targeting, Positioning

The interdependency between a company's general or specific market segmentation, targeting, and positioning (STP) strategy and its new product development activities in competitive markets has not received much attention until the work of Lilien and Rangaswamy on marketing engineering (1997). Lilien and Rangaswamy recommended a sequential process aiming at an integration of market analysis and segmentation, the choice for a target segment, and positioning based upon the customer needs and wants and thereby promoted an emerging discipline within marketing that supports decision making relying on data rather than mental models or opinions.

In an STP process, preferences are clustered in homogenous market segments that represent bundles of specific characteristics with data derived from market surveys. The number and composition of these segments thereby depend on the choice of pre-defined algorithms and market engineering methods and have important implications for a segment specific communication strategy in later stages. After segmentation, the segments need to be reviewed as to select one or more target segments according to the characteristics preferred. Subsequently, a combination of attributes for products or services suited for the specific target(s) is defined or, with existing products, necessary amendments to place the product in a specific target segment are identified. Amendments may range from modifications of the inherent product attributes to altered marketing strategies. These activities form part of the final positioning step.

For the realization of the ideas of marketing engineering, several tools and concepts have been conceived in science and industry that help to implement marketing decision models and methods (cf. Lilien, Rangaswamy, 1997). In order to take advantage of these models that are well-suited for new product development and in accordance with the intentions of the featured approach, it is recommended to use a software tool, which meets the STP requirements in the new product development process and offers marketing strategists an ideal base for various important marketing decisions.

ProDeli is a marketing decision tool, used for extensive market studies, new product development processes and product enhancement processes. Through the ranking of products (competitive products, own products and new concepts) and attributes, characterizing these products, the total market is partitioned into smaller market segments and a market landscape is generated displaying customers, customer segments attractiveness and positioning of products as well as the importance of different attributes. Based on the market segmentation, an appropriate target group is selected and analysed. Finally, a product/service or company is positioned in the market landscape and tested with a market simulation (built on the choice based conjoint analysis), whether the new positioning concept will have success or not. The integrated market simulation supports the management to quantify marketing strategies and receive more reliability.

According to the recommended STP approach for developing marketing strategies (cf. Lilien, Rangaswamy, 1997), in the first step, customers are segmented into homogenous groups using the k-means clustering algorithm (McQueen, 1991). By using the Davies-Bouldin Index (1979), ProDeli determines the optimal number of market segments. In a second step an initial MDS solution is computed based on distances between product and attribute rankings. In the next step the customers are positioned in the map. The customer positions are based on a weighted average over all product and attribute positions. Weighting factors are derived from the importance customers place on products and attributes. In a further step, a new segment is calculated using an extended segmentation base including the customer positions as additional segmentation criteria. Finally, the positions of products and attributes are calculated based on a weighted average of the customer positions (cf. Natter, Mild, 2003).

4. Use Case

The presented method was applied in the R&D project “Open SPIRIT” that dealt with intermodal passenger transport management via mobile devices, focusing on the development of electronic information tools on smartphones for regional and interregional trip planning and on-trip accompaniment, and continuous orientation and guidance of passengers, including local indoor environments and (underground) transfer junctions. Project results encompass a prototype of a personal travel companion on smartphones, a technical concept for electronic fare and ticket management as well as test set-ups for local area passenger navigation and orientation (indoor und outdoor). From a product perspective, there was the intention to develop an application which has the potential to become part of the standard equipment of all Austrian smartphone users, i.e. the personal travel companion for public transport (cf. Wörther et al., 2004).

The presented framework of success factors was applied to the developed mobile travel companion. Since the analysis justified a more detailed, empirically founded investigation, the Open SPIRIT product concept was tested in comparison to three further concepts. The test included the definition of an appropriate target group, the evaluation of the attractiveness of concepts and attribute importance as well as the positioning of concepts. In the current phase of the project, the consortium does not permit the publication of these data. Hence, in order to illustrate the application of the STP-approach in the context of Open SPIRIT, data created by a random generator were used.

