Customer reaction to service elimination

Ph.D. Thesis proposal

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1 INTRODUCTION

Service elimination is a potential tool of portfolio renewal, as it enables to unlock resources of service firms and thus, accelerate the launch of new portfolios. Due to the short life-cycles of services, services might get accumulated in the system of firms very quickly that requires the management of a relatively big service portfolio. In today’s fast-paced economy service elimination is seen as a requirement for business competitiveness, because through the simplification of business portfolio, both customer and firm value could be increased.

Service elimination requires systematic planning and execution to retain customers. However, service providers struggle with finding the best way to minimize customer churn following SE, due to both strategic issues and limited information about this process.

Despite the managerial relevance, service elimination is rather neglected in the literature, as from the 80s onwards practice mostly focused on service development that was a driver of research as well in the service development field. This resulted in usually very complex service portfolios, which should be simplified by eliminating existing services and thus reducing maintenance and portfolio performance management challenges. This makes service elimination a possible area of new discoveries.

Due to both academic and practical relevance, we decided to position our research on customer reaction to service elimination, as the service elimination process itself contains the risk of losing existing customers and revenue. The objective our research is to understand customer reaction following SE that determines the success of service elimination.

As practical relevance comes from churn reduction in case of service elimination with a primary focus of customer satisfaction, there are basically three directions of literature: SE, SE-related theories (product elimination, justice theory, social exchange theory) and customer reaction to SE (satisfaction, loyalty, commitment, WOM and complaining). We intend to combine service elimination with customer retention strategies to see the differences between service elimination and a normal retention case.

Our research focuses on the relationship between service elimination and customer reaction to service elimination. As this is a complex issue, we have combined qualitative (Study 1 and Study 4) and quantitative methodology to answer the research questions, because it suits the best the two highlighted areas of our research: 1. the causes and process of service elimination (Study 1); and 2. success-factors of service elimination, with strong emphasis of reduced customer churn rate (Study 2-4.). In the quantitative phase in order to
assess carefully both the firm and customer aspect, we applied consumer survey (Study 2) and database modeling (Study 3).

After the literature review research questions and methodology will be presented followed by pilot study results. We conclude the thesis proposal with summary of research, timing, expected contribution and managerial implications.

2 LITERATURE REVIEW

In the literature review, the main concepts are introduced in three areas: service elimination, service elimination-related theories and customer reaction to service elimination.

2.1 SERVICE ELIMINATION

Service elimination (SE) is considered an action by service firms that involves both the closing and the elimination of existing service(s). Elimination requires existing customers to migrate to new service packages, which can result in forced migration. In the case of closing however, the service package remains available for existing customers, but is not open to new ones (Gounaris et al. (2006)).

The importance of the topic of SE can be underlined from two main aspects:
1. There are gaps in academic research in many subfields: our literature review clearly shows the possible research directions, such as post-elimination phase and customer perspective studies;
2. There is a need from companies as well to build a proper SE strategy, as they are currently managed on an ad-hoc basis that involves the risk of customer churn.

SE can be enhanced if brought to strategic level (Harness & Harness, 2012), and from the corporate portfolio management (CPM) perspective there is no adequate method in strategic management research for effectively organizing and managing multi-business portfolios (Nippa, Pidun, & Rubner, 2011). SE combined with CPM could be an adequate tool for successful service innovation.

We found a link between service innovation and SE, as service maintenance is part of new service development (Gustafsson & Johnson, 2003). Furthermore, existing frameworks do not support service innovation in on-going customer relationships, which is resolved by finding alternative service innovation paths (Gremyra & Witell, 2013). SE could be one of these alternative solutions, if managed correctly by the firm.
SE was studied only by a small group of researchers (Argouslidis P., 2007), (Argouslidis & McLean, 2003), (Argouslidis & Baltas, 2007), although the topic has relevant managerial implications as well.

Avlonitis and Argouslidis (2012) provide an overview of the field, from which we focus on the outcome of SE (Table 1). In the literature, product elimination (PE) and service elimination (SE) are often studied together, however there are differences between the two concepts we define later.

<table>
<thead>
<tr>
<th>BROAD TOPICS</th>
<th>FIRM PERSPECTIVE</th>
<th>CUSTOMER PERSPECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MANUFACTURING SECTORS</td>
<td>SERVICE SECTORS</td>
</tr>
<tr>
<td>General description of PE practice</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

1. Pre-elimination decision-making phase

Precipitating circumstances | x |

2. PEDM process

Identification of candidates for elimination | x | x | x |

Analysis and revitalization/modification | x | x | x |

Evaluation and decision-reaching | x | x | x | x |

Implementation | x | x | x | x |

3. Post-elimination phase

Performance outcomes | x |

Success factors | x | x |

4. Organizational and structural issues

Participation | x | x | x |

Decision-making structure (i.e. formalization) | x | x | x |

Decision speed | x | x |

5. Ethical aspects | x |

6. PE and the PLC concept | x |

7. Typologies of PE decisions | x |

8. Historical, regulatory and economic aspects of product exits | x | x | x |

9. Consumers' reaction to PE's | x | x |

Table 1.: Summary of SE literature (Avlonitis & Argouslidis, 2012)
From the SE literature review, it is clear that the pre-elimination decision-making phase and the PE/SE decision-making process are covered; what remains relatively unstudied is the post-elimination phase. This research is positioned as post-elimination consumer research, a significant gap in the extant literature, as it is seen on Table 1.: the authors list all the areas ever studied within SE based on two perspectives: firm and customer perspective. There are three phases of the SE process itself: 1. the pre-elimination phase deals with the causes; 2. the PEDM process determines the attributes of the elimination process; 3. and the post-elimination phase focuses on the result of the SE. Performance outcomes are only studied in manufacturing sectors and success factors in financial service sector and multi-sector studies. Surprisingly there is no customer perspective analysis in the service area combined with post-elimination phase, especially success-factors.

The literature review showed that the methodology of the studies is mostly a mixed qualitative-quantitative type. Argouslidis et al. (Argouslidis & McLean, 2003) used the combination of qualitative and quantitative research: in-depth interviews and mail survey. The article presents qualitative and quantitative empirical evidence on a) the way in which British financial institutions analyse the deviant performance of financial services, which have been identified as candidates for elimination and b) the remedial actions that they consider in order to restore a deviant performance, when possible and feasible. His later studies in the financial sector (Kent & Argouslidis, 2005), (Argouslidis P. , 2007) applied similar methodology, exploring formalization in financial institutions’ product line pruning decisions, and maintaining a link between SE decision-making and structural characteristics of organizational decision-making. SE decision and implementation is also key in the work of Avlonitis (Gounaris, Avlonitis, & Papastathopoulou, 2006).

We follow this structure by investigating causes and actions to improve the outcome of SE, with an additional database modeling in the quantitative phase.

To our knowledge SE studies are focusing on financial services (Argouslidis & McLean, 2003; Argouslidis P. , 2007; Argouslidis & Baltas, 2007). Within the post-elimination phase of SE, the role of strategic decision and company type were highlighted as determinants of SE success (Harness & Marr, 2004; Gounaris, Avlonitis, & Papastathopoulou, 2006). This is in accordance with our choice of telecommunications as a field of study: company type may account for differences in SE, which cannot be captured by studies only focusing on financial sector, including some multi-sector studies.
Based on the literature review, we formulate the definition of SE that is used in the research: service elimination is a process, when a service firm eliminates its existing services by migrating existing customers to new service packages. Although service closing still enables to keep existing subscription for existing customers, and it is only closed from new customers, service elimination requires the closing for both new and existing customers. Regarding the type of elimination, there are various possible forms both in terms of the execution of elimination (immediate drop, replacement, harvesting etc.) and timing (voluntary or forced).

One important implication of the SE literature review is that the pre-elimination and process phase are basically covered, what remains relatively unstudied is the post-elimination phase. Second is the customer side, which is rather neglected. We position our research to these areas, because SE may have many potential outputs affecting customers that influence customer retention, satisfaction and loyalty, which enables the discovery of new findings in the field.

So our conclusion is that the understanding of customer side might be able to fill the research gap consisting of SE and customer retention combined with customer perspective and thus accelerates portfolio innovation and reduce customer churn in these cases.

2.2 SERVICE ELIMINATION-RELATED THEORIES

In order to understand SE more, we review a few SE-related theories that are relevant in for our research objectives. First, product elimination (PE) is described, because although SE and PE are different concepts, they have some common attributes that can be used in our research. Second, justice theory- a widely used theory in services marketing- is used to assess customer reaction to SE. Third, economic and psychological costs are introduced, which are primarily rooted in social exchange theory.

2.2.1 PRODUCT ELIMINATION

Product elimination (PE) is defined as: “(...) the elimination process starts when an organisation identifies a change which questions the viability of keeping a product at market” (Harness & Harness, 2007, p. 198.), which is similar to the SE case in terms of dominant reasons, objective and benefits of elimination.

PE has strategic importance too: “product elimination can generate outcome benefits for the organization in four areas: simplification/concentration of management and sales effort; improved product portfolio performance; customer management related; improved
physical and financial resource management” (Harness & Harness, 2012, p. 56.). Harness et al. (2012) analysed primarily the effects in case of product elimination, but in case of financial services they received similar results. So we see these as shared benefits between PE and SE.

PE involves some challenges for managers, as they are reluctant to take actions due to PE’s effect on loyalty (Homburg, Fürst, & Prigge, 2010). We see it as an existing problem in case of SE as well.

Elimination is usually very different in case of services than products: in terms of service elimination (SE) the company seeks to re-direct its clientele to purchase a different service (replacing the one dropped or already existing) (Gounaris, Avlonitis, & Papastathopoulou, 2006).

The reasons leading to PE might be slightly different: at PE overall poor performance (e.g. sales drop), product management within the portfolio or external factors (e.g. regulations) (Harness & Harness, 2007) or limited shelf space drive the elimination, in case of services however, there might be many other causes for elimination besides these. We see it rather as part of service’s short life-cycles and the requirement of quick new portfolio launch in service industries. This means that SE decision is mainly related to the need of managing demand and leading customers out of the service that is about to be dropped (Harness & Mackay, 1997).

Based on this, we summarize the similarities and differences between SE and PE in a B2C context (Table 2.). The most important similarities are dominant reasons, objective and benefits of elimination, but as our analysis highlights the success of SE, the crucial difference in this sense between SE and PE is that no forced migration is happening in case of PE, because customers do not have a contract, so they can buy a replacement product. This has a direct effect on customer churn, so this aspect cannot be analysed by using common attributes between products and services.

<table>
<thead>
<tr>
<th>Dominant reasons for elimination</th>
<th>Service elimination</th>
<th>Product elimination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>overall poor performance;</td>
<td>overall poor performance;</td>
</tr>
<tr>
<td></td>
<td>service management within the portfolio;</td>
<td>product management within the portfolio;</td>
</tr>
<tr>
<td></td>
<td>short life-cycles;</td>
<td>short life-cycles;</td>
</tr>
<tr>
<td></td>
<td>external factors.</td>
<td>external factors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>limited shelf space in retail.</td>
</tr>
<tr>
<td>Objective of elimination</td>
<td>re-directing clientele to a new service/product</td>
<td></td>
</tr>
<tr>
<td>Notification of customer</td>
<td>direct communication with customer</td>
<td>limited/lack of communication with customer</td>
</tr>
<tr>
<td>The effect of elimination on storage costs</td>
<td>not relevant</td>
<td>storage costs might decrease</td>
</tr>
</tbody>
</table>
The effect of elimination on maintenance costs might decrease. Training is required. The result of elimination is either normal or forced migration, with a replacement product. The benefits of elimination include:

- Simplification/concentration of management and sales effort;
- Improved product/service portfolio performance;
- Customer management related benefits;
- Improved physical and financial resource management.

