Designing a Customer Communication System for Critical Incidents: a case study on the Swiss Federal Railway

A Thesis Submitted for The Degree
Doctorate in Business Administration

Frank Liebermann
Dipl. Ver.wiss., Dipl. Inf.wiss.

Student No.: 11366663

January 2013
I, Frank Liebermann, hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Charles Sturt University or any other educational institution, except where due acknowledgment is made in the thesis. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged.

I agree that the thesis be accessible for the purpose of study and research in accordance with the normal conditions established by the University Librarian for the care, loan and reproduction of the thesis.*

January 20th, 2013

Signature

Date

* Subject to confidentiality provisions as approved by the University
Abstract

The starting point for this thesis was a major incident on the entire Swiss rail network following a power cut. For several hours, rail traffic came to a standstill, with all trains stopped in their tracks. This situation caused the Swiss Federal Railway (SFR) to come under considerable fire. As a result, several projects were initiated which were intended to prevent a similar situation from reoccurring in the future. The optimisation of customer information in the event of incidents is one of these projects.

As very little concrete literature exists on the subject of customer information in the rail environment, various subjects were studied in order to provide possible explanations. These include research areas such as customer satisfaction research, customer segmentation, and technological and sociological trends. Other dimensions, such as crisis and incident management and stakeholder management, provide best practice approaches which offer ideas for improvement. Propositions were formulated which deal with customer satisfaction and how this can be maintained.

Methodologically, the thesis follows the case study approach. The first part deals with qualitative interviews carried out within the SFR organisation in order to examine the existing situation. The second part consists of an analysis of secondary quantitative data, using surveys to examine customers and their attitudes towards the company.

It generally appears that customers accept breakdowns in a complex technological environment. However, it is vital to provide them with proactive and thorough information. This allows customer satisfaction to be maintained. On the basis of the propositions and interviews, it was possible to define various measures for improvement. It became apparent that a firm strategy, improved organisation and more customer contact can lead to optimisation.

It was revealed that customer information during critical incidents is a basic factor according to the Kano model. No enthusiasm can therefore be generated for the suggested measures. However, it is possible to stabilise customer satisfaction. Customer...
satisfaction is influenced by Parasuraman’s “zone of tolerance” in that travellers who receive information become dissatisfied more slowly than those who are uninformed.

The customer information system that emerged from the research is based on a multitude of different components. Centralised and decentralised data sources (timetable data, route planning, station information etc.), guidance and control systems, and data from surrounding countries would be processed into customer information data with the help of a user interface. Customer information would then be transmitted to trains, stations and all other information channels. Additionally, employees in operations control centres would have the opportunity to transmit information directly to trains and stations. The essential innovation area for future customer information communication is in the area of mobile information.
## Contents

1. Introduction ....................................................................................................... 1
  1.1 Background ....................................................................................................... 2
  1.2 Research Question ............................................................................................ 3
  1.3 Significance of Research ................................................................................... 6
  1.4 Research Method .............................................................................................. 8
  1.5 Outline of the Report ........................................................................................ 9
  1.6 Definitions ....................................................................................................... 11
    1.6.1 Critical .......................................................................................... 11
    1.6.2 Incident ......................................................................................... 11
    1.6.3 Crisis ............................................................................................ 12
    1.6.4 Customer ...................................................................................... 12
    1.6.5 Communication ............................................................................ 13
    1.6.6 Information ................................................................................... 14
    1.6.7 System .......................................................................................... 14
  1.7 Contribution to Professional Practice ............................................................. 15
  1.8 Delimitations of Scope .................................................................................... 16
2. Literature Review ............................................................................................. 17
  2.1 Introduction ..................................................................................................... 18
  2.2 Scope of Literature .......................................................................................... 19
  2.3 Analysis of Literature ..................................................................................... 20
    2.3.1 Customer Satisfaction Research ................................................... 20
    2.3.2 Customer Segmentation ........................................................................ 40
    2.3.3 Crisis Management .............................................................................. 45
    2.3.4 Incident Management ........................................................................... 60
    2.3.5 Social Media and Technological Trends ...................................... 66
  2.4 Conclusion from Literature ............................................................................. 71
    2.4.1 Conclusions from Customer Satisfaction Research ..................... 71
    2.4.2 Conclusions from Crisis Management ......................................... 74
    2.4.3 Conclusions from Incident Management ..................................... 76
    2.4.4 Conclusions from Trends ............................................................. 77
  2.5 Framework ...................................................................................................... 80
    2.5.1 Competence of Incident Recovery ............................................... 81
    2.5.2 Customer Information as a Basic Factor ...................................... 81
    2.5.3 Communication Competence ......................................................... 82
    2.5.4 Cause of Incidents ........................................................................... 83
    2.5.5 Overview of Propositions ............................................................... 83

VII
E. Appendix: Interview Transcript ................................................................. 250
F. Analysis of Proposition ............................................................................. 282
G. Appendix: Interview Participants .......................................................... 284
H. Appendix: Role Descriptions ................................................................. 285
I. Appendix: Measures ............................................................................... 287
J. Appendix: SPSS Tables .......................................................................... 301
## List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Assumption</td>
</tr>
<tr>
<td>AI</td>
<td>Adequateness of Information</td>
</tr>
<tr>
<td>AS</td>
<td>Act on Strategy</td>
</tr>
<tr>
<td>BA</td>
<td>Business Architecture</td>
</tr>
<tr>
<td>BI</td>
<td>Benefit of Information</td>
</tr>
<tr>
<td>BS</td>
<td>Business Strategy</td>
</tr>
<tr>
<td>C</td>
<td>Customer</td>
</tr>
<tr>
<td>CC</td>
<td>Communication Competence</td>
</tr>
<tr>
<td>CCSCI</td>
<td>Customer Communication System for Critical Incidents</td>
</tr>
<tr>
<td>CD</td>
<td>Confirmation / Disconfirmation Paradigm</td>
</tr>
<tr>
<td>CEL</td>
<td>Customer Expectation Level</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>CFF</td>
<td>Chemins de fer fédéraux suisses</td>
</tr>
<tr>
<td>CHF</td>
<td>Swiss Franc</td>
</tr>
<tr>
<td>CI</td>
<td>Corporate Identity</td>
</tr>
<tr>
<td>CIC</td>
<td>Cause of Incident</td>
</tr>
<tr>
<td>CK</td>
<td>Customers are Known</td>
</tr>
<tr>
<td>CN</td>
<td>Customer Needs</td>
</tr>
<tr>
<td>CO</td>
<td>Constraints</td>
</tr>
<tr>
<td>CR</td>
<td>Change Request</td>
</tr>
<tr>
<td>CRM</td>
<td>Customer Relationship Management</td>
</tr>
<tr>
<td>CS</td>
<td>Customer Satisfaction</td>
</tr>
<tr>
<td>CSG</td>
<td>Customer Segmentation</td>
</tr>
<tr>
<td>CSU</td>
<td>Charles Sturt University</td>
</tr>
<tr>
<td>CuR</td>
<td>Customer Requirements</td>
</tr>
<tr>
<td>CVM</td>
<td>Customer Value Management</td>
</tr>
<tr>
<td>DF</td>
<td>Delay Frequency</td>
</tr>
<tr>
<td>DIF</td>
<td>Dissatisfaction Frequency</td>
</tr>
<tr>
<td>DPA</td>
<td>Deutsche Presse Agentur</td>
</tr>
<tr>
<td>EDI</td>
<td>Eidgenössisches Departement des Inneren</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FAZ</td>
<td>Frankfurter Allgemeine Zeitung</td>
</tr>
<tr>
<td>FFS</td>
<td>Ferrovie federali svizzere</td>
</tr>
<tr>
<td>I</td>
<td>Information</td>
</tr>
<tr>
<td>IC</td>
<td>Incident</td>
</tr>
<tr>
<td>IN</td>
<td>Individualisation</td>
</tr>
<tr>
<td>IOS</td>
<td>Interests of Stakeholder</td>
</tr>
<tr>
<td>IQ</td>
<td>Information Quality</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>ITIL</td>
<td>Information Technology Infrastructure Library</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>ITS</td>
<td>Information Technology Strategy</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
</tr>
<tr>
<td>NZZ</td>
<td>Neue Zürcher Zeitung</td>
</tr>
<tr>
<td>ORG</td>
<td>Organisation</td>
</tr>
<tr>
<td>PC</td>
<td>Public Company</td>
</tr>
<tr>
<td>PPT</td>
<td>Public Passenger Transport</td>
</tr>
<tr>
<td>QT</td>
<td>Quantitative Question</td>
</tr>
<tr>
<td>QL</td>
<td>Qualitative Question</td>
</tr>
<tr>
<td>R</td>
<td>Responsibility</td>
</tr>
<tr>
<td>RA</td>
<td>Research Assumption</td>
</tr>
<tr>
<td>SA</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>SBB / SFR</td>
<td>Schweizerische Bundesbahnen / Swiss Federal Railroad</td>
</tr>
<tr>
<td>SCI</td>
<td>Strategy Customer Information</td>
</tr>
<tr>
<td>SH</td>
<td>Stakeholder</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Messaging Service</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for the Social Sciences (Statistical Software)</td>
</tr>
<tr>
<td>SRM</td>
<td>Stakeholder Relationship Management</td>
</tr>
<tr>
<td>SRP</td>
<td>Service Recovery Paradox</td>
</tr>
<tr>
<td>TA</td>
<td>Technology Architecture</td>
</tr>
<tr>
<td>TF</td>
<td>Travel Frequency</td>
</tr>
<tr>
<td>TT</td>
<td>Type of Train</td>
</tr>
<tr>
<td>UIC</td>
<td>Union internationale des chemins de fer</td>
</tr>
<tr>
<td>UML</td>
<td>Unified Modelling Language</td>
</tr>
<tr>
<td>UVEK</td>
<td>Eidgenössische Departement für Umwelt, Verkehr, Energie und Kommunikation</td>
</tr>
<tr>
<td>VFS</td>
<td>Viafiers federalas svizras</td>
</tr>
<tr>
<td>WDR</td>
<td>Westdeutscher Rundfunk</td>
</tr>
</tbody>
</table>
Tables

Table 1: Customer Satisfaction Literature ................................................................. 39
Table 2: Customer Segmentation Literature .............................................................. 44
Table 3: Crisis Management Definitions (Harald 1998) .............................................. 52
Table 4: Crisis Management Literature .................................................................. 59
Table 5: Incident Management Literature ................................................................ 65
Table 6: New Technological & Social Trends ............................................................. 70
Table 7: Research Paradigms (adapted from Guba & Lincoln 1994) ......................... 90
Table 8: Selection Criteria (adopted from Pryzborski & Wohlrab-Sahr 2008) ......... 104
Table 9: Interviewees ............................................................................................... 105
Table 10: Sample ..................................................................................................... 109
Table 11: SFR Fact Sheet (SBB 2009) ..................................................................... 125
Table 12: Confirmation of proposition 1 .................................................................... 138
Table 13: Incident Information (SBBi 2006) ............................................................. 142
Table 14: Confirmation of proposition 2 .................................................................... 144
Table 15: Confirmation of proposition 3 .................................................................... 152
Table 16: Confirmation of proposition 4 .................................................................... 155
Table 17: Confirmation of propositions ...................................................................... 163
Table 18: Customer Information Systems (blue indicates areas of action) .............. 184
Table 19: Information Types (blue indicates areas of action) .................................... 185
Table 20: Customer Information Strategy ............................................................... 288
Table 21: Development of an Organisational Concept ............................................. 289
Table 22: Definition of KPIs .................................................................................... 290
Table 23: Development of Programme Management .............................................. 291
Table 24: Development of a Media Concept ........................................................... 292
Table 25: Intensification of Customer Contact ......................................................... 293
Table 26: Definition of Customer Segments ............................................................ 294
Table 27: Mobile Customer Information ................................................................. 295
Table 28: Additional Information ............................................................................ 296
Table 29: Proactivity ................................................................................................ 297
Table 30: Individualisation ....................................................................................... 298
Table 31: Customer Segments .................................................................................. 299
Table 32: Mobile End Devices ................................................................................. 300
Table 33: Customer Satisfaction in General ............................................................. 301
Table 34: Statistics Customer Satisfaction in General .............................................. 302
Table 35: Delay Frequency ...................................................................................... 303
Table 36: Statistics Delay Frequency ....................................................................... 303
Table 37: Unpleasant Delays ................................................................................... 304
Table 38: Statistics Unpleasant Delays ..................................................................... 304
Figures