The minimum questionnaire design for a ProDeli study requires four categories of questions as summarized in Table 1.

All variables generated by these four categories of questions are necessary for deriving ProDeli maps and using the market simulations. However, market research for new product concepts usually integrates additional questions concerning demographics, lifestyle, media consumption, image and so on, which were also asked in the Open SPIRIT study but are not a prerequisite for the analysis with the employed software tool. To enable market simulation, additional conjoint questions were necessary in the questionnaire.

Table 1: Data Requirements of ProDeli

Question category	Example
Rank (or rate) products	Concept A Concept B Concept C Concept D
Rank (or rate) attributes	Price per use Routing User profile Input method Visualization
Rank (or rate) levels of all non-metric and non-binary (yes/no) attributes (e.g. input method)	Computer keyboard Mobile keypad Mobile touch screen
Expenditures in that product category	Per use in €

Figure 3 demonstrates the application of the joint mapping of attributes / products and customers. Three market segments were computed by the software tool. Customers (questioned interviewees) are the different points in the map and differ according to their segment membership in colour and style (red, quadrangular = first segment; green, roundly = second segment and blue, triangular = third segment). All product concepts (A, B, C, D – red coloured labels) and attributes (magenta-coloured labels) are positioned according to their perceived difference. Similarly perceived products or similarly perceived attributes are positioned close to each other. Attributes, located close to a product (e.g. input method and concept D) play an important role for customers in that area. The bigger the size of the product or attribute label, the more attractive/important is the product/attribute for the customer.

Small distances between a concept and the position of a customer indicate high preference towards this concept. The most important attribute seems to be the “input method”, the most attractive product concepts are Concept A and concept D. Concept D is associated with a practical input method and a fair visualization. Concept A, the ready developed and preferred product, is perceived with the possibility to create a user profile and a fair visualization during routing.

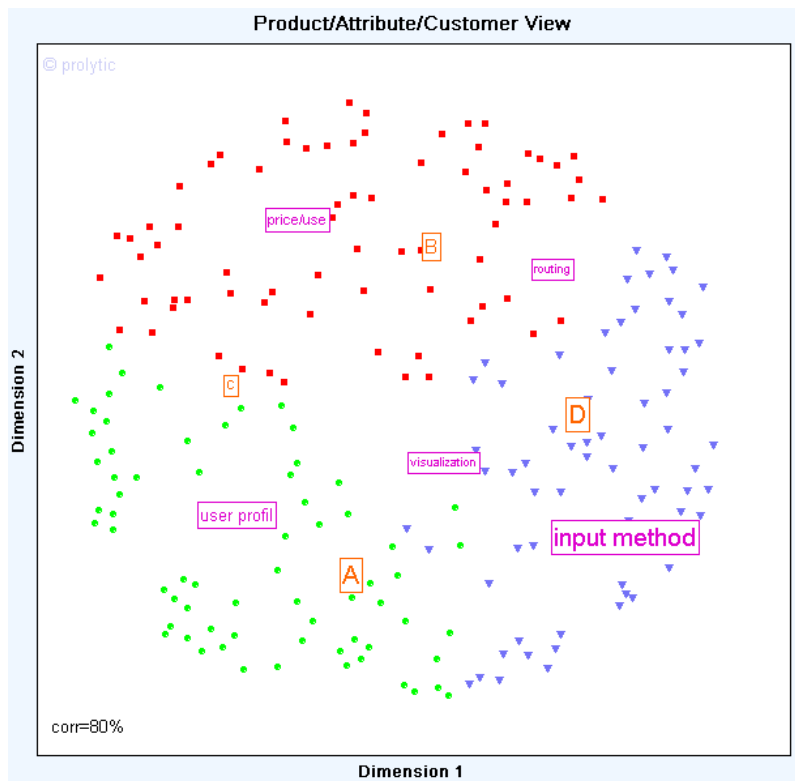


Figure 3: Visualization of a Specific Market

Figure 4 shows the concept preferences (first line) and attribute preferences (second line) in the three different segments. The preferred concept A dominates market segment 2, i.e. concept A is best positioned in the second market segment. The most important attributes in this segment are the possibility to create an user profile and the visualization of routing. To hold the customers in this market segment, it is necessary to fulfil the customer’s attribute requirements in this segment. To meet the customer’s wishes in market segment 3, it is necessary to offer an attractive input method, the most important attribute in market segment 3. The most important attribute in market segment 1 is the price per use.