<table>
<thead>
<tr>
<th>The effect of elimination on maintenance costs</th>
<th>System maintenance costs might decrease</th>
<th>Maintenance costs might decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>required</td>
<td></td>
</tr>
<tr>
<td>Result of elimination</td>
<td>normal or forced migration</td>
<td>replacement product</td>
</tr>
<tr>
<td>Benefits of elimination</td>
<td>– simplification/concentration of management and sales effort;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– improved product/service portfolio performance;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– customer management related benefits;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– improved physical and financial resource management.</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.: Similarities and differences between SE and PE

2.2.2 Justice Theory

Justice theory is a relevant service marketing concept in our research, which was mostly applied in the case of service recovery (Andreasen, 2001; Wirtz & Mattila, 2004), which is seen as a tool for customer loyalty. Boshoff et al. (2000) define service recovery as follows: “Efforts made by the firm to return aggrieved customers to a state of satisfaction following a service failure” (Boshoff & Allen, 2000, p. 63.). Although SE is not a service failure, but very similarly, it can involve a negative customer attitude and complaints that might lead to customer churn, if SE is not handled adequately.

To assess the effect of SE, the three types of fairness in justice theory are relevant: distributive, procedural and interactional fairness. Distributive justice refers to the outcome, while procedural justice is the sum of processes, policies and rules (Smith, Bolton, & Wagner, 1999). Interactional fairness includes apology, perceived helpfulness, courtesy and empathy of the service staff (Wirtz & Mattila, 2004).

In the following part we summarize the main findings about the application of justice theory in the field of service failures and then highlight their relevance in terms of SE.

One relevant research issue concerns the combination of service recovery tools. Based on Wirtz and Mattila’s results (2004), compensation is not always required due to procedural and interactional justice: in case of service failures an immediate recovery and apology makes the compensation unnecessary, however compensation has no impact, when customer perceives procedural and interactional injustice during the process.

Compensation only had an influence on customer satisfaction, when either an immediate recovery happened without apology or a delayed reaction with apology. This means that an immediate recovery with an apology without compensation might be the most satisfying and cost effective solution for companies.
According to justice theory, we can differentiate between customer perception regarding moral principles (what should have happened) and how it would have felt in terms of distributive, procedural and interactional justice (McColl-Kennedy & Sparks, 2003).

The use of service recovery tools and the underlying justice theory contribute to the understanding of customers’ complaining behaviour, which is also a potential consequence in the case of SE and might affect churn. Overall we can conclude that the understanding of service recovery and justice theory helps us to get a better insight into the way (fairness) SE elimination is implemented and the reasons why it may have a positive or negative attitudes on customers.

Justice theory is linked to social exchange theory which is the focus of the next chapter.

2.2.3 **SOCIAL EXCHANGE THEORY**

Homans defines social exchange (1958) as “an exchange of goods, material goods but also non-material ones, such as the symbols of approval or prestige” (Homans, 1958, p. 606.). Blau (1964) adds that it “involves favors that create diffuse future obligations (...) and the nature of the return cannot be bargained” and “only social exchange tends to engender feelings of personal obligations, gratitude, and trust; purely economic exchange as such does not” (Blau, 1964, p. 93-94.).

These explain that in social exchange psychological costs are also present besides economic costs, and the way they are affecting customer retention. We use these to measure the effect of SE on customers. Social exchange might also help to understand, what are the mediating variables between procedural and interactional justice on customer reaction (Masterson, Lewis, Goldman, & Taylor, 2000). In case of SE social exchange refers to the relationship between the service provider and customer.

According to Homburg *et al.* (2010, p. 531), “eliminating a product may result in severe economic and psychological costs to customers, thereby seriously decreasing customer satisfaction and loyalty.”

Psychological cost is perceived as the cost stemming from social exchange (e.g. staff-customer relations) that appears over the course of time and the uncertainty/risk of the unused brand, because the customer perceives high risk regarding a brand they have never used (Sharma & Patterson, 2000). Risk exists especially in services, where customers prefer a rival service provider, because service quality cannot be evaluated before purchasing (Sharma, Patterson, Cicic, & Dawes, 1997). The concept of psychological costs have relevance in SE case, when due to SE, customer is exposed to evaluate the competitor’s offer. This uncertainty
about the migration decision involves a service evaluation risk for the customer and the risk of churn for the company.

_Economic cost “reflects the degree of a customer’s perceived economic burden and expenditures due to the product elimination”_ (Homburg, Fürst, & Prigge, 2010, p. 533.)

Foa and Foa (1974; 1980) describe the difference between economic and psychological costs as follows: economic costs and benefits are the ‘hard factors’ of an exchange, psychological costs and benefits represent the ‘soft factors’, such as reliability, flexibility, and cooperativeness.

The relationship between service elimination and customer satisfaction also affects customer retention: “psychological costs of the elimination reflect the degree to which the customer becomes uncertain about the eliminating company owing to the product elimination, as the elimination can raise customer doubts about the wisdom of engaging in a business relationship with this company” (Homburg, Fürst, & Prigge, 2010, p. 533.).

_Switching cost_ is the sum of economic, psychological, and physical costs (Jackson, 1985). The economic or financial switching cost is a sunk cost which appears when the customer changes their brand, for example the costs of closing an account with an operator and opening another with a competitor (Klemperer, 1987).

Economic and psychological costs are related to the concept of switching costs, which include not only those costs that can be measured in monetary terms, but also the psychological effect of becoming a customer of a new firm, and the time and effort involved in buying a new brand (Klemperer, 1995; Kim, Kliger, & Vale, 2003). In this sense, SE might make customers to get involved in a situation like this: in case of the new offer is not acceptable for him/her, the customer should consider other alternatives by competitors, where switching costs influence this decision.

Social exchange theory gives the foundation of SE-related costs for the customer that significantly influences the final outcome of SE. In this way, social exchange theory helps to understand customer reaction following SE.

### 2.3 Customer Reaction to Service Elimination

_Customer reaction_ involves many concepts that primarily affect the outcome of SE and thus are relevant in our research. These concepts include satisfaction, loyalty, commitment, WOM and complaining. Complaining behaviour is a potential reaction of SE, so it is an important customer reaction that needs to be considered. The importance of those constructs for our study can be underlined by the fact that they have an impact on customer retention. In
the following section first we discuss churn as a measurement of customer retention. It is followed by the description of satisfaction, loyalty, commitment and WOM with a special focus on their relation to customer retention.

Churn is an operational measurement of customer retention (Gustafsson, Johnson, & Roos, 2005). In the wireless telecommunications service industry, customer churn is used to denote the customer movement from one provider to another; churn management describes an operator’s process to retain profitable customers (Berson, Smith, & Thearling, 2000). We use churn to assess the outcome of SE in Study 2 and Study 3 and thus find connection between customer reaction resulting in churn in case of SE. Churn studies can be categorized as cause of churn, retention, and type of churn (Braun & Schweidel, 2011). Our research focuses on retention.

Risselda studies the evolution of churn prediction models (Risselada, Verhoef, & Bijmolt, 2010) that is important to us, because we have found that one KPI of measuring the success of SE is the reduced churn rate. That is why we intend to combine churn and SE, which is usually not adapted to measure the effect of SE on customers. We have chosen churn, because it is a frequent KPI in service industries to determine the satisfaction of customers with the current service. SE is very specific in this case: the elimination process means forced migration in most cases, which changes the behavior of the customers. As a consequence, churn is a key issue in the context of telecommunication.

Kamakura and his colleagues draw the attention on the importance of methodology, it can cause significant differences in the profitability of churn management campaigns and in performance, when using a variety of modeling approaches (Neslin, Gupta, Kamakura, Lu, & Charlotte H., 2006). This means that although we intend to explore what can lead to a successful SE, the choice of methodology can result in entirely different findings. That is why we use both customer survey and database modeling (Study 2 and Study 3).

Our quantitative approach of modeling churn is linked to the analytical CRM (customer relationship management), which is the process of collecting and analysing a firm’s information regarding customer interactions in order to enhance the customers’ values to the firm (Kamakura, et al., 2005). They further add that CRM can be organized along the customer lifecycle, including customer acquisition, development and retention strategies. A successfully planned and executed SE can be part of the retention strategy within CRM.

Among these categories our research is a retention strategy, which aims to reduce churn in case of SE. The problems perceived during our pilot study (e.g. frustrated customers
affected in SE) might be due to a wrong categorisation of SE at the operators, it needs to be further investigated whether SE is treated indeed more as a customer lifecycle issue rather than retention.

Knox measures the likelihood of churn by measuring the effects of prior complaints, prior purchase and complaint recovery (Knox & Oest, 2014). They find that the number of prior complaints increase the probability of churn, whereas complaint recovery leads to less churn. The surprising fact is however that the effect of purchase reducing churn is much higher (315 days) than the effect of complaints (8 days) (Knox & Oest, 2014, p. 48.). This means that if the customer does not leave after the first complaint, he/she is expected to stay with the company.

So based on the churn literature, SE can be viewed as a situational factor that modifies customer satisfaction and engagement, which has an impact on customer retention strategy. Thus the models determining normal customer churn rate (Rust, Simester, Brodie, & Nilikant, 1995) (Ho & Zheng, 2003) (Kamakura, et al., 2005), (Prince & Greenstein, November 2011) (Kumar & Petersen, 2012)) needs to be modified in order to assess the effect of SE. In the SE and churn literature we see a huge potential in adding these results that might help to reveal the aspects that make churn modeling different in case of SE.

Among customer reaction, other related concepts are introduced, such as satisfaction, loyalty, commitment and WOM, because they also have an effect on customer retention. In order to enhance the post-elimination phase of SE, these relevant concepts need to be investigated. We now explain the main differences between them.

Customer satisfaction is defined as a customer’s overall evaluation of the performance of an offering to date (Johnson & Fornell, 1991). This overall satisfaction has a strong positive effect on customer loyalty intentions across a wide range of product and service categories, including telecommunications services (Fornell, 1992; Fornell, Johnson, Anderson, Jaesung, & Bryant, 1996).

Commitment is usually defined as the extent to which an exchange partner desires to continue a valued relationship (Moorman, Zaltman, & Deshpandé, 1992). The distinction between affective and calculative commitment lies in the fact that they are the drivers of loyalty: affective commitment, as created through personal interaction, reciprocity and trust; and calculative commitment, as created through switching costs (Bendapudi & Berry, 1997) (Fullerton, 2003) (Garbarino & Johnson, 1999) (Morgan & Hunt, 1994). The difference between commitment and satisfaction is that affective commitment is forward looking, while
satisfaction is a retrospective evaluation (Verhoef, 2003). In terms of our research it means that commitment drives customer retention.

Regarding the relationship between customer retention, satisfaction and commitment, many publications point out that satisfaction is a prerequisite of customer retention, Kotler states that “The key to customer retention is customer satisfaction” (Kotler, 1994). Gustafsson et al. (2005) defines the three main factors of retention as composed of overall customer satisfaction, affective commitment and calculative commitment and similarly to Kotler, they see customer satisfaction as the driver of customer retention. They also used scales for measuring satisfaction, calculative and affective commitment and investigate the relationship between customer satisfaction on commitment and customer retention.

Hennig constructs a conceptual model between customer satisfaction and customer retention: customer satisfaction has an effect on immediate quality, which is the immediate antecedent of customer retention (Hennig-Thurau & Klee, 1997). They further define the overall quality perception, as an antecedent of both commitment and trust, where commitment is the target variable.

Rust investigated what are the factors which determine retention (Rust & Zahorik, 1993) using combined qualitative and quantitative measurement techniques, e.g. logit and factor analysis. They build a mathematical framework based on the defensive marketing view of market share (Fornell & Wernerfelt, 1987). The main result is that the retention rate is the most important component of market share and it is driven by customer satisfaction. This highlights also importance of these concepts for managers, as they are directly linked with market share and the connection between satisfaction and retention.