Figure 1: Research Model ................................................................................................ 4
Figure 2: Structure of this Thesis ................................................................................... 10
Figure 3: Overview ......................................................................................................... 18
Figure 4: Bodies of Literature ....................................................................................... 19
Figure 5: Customer Satisfaction (adapted from Kumar et al. 1997: 309) ...................... 25
Figure 6: Confirmation / Disconfirmation Paradigm (adapted from Krafft 1999) ........ 27
Figure 7: Rail Service Quality (Parasuraman et al. 1994) .............................................. 36
Figure 8: Zone of Tolerance (adopted from Zeithaml & Bitner 1996) ........................ 36
Figure 9: Personal and Functional Connection (Story & Hess 2006: 409) ................. 42
Figure 10: Communication Model (adapted from Shannon 1949) .............................. 46
Figure 11: Communication Model (adapted from Westley & McLean 1957) .......... 47
Figure 12: Mitroff’s Crisis Management (Mitroff 1996: 210) .................................... 48
Figure 13: Crisis & Disaster (Shaluf et. al. 2003: 28) ............................................. 51
Figure 14: Risk & Crisis Management Planning Process (Sapriel 2003: 350) .......... 56
Figure 15: Customer Satisfaction (adopted from Homburg 2003) ............................. 80
Figure 16: Propositions ................................................................................................. 83
Figure 17: Structure of Research Method ................................................................. 88
Figure 18: Research Process ......................................................................................... 98
Figure 19: Organisation Customer Information (adopted from SBBi 2007)........ 124
Figure 20: Customer Satisfaction in General ......................................................... 133
Figure 21: Customer Satisfaction ............................................................................. 134
Figure 22: Delay Frequency ....................................................................................... 135
Figure 23: Unpleasant Situations ............................................................................. 136
Figure 24: Experienced Delay Minutes ................................................................. 137
Figure 25: Incident Information (SBBi 2006) ......................................................... 141
Figure 26: CI during Incidents .................................................................................. 143
Figure 27: Speed of Information Delivery ............................................................... 149
Figure 28: Speed of Information Delivery and Customer Satisfaction ................ 151
Figure 29: Customer Information Model ................................................................. 156
Figure 30: Submodel 1 ............................................................................................. 157
Figure 31: Submodel 2 ............................................................................................. 159
Figure 32: Submodel 3 ............................................................................................. 160
Figure 33: Submodel 4 ............................................................................................. 161
Figure 34: Procedures ............................................................................................... 178
Figure 35: Measures ................................................................................................. 181
Figure 36: Customer Information System (adopted and extended from SBBi 2011) .. 187
1 Introduction
1.1 Background

The biggest incident in the history of the Swiss Federal Railway (SFR) occurred in June 2005. The Swiss rail network came to an almost complete standstill; more than 200,000 people in 1,500 trains were stuck at the same time. The incident occurred during the evening rush hour, with all lines in the SFR affected simultaneously. The problem was caused by a fault in the electricity supply. A chain reaction interrupted the power supply to the entire rail network. Travellers received their information via loudspeaker announcements and display boards operated manually by staff at remote control centres. At the same time, the mobile telephone network in stations collapsed. The reason for this was the large number of people using their telephones at the same time to inform others about the delays. It was almost two hours before the first trains were able to run again, and 12 hours before the rail network was restored to its original state (DPA 2005; Handelsblatt 2005).

This situation provided a major challenge for the SFR. A single point of breakdown caused the whole rail network to collapse. Subsequent analysis showed that a single overturned electricity mast brought about the chain reaction (SBB 2005). Another major incident occurred a couple of weeks later in the region of Central Switzerland. Heavy rainfall and storms led to massive problems; tracks were washed away, while other sections of the route became impassable due to landslides. It took more than six weeks to restore the situation to normal (SBB 2005a).

These two incidents had far-reaching consequences for the company. The SFR’s customer satisfaction levels dropped appreciably, particularly in Central Switzerland. Those affected were understanding of the problems and realised that the company was not responsible for the incidents; however, there was loud criticism of customer information at the time. Many customers found it entirely unsatisfactory (NZZ 2005).

For this reason, the SFR came up with a multitude of measures which all had the aim of preventing disruptions and of minimising the damage caused by disruptions that had occurred. As a rail network with absolutely no disruptions is not realistically possible, a customer should at least be reliably informed in the case of a disruption (SBBi 2007).
1.2 Research Question

Following the approach of Okumus (2003), a research question will now be explained and complemented by a set of propositions, which are described in this thesis. The research question is as follows:

**What are the success factors for customer information of SFR-customers in critical situations in order to maintain stable customer satisfaction?**

The idea for this question came from the “Customer Information” program from the SFR, which has a multitude of measures aimed at improving customer information.

Disruptions to the rail network can be due to various reasons: material defects, human error, technical problems or natural forces can all influence the rail network. By regularly improving maintenance, technology and by training the personnel, incidents and their effects are reduced however cannot be completely eliminated. When incidents occur, rail passengers will react.

If customer expectations in a product or service are not met, the customer reacts with dissatisfaction (e. g. Kano 1984; Bowen & Chen 2001; Kanning & Bergmann 2009). As an important feature of the service provision to the rail passenger, is punctuality, when it is not achieved, this leads to dissatisfaction (Parasuraman et al. 1994). Internal studies done by the SFR indicate however, that customers will show understanding in the case of incidents when they occur, as long as these are communicated early enough and as long as the customer can still complete his travel plans (SBBi 2008; SBBi 2008a).

Information is a success factor if customer satisfaction in the case of disruption is to remain stable.

Initial questions in order to answer the research question are as follows:

- Which factors are relevant for customer satisfaction during incidents?
- Which processes and stages are relevant during incidents?
- Which factors are crucial to the success of customer information?
The research topic is illustrated in the figure below. It is obvious that incidents influence the customer satisfaction. But how this happens it is not clear. The black box from figure 1 will be transferred in a model which explains the backgrounds and the influencing factors.

![Figure 1: Research Model](image)

Significant problems with respect of the provision of customer information during incidents are caused by insufficient organisational establishment of processes and guidelines, but also by a technical infrastructure which is not up to date, thus impeding quick reactions in crisis situations. This research aims to make a contribution towards addressing a framework designed to improve communication during incidents in order to keep the customer satisfaction stable. The main objectives are:

- Systematic understanding of incident processes in order to improve customer information during incidents.
- Improving customer communication during incidents in order to keep the customer satisfaction level stable.
- Based on the available literature and various existing concepts, theoretically grounded measures will be developed which may be implemented operationally by the SFR.

A focussed discussion in existing literature on the subject of customer information during critical incidents was not directly apparent. There are, however, a large number of publications which deal with related topics. These approaches very often focused on pure research (e.g. Perry 2003; Gillingham & Noizet 2007) rather than on practical applications for communication in critical incident situations.
To answer the research question it was necessary to explore different scientific disciplines, covering subjects in the fields of business administration, social sciences and psychology, where many established and valuable approaches were discovered. Thus approaches for measuring quality in a service environment (Bruhn 2008; Rizk-Antonious 2002), explanatory models for customer satisfaction (Kano 1984; McCollough et al. 2000; Oliver & DeSarbo 1988), ideas from the field of crisis and incident management (Parsons 1993; Elliot et al. 2005) and other disciplines provide information to develop a well-grounded model and create a conceptual frame of reference. On the basis of this frame of reference, a case study method was used to examine the extent to which the propositions from the literature review were applicable. The findings were presented, resulting in improvements to the organisation of customer information within the SFR on the one hand, and for rail passengers as consumers on the other.
1.3 Significance of Research

As a consequence of the pervasiveness of new media such as the internet in society, the public has changed. Nowadays anyone can publish films, books and texts worldwide using affordable computers, without having to incur high market entry costs, which has changed the influence of the public. If a company wants to be successful, clear and positive communication is a factor. Credibility capital is as important in crisis situations as financial resources or know-how (Davies & Walter 1998). This particularly applies to companies operating in the public arena, such as a public rail company. A monopoly position is associated with a large number of economic benefits which must, however, be constantly justified to the public. This results in particular demands on internal and external communication. Information has grown in importance in recent years due to increasing competition between established and new media (Kuhlen 2004).

Activities which previously had absolutely no significance for the public and also required no approval now have public relevance. Whereas just a few years ago investors or customers were the key stakeholders for an organisation, the spectrum has since widened. Purely economic perspectives are now no longer acceptable from companies. An activity carried out by a company often has an impact on the public. The public emerge increasingly as stakeholders, as they see themselves as indirectly affected by company actions. Companies are turning into public institutions which are accountable to internal stakeholders, but also to the general public (Scherler 1996). Company decisions which run contrary to the opinion of the general public are punished by way of a withdrawal of trust (Zhong & Low 2009). A recent example is job cuts. When the SFR wanted to close an unprofitable factory in Tessin, the employees resisted with an illegal strike, and the site remained open. Critical to their success was the strong support of the public, politicians and other companies who declared their solidarity. The management of the SFR was not able to maintain their position and conceded to the strikers (e. g. Tagesanzeiger 2008a).
This and other recent examples show how strongly the public perceive the SFR and how fiercely the public react to incidents when they have the impression that the company has failed (20Min 2009b)\(^1\), or when they receive a positive impression (Blick 2009).

It is therefore useful to investigate how customer information can be integrated into a customer communication system during critical incidents (CCSCI) to keep customer satisfaction in crisis situations stable. With this thesis, existing scientific findings and theoretical approaches in the context of customer information during incidents have been applied to a business problem.

---

\(^1\) Entering the search terms “SBB” and “Störung” (“incident”) in Google returned over 28,000 hits, with most hits on the first page referring to daily newspaper coverage of the subject.
1.4 Research Method

The research method is based on a single case study approach, following a two-stage method (Yin 2008; Riege 2003; Baxter 2006; Flyvbjerg 2006). SFR employees with different functions and at different hierarchical levels from various departments involved with customer information are interviewed. The objective is to gain as much information as possible from different points of view. Next, quantitative data from the company’s customer satisfaction survey is evaluated. The secondary data analysis is based on the results of over 4,200 surveys. Additional internal SFR-documents are analysed.

The method of triangulation was chosen as the analytical method for which research of at least two methods was carried out (Lamnek 2005). This basis was chosen because according to Denzin (1978) the findings most often indicate the situation in reality rather than in the method. The knowledge obtained here allows conclusions to be drawn which can serve as the basis for enhancements to a customer communication system.
1.5 Outline of the Report

The introduction chapter provides the reader with an insight into the subject. The background to the research is described followed by the basis of the presented research questions and their meanings. Following this comes the methodology, some basic definitions and the delimitation of scope.

The literature review makes up most of the second chapter. The research literature relates to the subjects of customer satisfaction, customer segmentation, crisis and incident management which are investigated. In the second part of the chapter, based on the literature analysis, the propositions which have to be investigated are developed.

The research method is dealt with in the third chapter. Here, the underlying research models, the single case study, the triangulation, the scientific quality criteria and the ethical foundations can be found.

The analysis chapter investigates the propositions defined in the literature review with the research methodology and presents the evaluation of the facts.

In the last chapter, the results from the thesis are presented and the research questions are answered. A special focus in this chapter is on the implications for professional practise as the results presented with regards to this are in the form of concrete measures.
Figure 2: Structure of this Thesis
1.6 Definitions

Key terminology underlying the research topic requires explanation within the various relevant objectives to be studied. Incident is a key term, as is the customer who feels the effects, as an incident exerts a critical influence on him. Customers receive information by communication, which also makes these terms relevant. Finally, the intention is to embed the knowledge gained into a CCSCI, with the aim of improving the quality of the established system. These key terms used are now defined.

1.6.1 Critical

Etymologically, the term originates from Greek (κριτική) and means “to distinguish”, or “to separate” (Duden 2007). Here, the term crisis used in its modern context and describes the recognition of a deficit which underlies an implicit demand to remedy this (Fuchs-Heinritz et al. 2008). In the context of this thesis, the term “critical” is applied to the scale of an incident:

A situation is critical when a large number of passengers find their travel situation to be unacceptable.

A large number means that more than 10,000 passengers\(^2\) are affected. This number can be quickly reached. Particularly during rush hours, at connecting stations and on heavily frequented routes, a small effect can often have the consequence of a large number of knock-on delays. A travel situation is critical when the customer misses their connections and receives no information about alternatives, as this reduces customer satisfaction.

1.6.2 Incident

An incident denotes the deviation of a planned state or expected course of events from its specified, expected or predicted path (Duden 2007). In passenger transport, such

\(^2\) This is a standard value used by the SFR (SBBi 2008).
processes or orders of events can be of various natures. Trains can be delayed or their frequency reduced. Furthermore, incidents with serious consequences are possible, such as rail accidents resulting in personal injury. Within the scope of this thesis, the focus is on critical incidents where the information delivery can be handled automatically. In the case of disasters, individual communications measures usually need to be defined (Rosenberger & Pfizenmeier 2009; Eisenegger 2005) which mostly cannot take place purely automatically.

**An incident exists when passengers’ travel plans are noticeably affected by delays or train cancellations.**

### 1.6.3 Crisis

Colloquially, a crisis describes a negative situation which is a threat to existence or can cause very serious damage. This suggests a problematic decision situation involving a turning point. Primarily, Harrald’s (1998) definition is used:

Derived from the Greek krisis, meaning a crucial turning point in the course of something, an unstable condition in which an abrupt or decisive change is impending. Crises threaten the priority goals of an organization, challenge the traditional behaviors and values shared in an organization, and put a great deal of time pressure on decision makers.

### 1.6.4 Customer

In Middle High German, the word Kunde denoted an “eyewitness”, someone who had observed a particular situation due to their physical presence. A customer is, in post-war corporate philosophy, the most important person in a company, regardless of whether they are physically present, writing or telephoning. From the 1950s, “customer” received a strongly positive connotation, which is still retained today (Duden 2007).

A customer is any person who is interested in the products or services of a company or their potential use – both in terms of purchasing and in terms of their marketing. In addition, however, any institution (profit-orientated company, non-profit organisation,
state, public sector, association) can emerge as a customer. In the scope of this thesis, the term “customer” is used in the following sense:

The customer is the rail passenger who uses the products and services of the railway.

This distinction is made because further types of customer appear within the thesis, for instance internal customers of communication systems.