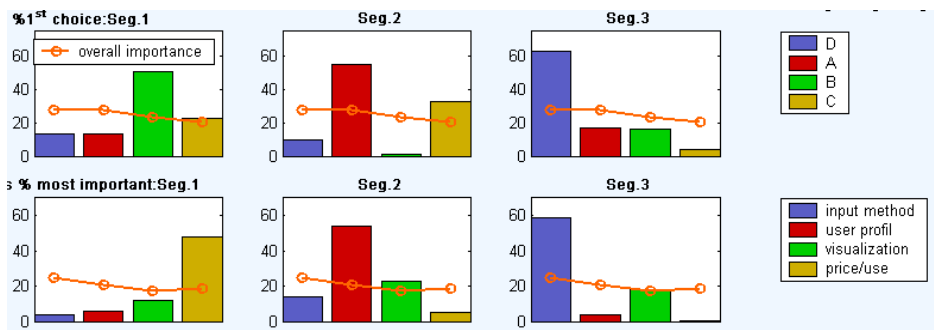


Figure 4: Product and Attribute Preferences in the Different Market Segments

After the total market has been fragmented into smaller market segments, it is recommended to select a segment or series of segments and target it. Figure 5 shows the selection of a specific target group in ProDeli. The target group can be defined on the basis of segment membership, regional restrictions in the map and any combination of filters on variables (cf. Natter, Mild, 2003). In our use case the target group is selected on the basis of the segment membership (segment 2 and segment 3).