Dick et al. (1994) define loyalty as “the relationship between the relative attitude toward an entity (brand/service/store/vendor), and patronage behaviour” (Dick & Basu, 1994, p. 100.). The linkage between loyalty and satisfaction is often studied, and although there are many contradictory views, it is still supported that customer satisfaction has an influence on loyalty (Fornell, Johnson, Anderson, Jaesung, & Bryant, 1996).

Bolton studied the linkage between loyalty and retention in the financial sector, also with database analysis using logistic and tobit regression (Bolton, Kannan, & Bramlett, 2000). Dependent variable is a stay decision (similar to churn), with predictor variables related to satisfaction and loyalty. They conclude that loyalty programs do not have an effect on customer retention per se, but together with other interactional variables, such as comparing the company’s offers to the competition. So the main effect of loyalty program lies in the fact
that customers in loyalty programs are less sensitive to losses from the overall price advantages compared to competition. In our analysis this means that loyalty programs would probably lower economic and psychological costs.

Verhoef found that affective commitment and loyalty program have significant positive effect on customer retention, while the positive effect of satisfaction on customer retention could not be proved empirically (Verhoef, 2003). So the relationship between satisfaction and customer retention are much debated due to different empirical results.

Aksoy et al. measure the relationship between overall satisfaction and loyalty intentions of mobile telecommunications customers (Aksoy, Buoye, Aksoy, Lariviére, & Keiningham, 2013). They found that satisfaction is an important predictor of recommendation/repurchase.

Regarding word of mouth (WOM) Anderson (1998) measures the effect of customer satisfaction on loyalty and WOM. They used a utility-model of WOM and data from Sweden and the USA. The results show an asymmetric U-shape figure: the highly dissatisfied customers engage in higher WOM than highly satisfied ones, but these are the highest values. They also found that negative communication has greater effect on WOM than positive communication. They suggest that it would be important to understand the differences across product and service categories. Regarding this, our research contributes to the analysis of the effect of service elimination on WOM in relation of satisfaction in the telecommunication sector.

3 RESEARCH QUESTIONS AND METHODOLOGY

After discussing main concepts related to our research and gaps in the literature, we explain the rationale behind our conceptual framework, research questions and field of study followed by hypotheses and research methodology that consists of four studies.

3.1 CONCEPTUAL FRAMEWORK

Based on the literature review we propose a conceptual framework of SE, which could be used as the basis of research methodology formulation (Figure 1). The literature review concluded that SE has three main phases: causes, process indicators and consequences of SE.

We use a broader conceptual framework to have an overview of the antecedents, process and impact of SE. Antecedents of SE include causes (e.g. sales drop, low margin rates, new product portfolio launch, shorter service life-cycles), and triggers (e.g. technology, global trends). Antecedents affect SE characteristics (e.g. SE process, strategic level SE, customer handling, economic and psychological costs) that have an impact on both customer (churn,
satisfaction, loyalty, affective and calculative commitment, WOM, complaining) and firm (customer management, maintenance and development costs, management and sales effort, resource management, service portfolio performance). Barriers (e.g. legislative environment, government regulations, refurbishment of out-dated services, long-term contracts) moderate the relationship between antecedents of SE and SE characteristics.

Impact on customers and firm have a key role in SE research, because these are the areas, where the success of SE can be measured. In our research we focus on the impact on customers.

Figure 1: Conceptual Framework of SE

3.2 **RESEARCH QUESTIONS**

Based on the literature review and practical relevance we have formulated the following research questions:

1. What are the main reasons for SE at the strategy level?
2. What are the organizational factors affecting SE decisions?
3. What are the factors that influence the success of SE?
4. What are the challenges of SE from a managerial perspective?
5. What is the relationship between perceived costs of SE (economic, psychological cost and compensation) and churn, satisfaction, loyalty, commitment and WOM from the customer’s perspective?

5.1. What are the factors that influence the relationship between SE and churn?
5.2. Is churn higher in case of SE compared to normal churn rates?
5.3. Does psychological cost have an effect on churn in case of SE?
5.4. Does economic cost have an effect on churn in case of SE?
5.5. Does compensation have an effect on churn in case of SE?
5.6. How could churn be reduced in case of SE?

6. In what characteristics are customers different regarding their churn status after SE?
7. How do company activities, customer behavior and usage influence the customer’s churn status after SE?
8. How are customers affected by SE that drives their post-elimination behaviour?

As each of the research questions requires different methodology, we designed our research accordingly:

- Research Question 1-4: qualitative methodology (Study 1);
- Research Question 5: quantitative methodology- experimental design based on scenarios using customer survey (Study 2);
- Research Question 6-7: combined quantitative methodology- database analysis: general linear model and econometrics (Kernel matching) (Study 3);
- Research Question 8: content analysis of retention calls (Study 4.).

3.3 FIELD OF STUDY: TELECOMMUNICATIONS

We use the telecommunications industry as a field of study for our research, because the practical relevance of the topic: on the one hand, telecommunication operators have difficulties finding the most suitable SE strategies without losing existing customers and revenue, on the other hand, it is a challenging decision for customers that affects their everyday life. Second, short life-cycles of services in telecommunications make SE a more common practice than before. We see it as an important issue, and with the large customer databases of companies, the process and its outcome could be significantly enhanced. So telecommunications industry is suitable for SE analysis, it is ideal to understand the special characteristics of services during elimination. So knowledge gained from financial services sector and some multi-sector studies could be broadened.
Based on the Hungarian telecommunications market, the trend is clear: voice subscriptions are strongly declining (Analysis Mason, 2014) with basically constant market shares by the three operators (T-Mobile, Telenor and Vodafone).

What regards churn in the Hungarian market (not in SE situations, but normally), NMIA publishes (National Media and Infocommuncations Authority (NMIA), 2013) several results. It is quite surprising that the pre-post migration is very low, only 2%. 5% of the clients terminated his/her subscription, 4% changed, because another operator’s offer was better. What regards client migration, the ratio of new entrants is very low (1%), migration is rather typical of those, who have already a subscription, but the vast majority does not migrate. This also signals that SE-related churn cannot be assessed based on churn models used in normal situations, because they might not include all relevant factors in terms of customer reaction that determine the final outcome of SE.

These trends show the difficulty of acquiring new clients, which is possible only if operators convince clients to change their current operator or strengthen retention strategies more, which latter has an increased value under these market conditions. Therefore, it is important to examine consumer preferences as accurately as possible to make SE an effective tool of retention, noting that operators should no longer focus only on acquisition, but more on retention.

So we believe that even in an oligopolistic market, as in Hungary, because of the declining voice trends and stagnating market shares, operators have to create new types of portfolios, in which the role of SE will be key: SE is the prerequisite of portfolio innovation, which means that eliminating services enables the redesign of the whole service portfolio, although it is a neglected area in practice.

3.4 HYPOTHESES AND RESEARCH METHODS

Based on the literature review and conceptual framework, we implemented four studies to answer the research questions and test hypotheses, which will be presented in detail in the following sections.

3.4.1 STUDY 1: QUALITATIVE RESEARCH

On the Hungarian telecommunications sector, the competition is very though on the basically stagnating market, the total rearrangement of current portfolio might be the only solution for increasing sales and revenue. The revenue share of data is around 25% (Analysis Mason, 2014), and it is expected to increase in the next few years dramatically.
Telecommunication operators cannot introduce new solutions, until capacity is locked for supporting out-of-date tariff plans. Therefore, SE has a central role in reaching new sales targets of the operators.

The aim of Study 1 is to analyze SE strategies, through the example of the telecommunication industry, because it is ideal to understand the special characteristics of services during elimination. So Study 1 focuses on the causes and process of SE, from the firm perspective. We want to want to investigate the main causes of SE at a strategy level with qualitative interviews. The qualitative research is suitable to understand causes, process and the output of SE. We aim to reveal main concepts, problems during the process, which helps to develop the success of SE.

Before the primary research of Study 1, we constructed a secondary research phase with the aim of analysing internal company data of the telecommunications operator, including documents describing the SE process.

The primary analysis of the qualitative research is an in-depth interview technique with semi-structured questionnaires. The reason for our choice is that we want to ask certain questions to discover the mechanisms here, but it is important to keep it wider than a questionnaire, because it might turn out during the interviews that there are new directions brought up by the respondents, which are worth to ask in more detail.

Study 1 was carried out in January 2014 at Hungarian telecommunications operator including 3 in-depth interviews with managers as interviewees, who have been involved in one of the biggest tariff simplification project of the company in 2012-2013 (guidelines are in the 7.1 exhibit).

In Study 1, we focus on Research Question 1-4:

1. What are the main reasons for SE at the strategy level?
2. What are the organizational factors affecting SE decisions?
3. What are the factors that influence the success of SE?
4. What are the challenges of SE from a managerial perspective?

We now turn our attention to Study 1, which intended to get first-hand information from Hungarian telecommunications operator about their last bigger SE project in 2012-2013. As we have shown in the Conceptual Framework, we were first interested in the causes and process of SE (see Figure 1.).
There were not many publically available sources for investigating SE in a telecommunications environment, so the interviews provided the first possibility for us to gain insights about the whole SE process at the company.

Our first interviewee was a Portfolio Manager at a Hungarian telecommunications operator, who is organizing regular governance meetings, required to approve a new portfolio. There are detailed processes behind a new service portfolio launch, and the decision committee consists of Head ofs, and in the last round the GMT (General Management Team) approves or rejects the proposal.

So we were first interested whether there is a similar process behind SE. It turned out that SE is treated on an ad-hoc basis and there is no such management forum to decide about the eliminated tariffs.

“*The decision about the elimination is usually made by one person*”

“*We needed to launch the tariff simplification project mainly because the offer [tariff in the billing systems] testing and the maintenance is very costly, we have about 2500 offers currently*”

“*The customer might decide to terminate the subscription if we ask his/her tariff preferences after elimination*”

*(Portfolio Manager at Hungarian telecommunications operator)*

He suggested some research directions for us: the ARPU [average revenue per user] change is not calculated between the original tariff and the tariff after migration; churn is very high that should not be accepted even in case of SE; goals are not clearly defined during the SE process. We involved these suggestions in our further research plans.

Another issue came up, when we started to talk about the process behind the elimination: the current model –which aimed to determine the most suitable service package for the customer after elimination- had an 11% success ratio only. 11% means that 11 customer out of 100 migrated to the service package predicted by the model.

The model in this project used the following dependent variables, which could be extended in our churn model by taking additional explanatory variables (see. 3.5.3. Chapter): Monthly fee + offer monthly fees – discounts + (traffic- traffic allowances- offer allowances) + paid amounts.
To better understand the exact problem here, we decided to make a second interview with a CVM [customer value management] Planning and Commercial Manager at the company, who prepared the tariff migration model during the project.

He also emphasized that the main causes of the elimination were due to cost and maintenance of the existing offers in the billing system. What regards the causes of SE, he had very straightforward answers, similar to our previous interviewee.

“The tariff simulation model created the pricing of all available tariffs based on the calling habits of the customers”

“The 11% success ratio is due to the low response rates in the communication part of the elimination process: telesales can reach ca. 60% of customers affected, where we had an unexpectedly high response rate of 20-30%. The rest of the customers is contacted by DM letters, where there was only a 2% success rate.”

“The eliminated tariff is usually old, so there is no business rationale to keep it; there are very few subscribers; based on the tariff profitability calculations the margin is very low; or in most cases there is a new portfolio to be launched.”

(CVM Planning and Commercial Manager, Hungarian telecommunications operator)

He mentioned also that segmentation needs to be used among customers, because according to their life-cycles very different tools might be required in the case of SE: the most dangerous segment is in this sense those customers still within the 2 years contract, because with the eliminated tariff they do not have to pay penalty for terminating the contract. Those customers already out-of contract have lower probability of churn. We use the tenure variable in Study 3 to differentiate between these customers.