1.6.5 Communication

The communication model, which was developed by Shannon & Weaver (Shannon 1949) defines communication as the transfer of a message from a sender to a receiver. For this purpose, the message is coded and the signal conveyed over a communications channel. The term communication has expanded since the 1940s and has been increasingly extended to relate to technical devices such as the telephone and computers where it means the transmission of a signal (McLuhan 2001). A prerequisite for successful communication is that the sender and receiver use the same coding of the message (Burkart 2002).

SFR follows a communication approach (SBBi 2007) which is based on Shannon & Weaver’s communication model (1949). This approach aims to reach as many customers as possible through a multi-channel approach. For this reason, Shannon & Weaver’s communication model (1949) can be modified as follows:

Communication means that a message is transferred from the sender (SFR) to the receiver (customer) by way of a channel (loudspeaker, display board, notices, SMS, etc.). Through the selection of different channels, different codings arise with the aim of being comprehensible to the maximum number of people (customers of the SFR).
1.6.6 Information

In the field of human action, information is understood as knowledge to which importance and value has been attached in any given situation. In this context, talk of “information” or “obtaining information” is linked to the elimination or reduction of uncertainty through information, clarification, notification, communication or through the knowledge of subjects and phenomena (e.g. Watzlawick et al. 2011; Kuhlen 2004). Recognisability is frequently a feature of the concept of information along with news content. The essential quality in information is the ability to elicit changes in the receiving system. In the context of this thesis, this means that the customer can use information to adapt their actions:

Customers use travel information in incident situations to adapt activities.

1.6.7 System

Systems organise and maintain themselves through structures. A structure is a pattern (shape) of system elements and their relational networks through which a system is formed, operated and maintained. Systems objective includes reducing complexity and manageability through the use of structures. In contrast, a structureless collection of several elements is termed an aggregate (Luhmann 1996).

The customer information system consists of a multitude of information channels (display boards, notices, announcements, counters…) through which information (standard information, incidents) is provided, processed and carried. The systems allow the customer to plan their journey efficiently and are managed by the employees of the SFR.
1.7 Contribution to Professional Practice

The aim of this thesis is to provide an essential contribution to the improvement of customer information within the SFR. Therefore, the focus of the work is also strongly towards the preparation of results that can be tangibly realised.

Furthermore, the focus is on two subject areas. What has to be ascertained is how the organisation can improve so that customer information is more efficient. Up to now there has always been a sharp distinction between “pre-trip” information at the train station which the organisational department is responsible for and the “on-trip” information during the journey, for which the passenger transport department is responsible. In this thesis, the method of mobile customer information will be investigated, which covers both areas.

A central aspect of this thesis is the customer reaction in critical situations. How customer satisfaction changes when critical situations appear and the influence of customer information have been investigated.

On top of this, it will be investigated how customer information as an entity can gain in quality in practice. In particular, the characteristics of quality that train passengers consider to be important will be analysed.

The findings from these subject areas will be interpreted into measures which can be tangibly realised in the form of projects.
1.8 Delimitations of Scope

The research focuses on the influence of information on customer satisfaction during delays to passenger transport. There are numerous other influencing factors, such as the cleanliness of the train, air quality, the friendliness of service staff, etc (Parasurman et al. 1994). These influencing factors are not under investigation in this research. Furthermore, the model is focused on the SFR.

For incidents, the focus is on the issue of delays. Almost every incident leads to a delay, thus the majority of factors are covered. Other incidents are not considered.

In terms of customer information, technically generated and transmitted information is considered. Other types of customer information, such as information provided personally by train staff or at ticket counters, are not the focus of the document. The reason for this is that these employees also draw their information from technical media and generally accessible channels.
2 Literature Review
2.1 Introduction

The purpose of this chapter is the definition of a theoretical framework that outlines the current state of literature in this research area. Therefore an overview about existing literature in this research area is given, gaps are identified and it is explained how this research will contribute to professional practice.

This chapter consists of two main sections. In the first section (section 2.2 and 2.3) an overview regarding the current state of literature is given. In the second part conclusions are drawn (section 2.4) the research framework is built and propositions are derived (section2.5). The next figure shows chapter 2 as an overview.

<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope of Literature Review</td>
</tr>
<tr>
<td>Analysis of Literature</td>
</tr>
<tr>
<td>Conclusions from Literature</td>
</tr>
<tr>
<td>Implications for Research</td>
</tr>
</tbody>
</table>

Figure 3: Overview
2.2 Scope of Literature

Various fields of customer satisfaction research, crisis and incident management, customer segmentation and technical and social trends contribute directly to a better understanding of customers. The basic definitions were described in section 1.6.

To develop new practices and to answer the research question it is necessary to examine existing literature and available knowledge, to identify conceptual approaches that can be combined, adapted or extended, for the special needs of the railway.

In order to reach this target, the literature review starts with the subject of customer satisfaction research. In addition, attention is placed on which factors influence customer satisfaction. In the areas of crisis and incident management, it has to be investigated which concepts exist which help to bring the situation under control in these two cases.

Customer segmentation is interesting as we can see the basis of how the various customer segments are made up. Thereby, a new customer information system will be able in future to examine which social and technological trends could influence these customers.
2.3 Analysis of Literature

This section contains the different bodies of literature, which are connected to the area of customer information in crisis situation.

2.3.1 Customer Satisfaction Research

Empirical studies confirm the correlation between customer satisfaction and a company’s success (Narver & Slater 1990; Jaworski & Kohli 1994). But why should this be the case, and what effects does a dissatisfied customer have on a company? In the body of literature it is assumed that high quality services and products are essential for a company; that this leads to high customer loyalty and therefore to higher profits, all at lower costs. A product or service is everything that arrives on a market with the aim of attracting attention, being purchased, used or consumed, for the purpose of satisfying needs (Priluck 2003). A market study by KPMG (2000)3 profiling the 500 highest-revenue industrial companies in Europe shows that they all focus on the customer service centre and on improving customer service processes. Satisfied customers exhibit high loyalty towards a company and repeatedly turn to a familiar service or product. In this way, a company can guarantee regular revenue. Satisfied customers are also characterised by higher price elasticity. They respond less negatively when prices are increased, which leaves a multitude of possible strategies open to the provider (Hinterhuber & Matzler 2009).

What happens, then, if an incident impairs the quality of a service? In this situation, the customer uses a service whose quality is not of the expected standard. The basis for customer satisfaction research is the analysis of the customer’s level of expectation. The level of expectation can be divided into normative and predicative expectations (Boulding et. al 1993).

Normative expectations can be defined as the performance-related aspiration level of the customer, their “should” expectation. Normative expectations reduce the probability of the expectation being fulfilled, while predicative expectations have a positive effect.

3 http://www.kpmg.de/library/surveys/satellit/Management_Summary_17.01.2000.pdf
on perceived quality, as this expectation has already been met repeatedly, and a deviation is perceived as such (Zollondz 2006).

The situation is different with affective expectations, which differ from cognitive expectations. The concept of affective expectations describes possible emotional conditions in situations that are influenced by stimuli. These can lead to a distorted perception (Bruhn et al. 2006). A rail customer who is already late will react considerably more intensely to a small delay than on another day when he/she has sufficient time. Customer expectations change over time, with the respective consumption phase being decisive. The period before the use of a service is crucial to the purchase decision. Expectations still play a minor role here. These change during utilisation, when preliminary quality and satisfaction judgments are made. These are based on experiences with the service provider as well as with information which leads to new expectations (Bruhn et al. 2006; Concèpcion et al. 2009).

The investigation of customer satisfaction is divided into four parts:

- Chapter 2.3.1.1 verifies whether customer satisfaction is at all relevant to the rail environment.
- Chapter 2.3.1.2 describes the most important theoretical approaches that explain which factors influence customer satisfaction. These are the confirmation/disconfirmation paradigm, Noriako Kano’s concept, opponent-process theory, the assimilation-contrast model and attribution theory.
- Chapter 2.3.1.3 describes the most important quality criteria that affect customer satisfaction in the rail environment.

2.3.1.1 RELEVANCE OF CUSTOMER SATISFACTION

The significance of customer satisfaction is a topic that the body of literature has thoroughly dealt with (Schwenk 2006; Künzel 2005). The results gained are mostly based on customer surveys. The benefit can be linked to various key points:

- High customer satisfaction allows a company to expand their target group.
- Satisfied customers are less sensitive to prices and rarely change supplier for monetary reasons.
- The product offering can be optimised.
- Advertising and marketing costs can be reduced.
Customer retention is very high with satisfied customers.

In general, customer satisfaction can be considered as a person’s attitude towards a service or a company (Kanning & Bergmann 2009). The person can pass through different stages of satisfaction at any given time, dependent on various influencing factors. Thus a rail traveller might be very satisfied with the punctuality of the trains, for instance, whilst being very dissatisfied with the cleanliness or availability of seats during the journey. The correlation between customer satisfaction and customer loyalty has been proven by numerous studies (e.g. Athanassopoulos et al. 2001; Keiningham et al. 2005).

For Wong & Sohal (2003), customer satisfaction is regarded as the primary defining factor for recurring buying behaviour. The greater the correspondence between customer expectations and the service provided, the more likely he is to buy there again. In the Confirmation-/Disconfirmation Paradigm, the correlation can be expressed as a formula:

\[ S = E - P \]

Satisfaction (S) = Expectation (E) – Perception of Performance (P) (Kanning & Bergmann 2009).

However, recurring buying behaviour has nothing to do with commitment. For example, a customer might always stay in the same hotel because he likes it there; however, if another hotel opens in the next street, he might switch because he expects a better service there (Bowen & Chen 2001).

Incidents lead to a poor perception of quality. Fundamentally, quality is assessed as when customer needs match the product characteristics (Taylor 1995). A myriad of approaches are available in the literature for the definition of quality in the service environment (Bruhn 2008; Rizk-Antonious 2002). In his customer satisfaction studies, Chris Taylor (1995) defines three main features that underlie most definitions of quality:

- Freedom from defects: customers expect products with no defects. The requirements of the customer are to be considered here. Varying defect tolerances are acceptable depending on the intended use.
Fitness for purpose: a customer expects the product to have certain required properties – a ship must float, a car must drive, and a plane must fly. The required properties are not only a characteristic of quality, but also a minimum standard.

Quality from the outset: it should be a matter of course that the customer receives an appropriate and defect-free service from the outset. Product recalls damage the image of a company and can threaten its existence (Taylor 1995).

Low quality can seriously damage a company. For instance, when it became clear that faulty tyres from the Bridgestone/Firestone Company had caused traffic accidents with 271 verifiable deaths, the largest product recall in the world took place. 14 million tyres were recalled during the year 2000, and the firm lost three billion US dollars. This resulted in factory closures in the USA and thousands of employee redundancies (Fischer 2008).

Satisfied customers serve as a reference, in that they tell other people about their positive experiences. However, this also occurs in negative cases. The result can be that dissatisfied customers describe negative experiences that discourage other potential customers or cause existing ones to leave. Possible alternatives also play a role in customer satisfaction; if these are available, the customer is less prepared to compromise, provided the alternatives better meet his/her needs (Kaiser 2004).

Historically speaking, consideration of customer satisfaction is relatively new. The phenomenon of relevance, such as Reis et al. (2003), has only been described since the end of the Second World War. Before and after the World Wars, the largest problem for the economy was a shortage of day-to-day necessities. The available food and consumer goods were bought because there were few or no alternatives. Clothing was not designed for fashionable purposes, but rather the requirements of the environment (warmth, robustness, etc.). The same applied to quality and price. These were determined by the supplier, and the consumer had few or no alternatives (Reis et al. 2003). A classic seller’s market arose. A seller’s market describes a market situation where the seller finds himself in a more favourable tactical negotiating position than the buyer. Reasons for the strong position of the seller can be a shortage of goods or increased demand from buyers for urgent goods, for instance scarce raw materials. In
the seller’s market following the Second World War, differences in price and quality between individual suppliers were low, as was market transparency and mobility in exchanging products, as the infrastructure was destroyed in many sectors. Customers suffered from a high dependence on the seller. Not until the reconstruction years did luxury goods regain their importance. Step by step, new manufacturing technologies developed, which allowed the production of better quality goods. At the same time, consumers again had higher disposable incomes which made the production of luxury goods worthwhile. A further significant factor in the change was advances in technology, which allowed better manufacturing. Legislation and international trade agreements allowed national economies to specialise, so that ever higher quality and cheaper products and services could be produced, which became exchangeable within the framework of international trade (Taylor 1995). This historical review shows why customer satisfaction does not play a role in many countries (for example in the Third World or various developing countries): for many products, it is a seller’s market. The customers have no alternatives and when these are available, market transparency is often missing.

Other authors challenge customer satisfaction as the top priority. In the IT service management sector there is a view that an excessively high level of customer satisfaction creates unnecessarily high costs. Hence a slight dissatisfaction is still acceptable as customers do not change their providers for a relatively long time. Other authors assert that the significance of customer satisfaction is connected to the goods or service. If, for instance, a very important product feature meets a very high level of customer satisfaction, a company can benefit from this. This is not the case if low importance is attached to a product or feature and customer satisfaction is high; then irrelevant benefits are gained. Low customer satisfaction with unimportant products can also be disregarded. A need for action always exists when there is low satisfaction related to an important feature (Hinterhuber & Matzler 2009). The “service recovery paradox” (SRP) becomes important. Here, complaints are used specifically to address the issue of customer retention. The company thereby makes use of an effect: customers who complain and have their problem resolved to their satisfaction are more satisfied than customers who use a product without any problems (Jeschke & Schulze 2006). It shows that incidents can be turned into a positive effect. This occurs when it is possible to revert to the original state through a service recovery. Service recovery is defined as
all efforts made by a company that are related to resolving the problem. This refers to all the resources with which a company can face a problem, with the aim of resolving it (Maxham 2001). Various studies show that customers are more satisfied after an incident has been resolved than customers who received perfect service from the outset (Michel & Meuter 2006; Maxham & Netemeyer 2002; Mc Collough et al. 2000).