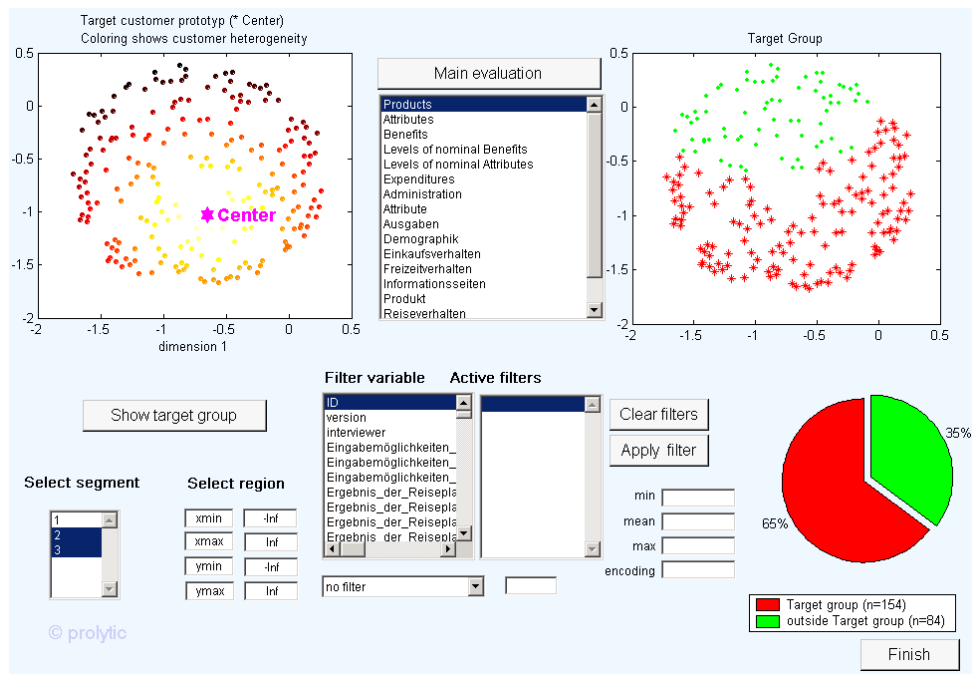


Figure 5: Targeting in ProDeli

The pie chart indicates that 65% of the initial population belongs to the target group. The scatter plot at the right hand side highlights the selected customers; the plot at the left hand side shows the centre of the target group in Figure 5. The list box in the centre offers evaluations of the target group in terms of the most preferred products and attributes, but also any question of the questionnaire (e.g. buying behaviour, lifestyle, image etc.). Figure 6 shows an example of the evaluation of the target group (Question: “How often do you use your car in a week?”).

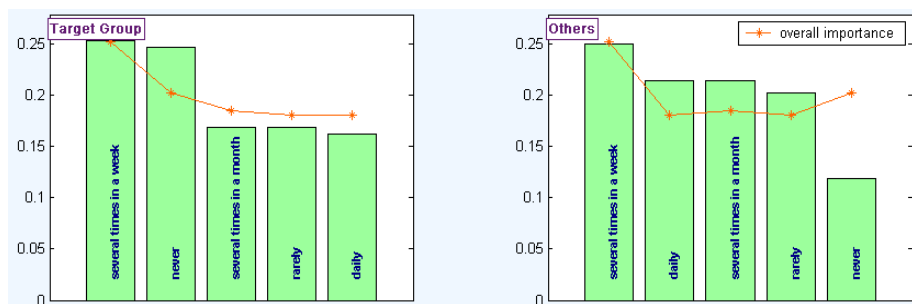


Figure 6: Evaluation of the Target Group

The chart on the left hand side shows the analysis of the target group, the chart on the right side depicts the analysis of persons who are not in the target group. In the example persons in the target group use their car less often than people who are not members of the target group.

ProDeli supports the positioning process with a graphical analysis of each desired position in the market and the integrated market simulation, which enables the market analyst to quantify marketing decisions. Positioning depends on several influence factors such as the possibilities and capacity in a company, attractiveness of a (new) position, competitor behaviour and so on. ProDeli enables the analysis of each desired market position as illustrated in Figure 7.