He gave us suggestions in terms of the model: a potential development direction could be to build the migration model on usage instead of revenue, because out-of bundle usage was usually higher than the in-bundle usage (customers were spending more on average than the usage included in their tariff plans). In Study 3 we have usage data as well to predict churn status.

He also helped us to better understand the quantitative model: the 11% success ratio is not due to modeling issues, because the model determined the most suitable new tariff after elimination within a 5% confidence interval, but nonetheless, the customer decided to leave. This was an important message for us that we should focus on the customer questionnaire within the quantitative part of our research (Study 2), besides the churn model.
The questions about the process itself highlighted important problems: there remained many customers, who could not be reached by the company. They had to be forced migrated to the basic tariff (which has very unfavourable conditions, high price per minute prices and high monthly fee), where the churn was around 20-30%. This also calls for the attention of churn reduction following SE.

We were interested in the process issues more, so we organized the third interview with the CVM SOHO Manager at the company. She talked about the process in detail, which shed light on the causes of the high churn rates:

“The customer first receives a notification letter, 60 days before the elimination. If the customer has not replied, he/she gets automatically migrated to the base tariff after 60 days. This involves huge number of complaint handling, because we have to verify that they did not receive the notification at least two times, or that the recommended tariff was not good.”

(CVM-SOHO Manager, Hungarian telecommunications operator)

It was clear from our conversation that the customer is very frustrated during the whole SE process. Posting service is probably not the best method to notify the affected customers, because they recognize the problem only after the forced migration (receiving significantly higher invoices), which results in immediate churn. This means that we have to think about changing the communication tools usage as well during the process. Further, SE needs to be properly assessed as a retention strategy and not handled as a normal lifecycle event.

Study 1 showed that there is a need from practice to reduce customer churn in case of SE, which requires SE processes to be better adapted to customer’s needs and an improved model of determining the customer’s suggested service package after elimination.

So Study 1 has three main implications:

- Success-factors of SE are relevant to study from a managerial perspective;
- Within success-factors, there is a need from practice to design a better model for determining the customer’s new service package that is leading to decreased customer churn;
- SE process needs to be better adapted to customer’s needs and treated more as part of retention in order to reduce customer churn.

As Study 1 highlighted, the topic is relevant for further analysis, especially regarding customer retention and churn. We planned Study 2 and Study 3 accordingly.
Study 1 is limited in a sense that it consisted of only three in-depth interviews at one Hungarian telecommunications operator, which could be extended with more insights from other operators. However we managed to get insights on causes and process of SE that we built in Study 2 and Study 3.

3.4.2 STUDY 2: EXPERIMENTAL DESIGN

The objective of this study is to get a better understanding of consumer reaction following SE in a telecommunications context. It investigates the impact of economic and psychological costs on consumer reaction. As existing literature has not yet linked economic and psychological costs with SE in a business-to-consumer context, this study fills a significant gap in the literature.

The economic costs of elimination reflect the financial loss or expenditure the customer faces following SE (Homburg et al., 2010). With the increased financial burden, the customer is more likely to churn, be less satisfied with the service provider, and find less value in maintaining a relationship with them.

In Study 2, we focus on Research Question 5 and its supplementary research questions:

5. What is the relationship between perceived costs of SE (economic, psychological cost and compensation) and churn, satisfaction, loyalty, commitment and WOM from the customer’s perspective?
   5.1. What are the factors that influence the relationship between SE and churn?
   5.2. Is churn higher in case of SE compared to normal churn rates?
   5.3. Does psychological cost have an effect on churn in case of SE?
   5.4. Does economic cost have an effect on churn in case of SE?
   5.5. Does compensation have an effect on churn in case of SE?
   5.6. How could churn be reduced in case of SE?

On the theoretical bases of economic cost, customer retention, satisfaction, and commitment literature, the following is expected:

H1: Economic cost increases churn, WOM and complaining, and decreases satisfaction, loyalty, affective and calculative commitment.

Psychological cost refers to the reliability, flexibility, and cooperativeness of the company during SE (Foa & Foa, 1974; Foa & Foa, 1980) and reflects the degree to which the
customer becomes uncertain about the eliminating company and has doubts about the wisdom of staying with them (Homburg, Fürst, & Prigge, 2010). Psychological costs represent an unpleasant inner state which in turn may lead to a decrease in trust. Thus psychological cost is expected to increase intention to churn, and decrease satisfaction and commitment.

On the theoretical bases of psychological cost, customer retention, satisfaction, and commitment literature, the following is expected:

\textit{H2: Psychological cost increases churn, WOM and complaining, and decreases satisfaction, loyalty, affective and calculative commitment.}

Based on the literature review of the role of prior complaints, prior purchase and complaint recovery in churn prediction (Knox & Oest, 2014), we assume that the number of complaints increases the probability of churn, which could be reduced by applying compensation. So the following is expected:

\textit{H3: Compensation decreases churn and complaining, and increases satisfaction, loyalty, affective and calculative commitment and WOM}

Customer perception of economic cost could also be altered by psychological costs. “Hard factors” could be modified by the service provider with the use of appropriate “soft factors” (Foa & Foa, 1974; Foa & Foa, 1980), through psychological cost effects.

In order to explain the interactions between economic and psychological costs, we rely on the concepts of cognition and affect, which are the focus of several research studies (e.g. Oliver, 1980; LaBarbera & Mazursky, 1983; Oliver & DeSarbo, 1988; Westbrook & Oliver, 1991; Mano & Oliver, 1993).

Kempf’s (1999) study suggests that for functional (vs. hedonic) products, cognitions are more important drivers of product evaluations than affect. We consider telecommunication as a functional service. We also assume that economic costs correspond to the cognitive approach, while psychological costs are rather related to affect. When economic cost is involved, cognition is likely to dominate affect, while in the absence of economic cost, affect will have a stronger impact.

It is therefore expected that:

\textit{H4: There will be interaction effects for economic and psychological costs. In the absence of economic costs, the impact of psychological costs on customer reaction will be stronger than in the presence of economic costs.}
Our aim with the experiment design based on scenarios is to determine the relationship between costs and benefits of SE (economic, psychological costs and compensation) and customer reaction, including churn, the operative KPI of customer retention, as the primary factor to decide, whether the elimination was successful.

The choice regarding experimental design instead of a consumer survey is due to limited access to customer data. Only a small number of customers involved in service package simplification agree to be contacted for marketing purposes, which results in a small sample size. Further, SE is usually not organized systematically and there are limited numbers of such projects available. SE researchers usually combine telecommunications with financial services to obtain a higher number of cases required for quantitative analysis.

Based on the literature review and the exploratory research results we prepare a 2x2x2 between subject experiment based on scenarios, with independent variables of perceived economic cost and perceived psychological cost as proposed by Homburg (Homburg, Fürst, & Prigge, 2010) and compensation, while the dependent variables are churn, satisfaction, loyalty, affective and calculative commitment, WOM and complaining.

Economic cost is incorporated into the scenarios as the cost of the service package for the customer, which is defined as a Dummy variable that takes the value of one if the cost of the offered service package is higher than current service package, and zero if the cost is lower than current one.

As Homburg did not specify the exact measure of psychological cost, we refined the meaning of psychological cost based on social exchange theory in case of our study carried out in a telecommunication context: economic cost means that the service package is better/worse as the current one (which is to be eliminated), and psychological cost refers to the fact of prior notice received by the customer before the elimination. We defined it as whether the SE is expected for the customer, which means that the role of notice will be emphasized here: if the customer gets a prior written and verbal notice about the SE, we expect psychological costs to be lower, and their effect to be marginal. As the written prior notice is a legal requirement as well during the SE process, we add further that psychological cost here refers to the case, when only written notice is received without any verbal clarification received by the customer before the elimination, e.g. through retention call.

In Study 2 and Study 3 we investigate the success-factors of SE: although success can have a variety of meanings, from the combination of customer retention and SE literature we
see that success is preliminary defined as reduced churn rate among customers affected in the SE process, so we follow this definition throughout our research. So we use churn, the operative KPI of customer retention, as the primary factor to decide whether the elimination was successful.

Our qualitative pilot study at a Hungarian telecommunications operator concluded that service elimination is not organized at a strategic level, however the service packages stored in the billing systems have serious costs that need to be cut in order to launch a new portfolio (Somosi & Kolos, 2014). So we see service elimination retention strategies as part of the service portfolio management and customer side needs to be deeply discovered in order to improve the efficiency of the SE process, and thus make it more successful in the end. So in Study 2 and Study 3 we focus on this perspective.

We have chosen a special type of a consumer survey: experimental design based on scenarios, because we wanted to simulate all the effects that might influence customer retention, churn, its operative KPI, its drivers (satisfaction, loyalty and commitment): costs related to (forced) migration to another service package, such as psychological and economic costs.

As we reckon that it is essential to record direct inputs from customers, we decided to do an experimental design. However this does not enable us to analyse historical data of customer reactions in these situations; so we decided to collaborate with one of the Hungarian telecommunications operator to compare real actions during a SE at the company in 2012-2013 based on the company’s database with our results in the experimental design. We are going to present the database analysis in Study 3.

Our choice regarding experimental design instead of a normal consumer survey is due to our information based on this database request: only few of those customers involved in this service package simplification agreed to get in contact due to marketing purposes, so the sample would be very low. On the other hand, as SE is usually not organized systematically, there are a limited number of such projects available in the past. This might explain the rationale of the multi-sector studies in the SE literature: SE researchers usually combine telecommunications with financial services to obtain higher number of cases, ideal for quantitative analysis. To increase the number of respondents, we decided to do an experimental design based on scenarios, and because it is more like a theoretical approach that cannot measure real actions as normal survey, we compare the results from the scenario
analysis with the actual steps taken by customers based on the database received from the Hungarian operator.

Churn is usually linked with complaints (Knox & Oest, 2014), and in case of SE it mostly occurs when they are force migrated to an unfavourable service package. We integrate this into our research, by adding a compensation variable in our experimental design, which gives support for H3.

We now briefly introduce the scales used in the experiment:

- **Churn**: we use churn as a measure for loyalty with Zeithaml’s scales (Zeithaml, Berry, & Parasuraman, 1996).
- **Satisfaction, affective and calculative commitment**: we use Gustafsson’s scales for measuring satisfaction, calculative and affective commitment (Gustafsson, Johnson, & Roos, 2005). We expect a relationship between satisfaction and customer retention, thus churn. What regards satisfaction, according to Aksoy, we expect an effect of satisfaction on NPS (Net Promoter Score, (Reichheld, 2003), what we implemented in our research (Aksoy, Buoye, Aksoy, Larivière, & Keiningham, 2013).
- **Loyalty**: we used the summary of Pamies for valid measures regarding loyalty (Pamies, 2012).
- **WOM**: Regarding word of mouth (WOM) we use Anderson’s scale (Anderson, 1998). Based on his results, we expect WOM to be higher if the customers are not satisfied, which gives the support for H1 and H2 for WOM.

Summarizing the construction of our experimental design, we used the following variables and scenarios in the experiment:

- **Independent variables**: economic cost, psychological cost and compensation
- **Dependent variables**: churn, satisfaction, loyalty, affective and calculative commitment WOM, and complaining

**Description of scenarios (Figure 2.):**

1. Better service package after elimination; customer receives letter and notification by phone without compensation before the elimination
2. Worse service package after elimination; customer receives letter, notification by phone without compensation before the elimination
3. Better service package after elimination; customer receives letter, notification by phone and compensation before the elimination with compensation
4. Worse service package after elimination; customer receives letter, notification by phone and compensation before the elimination
5. Better service package after elimination; customer does not receive notification by phone and compensation before the elimination
6. Worse service package after elimination; customer does not receive notification by phone and compensation before the elimination
7. Better service package after elimination; customer does not receive notification by phone, but is compensated before the elimination
8. Worse service package after elimination; customer does not receive notification by phone, but is compensated before the elimination

3.4.3 **STUDY 3: DATABASE ANALYSIS**

The database analysis will focus on the consequences of SE, and more specifically: the relationship between the success-factors of SE and customer reaction, from which the reduced churn rate is a key issue.