Incidents influence customer satisfaction. The confirmation/disconfirmation paradigm investigates which consequences for customer information arise from the model.

The most important influencing factors relating to incidents on customer satisfaction are shown in the following figure, which is based on a study by Kumar (et al. 1997). The Y axis represents the continuum of customer satisfaction, while the X axis displays time elapsed. The starting point is the customer’s arrival at the departure station; the end point is the destination station. In the graph, it is assumed that the customer has a satisfaction rate of zero at the starting time. Satisfaction is defined as a constant which does not change during the course of a normal journey. This satisfaction can be defined as the base satisfaction. Incidents influence this base satisfaction, generally negatively. This can be illustrated by a simple scenario. In the graph, the satisfaction of two passengers is represented by a horizontal arrow. Passenger 1 experiences a train journey without any incident. His base satisfaction does not change during the journey time.

This is not the case in the example of Traveller 2. At the start of the journey, the base satisfaction of Traveller 2 is identical to that of Traveller 1. However, at time t=0, an
incident occurs. This causes the satisfaction to drop dramatically, which is expressed by variable a. With increasing delay, the satisfaction will constantly decrease. This change continues until the end of the incident. Whether the satisfaction will return to the initial level cannot be definitively determined. Presumably, however, if the traveller is still able to reach his destination on time, the initial level will again be attainable. It is problematic if appointments cannot be met due to the delay. In studies, Kumar (et al. 1997) measured the satisfaction of customers while waiting in supermarket queues. Satisfaction increased as the customers approached the checkout, as the end was in sight. A similar assumption can be inferred with Traveller 2. At the end of the journey, his customer satisfaction is lower than for Traveller 1, but is once again approaching that level. In the graph, the difference is represented by variable a. Two schools of thought have developed. Etzel and Silverman (1981) describe an effect which asserts that customer satisfaction after an incident can rise above the original level. The effect was later described as the service recovery paradox (SRP) (e.g. Matos et al. 2007; Jeschke & Schulze 2006). Scientists have been discussing this question for decades. While McCollough (et al. 2000) assumes that the original level can no longer be reached, Maxham and Netemeyer (2002) assert that an increase is possible.

2.3.1.2 EXPLANATORY MODELS FOR CUSTOMER SATISFACTION

Within a business environment, customer satisfaction describes the relationship between customer expectation and the satisfaction of needs (Matzler et al. 2005; Zeithaml 1992; Meffert & Bruhn 1997). Satisfaction is a customer’s feeling that arises through his comparison of the perceived increase in value and the expected increase in value. Meffert & Bruhn pointed out that customer satisfaction and value are linked together. These are the expectations expressed by the customer (specifications) and measurable performance requirements. If they do not fully match expectations, dissatisfaction arises; if expectations are surpassed, satisfaction increases. Performance requirements can be ascertained by way of traditional market research methods (verbal or written surveys) Spreng (et al. 2009). The most important explanations and their consequences are described below.
2.3.1.2.1 Confirmation / Disconfirmation Paradigm

The confirmation/disconfirmation paradigm (CD) is one of the key explanatory models for the investigation of customer satisfaction. This approach is also the basis for other approaches in behavioural science, such as the consistency theory, contrast theory and assimilation theory (Krafft 1999). The paradigm is strongly affected by the influence of personal communication and customer expectations in the service process.

The basis of the theory is the tendency for customers to set specific expectations of a product or service (Bruhn 2008). The perception of products or services occurs in two ways. First the customer observes the service or product, then a process of comparison begins. Here the customer checks whether the performance actually received (actual state) corresponds with their reference standard (target state). The degree of correspondence expresses the customer’s level of expectation in relation to the performance. If the perceived performance exactly matches the expected standard, a confirmation emerges. If the actual state exceeds the target state, then a positive disconfirmation (satisfaction) arises; if this is not the case, it creates dissatisfaction, a negative disconfirmation (Luk & Layton 2002; Homburg 2003). Satisfaction is generally regarded as a result of a cognitive comparison between the reference standard and the perceived level of performance. In more recent research, the opinion is increasingly emerging that an affective component is added (Ojasolo 2001). It appears to be certain, especially in the service sector, that there is a correlation between emotional and cognitive aspects. The significance of emotional experiences increases with time, as these generally occur suddenly and uniquely (Bruhn et al. 2006). Customer satisfaction is a positive emotional state which results from the attribution of
events and the attributed causes. Customer satisfaction is always particularly high if the customer is involved in the exchange process. Particularly high dissatisfaction occurs if the external causes of the negative experience lie outside of the control of the service provider (Bruhn et al. 2006).

A key strength with the approach lies in the fact that it can explain in which situations dissatisfaction is likely to occur. This also results in a weakness: for various problems, the causal factors are not evident to the customer. The customer does not care about the cause. The customer wants to receive the desired service. Here, too, the theory provides little explanation. Due to these weaknesses, the C/D model is insufficient as a single explanatory cause.

Customer expectations are the key influencing factor for customer satisfaction (Bruhn 2008). In a comparison process, the customer verifies how expectations are aligned with the delivered services/products. Satisfaction develops when expectations are met or exceeded, and dissatisfaction when this is not the case. After a certain amount of time, positive experiences are considered a matter of course. On the other hand, a negative corporate image can lead to dissatisfaction even during incidents that were not self-induced. Customers claim causal attributions mostly with negative experiences (Erevelles & Leavitt 1992; Wong & Weiner 1981).

2.3.1.2.2 Opponent-Process Theory

The Opponent-process theory is based on motivation (Solomon 1980). According to this theory, positive and negative emotions are strong motivators for people. These change over time, and people become accustomed to particular stimuli.

Solomon (1980) carried out studies on parachutists. During the first jump, a person usually experiences strong fear which is then superseded by a counter-reaction after landing, which results in a strong feeling of happiness:

“During their first free-fall, before the parachute opens, military parachutists may experience terror: They may yell, pupils dilated, eyes bulging, bodies curled forward and stiff, heart racing and breathing irregular. After they land safely, they may walk around with a stunned and stony-faced expression for a few minutes, and then usually they smile, chatter, and gesticulate, being very socially active and appearing to be elated” (Solomon 1980: 693).
After a certain period of time, tolerance is developed towards the stimulus. During the next jumps, the agitation abates until a stable level is reached. The significance of criteria for the evaluation of performance consequently changes over time (Solomon 1980). The Opponent-process theory describes how the dynamic adjustment process to stimuli takes place. As with the CD paradigm, the perception of stimuli takes place with a comparison of standards. The explanation of this provides the homeostasis. The theory explains that self-regulating systems can keep themselves in a stable state even with negative feedback. This concept was originally developed by Claude Bernard in 1929. Since then, it has been applied in various scientific disciplines (Oliver & DeSarbo1988).

In the field of psychology, the assumption claims that humans want to maintain a constant state in their central nervous system. After a period of adjustment it is no longer possible to reach an emotional imbalance with the same stimuli (Bruhn et al. 2006). The opponent-process leads to stimulation constantly decreasing over time, thereby hardly influencing the judgment of quality any longer. This would mean that a consistently high standard of quality in transport would not provide an additional positive perception, but would instead be taken for granted. If a customer’s train always arrives on time, this punctuality will be expected and not felt to be a particular feature of quality. Not until a contrary stimulus is encountered, such as a delay, does this effect enter the consciousness. On the basis of the opponent process, Matzler defines the development of asymmetrical effects (Matzler et al. 2005). These can be divided into three phases: In the first phase, a customer perceives a new stimulus about a product. The positive impression causes the customer to lose emotional balance. Through the opponent-process, a new balance is established over the course of time. The perception of the product attribute at first leads to enthusiasm, although its absence does not produce negative emotions.

2.3.1.2.3 The Kano Model
The Kano model effectively describes a transfer and extension of the two-factor theory put forward by Herzberg, who developed the theory of work motivation. Kano’s basic factors correspond to Herzberg’s hygiene factors, while Kano’s performance and excitement factors are comparable to Herzberg’s motivation factors (Kano 1984).

Asymmetrical effects are the basis for the Kano model of customer satisfaction. Kano developed his model at the University of Tokyo, where he studied how the customer’s
requirements are incorporated in product development. As a starting point the model takes three factors which have an influence on overall satisfaction (Kano 1984):

- Basic factors are the minimum requirements that a product must contain. If these are not present, dissatisfaction arises. If they are present, satisfaction does not increase as they are simply expected. The correlation between factor and overall satisfaction is asymmetrical. In the rail context this would mean that the customer expects to arrive at the next station safely. If this basic requirement is not met, the customer will be dissatisfied.
- Performance factors lead to satisfaction when performance exceeds expectations. Dissatisfaction occurs when the expectations are not met. In the context of the railway, this would mean that a) air conditioning ensures a comfortable temperature in the train during a hot summer or b) where incidents influence arrival times.
- Excitement factors cause high satisfaction if they can be found. If they are missing, the customer does not notice and no dissatisfaction arises. This presents positive asymmetry. The higher the satisfaction, the more important this factor becomes. In the rail environment, enthusiasm can occur for instance if free drinks are provided in the height of summer.

According to Kano, there is no linear connection between the different factors and overall satisfaction. The connection between individual performance attributes is highly dependent on the satisfaction and overall situation of the customer. The significance a customer assigns to a characteristic is a function of satisfaction. The higher this is, the more satisfied the customer is (Matzler et al. 2005).

Various authors express criticism towards Kano. It remains unclear why for some services the positive confirmation level does not occur, despite exactly meeting expectations. Likewise, a customer who has not formed pre expectations can still be dissatisfied (Sauerwein 2000). A further criticism of the model is that different customers who have expressed the same expectation can to some extent evaluate the performance differently afterwards (Homburg & Stock 2001). However the strength of the concept lies in the consideration of the subjective aspiration level. A normative standard does not seem to be very helpful, as a customer will only be satisfied by a service if it is sufficient for individual needs (Cadotte et al. 1987).
Various additional theories are now considered which may also guide understanding on customer satisfaction. These are the assimilation-contrast theory, attribution theory and equity theory.

The assimilation theory assumes that people strive for cognitive balance. A balance exists when expectations and the perceived reality match. In contrast, when there is a discrepancy (cognitive dissonance) a mechanism is activated to restore consonance (Homburg 2003). In contrast theory, in the case of a discrepancy, a retroactive correction of perceptions is carried out, albeit in a negative direction. People then tend to increase the discrepancy between perception and reality. For positive and negative discrepancies, the effect only occurs after specific thresholds have been exceeded (Homburg 2003). In assimilation-contrast theory, both approaches are combined. The size of the discrepancy between expectations and perceived reality determines whether a mechanism is activated. This can lead to an increase (assimilation effect) or a reduction (contrast effect) in the discrepancy. If the value falls within the acceptable range, the person retrospectively adjusts their perception of reality and expectations (assimilation effect). If the effect is in the person’s range of indifference, no retrospective adjustment occurs. If the expected performance differs strongly from the actual performance, a discrepancy exists in the rejection range. Then the contrast effect takes place, leading to an increase in the discrepancy between expectations and perceived reality (Homburg 2003).

The starting point for attribution theory was Heider’s (1958) assumption that, as information processors, humans seek reasons for their actions. People are consequently not satisfied with simply acknowledging events, but attempt to interpret the reasons for them. Particular attributions (conditions) can lead to different forms of customer satisfaction, even though the same expectations were present. Attribution theory explains the emergence of customer satisfaction as an allocation or attribution of events to their causes. Here, attribution is a process of interpretation, through which an individual traces social events and actions to their causes. Depending on the attribution, satisfaction can rise or fall. The key approach in attribution theory is the hypothesis that cognitive processes can be the cause of one’s own and others’ actions. Thus the customer's level of satisfaction is highly dependent on whether the customer, the provider or a third party is responsible for fulfilling expectations (Oliver & DeSarbo...
The level of satisfaction is particularly affected if the customer is responsible for fulfilling expectations. If the provider is responsible for fulfilling the service, satisfaction is less crucial. Examples of such products are model kits. If the customer successfully assembles a plane, he/she is very satisfied with the product. If the customer engages a third party to assemble it, satisfaction is lower. A further observation in this context is the factor of stability. If this is given as a cause for the fulfilment of expectations, the customer will assume good performance in the future as well (Matzler et al. 2005). An additional important factor is the controllability of a performance. This puts into perspective the influence on the fulfilment of expectations. Customers decide whether a cause is open to influence (controllable) or not (uncontrollable). If the reason for the lack of fulfilment is regarded as uncontrollable, the decrease in customer satisfaction is smaller (Homburg 2003).