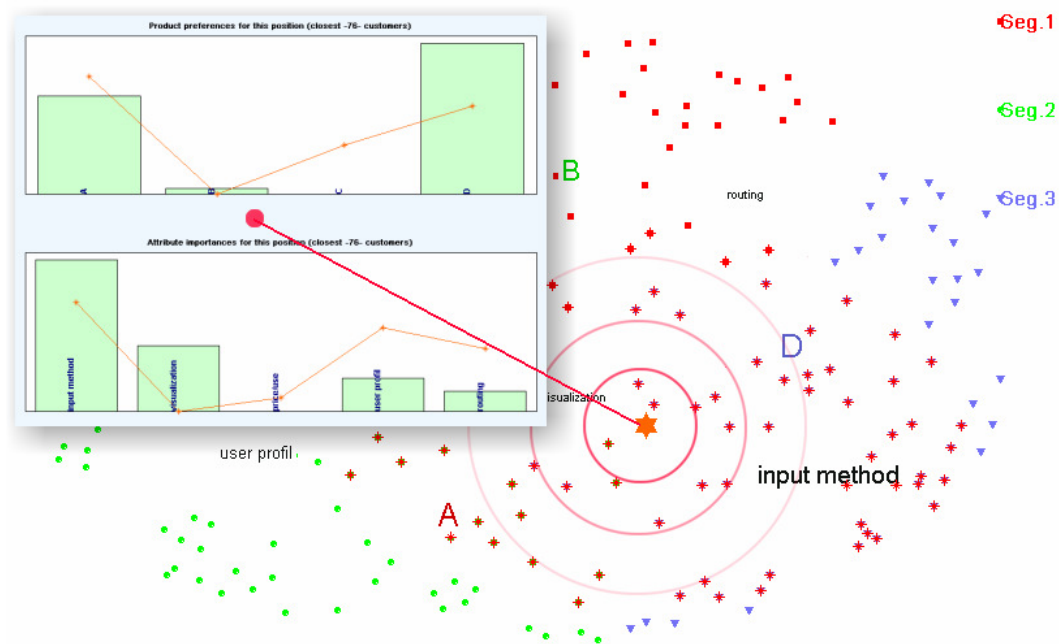


Figure 7: Analysis of a Specific Market Position

In our use case the position in the centre of the target group is analysed. For this purpose ProDeli selects 10% of the sample or at least 50 persons close to the centre of the desired position. To evaluate the position, the tool displays preferences and data of the selected customers.

The final step is to test the targeted position based on market simulation. While the market analysis helps to identify the most relevant product features and target group characteristics, the market simulation will contrast different market scenarios, e.g. old market position vs. new market position or product with intended attribute levels vs. product with changed attribute levels. The market simulation is founded on choice based conjoint analysis that estimates shares of preference (i.e. fictive market shares) and offers an accurate overview of the importance of attributes.

In the example, the most important attribute is the input method with the computer keyboard as most attractive item. However, Concept A includes merely a mobile keypad. To estimate the impact of an improved concept, this attribute level is changed and combined with the option to key in data with a computer keyboard. Market simulation enables the comparison of both market scenarios (Concept A vs. improved Concept A) and the quantification of the change in preference shares that is due to this measure (cf.

Table 2). In this case, the change of the attribute level leads to an increase of 5 percentage points within the target group (from 29% to 34%).

Table 2: Result of Market Simulation

	Preference shares	Change in preference shares
Market scenario 1	29%	
Market scenario 2	34%	+ 5% points

In summary, the chosen approach offers the market analyst the following advantages and possibilities:

- an interrelated overview of the market situation,
- the full integration of segmentation, targeting and positioning (STP) in the new product development process,
- the easy planning and testing of new marketing strategies, target groups and market positions, as well as
- the opportunity of conducting market simulation, supporting the analyst in quantifying important marketing decisions.

These benefits were made use of to determine the right target group for Open SPIRIT and to serve as a basis for further product launch decisions.

5. Conclusion & Outlook

Launch decisions are among the most sensitive decisions in business. Starting with the conception of an idea up to the actual launch important expenses have to be accounted for. Therefore, high quality decision making is essential in this field, especially in the dynamic and competitive mobile business industry where new products have to be positioned on the market at frequent intervals.

Quite obviously, for a vast acceptance of a product it is crucial to listen to the needs and wants of customers and to incorporate their preferences during the development of a new product. Nevertheless, it is not always possible to do so and decision makers in everyday business may face the problem that they are required to launch a ready developed product whose attribute levels cannot be changed. The featured approach is particularly suited for such scenarios, providing a clear and simple to follow guideline that eventually helps to quantify marketing decisions.

Based on empirical studies as well as desk based research success factors were identified which serve as a first assessment of the potential of new applications. This way, unpromising products can be sorted out at the beginning of the launch process; costs and loss of reputation due to a failure on the market can be avoided. Products with higher potential that pass the first assessment have to be investigated further. For these products the collection of empirical data and the analysis with a marketing engineering tool is strongly advised. The software tool presented supports the STP approach as well as complex statistical methods, such as conjoint analysis or multidimensional scaling, facilitating structured data analysis and, consequently, higher decision quality.