The main aim of the database analysis is to find correlation between churn and service package elements and customer characteristics. As from the literature churn reducing strategies evolve, the use of Dummy variable, churn enables the use of only some marketing research and econometrics methodology.

*In Study 3, we focus on Research Question 6-7:*

6. In what characteristics are customers different regarding their churn status after SE?
7. How do company activities, customer behavior and usage influence the customer’s churn status after SE?
Based on Study 1 with three in-depth interviews carried out during January 2014 at the company, we observed some critical points during the process, which gave the foundation for our hypotheses for Study 3. First, the call of telesales is not a mandatory element in the CVM-based process, there is an option of e-DM as well, which increases the psychological cost (meaning late notice as we used this as a variable in our experimental design in Study 2) of the customer (Figure 10.). This letter raises the uncertainty of the customer, and there is an option of force migration, which is usually unfavourable for the customer. In practice, customers are many times shocked, when they receive the first bill of the force migrated service package, and due to its usually unfavourable conditions compared to their current service package, they immediately end their subscription. We see this part of the process as a factor increasing potential customer churn.

The discrepancies perceived during the qualitative interviews at the company are clearly shown on the process diagram (Figure 3.). The process used in practice contains a risky element: if the customer is notified by an e-DM and is not open to migrate, they are force migrated to the base service package that is a less favourable offer for the customer in most cases causing both economic cost and psychological costs for the customer that might be reduced by compensation (economic and psychological costs and compensation as independent variables in Study 2). As a result, due to forced migration the potential of churn is much higher in these cases.

Figure 3: Process of service elimination

Source: Hungarian telecommunications operator, 2013

We formulate four hypotheses based on our results of the exploratory qualitative interviews at the company in January 2014:

\[ H5: \text{Churn rate during SE is higher than normal churn rate.} \]
H6: Those customers, who are in contract with the service provider for a longer time, have lower churn rates during SE compared to new customers.

H7: If the billing amount of the customer is approximately the same before and after SE, the churn rate during SE will be lower compared to bigger differences in the billing amounts.

H8: If customers contacted more times the call centre, including the initiated and received calls as well, the churn rate during SE will be lower compared to those contacting the call centre fewer times.

Data is available for the biggest tariff simplification project of the company from 2012-2013. The sample is party received from a Hungarian telecommunications operator as part of a research agreement within the company and our university, further modifications of the database is expected by the end of February 2016. The sample includes 25 eliminated service packages in the consumer, and 62 in the SOHO segments (small office-home office), affecting altogether around 13 000 customers, who have been involved in this elimination.

The tariff simplification project consisted of seven main phases, from which data is available for phases 4-6 (Table 3.). Customer activity in phases 4-5 shows high churn rate (Figure 4.).

<table>
<thead>
<tr>
<th>Phase</th>
<th>Focus</th>
<th>Tariffs Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase1</td>
<td>Technical cleaning</td>
<td>176</td>
</tr>
<tr>
<td>Phase2</td>
<td>Tariff with no users</td>
<td>59</td>
</tr>
<tr>
<td>Phase3</td>
<td>Ex CRM, billing projects</td>
<td>36</td>
</tr>
<tr>
<td>Phase4</td>
<td>Soho, Cons. tariffs with 1-100 users (voice)</td>
<td>34</td>
</tr>
<tr>
<td>Phase5</td>
<td>Cancel collection suspended subscribers</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Additional technical cleaning</td>
<td>44</td>
</tr>
<tr>
<td>Phase6</td>
<td>Technical cleaning of offers</td>
<td>126</td>
</tr>
<tr>
<td>Phase7</td>
<td>Soho, Cons voice tariffs with 101-1000 users</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Fleet migration (1st group)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Soho, Cons data tariffs 1-1000 users</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Offer migration (1-100)</td>
<td>560</td>
</tr>
</tbody>
</table>

Table 3.: Hungarian telecommunications operator- tariff simplification project summary
Source: Hungarian telecommunication operator, 2013

![Figure 4.: Database analysis- churn rate in the SE project](image)

Source: Hungarian telecommunications operator, 2013
The methodology is chosen according to the literature review: as the research questions focus on a Dummy dependent variable (churn), we use discriminant analysis and econometrics (logit and tobit regression, and if suitable, special type of propensity score matching: Kernel matching). In Study 3 we investigate how churn can be reduced after SE. So we briefly introduce these methods in the following sections.

“The objective of a discriminant analysis is to classify objects, by a set of independent variables, into one of two or more mutually exclusive and exhaustive categories” (Morrison D. G., 1969). We use this method to classify between two categories of customers based on their churn status.

Discriminant function analysis (DFA) in marketing research has been proved most beneficial for three major purposes: 1. developing predictive models to classify individuals into groups (Churchill, Ford, Ozanne, & Ozanne, 1970), (Pessemier, Burger, & Tigert, 1967) (Rao, 1973), (Robertson & Kennedy, 1968), 2. “profiling” characteristics of groups which are most dominant in terms of discrimination (Brody & Cunningham, 1968) (Claycamp, 1965) (Massy, 1965) (Perreault & Darden, 1975) (Shuchman & Riesz, 1975) and/or 3. identifying the major underlying dimensions (i.e., discriminant functions) which differentiate among groups (Evans, 1959) (King, 1963) (Morrison D., 1969). We follow these criteria: 1. in our case churn classifies customers into two groups, 2. we analyze characteristics of churned and non-churned customers, 3. we differentiate variables based on churn predicting capacity.

In discriminant analysis, also known as supervised classification, known classifications of some observations (the “training set”) are used to classify others (McLachlan, 1992) (Ripley, 1996). The objective of the two-group discriminant analysis is to provide a linear function that will distinguish churned and non-churned customers, which is our aim as well. Discriminant analysis also helps to determine the relative importance of independent variables (Nittala, 2011) that helps us to rank independent variables based on churn predicting capacity.

Our research is focusing on the event of churn: whether the customer leaves the company during SE. From methodological point of view, this can be seen as a “treatment” that some customers receive (Wangenheim & Bayón, 2007), and we are interested in studying their “treatment effects” on customer retention.

The analysis of endogenous treatment is important in econometrics literature ( (Rubin, 1973) (Rosenbaum & Rubin, 1984) (Heckman, Ichimura, & Todd, 1997) (Diaz & Handa, 2004)) besides DFA, and currently they have shown that propensity score matching (PSM) is best when selection mechanisms are well known (Heckman, Ichimura, & Todd, 1997). In our
case, due to the fact that we are receiving a customer database including historical data, sampling is well known that also verifies our choice on PSM techniques.

The PSM technique has been shown to provide the best results of all matching techniques under two conditions (Wangenheim & Bayón, 2007). First, the predictors of the treatment must be well known and measured for both treatment and nontreatment cases, which we obtain in our database. Second, PSM is especially effective when longitudinal data are available, which we partly have in our database: it contains customer information from the beginning of the contract, but the elimination itself occurred only once, so we meet only partly the second requirement.

The rationale behind using Kernel matching is to match pairs of customers, with the grouping variable of churn: this method is suitable for creating pairs that are similar in all the other variables, expect churn. Kernel matching is using a special type of tobit regression, where customers are matched with weighted variables. This makes possible that every customer has a pair that has/has not churned during SE. With a normal tobit regression only those pairs would exist, where exact matches are found that makes the sample relatively smaller.

The steps of the PSM procedure are described in Figure 5.:
During the database analysis we follow three main methods:

1. Discriminant analysis: the dependent Dummy variable, churn enables the use of discriminant analysis. We intend to categorize predictive variables based on their ability to predict churn status in case of SE.

2. Econometrics- logit and tobit regression, Kernel matching: as introduced above, we find logit and tobit regression and Kernel matching ideal to answer the research questions related to churn status. Our aim is to define the differences between churned and non-churned customers, according to historical data.

3. Cluster analysis: based on the demographics, income, profession, postal code and further data of customers there are several possibilities to discover the inter-and intra-segmental relationships.

The logit, tobit regression and Kernel matching will focus on the churn Dummy: we need to estimate the probability of the customer leaving the operator. If the customer stays with company, there is a differentiation between the types of new service package (Figure 6.):

- Toxic: the monthly fee of the new service package is lower than the original one;
- Neutral: the monthly fee of the new service package is around the same as the original one;
- Preferred: the monthly fee of the new service package is higher than the original one.

During the analysis, we are able to differentiate between non-churned customers, according their new service package. This is important, because it links customer retention with revenue saving potentials for the company during SE.

*Information available from the database is the following:*

- Demographics (sex, age, residence)
- Churn rate of the eliminated service packages in the consumer and SOHO segments
- Date of elimination of the eliminated service packages
- Activation date of original and new contract (if applicable)
- Service package of customer before and after SE (if applicable)
- In-bundle elements of service package before and after SE (if applicable)
- Monthly fee and total billing amount before and after SE (if applicable)
- Customer usage data before and after SE
- Compensation received by the customer due to SE (if applicable)
- Number of call centre calls initiated by the customer and by the operator 3 months before and after SE, including call work code (CWC), which describes the content of the conversation
- Number of active customers on eliminated service packages
- Selected number of retention calls before SE are available for further analysis (suggested methodology: content analysis with Nvivo in Study 4)

3.4.4 STUDY 4: CONTENT ANALYSIS

The aim of Study 4 is to gather immediate customer reaction in relation of SE. Based on Study 1 results, we see that customers are frustrated in these situations, and confused about the quality and content of the offers due to complexity issues both in terms of communication (written and many times missing direct contacts), and missing strategic level handling of SE.

In Study 3, we focus on Research Question 8:

8. How are customers affected by SE that drives their post-elimination behaviour?

According to justice theory, customer frustration can be handled as a mediator in the relationship between perceived fairness, perceived control and satisfaction that drives behaviour (Guchait & Namasivayam, 2012). This behaviour can result in churn, which is our KPI measuring the success of SE.

Thus we expect that:

H9: Economic cost increases customer frustration
H10: Psychological cost increases customer frustration

From the research collaboration with a Hungarian telecommunications operator, besides the database, 38 retention calls are available for further analysis. These calls were recorded by the call centre of the company, when the retention team contacted the customers involved in SE, or the customer called the company.

The added value of these calls lies in the fact that as Study 1 concluded, SE is usually a stressful event for the customer, especially when forced migration is happening. Through the
retention calls we are able to get the first impressions of customers in relation of SE that is not possible with Study 1-3, because they model the SE situation and capture the historical data of SE. From Study 1 however it was clear that this frustration could be best captured with the first reaction of customers.

As the information of these calls are very varied in terms of capturing this first experience related to SE, we take a sample of these 38 calls that can give us the best insights related to SE reactions. The suggested methodology is content analysis, because we would like to build in-vivo codes to analyze customer reaction.

4 PILOT STUDIES

4.1 EXPERIMENTAL DESIGN

Before testing the full list of scenarios, we prepared a pilot study without the compensation and complaining variables (Somosi & Kolos, 2015). This gives a limited number of scenarios (4 instead of 8), and less dependent variables, where the effects can be still observed, but it is easier to handle.

Based on the literature review and the exploratory research results, in Study 2 pilot a 2x2 between-subject experiment design based on scenarios was carried out (N=163), with economic and psychological costs as independent variables (Homburg, Fürst, & Prigge, 2010) and with the following dependent variables: churn, satisfaction, loyalty, affective and calculative commitment and WOM. Independent variables are economic and psychological costs that are used to measure the effect of SE on customers. Psychological cost refers to whether the customer had received prior notice and was contacted by phone before elimination, that is, the SE was not unexpected, thus representing a lower level of psychological cost. Economic cost is incorporated into the scenarios as the cost of the service package for the customer, which is defined as a dummy variable that takes the value of 1 if the cost of the offered service package is higher than current one, and 0 if the cost is lower than current one.