Equity theory has its origins in organisational psychology. Based on the work of Adams (1963) and Pritchard (1969), the sense of fairness towards employees was evaluated. Adams made the assumption that employees in a company would compare their workloads and remuneration with the workloads and remuneration of other employees. The employee would feel equity if the relationship between workload and remuneration was the same as for other employees. Inequity arises when the relationship is unequal in comparison with each other. If this theory is applied to all individuals, they would always feel dissatisfaction if their own input/output ratio is perceived as worse than that of other individuals:

“When individuals find themselves participating in inequitable relationships, they become distressed. The more inequitable the relationship, the more distress individuals feel.” (Walster et al. 1978: 17)

This general theory of equity can be transferred to other situations, such as the exchange of services or products. It is assumed that customers have an imagination of a fair exchange situation, and that customers as a rule make three forms of comparison (Homburg & Rudolph 2001):

- Comparison with the exchange partner,
- Comparisons with others involved in the transaction, such as other customers, and
- Comparisons with other providers.
As inequity leads to negative emotions, unfair transactions at the expense of the customer result in dissatisfaction. According to this theory, satisfaction is present when a feeling of equity occurs. Empirical studies confirm this statement. Tests with a fictitious airline showed that customers were dissatisfied when they learned that other customers received the same flight at a cheaper price (Fisk & Coney 1982; Fisk & Young 1985). According to equity theory, customer satisfaction is a positive emotional state which results from a feeling of fairness. If a comparison of exchanges is felt to be fair or positive in comparison with another provider, this is positive. It is not only the price which is crucial, but also all other service aspects (Homburg & Rudolph 2001).

Lengfeld criticises equity theory with regards to an absence of quantification (Lengfeld 2004). Thus it is not clear to what extent customer satisfaction changes input and output ratios. Particularly in the context of services it is difficult to quantify when performance should be evaluated as acceptable, positive or negative. The explanation is questionable for labour-intensive services. The output is usually easy to quantify with services; however, the input is critical. During a rail journey, for instance, the completed travel route can be easily quantified, but additional services such as logistics, safety, infrastructure etc. are rather difficult to gauge. Another point of criticism occurs in the comparison with other customers.

Fundamentally, equity theory can be said to be insufficient as a sole explanation. However, it does offer valuable explanations in combination with other models.

2.3.1.2.5 Concluding Discussion of Customer Satisfaction Models

In this section, the aim is to present the previous conclusions drawn in a comprehensive customer satisfaction model. In particular, the aim is to compensate for the weaknesses of individual approaches and to develop their strengths. By including various theories, the emergence of customer satisfaction exclusively as a result of positive or negative disconfirmation can be avoided.

With a positive confirmation, customer satisfaction increases the greater the input/output ratio is when compared to the provider or other customers. This increase can occur if customers are actually in a position to make a judgment. Causal attributions generally take place with negative, unusual or unexpected incidents. Hence it can be assumed that the influence of causal attributions is rather small. They become particularly significant during negative events, as these strengthen.
“That is, before a customer determines his or her level of dis/satisfaction, he or she will diagnose the causes of disconfirmation and, depending on the perceived nature of the causes, the level of dis/satisfaction […]” (Bitner 1990: 71)

Consequently, dissatisfaction increases if a negative disconfirmation can be traced to a frequently recurring cause, or if the incident was controllable by the provider. However, dissatisfaction can be reduced by causal attribution in the case of a verifiable external cause.

Various researchers advise against responding to all customer desires. Brown warns against simply actioning everything that customers request. If various decision-makers had relied on test groups, there would be no Walkmans or Chrysler Minivans today (Brown 2002). Aside from this, Brown notes that customers do not always know what they want, or at least cannot put this fundamentally into words. This seems to apply particularly to new products which have not previously been on the market. Developments are not always predictable and subject to rational motives. The success of products that are subject to fashion or trends (e.g. clothing, toys, music) cannot always be predicted.

2.3.1.3 SERVICE QUALITY IN THE RAIL ENVIRONMENT

Following the debate on the psychological basis of customer satisfaction, it is now necessary to check which objective quality criteria are relevant.

Allen and DiCesare (1976) divided quality criteria for services in public rail transport into the categories of user and non-user. The service categories for users were speed, reliability, comfort, convenience, safety, additional services and innovations. For non-users, the authors defined efficiency, demand and environmental impact as categories. Silcock (1981) used a different approach. He defined the categories of accessibility, reliability, comfort, convenience and safety. A similar concept was followed by Pullen (1993). For him, service for rail companies was

“… those attributes of the service which affect its fitness for purpose […] and the attributes, and indeed fitness for purpose, require detailed definition in relation to local objectives and circumstances” (Pullen 1993: 26).
These traditional approaches allow for performance indicators to be divided into two categories: efficiency and effectivity. The category of efficiency quantifies the processes and measures involved in service delivery. Service quality is one of the categories that falls into the domain of efficiency. Pullen (1993) divides the service categories into three sections: scope of service, quality of service and cost/revenue, which in turn are divided into user and non-user categories. Travellers’ waiting times, lost mileage and journey characteristics (arrival and departure times, journey duration) are the key categories for Pullen (1993). The British railway follows an alternative approach. Here, train performance is the focus, which is measured by the categories of minutes delay per passenger, overcrowded trains, broken connections per distance unit, and safety (passed signals per distance unit) (Pollit & Smith 2002). A different measurement system is described by Drea and Hanna (2000). The authors investigated the passenger system of US railway company Amtrak. The focus of the study was the identification of the criteria used by customers when they have a choice between private transport (car) and public transport (bus, train). The attributes measured were comfort, cost, time (when can I travel?), destination (when exactly will I arrive?) and productivity during the journey (can I work?). Other criteria were the accessibility of the railway stations (convenience), parking situation, seat comfort, cleanliness and staff friendliness. The overall performance can provide a statement about the quality of a railway.

Studies by Parasuraman (et al. 1994) are particularly significant to answer the research question. His model describes the basis for quality of service in the rail environment. The two-tier model consists of a “desired service” and an “adequate service”, whereby adequate means that a minimum acceptable standard exists.
According to Parasuraman’s model, various influencing factors have consequences for the perception of customer satisfaction. The “zone of tolerance” defines the extent to which the customer is prepared to tolerate problems. During incidents, a large number of the model’s dimensions are affected. Therefore, a key task in the course of this project is to identify which influencing factors are decisive.

The “zone of tolerance” model was originally developed by Zeithaml & Bitner (1996). In incidents, the “zone of tolerance” can be interpreted as a range between the acceptable and desired level.
Authors such as Parasuram (et al. 1994) and Zeithaml & Bitner (1996) stated that most customers are no longer prepared to accept unsatisfactory or even mediocre quality. It should therefore be a matter of course for a company to optimise its own performance with regards to quality. Here Kotler distinguishes between the absolute and manufacturer-oriented concepts of quality. Whilst the manufacturer-oriented concept of quality concentrates on the company’s own processes and service provision, the absolute concept compares the quality level of functionality. As an example the comparison between a VW Polo and a Mercedes S Class car can help. The S Class has better functionality as it is more comfortable to drive, but it is also more expensive and is targeted at a different customer segment than the VW Polo. The customers, however, expect high quality within their level.

Levitt (1983) describes how services can be extended, for instance by supplementing them with additional services. An “extra” can make a considerable difference in the differentiation of services:

“Having been offered these extras, the customer finds them beneficial and therefore prefers doing business with the company that supplies them.”
(Levitt 1983: 9)

It must be kept in mind here that the process of delivering a service and the provision of a service do not make a difference. According to the concept of “augmented services”, services can be interpreted as a package of objective benefits and services, which together form the actual product. This package consists of core services (in the rail environment, transport from A to B) and supplementary services (seat comfort, friendly counter staff, cleanliness). However, there are various ancillary services which are often not perceived by the customer as they are expected as a matter of course (e.g. safety staff, cleaning staff). According to Maister & Lovelock (1982) four stages are necessary for the successful implementation of a service concept:

– Definition of a service concept
– Definition of a basic service catalogue
– Definition of extended services
– Management of service perceptions

The service concept includes the company’s objectives. It forms the basis for the next step. The basic service catalogue comprises the service package that is important for
fulfilling customers’ needs. Customer expectations need to be gathered here; the technical quality must be adequate for customers’ requirements. An important point must be considered here: even a good service package can be destroyed by poor interaction with customers (Specht et al. 2006). This is particularly significant. The basic service (e.g. the transportation of customers in rail environment), can be at a high standard (punctuality, safety) but this good impression can be destroyed by poor performance in other areas (dirty trains, no available seats, unfriendly counter staff, unsatisfactory customer information).

“Therefore, a good service package does not necessarily mean that the perceived service (product) is acceptable. According to the quality models of services, the service production and delivery process, especially the customer perception of the buyer-seller interactions, is an integral part of the product.” (Levitt 1983: 10).

2.3.1.4 OVERVIEW OF CUSTOMER SATISFACTION LITERATURE

The following table shows the most important findings from the analysed customer satisfaction literature in an overview.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Research</th>
<th>Key Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance of Customer Satisfaction</td>
<td>Keiningham et al. 2005; Priluck 2003; Taylor 1995</td>
<td>Found a positive correlation between customer satisfaction, customer loyalty and corresponding higher profits. Found that quality is assessed when customer needs match the product characteristics. Main features are freedom from defects, fitness for purpose and quality from outset. Incidents lead to a poor quality perception.</td>
</tr>
<tr>
<td>Service Recovery Paradox</td>
<td>Hinterhuber &amp; Matzler 2009; Matos et al. 2007; Jeschke &amp; Schulze 2006</td>
<td>Found that under some conditions customers are more satisfied than other customers, when they had complaints and their problem is resolved to their satisfaction. This occurs when it is possible to revert to the original state through a service recovery.</td>
</tr>
<tr>
<td>Confirmation / Disconfirmation Paradigma</td>
<td>Luk &amp; Layton 2002; Homburg 2003; Ojasolo 2001</td>
<td>Found, that customers check whether the performance actually received (actual state) corresponds with their reference standard (target state). The degree of correspondence expresses the customer’s level of expectation in relation to the performance. If the perceived performance exactly matches the expected standard, a confirmation emerges. If the actual state exceeds the target state, then a positive disconfirmation (satisfaction) arises; if this is not the case, it creates dissatisfaction, a negative disconfirmation. Satisfaction is generally regarded as a result of a cognitive comparison between the reference standard and the perceived level of performance. In more recent research, the opinion is increasingly emerging that an affective component is added</td>
</tr>
<tr>
<td>Opponent-Process Theory</td>
<td>Oliver &amp; DeSarbo 1988; Bruhn et al. 2006</td>
<td>Developed a theory which describes how the dynamic adjustment process to stimuli takes place. As with the CD paradigm, the perception of stimuli takes place with a comparison of standards. The explanation of this provides the homeostasis. The theory explains that self-regulating systems can keep themselves in a stable state even with negative feedback. Described that humans want to maintain a constant state in their central nervous system. After a period of adjustment it is no longer possible to reach an emotional imbalance with the same stimuli.</td>
</tr>
<tr>
<td>Kano-Model</td>
<td>Kano 1984</td>
<td>Developed a model that describes three factors which have an influence on overall satisfaction: basic factors, performance factors and excitement factors. There is no linear connection between the different factors and overall satisfaction. The connection between individual performance attributes is highly dependent on the satisfaction and overall situation of the customer.</td>
</tr>
<tr>
<td>Service Quality</td>
<td>Allen &amp; DiCesare 1976; Silcock 1981; Pullen 1993; Parasuramans et al. 1994</td>
<td>Showed that the service categories for users are speed, reliability, comfort, convenience, safety, additional services and innovations. Other relevant categories are efficiency, demand and environmental impact. Travellers’ waiting times, lost mileage and journey characteristics (arrival and departure times, journey duration) are the key categories. Developed a two-tier model which consists of a “desired service” and an “adequate service”, whereby adequate means that a minimum acceptable standard exists. Various influencing factors have consequences for the perception of customer satisfaction. The “zone of tolerance” defines the extent to which the customer is prepared to tolerate problems.</td>
</tr>
</tbody>
</table>

Table 1: Customer Satisfaction Literature
A high level of customer satisfaction goes hand in hand with a higher level of profitability (Keiningham et al. 2005; Priluck 2003 Taylor 1995). Therefore, organisations normally strive to achieve this. Another point is the accuracy of products and services. SRP is also of interest. (Hinterhuber & Matzler 2009; Matos et al. 2007; Jeschke & Schulze 2006). In literature, several approaches have been demonstrated, from which SRP originated. Having said this, within this research, no generally accepted guidelines are described, where SRP is always valid or can necessarily be conveyed. Within the scope of this research, it has to be investigated whether the model can be applied here.

To be noted are the incentive based approaches. If, as described by Oliver & DeSarbo (1988) and Bruhn (et al. 2006), the enthusiasm with a positive perception is always diminishing, the organisation has to check the behaviour when the incentives change. This is even more so relevant not only when a further positive incentive is missing but also when a negative stimulus arises, which occurs as a result of a breakdown in service. This conforms to Kano’s model (1984), which describes how, within the course of time the Excitement and Performance Factors revert back to Basic Factors.

Another key point is customer expectations, which should concur with the actual delivered outcome (e.g Luk & Layton 2002; Homburg 2003). Organisations should endeavour to reach this target. This is also mentioned in Parasurman's model (et al. 1994), which differentiates between “desired service” and “adequate service”. The basis of this is that the customer can testify to having a greater feeling of authority and feeling of fairness, which assumes that he can justify the cost of the expected service as being within reason.