References

- Carlsson, C., Carlsson, J., Denk, M., Walden, P., (2005): "Mobile Commerce: Insights from Expert Surveys in Austria and Finland", Proc. 18th Bled eConference "eIntegration in Action", Bled, Slovenia, June 6 - 8, 2005.
- Carlsson, J., (2005): "Mobile Services and Finnish Consumers", Presentation given at a meeting of the eCommerce Working Group of the OCG, Vienna, Austria, January 31st, 2005, available at <http://www.ocg.at/>, last visited January 23rd, 2005.
- Davies, D. L., Bouldin, D. W., (1979): A cluster separation measure, IEEE Trans. Pattern, Anal. Machine Intel., Vol. 1, pp. 224 - 227.
- Dean, D., Sirkin, H., (2000): "Mobile Commerce – Winning the on-air consumer", Boston Consulting Group Report, available at <http://www.bcg.com/>, last visited February 1st, 2006.
- Denk, M., Wiesbauer, B., (2004): "M-Commerce Expert Survey: Comparison of Austrian Results 2002 and 2003 and International Comparison", EC3 final report wp4ec3NetWorks3_br9, available at <http://www.ec3.at/>, last visited January 25, 2006, in German.
- Giordano, M., Hummel, J., (2005): "Mobile Business", Gabler Verlag, Wiesbaden, in German.
- Hultink, E. J., Hart, S., Robben H. S.J., Griffin, A., (2000): Launch Decisions and New Product Success: An Empirical Comparison of Consumer and Industrial Products, Journal of Product Innovation Management, Vol. 17, Issue 2, New York.
- Keen, P., Mackintosh, R., (2001): "The Freedom Economy: Gaining the M-commerce Edge in the Era of the Wireless Internet", Osborne/McGraw-Hill, Berkeley.
- Lilien, G., Rangaswamy, A., (1997): "Marketing Engineering: Computer Assisted Marketing Analysis and Planning", Addison Wesley, New York.
- Mattern, F., (2003): "Ubiquitous Computing – Szenarien einer informatisierten Welt", in Zerduck, A., Picot, A., Schrape, K., Burgelman, J.-C., Silverstone, R. (Editors), E-Merging Media - Kommuniaktion und Medienwirtschaft der Zukunft, Springer-Verlag, Berlin, in German.
- McQueen, J.B., (1991): "Some Methods of Classification and Analysis of Multivariate Observations", in Le Cam, L.M., Neyman, J., (Editors), Proc. 5th Berkeley Symposium on Mathematical Statistics and Probability, Univ. of California Press, Berkeley / Los Angeles, pp. 281 - 297.
- Natter, M., Mild, A., (2003): An Interactive New Product Development Tool for the Analysis and Evaluation of Market Research Data, Journal of Targeting, Measurement and Analysis for Marketing, Vol. 12, No. 1, pp. 43 - 52.
- Silberer, G., Wohlfahrt, J., Wilhelm, T. (2001): "Mobile Commerce. Grundlagen, Geschäftsmodelle, Erfolgsfaktoren", Gabler Verlag, Wiesbaden, in German.
- Walden, P., (2005): "Mobile Value Services", contribution to the panel session at the 18th Bled eConference 2005, Bled, Slovenia, 2005.
- Wiesbauer, B., (2004): "Analysis of Expert Opinions on the Situation and Future Trends of Mobile Commerce", University of Vienna & EC3, Research Report, Vienna, in German.

- Wörther, G., (2004): „Mobile Business: Erfolgsfaktoren aus Kundennutzensicht für 2,5 G und 3 G Services im B2C Bereich unter Berücksichtigung der aktuellen Lage am österreichischen Mobilfunkmarkt“, EC3 Research Report, in German.
- Wörther, G., (2004): „Erfolgsfaktoren im m-Commerce und Ausblick auf zu erwartende Entwicklungen“, Presentation at the Infolaw Forum, WU Wien.
- Wörther, G., Liska, M., Löcker, B., (2004): „Studie und Pilotdemonstration zu intermodalen / interoperablen Reiseinformationstechnologien, Projektbeschreibung“, Open SPIRIT project report, mostly in German.
- Zobel, J., (2001): Mobile Business und M-Commerce – die Märkte der Zukunft erobern, Carl Hanser Verlag, München, in German.