So the construction of the pilot experimental design based on scenarios is as follows:

- **Independent variables:** economic cost and psychological cost
- **Dependent variables:** churn, satisfaction, loyalty, affective and calculative commitment, WOM

Bearing in mind that sending a letter notifying the customer of the change in service package is a legal requirement, the four scenarios are as follows (Figure 7.):
1. Better service package after elimination; customer receives notification by phone before elimination.
2. Worse service package after elimination; customer receives notification by phone before elimination.
3. Better service package after elimination; customer does not receive notification by phone before elimination.
4. Worse service package after elimination; customer does not receive notification by phone before elimination.

4.1.1 **Sample**

Data were collected through an online questionnaire between November 2014 and January 2015. Participants for the experiment were recruited using social media, including LinkedIn and university student mailing lists. There was no screening for participation.

Scenarios described a telecommunications SE situation, where respondents had to answer questions about the process and evaluate the whole experience.

The sample contains 163 respondents (a 16% response rate). The male-female ratio is quite balanced (59% and 41%, respectively) and the average age of respondents is 31. Respondents were randomly assigned scenarios. The number of subjects for the different conditions varied between 37 and 44.

4.1.2 **Measures**

The following scales are used in the experiment:

- Churn is measured by the following items: “I would accept the operator’s offer” and “I would leave my current operator after this case” (based on Aksoy et al., 2013). Both items were averaged to create the final churn intention scale.
- Satisfaction and commitment: Gustafsson’s scales for measuring satisfaction and commitment are used (Gustafsson et al., 2005). Affective commitment was measured by the following statements: “I take pleasure in being a customer of the company” and

---

**Figure 7.: Scenarios in the pilot experiment (own construction)**

<table>
<thead>
<tr>
<th>Economic cost: 0</th>
<th>Psychological cost: 0</th>
<th>Scenario 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Psychological cost: 1</td>
<td>Scenario 3</td>
</tr>
<tr>
<td>Economic cost: 1</td>
<td>Psychological cost: 0</td>
<td>Scenario 2</td>
</tr>
<tr>
<td></td>
<td>Psychological cost: 1</td>
<td>Scenario 4</td>
</tr>
</tbody>
</table>

---

36
“I have feelings of trust toward the company.” Calculative commitment was measured by: “It pays off economically to choose the offer of the company”. Satisfaction was measured with four items: “I am satisfied with the operator’s offer,” “The operator exceeds my expectations,” “In my opinion the operator is close to the best operator.” In addition to these three items, which were based on the work by Gustafsson (2005), the authors added a fourth “I consider the operator’s reaction appropriate.”

- Loyalty: Zeithaml’s scales for loyalty are used for loyalty with the four following items (Zeithaml, Berry, & Parasuraman, 1996): “I will say positive aspects about this operator to other people”, “I will recommend this operator to anyone who seeks my advice”, “I will encourage my friends and family to use this operator”, “I will use this agency in the next few years”.

- WOM: based on Goyette et al. (2010) the authors added an item for measuring WOM referring to the content of WOM: “I would tell others, what happened to me”.

For the measurement scales, Cronbach’s alphas vary between 0.784 and 0.951 (SAT: 0.784, LOY: 0.784, CHURN: 0.796, AFFCOMM: 0.804, CALCOMM: 0.785, WOM: 0.951).

### 4.1.3 MANIPULATION CHECKS

Four expert judges (faculty members in services marketing) reviewed and commented on the scenarios and the questionnaire. Slight modifications in wording were made to improve ecological validity. Next, in accordance with the recommendations of Perdue and Summers (1986), manipulations were checked in a quantitative pilot study, independent of the main experiment indicating that the manipulations were effective, with a significant difference between test and control groups for all conditions.

When developing the manipulation checks, the study relied on the definitions provided by Homburg et al. (2010 p. 533) who described economic costs as perceived economic burden and expenditures, while psychological costs were conceptualized as a feeling of uncertainty, doubt, an unpleasant inner state of tension, and dissonant cognitions.

The manipulation check for the two independent variable was as follows: based on Cannon and Homburg (2001) and Montgomery et al. (2005), economic cost used: “I will have to face financial losses,” where $M$ (economic cost)=4.48 vs. $M$ (no economic cost)=1.56, $F(1.51)=118.73$, $p<0.000$. A one-item measure was used for psychological cost (Dwyer, Schurr, & Sejo, 1987; Noordweier, John, & Nevin, 1990; Arend, 2006): “Following the event I will have doubts about the reliability of the company,” $M$ (psychological cost)=3.73 vs. $M$ (no psychological cost)=3.13, $F(1.50)=3.117$, $p<0.01$. Scenarios for realism were also
checked: a telecommunications company manager commented on the scenarios and judged them to be realistic and fitting with their everyday practice.

4.1.4 **RESULTS**

General Linear Model (GLM) was used to assess the effect of economic and psychological cost on churn, satisfaction, loyalty and commitment.

The results of the differences in means according to the four scenarios are summarized in Table 4.

**Economic cost (0: no cost; 1: there is a cost)**

In case of the economic cost we see that all dependent variables behave as expected based on our hypothesis: economic cost increases churn and WOM, decreases satisfaction, loyalty, affective and calculative commitment. So H1 is supported.

**Psychological cost (0: no cost; 1: there is a cost)**

Psychological cost decreases satisfaction, loyalty and affective commitment as expected. Churn and WOM are not significant here. So H2 is partially supported.

**Interaction between economic and psychological cost**

The interactions gave surprising results with economic and psychological cost: customers are more satisfied, loyal and committed, and they would not leave the operator. This means that more customers would leave the company, if they receive a worse service package offer than the current one, but they are not receiving a prior notice compared to receiving such notice. Calculative commitment and WOM are not significant here. So H4 is rejected in case of economic and psychological cost interaction.

This raises the question of the complexity of offers: we suspect that the notice is more of an attention raising tool that makes the involved economic costs of the offer more explicit for the customer. This was mentioned by one interviewee in Study 1 as well, but in Study 2 it needs further investigation for empirical testing. A description referring to the complexity of offers should be included in Study 2 based on these pilot results.

The interactions between no economic cost, but psychological cost present are meeting our expectations: customers are more satisfied, loyal and committed, and they would leave the operator, if they receive a better service package offer than the current one, but they are not receiving a prior notice compared to receiving one. Calculative commitment and WOM are not significant here. So H4 is accepted in case of no economic cost and psychological cost interactions.
This second interaction also supports the idea of complexity issue in the offers, because it means that even though customers are offered a better service package than current one after SE, if they are not contacted by phone as well by the operator, they cannot recognize the value added of the new offer.

These results altogether support the partial acceptance of H4.

Study 2 pilot did not handle compensation, so H3 is not relevant here.

So hypotheses were partially supported: only economic cost option gave contradictory results in terms of interactions with psychological cost, which means that economic cost has stronger effect on customer reactions than psychological cost in case of service elimination.

We found that although both economic and psychological costs individually decrease customer satisfaction, loyalty and commitment, interactions of the scenarios behaved differently. In case of economic cost, psychological cost makes customers more satisfied, loyal and committed, with less churn, which did not confirm our hypothesis. However in case of a no economic cost and no psychological cost present, customer satisfaction, loyalty and commitment is lower, and churn is higher, according to our a priori expectations.

1 Cronbach alpha’s of variables are all above 0.8
2 First 1 canonical discriminant functions were used in the analysis.
These results provide support for H1, and partial support for H2 and H4. These main effects, however, are qualified by significant two-way interactions. The interaction effects are visualized in Figure 8.

The plots show that economic cost leads to a lower level of satisfaction, loyalty and commitment independent of psychological cost. But if there is no economic cost involved, psychological cost leads to a lower level of satisfaction, loyalty and affective commitment. The plot for churn displays a different pattern. In the case of economic cost, the presence of psychological cost decreases churn, while if no economic cost is involved, psychological cost increases churn.

![Figure 8: The effect of economic cost (SE) on dependent variables in connection with psychological cost](image)
As Study 2 pilot concluded, practitioners need to be aware that psychological cost might have a more significant role than expected: the form of contact with the customer has a stronger effect on retention than the quality of the offer itself. Perhaps offers only in written form are not clear for the customer, and as such, verbal notification raises their attention. As a result, the customer is more likely to switch operators.

The role of psychological cost is emphasized here: with worse offers it might lead to lower customer churn, and with better offers to higher customer churn. It is not just the quality of the offer that determines customer retention.

4.2 DATABASE ANALYSIS

In this section we present the first results of Study 3 (Somosi & Kolos, 2015).

4.2.1 SAMPLE

At this phase of the research the database is not fully received from the operator, the database with all above variables is expected to be received by the end of February 2016. Due to this reason, we used the below one Dummy variable and three scale variables during our analysis in Study 3:

- CHURN: takes the value of 1, if the customer has changed his/her current mobile operator after SE, otherwise 0;
- TENURE: time elapsed between the start and end date of the contract in days;
- NET_AMOUNT_DIFF: the net billing amount before and after SE in HUF;
- NUMBER_OF_CALLS: number of calls initiated/received by the call center from the start of the customer’s contract.

4.2.2 RESULTS

To answer Research Question 6, we use a dependent Dummy variable (CHURN), so we use discriminant analysis during Study 3. What regards Research Question 7, we are only able to answer it with the use of the full database containing all the variables, with econometrics methodology (logit and tobit regression and Kernel matching). So at this phase of the research we are going to present the results of the discriminant analysis (Mitev & Sajtos, 2007) with one Dummy variable and three scale variables.

First we check the churn rate, whether it meets our expectations in H5 (Table 5.). We can confirm our first hypothesis: the 15.5% churn rate is much higher than the normal average churn in telecommunications (price-independent churn), which is around 2-3%.
### CHURN

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td>0</td>
<td>11 243</td>
<td>84,5</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2 058</td>
<td>15,5</td>
<td>100,0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>13 301</td>
<td>100,0</td>
<td>100,0</td>
</tr>
</tbody>
</table>

**Table 5.: Churn rate during SE**

Table 6. shows the summary of the discriminant analysis: after extracting missing values, the sample contains 13 301 cases (N=13301).

**Analysis Case Processing Summary**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>13 301</td>
<td>100,0</td>
</tr>
<tr>
<td>Excluded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing or out-of-range group codes</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>At least one missing discriminating variable</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>Both missing or out-of-range group codes and at least one missing discriminating variable</td>
<td>0</td>
<td>.0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>.0</td>
</tr>
</tbody>
</table>

**Table 6.: Discriminant analysis summary**

Among the instrumental variables only the billing amount difference is not significant, all the others show a significant difference between churned and non-churned customers (Table 7.).

**Tests of Equality of Group Means**

<table>
<thead>
<tr>
<th></th>
<th>Wilks' Lambda</th>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TENURE</td>
<td>.990</td>
<td>129,185</td>
<td>1</td>
<td>13 299</td>
<td>.000</td>
</tr>
<tr>
<td>NET_AMOUNT_DIFF</td>
<td>1,000</td>
<td>2,138</td>
<td>1</td>
<td>13 299</td>
<td>.144</td>
</tr>
<tr>
<td>NUMBER_OF_CALLS</td>
<td>.989</td>
<td>153,933</td>
<td>1</td>
<td>13 299</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Table 7.: Discriminant analysis- Equality of group means**

The canonical correlation of 0,145 shows that the model is explaining 2,1% of group variance, meaning, whether the customer left the operator during SE (Table 8.). We expect this ratio to be higher in the next phase of the research with the full database, as it currently contains only 4 scale variables.