### 2.3.2 Customer Segmentation

As shown in the section on customer satisfaction research (chapter 2.3.1), it is important for a company to build up a close relationship with its customers and develop an understanding of them. Constantly changing customer needs and requirements force companies to undertake a constant adjustment process if they want to safeguard their position in the market and be successful (Story & Hess 2006).
“Concepts such as ‘customer orientation’, ‘close to the customer’, ‘customer segmentation’ and ‘niche marketing’ are well-known and much tested, along with ideas about ‘direct marketing’, ‘database marketing’ and so on. The common denominator in all these concepts is a greater focus on the customer.” (Davidow & Malone 1992: 27)

Customer segmentation can support customer orientation and optimise the use of resources. This becomes possible through the formation of homogeneous groups, through which their potential can be more easily addressed. Therefore more and more companies are not only focussing on customer satisfaction but also on customer profitability and customer value. Companies have recognised that a large proportion of customised services causes correspondingly high customer-specific costs.

A customer segment is a subgroup of people or organisations who display one or more identical traits with regards to product or service requirements. A customer segment has the following characteristics: it exhibits a high degree of heterogeneity compared with other segments, it is homogeneous within the segment itself, it reacts to specific stimuli and can be influenced by market interventions. Segments can be grouped according to various different categories, such as demographically, geographically, behaviourally or psychographically (Plowman 1997). Segment definitions must also contain two key pieces of information. The variables on the basis of which a customer has been allocated to a particular segment must be clear; in other words, the customer’s classification must be given. In addition, deductions must be made which describe with which strategy and which concrete package of measures the segment can be efficiently appealed to and cared for (Bauer et al. 2005).

A prerequisite for customer segmentation is the acquisition of comprehensive data. Long-term customer relationships and the associated detailed information allow high quality customer profiles and customer segments to be created. Here the volume of information is less decisive than the quality of the content and its electronic applicability. Data for customer segmentation can be divided into four data categories. Basic data includes demographic information and customer contact information. Descriptive data reflects the previous business relationship between the customer and the company. They allow statements to be made about buying behaviour. Action and reaction data characterise the previous interactions between the customer and company. Empirical studies (Hippner & Wilde 1997) prove, however, that most companies
actually only use a fraction of their available information. Awareness of the added value of customer data analysis is largely lacking. Story and Hess (2006) follow another approach. The main focus of the approach lies in the analysis of a company’s brand. The trust-based commitment model put forward by Story and Hess is based on the customer segmentation dimensions of relationship strength, extent and exclusivity. In the process, a difference is made between the personal and functional point of view. The functional dimension considers whether customer satisfaction is fulfilled by the defined performance requirements:

“When customers believe that the brand has their best interests at heart, that the brand will go above and beyond the call of duty, personal connections may begin to develop. In addition to brand activities, customers may enhance personal connections by incorporating brands into their self-concept and deriving pleasure from relational experiences.” (Story & Hess 2006: 408).

The personal dimension refers to the strength of the personal connection with a company. Customers who have a strong personal connection with a company and are satisfied with the functional requirements remain loyal to the brand and have strong price elasticity.

The loyalty of customers who only have a functional relationship with the company is strongly dependent on how possible it is to achieve their satisfaction. Values such as speed, price or service quality are in the foreground. Customers in the “personal” group
are mostly satisfied with the brand and very loyal. However, customers can change brands if a price comparison shows that other providers offer the same services at a cheaper price (Story & Hess 2006). The customers in the “committed” group are of most interest to a company. They are loyal to the company and have confidence in the brand. Performance is positively regarded, as is the company’s brand. These customers usually remain loyal to the company for a long time.

In marketing literature, high customer loyalty is generally rated positively. However, some authors also reveal the downside of the effect. Foscht (2002) describes that it can result in a certain laziness and inflexibility in an organisation. Another critical factor is a customer structure which leads to high costs in attracting particular target groups.

The following table shows the most important findings from the analysed customer segmentation literature in an overview.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Research</th>
<th>Key Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics of Customer Groups</td>
<td>Plowman 1997</td>
<td>Showed that a customer segment exhibits a high degree of heterogeneity compared with other segments. It is homogeneous within the segment itself, it reacts to specific stimuli and can be influenced by market interventions. Segments can be grouped according to various different categories, such as demographically, geographically, behaviourally or psychographically. Perceived that segment definitions contain two key pieces of information. The variables on the basis of which a customer has been allocated to a particular segment must be clear, the customer’s classification must be given. In addition, deductions must be made which describe which strategy and which concrete package of measures the segment can be efficiently appealed to and cared for.</td>
</tr>
<tr>
<td>Segmentation Data</td>
<td>Hippner &amp; Wilde 1997</td>
<td>Explained that data for customer segmentation can be divided into four categories. Basic data includes demographic information and customer contact information. Descriptive data reflects the previous business relationship between the customer and the company. They allow statements to be made about buying behaviour. Action and reaction data characterise the previous interactions between the customer and company.</td>
</tr>
<tr>
<td>Functional and Personal Dimension</td>
<td>Story &amp; Hess 2006</td>
<td>Showed the functional dimension which considers whether customer satisfaction is fulfilled by the defined performance requirements. When customers believe that the brand has their best interests at heart, that the brand will go above and beyond the call of duty, personal connections may begin to develop. In addition to brand activities, customers may enhance personal connections by incorporating brands into their self-concept and deriving pleasure from relational experiences. The personal dimension refers to the strength of the personal connection with a company. Customers who have a strong personal connection with a company and are satisfied with the functional requirements remain loyal to the brand and have strong price elasticity.</td>
</tr>
<tr>
<td>Benefit and Risks of Customer Segmentation</td>
<td>Foscht (2002)</td>
<td>Describes that high customer loyalty is generally rated positively. The downside of the effect describes that it can result in a certain laziness and inflexibility in an organisation. Another critical factor is a customer structure which leads to high costs in attracting particular target groups.</td>
</tr>
</tbody>
</table>

Table 2: Customer Segmentation Literature

In order to optimally address target groups, customer segmentation can make a valuable contribution. Indeed, within the context of customer satisfaction and for fair addressing of target groups, the uniformity of single areas is a huge advantage since these can then be used to target. A better connection to the customer is then achieved, as described by Story & Hess (2006). For companies, it is essential, even with a good connection to the customer to keep these active within the individual segments. As Foscht (2002) demonstrates, as soon as a certain inertia emerges, the segments can become dissatisfied very quickly and change to another provider.
2.3.3 Crisis Management

Crises are generally associated with negative subjects. This view has changed in recent years. Nowadays, managers see crises as a chance to optimise their company (Garcia 2006a). Crises are turning points for improvements, but can also plunge companies into ruin:

“Effective crisis response is a competitive advantage; ineffective crisis response causes a competitive disadvantage, and can even put an enterprise’s existence in jeopardy. But many leaders who are otherwise given credit for vision, strategic focus and discipline preside over undisciplined crisis responses, often at great risk to their career and their company’s future.” (Garcia 2006a: 4)

Crises carry the risk that they will grow into disasters. On the other hand, the different models for crisis management have a great deal in common. All of them consider thorough communication towards those affected and towards stakeholders to be of central importance (Davies & Walters 1998). In this chapter, the aim is to develop the essential concepts behind crisis management scenarios and to investigate to what extent they are relevant in the area of customer information during incidents. The central investigation point is communication in crisis situations.

2.3.3.1 COMMUNICATION AND CRISIS MANAGEMENT

Because communication plays a central role in all crisis management models, a short digression will cover the essential elements here. Perhaps the best known model, used in numerous scientific disciplines, is that of Shannon & Weaver. The model was developed in 1949 and was initially a purely technically-oriented model. It is a binary mathematical construction whose original aim was to provide a model for ideal communication in the American army. According to Shannon and Weaver, a communications process must contain six elements:

- the information source,
- encoding,
- the message,
- the channel,
- decoding,
- the receiver.
Shannon himself describes his work as a “mathematical theory of communication”. He excludes semantic and pragmatic aspects of information, in other words statements about the content of transmitted messages as well as their meaning to the receiver. This means that a “meaningful” message is transmitted as carefully as a random series of letters. Therefore although the Shannon theory is usually designated as an information theory, it makes no direct statements about the information content of transmitted messages (Mitroff 1996). Shannon’s model shows how information travels from the company to the customer and which factors can exert an influence in the process:

- Here, the information source is the organisation, which creates the information and must make it available in a suitable form.
- The transmitter translates this message into a signal, which is then transmitted to the receiver over the transmission channel. This could e.g. be analogue signals (e.g. acoustic, loudspeaker announcements) or digital signals (e.g. messages on mobile telephones or display boards).
- The receiver is a type of reversed transmitter, which transforms the transmitted signal back into a message and relays this to its destination. In our example, this would be a mobile telephone which translates the transmitted signal into a visual notification.
- During the transmission process, data is sometimes added to the signal or parts are destroyed, which were not intended by the message source. This unavoidable interference (signal noise) is due to the nature of the signals. An example of this would be an incomprehensible announcement at a station which arises due to magnetic interference with the loudspeaker.

An important feature of any communication is interdependence, i.e. two-way regulation and control, intentions on the side of the sender and reception and interpretation by the
receiver. It should not be suggested that a conscious intention to inform exists in every example of communication.

Westley and McLean (1957) developed a system model to present the process of message communication as a varied selective and dynamic feedback process.

Thereby a communicator (Co) chooses one or more possible events (X) from a selection and creates a message (x’). The title “Lawyer-Role” indicates that the message communication from C is determined by his own interests (Gatekeeper). The channel (Ca) represents any technical and human situation which the message takes in from the Co and makes accessible to the public. A selection process also takes place here once again and the response x’ becomes x’': The recipients finally receive a presentation of the incident X, which does not necessarily represent the real final incident as it has been processed at least twice. In addition a feedback process between those involved (Co, Ca, Re) takes place.

Maletzke (1964) defined mass communication as a one-sided circulation of public messages by way of technical distribution methods to a dispersed public which is not necessarily ready to receive the message.

Following Maletzke, direct feedback from the recipient to the communicator is not possible. The coming of the Internet has made it necessary to rethink Maletzke’s model. The fact that the Internet is interactive makes it possible to give very fast feedback irrespective of whether the communicator welcomes it or not (Rötzer 1996). Responses on Facebook and Twitter can occur in a very short time so that it is questionable as to how far one-sided communication can still be successful.

According to Mitroff (1996), the development of crisis management plans is advantageous, but insufficient. A key task is the detection of signals that can lead to
crises. An example of just such an effective monitoring process is described in the figure below:

![Diagram of crisis management phases](image)

**Figure 12: Mitroff’s Crisis Management (Mitroff 1996: 210)**

Effective preparation is all the more necessary, as when a crisis occurs, management resources are very quickly absorbed.

“When an event such as an industrial accident, a toxic release, or a major oil spill occurs, management often finds itself simultaneously involved in emergency management (the specialised response of emergency forces), disaster management (the management of the incident and the management and support of the response organisation), crisis management (the management of the crises situations that occur as a result of the accident), and business recovery and continuity (the recovery and continuation of the profitable delivery of products and services).” (Harrald 1998: 6)

In summary, the following statements can be recorded:

- Disasters and crises are different events, but are mostly related to each other.
- Smaller crises can grow into disasters as a result of poor management.
- During the formation phase of a crisis, it is hardly possible to differentiate between a crisis and a disaster.
- Crises go through various phases and can grow into disasters.

Crisis management is very strongly future-oriented. Once a crisis has arisen, it is too late to think about crisis management plans or emergency scenarios. Management must
answer questions very quickly if it wants to come out of the crisis unscathed. According to Pauchant & Mitroff (1992), the most important questions are as follows:

- When did the company notice that there was a critical defect or that something was wrong with the organisation, the system, the product or the service?
- If management did not notice that something went wrong, why was that the case?
- If something was noticed, what did the company do?
- If nothing was done, why not?
- If the company had known in advance that something like this would happen, what would they have done?

This means that even small incidents must be treated with due care. Depending on the situation, a regional incident can for instance become a serious crisis if the relevant stakeholders are not integrated. Unmanaged incidents can grow into serious problems which could represent a substantial danger to the company. Therefore crisis management is a strategic management task, on the basis of which concrete decisions can be derived for individual departments.

### 2.3.3.2 THE TERM “CRISIS”

Disasters, crises and incidents are different terms, but the information may be attributed to one incident. There are generally no universally accepted definitions of the term available (Shrivistava 1993). One reason for this is that every individual discipline in science, business and society provides a definition of crisis. Researchers, politicians, technicians, economists and social scientists all use the terms crisis, incident or disaster, but mean different things:

“… Union Carbide in its technical report referred to Bhopal as an ‘incident’, the government of India in its report called it a ‘disaster’ and the social activities called it a ‘tragedy’, ‘massacre’ and even ‘industrial genocide’.” (Shrivistava 1993: 26).

Other authors argue a more fluid transition of circumstances. An incident can turn into a crisis. If an incident goes unnoticed, a disaster can arise (Davies & Walters 1998; Shrivistava 1993). In literature, different types, characteristics and models of crises can be discovered. An incident is frequently synonymous with a crisis during the formation
phase. Thus a technological defect can become a crisis for a company (for example in aviation). Disasters, incidents and crises are different events, whereby disasters and crises are more widespread than incidents, which can be quantified by the extent of damage (Shaluf et. al. 2003).

In an analysis of terms in the context of crises and disasters, terminology, definitions, criteria, types and characteristics are significant. Terminologically there are extremely diverse labels for disasters. They can be described as industrial accidents, industrial crises, difficulties or a creeping problem. The terminology varies from company to company. Criteria for a disaster can also vary, for example in the number of fatalities, the extent of damage (high, medium, low), the duration of damaging effects (days, weeks, years) or the population affected (number, demographical characteristics). The types can be divided into natural disasters, man-made disasters or a combination of both. Crises can also be divided into social crises, company crises or private crises (Shaluf et. al. 2003). The figure below gives an overview with regards to the different definitions:
Figure 13: Crisis & Disaster (Shaluf et. al. 2003: 28)

Harrald (1998) follows a similar approach. He presents an overview of the various terms:
Term | Definition
--- | ---
**Crisis** | Derived from the Greek *krisis*, meaning a crucial turning point in the course of anything, an unstable condition in which an abrupt or decisive change is impending. Crises threaten the priority goals of an organization, challenge the traditional behaviours and values shared in an organization, and put a great deal of time pressure on decision makers.

**Emergency** | An unexpected event which places life and or property in danger and requires an immediate response through the use of routine community [or organizational] resources and procedures.

**Disaster** | Derived from the Latin (and Italian) *disastro* meaning ill starred and means an occurrence inflicting wide spread destruction and distress. A disaster is “an event, concentrated in time and space which threatens a society with major unwanted consequences as a result of the collapse of precautions which had hitherto been culturally accepted as adequate”. The World Health Organization defines a disaster as “any occurrence which causes damage, ecological incident, loss of human lives, deterioration of health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community.”

**Hazard** | Derived from the Arabic *al zahr*, or dice. Refers to a source of potential loss of danger or peril. A hazard is a condition with the potential for damage to the community or the environment. The hazard is the potential; the disaster is the actual event.

**Risk** | Derived from the Italian *risicare*, which means “to dare”. Risk is the exposure to the chance of loss; the combination of a probability of an event occurring and the significance of the consequence of the event occurring.

**Risk Assessment** | The quantitative determination of risk—the likelihood and extent of harm that may result from hazards.

**Risk Management** | The process of intervening to reduce risk—the making of public and private decisions regarding protective policies and actions that reduce the threat to life, property and the environment posed by hazards.

Table 3: Crisis Management Definitions (Harald 1998)

Crises are perceived much more intensively nowadays. Past decades were characterised by great optimism, which rested on the assumption that the future would be a series of positive events:

“…the revolutionary idea that defines the boundary between modern times and the past is the mastery of risk: the notion that the future is more than a whim of the gods and that men and women are not passive before nature.”

(Bernstein 1996: 119)
Crisis management is one of the key issues in modern societies. Problems must be anticipated in good time. Organisations must understand risk management as a part of crisis management if they want to be armed. The task of risk management consists of preventing crises and reducing crises. Harrald (1998) suggests the creation of various plans:

- a crisis reaction plan,
- an incident management plan,
- a crisis management plan,
- a crisis communications plan and
- a disaster reaction plan.

2.3.3.3 CRISIS MANAGEMENT MODELS

Managers make their decisions on the basis of knowledge and experience. Due to their nature, crises arrive unexpectedly and without advance warning. Of the plethora of crisis management concepts, two representative models will be studied here: Parson’s (1993) model, which follows a generic approach, and the phase-based model proposed by Elliot (et al. 2005). These two models will be focussed on as the authors are exponents of different approaches and mirror the fundamental characteristics of their respective models. Finally, a best practice model is described which focuses on maintaining the business (Sapriel 2003).

2.3.3.3.1 Generic Crisis Management

Only a small number of managers have practical experience or first-hand knowledge (Parsons 1993). Parsons defines crisis management as:

“Crisis management is a mixture of applied common sense, experience – your own and other people’s – and time: time to devote to concentrating on the problem.” (Parsons 1993: 26)

Being prepared for a crisis does not mean that every scenario is determined in advance. The purpose of crisis management is to grasp the extent of a crisis scenario, in order to then resolve it with flexible plans and measures. These plans must above all be easy to understand, so that they are feasible for all people involved. Parsons identified three different types of crisis (Parsons 1993):
Immediate crises: These are promptly noticed. The company is for the time being not in a position to investigate the problem. Detailed plans or packages of measures are not available.

Emerging crises: Emerging crises appear slowly and are noticed late. The biggest difficulty is discovering the problems and their causes. The main task is to gather together the parts of the puzzle so that parts which do not seem to fit give a complete picture of the crisis. The situation can best be compared with a dormant volcano which will at some point erupt.

Ongoing crises: These generally last for weeks, months or years, without a material improvement in the situation. Gossip, chatter, speculation and upheaval can frequently be found among those affected. Such crises can often be rectified by addressing the problems openly, regardless of how painful this might be.

All of the crises described have an information deficit in common. As soon as a crisis begins, it is essential to begin communications measures. Parallel to this, initial situation analyses should take place. All relevant company departments must quickly and seriously open information channels. Top levels of management must have all negative and positive information available. Clear communication from upper management to subordinate positions is also necessary. It must be clear to them that the measures carried out might not always seem ideal, but are essential in the scope of the overall situation. The information output must be centralised and staffed by an experienced manager. Fundamentally, the opinion should prevail that every medium is a “friend”. Information must be conveyed fully. Nothing has a worse impact in a crisis than the impression that those who caused the crisis are not communicating everything that they know (Parsons 1993). After the crisis, a situation analysis must be carried out. Lessons learned help to manage crises more efficiently in the future. This can, for instance, take place through the adaptation of crisis management plans.

This generic model by Parsons can be applied to almost every crisis, due to its high degree of abstraction. This quality is at once both a strength and a weakness. The strength is its clear abstraction and concrete description of what must be done. This approach is very strongly concentrated on communication, which is presumably insufficient for general crisis management, but represents a key strength of the approach within the focus of this research and context of customer information. A weakness of the model is that it does not describe how the suggestions could be implemented.
2.3.3.3.2 Phase-orientated Crisis Management

Elliot (Elliot et al. 2005) describes the main attributes of crises. Crisis situations are characterised by:

- a large number of different stakeholders,
- time pressure combined with the requirement to act,
- the shock effect for the company,
- an uncertainty about cause and impact and
- a threat to the company.

Crises occur in three phases. In the first phase, the pre-crisis, decisions or non-decisions by management can facilitate the crisis potential. General causes are often rigid organisational regulations which cannot be adapted, poor or wrong incentives, the denial of external indications of problems, information redundancy which leads to different and uncoordinated actions, external complaints that are not taken seriously, the exacerbation of damages due to incorrect responses, no readiness for problem solving, and a tendency to play down difficulties that arise. Crisis-prone companies tend to have management with limited problem-solving capabilities:

“Crisis-prone organisations were managed by individuals ‘suffering from serious pathologies’ which inhibited effective crisis management efforts” (Elliot et al. 2005: 338).

The next phase is the operative crisis. The crisis potential grows to a systematic incident in an organisation. The key task for management is to contain the problem and minimise damage. The greater the damage and the problems are, the better qualified the staff must be in order to solve them. For Elliot et al., crisis situations are a natural laboratory for testing hypotheses under tense and stressful organisational conditions and group dynamics (Elliot et al. 2005). The third phase is the post-crisis. Here, organisations try to minimise the effects of the crisis. After these activities, there generally follows a period of consolidation and an offensive phase, in which scapegoats are sought and/or lessons are learned for the future. Active learning after the crisis has abated can particularly help a company to become more capable of action as well as more crisis resistant (Elliot et al. 2005).
2.3.3.3 A Best Practice Approach for Maintaining the Customer Satisfaction

Sapriel (2003) places value on communication, but declares that an exclusive focus on it is in no way sufficient. According to his definition, a crisis is an event which calls into question the reputation, the safety or the survival of an organisation or an individual. This mostly happens when an organisation endangers public safety or does not consider generally accepted values. In this case, the organisation is not in a position to quickly resolve the crisis on its own. Studies show that most crises emerge stealthily; singular events which lead to problems are more of a rarity (Crisis Experts 2003). Hence it is usually insufficient to only have a business contingency plan. Conflicting stakeholder aims must also be considered. This is becoming increasingly difficult, as there are more and more interests to consider due to company acquisitions, lobby groups, customer interests, political representatives and other stakeholders (Sapriel 2003). In this context, it is particularly critical to recognise simmering crises. Risk management can identify individual crisis sources, but is not always able to package the various causes into a coherent context so that the crisis can be identified in a timely manner. Sapriel presents a best practice approach which has been put to the test in various different industries:

Figure 14: Risk & Crisis Management Planning Process (Sapriel 2003: 350)
The crisis manager has two main tasks:

- the planning and implementation of a crisis reaction system, and
- the consolidation of all key business units (legal, HR, IT, sales, marketing, communication, etc.) during crises.

It is first useful to analyse the existing risk and issue management processes, and the accident and emergency programmes, followed by the processes and know-how about concrete crisis management in the company. This investigation reveals any holes that must be closed. The next step is to develop an action plan which explains how processes are to be revised, expanded and integrated. Once this is complete, the employees must be trained and tested. Monitoring of crises and risks is key. The organisation must have the tools, processes, competences and resources to face crises when they first emerge. A tiered organisation structure ensures that neither an over-reaction nor an under-reaction occurs in the event of a crisis (Sapriel 2003).

Three subject areas are key to the best practice approach: management of victims’ next of kin, leadership and reputation management.

One of the newly recognised tasks is the management of victims’ next of kin. Sapriel (2003) shows that one of the lessons learned from September 11th is to manage the human elements of crises. While airline companies were well prepared for such situations, other companies affected had made no provisions for this situation. These companies were massively overwhelmed in communications with next of kin. Leadership is therefore key, as managers reflect the fears and expectations of those affected like a mirror. They must develop a clear vision for the time after the crisis, guide their team and quickly begin to implement tasks. A consensus-orientated leadership style is harmful here, as endless debates outweigh wrong decisions (Sapriel 2003). Reputation management is key for companies. Conflicting stakeholders’ interests can lead to the impression that if something happens to benefit one side, the other loses. A common company strategy must come into force which clearly communicates the company values, principles and aims on which decisions are based. Once a clear vision is established, it serves as the basis for all further announcements.
If applied to organisations, the purpose of reputation management is to make the organisation’s behaviour predictable for its relevant peer groups. Predictability is an important condition for building trust. Organisations should also behave consistently if they want to retain the trust of their stakeholders (Rosenberger & Pfizenmeier 2009). Neufeld (2007) states, that reputation has always mattered. Managing reputation, however, has become a bigger challenge with e-mail and blogs that empower customers, suppliers, interest groups, investors and the media. Eisenegger (2005) defines two criteria for reputation:

- first, functional reputation (competence and fulfilment of specific performance goals),
- second, social reputation (integrity and compliance with social values and norms).

The overall reputation arises from various criteria which mutually reinforce each other. Here, too, the stakeholder again infers that the trust-receivers (organisations) will behave in future as they have been observed to do in the past. Furthermore, Eisenegger (2005) points out a key assumption: reputation is based on a successful identity balance – the organisation should remain true to itself, i.e. act consistently.

Management of reputation is a part of risk management, and both are closely linked to incident management (Künstle 2003). Problems occur primarily when these subjects find their way into the media and cause discussion there. E. g. the SFR is affected by a multitude of such subjects, as shown by many examples (Basellandschaftliche Zeitung 2009; Bieler Tagblatt 2009; Solothurner Tagblatt 2009). The aim of reputation management must be to steer these issues by way of systematic observation, analysis and strategic influence in such a way as to avoid damage to the reputation.

2.3.3.5 OVERVIEW OF CRISIS MANAGEMENT RESEARCH

The following table shows the most important findings from the analysed crisis management literature in an overview.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Research</th>
<th>Key Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication in Crisis Situations</td>
<td>Maletzke 1964</td>
<td>Developed a model, which shows that direct feedback from the recipient to the communicator is not possible. Mass communication is a one-sided circulation of public messages by way of technical distribution methods to a dispersed public which is not necessarily ready to receive the message. Explained that the coming of the Internet has made it necessary to rethink Maletzke’s model. The fact that the Internet is interactive makes it possible to give very fast feedback irrespective of whether the communicator welcomes it or not. Responses on Facebook and Twitter can occur in a very short time so that it is questionable as to how far one-sided communication can still be successful.</td>
</tr>
<tr>
<td></td>
<td>Rötzer 1996</td>
<td></td>
</tr>
<tr>
<td>Correlation between crises and disaster</td>
<td>Harrald 1998</td>
<td>Showed that disasters and crises are different events, but are mostly related to each other. Smaller crises can grow into disasters as a result of poor management. During the formation phase of a crisis, it is hardly possible to differentiate between a crisis and a disaster. Crises go through various phases and can grow into disasters. This means that even small incidents must be treated with due care.</td>
</tr>
<tr>
<td>Definitions</td>
<td>Davies &amp; Walters 1998; Shrivistava 1993</td>
<td>Defined that an incident can turn into a crisis. If an incident goes unnoticed, a disaster can arise. Different types, characteristics and models of crises can be discovered. An incident is frequently synonymous with a crisis during the formation phase. Thus a technological defect can become a crisis for a company (for example in aviation). Disasters, incidents and crises are different events, whereby disasters and crises are more widespread than incidents, which can be quantified by the extent of damage.</td>
</tr>
<tr>
<td></td>
<td>Shaluf et. al. 2003</td>
<td></td>
</tr>
<tr>
<td>Generic Crisis Management</td>
<td>Parsons 1993</td>
<td>Emphasised that crisis management is a mixture of applied common sense, experience and time: time to devote to concentrating on the problem. The purpose of crisis management is to grasp the extent of a crisis scenario, in order to then resolve it with flexible plans and measures. Nearly all of the crises have an information deficit in common. As soon as a crisis begins, it is essential to begin communications measures. Parallel to this, initial situation analyses should take place. All relevant company departments must quickly and seriously open information channels. Top levels of management must have all negative and positive information available. Clear communication from upper management to subordinate positions is essential. Fundamentally, the opinion should prevail that every medium is a “friend”. Information must be conveyed fully. Nothing has a worse impact in a crisis than the impression that those who caused the crisis are not communicating everything that they know.</td>
</tr>
<tr>
<td>Reputation Management</td>
<td>Rosenberger &amp; Pfizenmeier 2009</td>
<td>Described that the purpose of reputation management is to make the organisation’s behaviour predictable for its relevant peer groups. Predictability is an important condition for building trust. Organisations should also behave consistently if they want to retain the trust of their stakeholders. The aim of reputation management must be to steer these issues by way of systematic observation, analysis and strategic influence in such a way as to avoid damage to the reputation.</td>
</tr>
</tbody>
</table>

Table 4: Crisis Management Literature

Communication is essential in a crisis. Although many years ago, just one way communication from sender to receiver was the norm (Maletzke 1964), this has now
changed to two way communication thanks to the Internet (Rötzer 1996). For organisations, this has important consequences. The nature of interaction arising from new media, prevents one way information. If the information is not correct, then very quickly objections will be raised by the receiver which as a result reach the sender. This demands a higher level of communication competence, compared with the situation before social media existed. This also correlates with Parsons’ findings (1993). Crises arise due to a deficiency in information. Should the organization do nothing to deal with these deficiencies, then with the help of social media other players become involved who try to deal with these deficiencies. (section 2.4.4). This can have negative repercussions on the organization if it is too slow to react or does not react in the right way (Rosenberger & Pfizenmeier 2009). From this, organisations can make the following conclusions:

- Media should be seen as being associated in a crisis situation, as it conveys information.
- If an information gap is not closed by an organisation, then other players will become involved and try to do so
- Should the information be incorrect, then thanks to two way communication this will very likely be discovered.