**Eigenvalues**

<table>
<thead>
<tr>
<th>Function</th>
<th>Eigenvalue</th>
<th>% of Variance</th>
<th>Cumulative %</th>
<th>Canonical Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.021²</td>
<td>100,0</td>
<td>100,0</td>
<td>.145</td>
</tr>
</tbody>
</table>

**Table 8.: Discriminant analysis- Eigenvalues, explained variance**

² First 1 canonical discriminant functions were used in the analysis.
The discriminant function is significant, so the above results are valid (Table 9.).

<table>
<thead>
<tr>
<th>Test of Function(s)</th>
<th>Wilks' Lambda</th>
<th>Chi-square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimension0</td>
<td>.979</td>
<td>281,708</td>
<td>3</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 9.: Discriminant analysis- Discriminant function

Table 10. shows the correlation between the discriminant function and predictor variables, similarly to the factor loadings used during factor analysis. The correlation of the billing amount difference is below 0.3 (in absolute value), so this is the weakest predictor regarding churn rate among the three variables, in accordance with above results as well.

<table>
<thead>
<tr>
<th>Structure Matrix³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>NUMBER_OF_CALLS</td>
</tr>
<tr>
<td>TENURE</td>
</tr>
<tr>
<td>NET_AMOUNT_DIFF</td>
</tr>
</tbody>
</table>

Table 10.: Discriminant analysis- The importance of the predictive variables

With the Box’s M statistics we are looking for a non-significant result, because the covariance matrices between groups should not differ. We have however a significant result, still, because of the large sample size, a significant test result is not regarded as too important (Table 11.).

<table>
<thead>
<tr>
<th>Test Results⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box’s M</td>
</tr>
<tr>
<td>F Approx.</td>
</tr>
<tr>
<td>df1</td>
</tr>
<tr>
<td>df2</td>
</tr>
<tr>
<td>Sig.</td>
</tr>
</tbody>
</table>

Table 11.: Discriminant analysis- Box’s M test results table

The pooled within-groups matrices (Table 12.) support the variables’ use of IVs (instrumental variables), as the intercorrelations are low.

<table>
<thead>
<tr>
<th>Pooled Within-Groups Matrices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation</td>
</tr>
<tr>
<td>TENURE</td>
</tr>
<tr>
<td>NET_AMOUNT_DIFF</td>
</tr>
<tr>
<td>NUMBER_OF_CALLS</td>
</tr>
<tr>
<td>TENURE</td>
</tr>
<tr>
<td>NET_AMOUNT_DIFF</td>
</tr>
<tr>
<td>NUMBER_OF_CALLS</td>
</tr>
<tr>
<td>NET_AMOUNT_DIFF</td>
</tr>
<tr>
<td>NUMBER_OF_CALLS</td>
</tr>
<tr>
<td>.017</td>
</tr>
</tbody>
</table>

³ Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions. Variables ordered by absolute size of correlation within function.
⁴ Tests null hypothesis of equal population covariance matrices.
Table 12.: Discriminant analysis- Pooled within groups matrices

The interpretation of discriminant coefficients is like that in multiple regression. Table 13. shows the index of the importance of each predictor, where sign indicates the direction of the relationship. It is also clear from this table as well that number of call is the strongest predictor, where the net amount difference is a less successful predictor.

<table>
<thead>
<tr>
<th>Function</th>
<th>Standardized Canonical Discriminant Function Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TENURE: .671, NET_AMOUNT_DIFF: -.123, NUMBER_OF_CALLS: .731</td>
</tr>
</tbody>
</table>

Table 13.: Discriminant analysis- Standardized canonical discriminant function coefficients

The discriminant function coefficients indicate the partial contribution of each variable to the discriminate function controlling for all other variables in the equation. They can be used to assess the IV’s unique contribution to the discriminate function. From this table is also obvious, what we concluded so far: number of calls is the strongest predictor (Table 14.).

<table>
<thead>
<tr>
<th>Function</th>
<th>Canonical Discriminant Function Coefficients5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TENURE: .001, NET_AMOUNT_DIFF: .000, NUMBER_OF_CALLS: .228 (Constant) -1.066</td>
</tr>
</tbody>
</table>

Table 14.: Discriminant analysis- Canonical discriminant function coefficients

In Table 15. we see results describing each group in terms of its profile, using group means of the predictor variables. Churned and non-churned customers belong to two different groups.

<table>
<thead>
<tr>
<th>CHURN</th>
<th>Functions at Group Centroids6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Function: 1: .063</td>
</tr>
<tr>
<td>1</td>
<td>Function: 1: -.342</td>
</tr>
</tbody>
</table>

Table 15.: Discriminant analysis- Functions at group centroids table

5 Unstandardized coefficients
6 Unstandardized canonical discriminant functions evaluated at group means
Figure 9. is produced with the use of saved discriminant variables during the analysis. It shows that the discrimination could be improved, because there are some overlaps between the graphs, which might be due to limited number of predictor variables. This could be improved when using the full database.

![Discriminant analysis- Histograms showing the distribution of discriminant scores for churned and non-churned customers](image)

Figure 9.: Discriminant analysis- Histograms showing the distribution of discriminant scores for churned and non-churned customers

4.3 CONCLUSION OF PILOT STUDIES

Study 2 pilot shed light on how SE shapes customer retention. Experimental design is used to determine the effects between SE and its main success factors, churn, and other variables related to customer reaction (satisfaction, loyalty, commitment and WOM). All hypotheses relating to satisfaction, loyalty commitment are supported; only interactions between economic and psychological costs gave surprising results. Regardless of economic cost, psychological cost seems to have an attention-raising role for customers. The missing contact from the operator determines the level of satisfaction, loyalty, commitment, and churn. Even if the offer was better, when the customer does not receive a phone call before elimination, they might leave the company. In a worse offer scenario, the absence of the call surprisingly improves the situation and results in lower churn rates. This means that the operator’s explanation makes the customer realize that they are facing economic loss or gain.

The results indicate that the offers themselves are probably not clear for customers; direct contact with the operator before elimination is more crucial. This might change the focus on “hard factors” in terms of customer retention, and emphasize the role of “soft factors.”

The next phase is going to be a 3x3 between subjects experiment based on scenarios, adding the compensation and complaining variable to our current research, as based on the literature compensation has an effect on customer complaints and so, it is to be expected to
correlate with customer retention as well. In the case of a forced migration during service elimination we expect compensation to make customers more satisfied.

The limitation of the Study 2 is that we applied a convenience sampling, although based on literature, representative samples are outside of the experimental design requirements.

The next phase of Study 2 is to refine the model based on the experiment questionnaire’s results: first, a compensation and complaining variable needs to be added, as the literature suggests differences in case of customer complaints with compensation.

Second, the measurement of psychological cost needs to be refined, because psychological cost is not equal with customer notification, it was only part of the pilot measurement. As results pointed out significant differences referring to the complexity of offers, a variable capturing the complexity attribute of the offer is required, and the consideration of other psychological cost-related elements (e.g. switching costs: time and other sacrifices by the customer to analyse competitor offers, personal interaction with the operator due to SE, issues related to number portability process) is advised.

Third, as Study 1 also concluded, the differentiation between in-contract and out-of-contract customers is required, because economic costs might be significantly different among these groups (e.g. device penalty costs within contract time).

Fourth, the usage of a larger sample would be helpful to ensure the internal validity of results, and also prove that non-significant results (e.g. in case of psychological cost churn and calculative commitment, and in case of interactions between economic and psychological costs calculative commitment and WOM) are also valid.

In Study 3 pilot we performed discriminant analysis to decide, whether the customer leaves the operator after SE. The predictor variables were: time elapsed between the start and end date of the contract in days; net billing amount difference between before and after SE in HUF; number of calls initiated/received by the call center from the start of the customer’s contract, from which only the net billing amount difference was not significant.

The discriminant function revealed significant associations between predictor variables and the groups. The low variance explained ratio (2.1%) is probably due to the few variables in the database that is going to be improved in the next phase of the research with the full database received from the operator.

During the further analysis of the results it was revealed that among the three predictor variables the strongest is the number of calls (0.735), second is the tenure variable (0.674) and the net billing amount difference is the weakest predictor of customer churn (-0.087). The
cross-validated classification confirmed that 84.5% of the classification were right, which is a good ratio.

Study 3 is not completed yet, however with the full database we aim to answer research questions. In Study 3 pilot we were not able to do this yet, but the direction is clear: the operative KPI of customer retention, churn is predictable with the database. An important finding of Study 3 pilot is that variables need to be refined in order to improve churn prediction.

So based on the pilot studies, we can conclude the following in terms of our hypotheses:

**H1:** Economic cost increases churn, WOM and complaining, and decreases satisfaction, loyalty, affective and calculative commitment. - accept (Table 4.)

**H2:** Psychological cost increases churn, WOM and complaining, and decreases satisfaction, loyalty, affective and calculative commitment. - partially accept (Table 4.)

**H3:** Compensation decreases churn and complaining, and increases satisfaction, loyalty, affective and calculative commitment and WOM. - not measured by pilot

**H4:** There will be interaction effects for economic and psychological costs. In the absence of economic costs, the impact of psychological costs on customer reaction will be stronger than in the presence of economic costs. - partially accept (Table 4.)

**H5:** Churn rate during SE is higher than normal churn rate. - accept (Table 5.)

**H6:** Those customers who are in contract with the service provider for a longer time, have lower churn rates during SE compared to new customers. - accept (Table 10.)

**H7:** If the billing amount of the customer is approximately the same before and after SE, the churn rate during SE will be lower compared to bigger differences in the billing amounts. - reject (Table 10.)

**H8:** If customers contacted more times the call center, including the initiated and received calls as well, the churn rate during SE will be lower compared to those contacting the call center fewer times. – accept (Table 10.)
5 SUMMARY

The emphasis on service development overshadowed the strategic level assessment of SE, which had significant effect both on customer retention and firm revenue, resulting in high churn rates, higher costs, locked resources and fragmented service portfolios at service firms. Through a well-designed and executed SE these portfolios might become more effective, and resources could be allocated to other areas within the company and reduce the cost of SE, which support customer retention following SE.

Retention plays a key role in today’s economy, as service markets are stagnating, and the exaggerated acquisition focus of companies might reduce the existing customer base by ignoring such significant effects of elimination, as high churn rates. The vast majority of customers involved in forced migration leave the company due to the perceived economic and/or psychological costs during SE. Thus economic and psychological costs are crucial: the value added of the new offer compared to the current one and the way, the company interacts with customer during SE primarily determines the risk of churn.

Although direct communication with customer might reduce psychological costs, and thus the need for forced migration, customers might leave nonetheless, due to unexpected effects of explanation given by the service firm. The form of written communication has a limited possibility for providing assistance in making the customer understand the value of the new offer, so when the communication becomes more direct (either personal or by phone), it suddenly raises the attention of the customer for the value of new offer, might it be better or worse than the current one, which affects churning behaviour. This means that service providers should assess carefully the cases, where direct communication is required to reduce churn.

Based on these, the thesis proposal discusses the research plan of a Ph.D. dissertation analysing service elimination with a special focus on customer reaction. We intend to gain new knowledge in the field of SE by combining the outcome of SE with customer perspective that may also give some new insights to enlighten the SE area, in a way that is useful for practitioners as well.

From an academic point of view our literature review showed that there are just a few papers to compare with, because of this combination of areas within SE. Most studies were done in the product field, within services, especially causes and process of SE are analysed.

From a managerial perspective we think that the planned research project can contribute to solve current SE-related problems of companies: as SE is usually not dealt on a strategic
level at most service firms, with more focus on the customer during the SE process, the whole SE strategy could be improved and thus high customer churn could also be reduced.

Our literature review on customer insights to SE concluded that churn is a common measure of customer satisfaction, however not used in the special case of SE. Practical relevance of the topic is also confirmed by Study 1: telecommunication operators are not handling service elimination on a strategic level that makes service development processes less effective. So, there is a need from practice to design a better model for determining the customer’s new service package resulting in decreased customer churn. To support this, the SE process needs to be better adapted to customer’s needs and treated more as part of retention in order to reduce customer churn.

Our research including experiment design based on scenarios and database modeling aims to analyze the possibility of generalization of these findings in case of SE, and limitations that are not applicable in our combined case of SE and churn prediction.

Study 2 is focusing on customer side and includes a scenario based experiment. In Study 2 pilot we used experimental design to determine the effects between service elimination and variables related to customer reactions (churn, satisfaction, loyalty, affective and calculative commitment and WOM) with independent variables of economic and psychological cost: the main result of the experiment is that, when these costs interact, economic cost has stronger effect on customer reactions than psychological cost in case of service elimination.

Study 3 is based on the customer database of a Hungarian telecommunications operator. We intend to reveal the reasons behind high churn rates compared to normal customer churn in case of service elimination through the analysis of service package elements and customer characteristics that influence customer churn analysing real customer behaviour. The result of Study 3 pilot is that tenure and number of calls to the call centre are strong predictors of churn during service elimination, while net billing amount is a weak predictor.

Study 4 intends to analyse the frustrated behaviour due to SE, by the content analysis of retention calls from the same database as in Study 3. Customer frustration is seen to have an important effect on customer retention.

The internal generalizability of our research is ensured by using random sampling and representative sample. Pilot studies are limited in this sense that is required to be handled in the research. Although telecommunications was chosen because its adequate characteristics for SE analysis, the external generalizability is however questionable, as SE is analysed in the
telecommunications sector, and only in Hungary. Further plans include the broader ICT sector analysis in an international environment, which would be the next step towards an overall view of the relationship between SE and customer retention.

5.1 SUMMARY OF RESEARCH METHODOLOGY

Our research consists of four main phases: qualitative interviews from the firm’s perspective, experimental design, database analysis and content analysis with customer database provided by a Hungarian telecommunications operator (Table 16.).

<table>
<thead>
<tr>
<th>Research questions</th>
<th>Qualitative interviews</th>
<th>Experimental design</th>
<th>Database analysis</th>
<th>Content analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What are the main reasons for SE at the strategy level?</td>
<td>5. What is the relationship between perceived costs and benefits of SE (economic, psychological cost and compensation) and churn, satisfaction, loyalty, commitment and WOM from the customer’s perspective?</td>
<td>6. In what characteristics are customers different regarding their churn status after SE?</td>
<td>8. How are customers affected by SE that drives their post-elimination behaviour?</td>
<td></td>
</tr>
<tr>
<td>2. What are the organizational factors affecting SE decisions?</td>
<td>5.1 What are the factors that influence the relationship between SE and churn?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What are the factors that influence the success of SE?</td>
<td>5.2 Is churn higher in case of SE compared to normal churn rates?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What are the challenges of SE from a managerial perspective?</td>
<td>5.3 Does psychological cost have an effect on churn in case of SE?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Economic cost increases churn and WOM, decreases satisfaction, loyalty, and affective and calculative commitment</td>
<td>5.4 Does economic cost have an effect on churn in case of SE?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.5 Does compensation have an effect on churn in case of SE?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.6 How could churn be reduced in case of SE?</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Qualitative interviews</th>
<th>Experimental design</th>
<th>Database analysis</th>
<th>Content analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Psychological cost increases churn and WOM, decreases satisfaction, loyalty, and affective and calculative commitment</td>
<td>5.1: Psychological cost increases churn and WOM, decreases satisfaction, loyalty, and affective and calculative commitment</td>
<td>H5: Churn rate during SE is higher than normal churn rate.</td>
<td>H9: Economic cost increases customer frustration</td>
<td></td>
</tr>
<tr>
<td>H2: Economic cost increases churn and WOM, decreases satisfaction, loyalty, and affective and calculative commitment</td>
<td></td>
<td>H6: Those customers, who are in contract with the service provider for a longer time, have lower churn rates during SE compared to new customers.</td>
<td>H10: Psychological cost increases customer frustration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
H3: Compensation decreases churn and increases WOM, satisfaction and loyalty and affective and calculative commitment.

H4: There will be interaction effects for economic, psychological costs and compensation.

H7: If the billing amount of the customer is approximately the same before and after SE, the churn rate during SE will be lower compared to bigger differences in the billing amounts.

H8: If customers contacted more times the call center, including the initiated and received calls as well, the churn rate during SE will be lower compared to those contacting the call center fewer times.

<table>
<thead>
<tr>
<th>Population</th>
<th>Telecommunication operator’s managers involved in SE</th>
<th>Telecommunication customers</th>
<th>Hungarian telecommunications operator’s customer database</th>
<th>Hungarian telecommunications operator’s customer database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation unit</td>
<td>Corporation</td>
<td>Customers</td>
<td>Customers</td>
<td>Customers</td>
</tr>
<tr>
<td>Sample size</td>
<td>3</td>
<td>200-300 (Pilot study: N=163)</td>
<td>13 301 (Pilot study: N=13 301)</td>
<td>38</td>
</tr>
</tbody>
</table>

Table 16.: Summary of research methodology

5.2 TIMING

The four studies are distributed within a 3 years’ timeframe (Table 16.), from which Study 1, Study 2 pilot and Study 3 pilot are completed. After the dissertation proposal defense, the completion of Study 3 and Study 4 is planned, followed by Study 2.

5.3 EXPECTED CONTRIBUTION

The expected contribution of the research consists of three main parts. First, the focus on the post-elimination phase combined with customer perspective fills a gap in SE literature. Second, SE gives a special circumstance to the normal churn modeling that might help to increase the understanding of churn. Third, SE is a key element both in academic theory and
in practice in terms of service portfolio innovation and management. The research gives insights for practitioners as well, on how to incorporate this knowledge of customer reactions when formulating an SE strategy.

5.4 Managerial Implications

SE enables the simplification of business portfolio that is a requirement for new service portfolio launch. Due to limited number of elimination projects available in the past, managers struggle to find solutions for handling the unusually high churn rates in case of SE.

Besides its academic relevance, our research intends to contribute to SE practice, by suggesting methods to handle negative customer reaction resulting in churn. As we highlighted in the research methodology, SE is a complex issue, where both the planning and execution are crucial in terms of the success of SE. Perceived costs for the customer and complexity of offers determine satisfaction, loyalty, commitment and WOM that have an effect on customer retention. So, the way of communication and the selection of customer base contacted directly by the service firm, determines the success of SE.
6 REFERENCES


80. Prince, J., & Greenstein, S. (November 2011). Does Service Bundling Reduce Churn?


7 APPENDIX

7.1 STUDY 1 PILOT: QUALITATIVE INTERVIEW GUIDELINES

- Please remember a case when you decided to eliminate one or more of your services.
- What were the causes of the SE?
- Do you think there were external triggers also besides those? How did you plan the process of elimination?
- Were there any barriers that limited your actions?
- What were the steps of the SE process? Did you have constant communication with your customers?
- Does your company have a certain strategy for SE?
- What were the consequences of the SE? Did you manage to reach the expected results?
- Was your SE successful? What does success mean for you in this aspect? Does your company have an evaluation system for SE?

7.2 STUDY 2 PILOT: EXPERIMENTAL DESIGN QUESTIONNAIRE

In Study 2 pilot we used 4 scenarios to which the same 15 questions were assigned to measure the effects on dependent variables. The questionnaires were distributed in Hungarian.

- Scenario 1:

Dear Respondent! This questionnaire is part of the research conducted at Corvinus University of Budapest, which is anonymous and only takes a few minutes to fill. We kindly ask you to fill this questionnaire, if the starting letter of your surname is between A-F. This is required for the randomization of questionnaire; we are not able to identify anyone based on this information. Thank you for your time and support.

You are satisfied with your mobile phone subscription. Your operator eliminates your service package.

Before elimination, the operator contacts you by phone to inform you about this change and to help you to choose a new service package.

The agent can offer you a service package with lower monthly fee, more internet and lower PPM than your current subscription.

One week after the phone call you receive a letter notification as well about the migration.
• Scenario 2:

Dear Respondent! This questionnaire is part of the research conducted at Corvinus University of Budapest, which is anonymous and only takes a few minutes to fill. We kindly ask you to fill this questionnaire, if the starting letter of your surname is between G-L. This is required for the randomization of questionnaire; we are not able to identify anyone based on this information. Thank you for your time and support.

You are satisfied with your mobile phone subscription. Your operator eliminates your service package.

Before elimination, the operator contacts you by phone to inform you about this change and to help you to choose a new service package.

The agent can offer you a service package with higher monthly fee, less internet and higher PPM than your current subscription.

One week after the phone call you receive a letter notification as well about the migration.

• Scenario 3:

Dear Respondent! This questionnaire is part of the research conducted at Corvinus University of Budapest, which is anonymous and only takes a few minutes to fill. We kindly ask you to fill this questionnaire, if the starting letter of your surname is between M-R. This is required for the randomization of questionnaire; we are not able to identify anyone based on this information. Thank you for your time and support.

You are satisfied with your mobile phone subscription. Your operator eliminates your service package.

The operator is informing you by post about the elimination, but you cannot remember receiving this letter, so the elimination is unexpected for you.

You call the call centre of the operator. The agent can offer you a service package with lower monthly fee, more internet and lower PPM than your current subscription.

• Scenario 4:

Dear Respondent! This questionnaire is part of the research conducted at Corvinus University of Budapest, which is anonymous and only takes a few minutes to fill. We kindly ask you to fill this questionnaire, if the starting letter of your surname is between S-Z. This is
required for the randomization of questionnaire; we are not able to identify anyone based on this information. Thank you for your time and support.

<table>
<thead>
<tr>
<th>You are satisfied with your mobile phone subscription. Your operator eliminates your service package.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The operator is informing you by post about the elimination, but you cannot remember receiving this letter, so the elimination is unexpected for you.</td>
</tr>
<tr>
<td>You call the call centre of the operator. The agent can offer you a service package with higher monthly fee, less internet and higher PPM than your current subscription.</td>
</tr>
</tbody>
</table>

- Questions assigned to each scenario:

To what extent do you agree or disagree with the following statement (1 - completely disagree; 5 - completely agree)?

1. I consider the operator’s reaction appropriate.
   - Completely disagree
   - Completely agree

2. I am satisfied with the operator’s offer.
   - Completely disagree
   - Completely agree

3. The operator exceeds my expectations.
   - Completely disagree
   - Completely agree

4. In my opinion the operator is close to the best operator.
   - Completely disagree
   - Completely agree

5. I will say positive aspects about this operator to other people.
   - Completely disagree
   - Completely agree

6. I will encourage my friends and family to use this operator.
   - Completely disagree
   - Completely agree

7. I will use this agency in the next few years.
   - Completely disagree
   - Completely agree

63
8. I would accept the operator’s offer.

   1  2  3  4  5

   Completely disagree ☐ ☐ ☐ ☐ ☐   Completely agree

9. I would leave my current operator after this case.

   1  2  3  4  5

   Completely disagree ☐ ☐ ☐ ☐ ☐   Completely agree

10. I would tell others, what happened to me.

     1  2  3  4  5

   Completely disagree ☐ ☐ ☐ ☐ ☐   Completely agree

11. I would file a complaint at the operator due to the case.

     1  2  3  4  5

   Completely disagree ☐ ☐ ☐ ☐ ☐   Completely agree

12. I take pleasure in being a customer of the company.

     1  2  3  4  5

   Completely disagree ☐ ☐ ☐ ☐ ☐   Completely agree

13. I have feelings of trust toward the company.

     1  2  3  4  5

   Completely disagree ☐ ☐ ☐ ☐ ☐   Completely agree

14. It pays off economically to choose the offer of the company.

     1  2  3  4  5

   Completely disagree ☐ ☐ ☐ ☐ ☐   Completely agree

15. I will encourage my friends and family to use this operator.

     1  2  3  4  5  6  7  8  9  10

   Completely disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐   Completely agree