2.3.4 Incident Management

The term incident is often mentioned in the same context as disasters and crises (e.g. Shaluf et al. 2003; Trim 2004, Gillingham & Noizet 2007). This chapter will particularly study incidents in the context of divergence of target and actual situations and the management of the related incidents.

2.3.4.1 DISAMBIGUATION

A definition by Hoogedorn (et al. 2008) describes incidents as unforeseen events that can cause great damage, destruction or human suffering. Authors such as Heiderich (2001) criticise this narrow definition of the term incident. For him, an incident is the deviation of an actual state from a target state. The crucial question is whether
everything was undertaken to resolve the incident. Hoogedorn sees an incident as an event in a chain, as similarly described in the crisis management chapter:

“Incidents are disturbances in a system that can lead to an uncontrollable chain of events, a disaster, when not acted upon properly” (Hoogedorn 2008: 17).

According to Meyer (2007), an incident can be defined as the deviation of a planned or expected event from its designated, predicted or expected path, due to an unforeseen endogenous (internally caused) or exogenous (externally caused) influence. As Hoogedorn’s definitions deal more with the field of crisis management, this thesis will follow Meyer’s definition of the term incident, and focus on the analysis of divergence between target/actual states.

The term incident is separate from the term crisis, although there is a relationship between the two. A fundamental connection between the terms exists in that an incident can grow into a crisis if it is not brought under control. This mechanism is illustrated by Davies & Walter’s (1998) model. However, not every incident has the potential to become a crisis. Smaller incidents can have consequences, but do not have to fulfil the potential of endangering an organisation (Garcia 2006a). The subject of incident management is covered here as, similarly to crisis management, it contains possible approaches that could be relevant to incidents in the rail environment.

2.3.4.2 SIGNIFICANCE OF INCIDENT MANAGEMENT

The aims of incident management are a rapid rectification of incidents in the production process, in order to avoid endangering time, cost and quality goals. Correlations between product development and production processes which facilitate measures for avoiding incidents should also be demonstrated. Incident management is sometimes associated with quality management, but has now established itself as an independent branch of research (Weller 2003). Normally, incidents cause chaotic situations that are highly complex and require swift action. Incidents in technical systems can have various causes. Thus the IT sector now has complex incident management models which describe, on a process level, how normal operations can be restored in a complex system environment through efficient procedures (e. g. ITIL 2009).
The significance of incidents in the management of companies is increasing. The reason for higher vulnerability to failures is the increasing complexity of products, technology and organisations. This trend is further exacerbated by cutbacks in time and quantity buffers, combined with a high integration and parallelisation of supply chains (Weller 2003).

As a rule, incidents have repercussions. These can be separated into internal and external repercussions. They can affect processes, results or both. The effects are often the causes of incidents and can form the starting point for new incidents (Weller 2003). The focus of the analysis here is on models which require purposeful communication with customers, with the aim of minimising the incident’s damage.

2.3.4.3 INCIDENT MANAGEMENT STRATEGIES

Strategies for incident management can be divided into prevention and reaction. Preventative strategies prevent incidents from occurring, while reactive strategies are first applied after the incident occurs. When using preventative strategies, it is necessary to examine how the prevention costs relate to possible damages. If the prevention costs exceed the damages, this approach is no longer useful. In prevention, it is often necessary to know the correlation between cause and effect, and the statistical probability of occurrence. This information is generally based on data from the past. Reactive strategies can be further classified as repulsive or remigratory. Repulsive strategies minimise the strategies of incidents. Remigratory effects develop their potential in that they produce an “orderly retreat” if the incident is not controllable (Heil 1995).

The distinction between preventative and reactive strategies is, according to Meyer (2007), not congruent with the distinction between cause-orientated and effect-orientated strategies. Thus preventative strategies can be geared towards the definitive removal of the cause of an incident (cause-orientated) or simply towards minimising the results of an incident (effect-orientated). Repulsive strategies can also address either the cause or the effect of an incident. After an incident occurs, either its cause can be identified and permanently eliminated, or merely a reduction of the effects of the incident can be achieved. In contrast, remigratory strategies are always effect-orientated, as they require the incident to be insufficiently controllable.
2.3.4.4 THE FOUR STAGE COMMUNICATION INCIDENT MODEL

An organisation’s reaction to an incident can have key impacts on the business. Good communication can not only prevent damage but also provide benefits for future business. Gillingham & Noizet (2007) present a four-stage model which shows how a company can steer public perception. The four elements are:

- Media and public: their needs must be considered and communication must take place from the point of view of the public.
- Swift action: the organisation must give the first outgoing message, the message must be controlled, the environment must be known, and the common values must be conveyed.
- Sincerity: the messages must be sincere, credible, comprehensible, and committed to the values of the organisation.
- Concern and compassion: people and the environment are in the foreground, the company must be highly driven in resolving the problem.

During an incident, the organisation must be clear that its own concerns are completely irrelevant at this time. Public perception is always crucial here, never the company’s own (Bierck 2000). The public must understand how the crisis will affect them. Unreserved communication is very important in order to convince the public of the company’s sincerity. The worst thing a company can do is to withhold information:

“In no circumstances should an organisation respond to an incident by saying it has no comment. This will be interpreted negatively and will hand control of the communications over to the media.” (Gillingham & Noizet 2007: 546)

Speed is a further factor that exerts significant influence on the success of communications measures. Stakeholders must be particularly quickly informed if no lasting damage is to occur. Another reason for swift action is that if the company does not act themselves, other media very quickly take the lead. The organisation concerned must try to maintain information superiority. A key subject of the communication must be how the company is dealing with the crisis and how it is taking care of those affected. Other information is of secondary importance. Furthermore, the company’s management must be present from the start and take responsibility for rectification (Bierck 2000).
Sincerity is an absolute necessity. Public denial of problems can lead to a disaster for an organisation (Ashcroft 1997; Coombs 1999). The company must give clear signs that it is taking the problem seriously and acting to find a solution.

Displaying concern and compassion helps to keep damage within limits. Companies that seem cold and calculating have major problems in difficult times. Sympathy and compassion for the victims must be clearly communicated and demonstrated visibly. The initial tone towards those affected sets the standard for further communication. Denial or disputation causes damage here, which in later situations either cannot be repaired or only with very great effort and usually with personal consequences. In critical situations, many companies make the mistake of allowing themselves to be guided by insurance companies or lawyers, and worry that expressing regret could have legal consequences (Bierck 2000).

Studies by Gillingham & Noizet (2007) have shown that companies which follow these four rules frequently emerge from problem situations unscathed.

2.3.4.5 OVERVIEW OF INCIDENT MANAGEMENT RESEARCH

The following table shows the most important findings from the analysed incident management literature in an overview.
Incidents are not as serious as crises, as they only point to a difference from the planned situation into an unwanted deviation (Heiderich 2001). In principle, it is difficult to work out if a preventative or a reactive strategy is appropriate. Customer relations and the costs of a disruption are not easy to measure in monetary terms. With regard to this, Heil (1995) argued only in relation to costs, which does not make sense for every industry or business area. In particular, with monopolies or with state run providers, this can lead to very serious damage to the reputation. The model from Gillingham & Noizet...
(2007) seems to make more sense. With this model, the focus lies heavily on the control of communication and the public perception, whereby the customer is the focal point rather than the excuses of the company. This can be very helpful when the key point is to keep the customer satisfied whilst at the same time maintaining a good reputation.

2.3.5 Social Media and Technological Trends

In many areas, the railway is a conservative business. The construction of new tracks, stations or tunnels requires long-term commitment, projects worth millions and above all time. Due to high costs, rolling stock (trains, wagons) has a long period of use during which the high costs must be recouped. Other areas are subject to very rapid change. More and more services in companies can only be carried out using the most modern technology. The high frequency on the networks as well as automated customer information, is inconceivable without the most up-to-date information technology. Other trends are less technological and more of a social nature. An ageing population, stronger environmental awareness and a trend towards the individualisation of society are just some of the developments which will affect our lives in coming decades.

Many of these trends are empirically verifiable, while others are creative inventions or conjecture. The following section therefore intends to highlight the most important social and technological trends that could affect business. Despite support from a number of studies, there remains a certain element of uncertainty. On the other hand, it is useful to anticipate developments early on, if the company does not want to fall behind.

“Where there is no time or knowledge for forward-looking thinking, there is future potential for bankruptcy.” (Horx 2008: 4)

In this research it is necessary to investigate how technological change can be combined with individual needs and which new products and services can emerge. Due to employees’ increasing time sovereignty, in future there will be fewer and fewer people who will have to work fixed hours or at particular places. Working from home is already commonplace for various professions in the information industry. Fixed working hours are also becoming less important outside of the service sector. Concepts such as the “flexible factory”, which adapts its staff schedules to orders, are becoming
more and more important (Handelsblatt 2005; FAZ 2009). This allows fares to be made more flexible, for instance, which makes different prices for the same route at different times of day possible. However, differentiated products also require differentiated customer information.

We can no longer imagine everyday life without navigation systems, internet technology, mobile telephones and other intelligent devices. These new devices have one thing in common: they provide the user with information and they are subject to short product and innovation cycles. While prices fall, the functionality and pervasiveness of technology improve. Although mobile telephones were initially status symbols, they have now become technology for the general population. This is one of the reasons why it is useful to implement mobile telephones as the information backbone. The mobile telephone is representative of trends such as continuous advances in technology, falling prices, better operability and wide distribution (Micic 2006). If a company succeeds in conflating innovative technology and new products with services for the customer, there is a high probability of success. If they are then also able to meet customers’ needs through individualised products, there is a high probability of economic success and customer satisfaction.

Social media have a strong influence. Communication in the internet primarily fulfils three criteria: it can be sent instantaneously, independent of the sender and recipient's location; it is interactive which means that information can flow bilaterally; it involves multimedia, i.e. it is possible to send text, sound and pictures, depending on requirements (White 2011). The spread of social media is changing the use of media immensely. Social media can be defined as follows:

“Social media can be defined as an umbrella term that is used to refer to a new era of Web-enabled applications that are built around user-generated or user manipulated content, such as wikis, blogs, podcasts, and social networking sites.” (Liu et al. 2011: 345)

The use of social media is becoming more widespread. Users have also transferred their social identity onto online media. New applications are appearing on a daily basis and contribute to the way communication is changing (White 2011). Social media offer a plethora of possibilities for companies to solve many communication problems related to communication with the public.
Wigley & Fontenot (2010) describe two consequences for organisations which stem from this:

- information is generated from non-official sources.
- information from these sources is used by other people and is subjected to further processing.

The authors call this "citizen-generated content". In this way, there is a considerable increase in the significance of normal citizens distributing information including in "incident situations". According to Wigley & Fontenot (2010), examples of this are the Mumbai attacks or the passenger jet which made an emergency landing on the River Hudson. Initial information came from citizens who communicated via Twitter and posted pictures on Facebook. The media's gatekeeper function is therefore being constantly reduced. For the authors, it is vital to incorporate citizen-generated content into crisis management plans.

"Crisis communication planning today must incorporate monitoring, active engagement with relevant sites and the use of emerging forms of social media. [...] When you plan for things that might go wrong, you also need to plan for the role that social media will play and how its involvement will impact your reputation." (Wigley & Fontenot 2010: 188)

Kietzmann et al. (2011) have developed a guideline on how companies can successfully implement social media. The 4C-Model (cognize, congruity, curate and chase) helps in the development, the monitoring and the understanding of social media. The principle, "customer service is the new marketing", plays a key role here. This statement is based on the fact that, today, no company can keep control of communication. Nowadays, social media and other web technologies mean almost anyone can offer content without undue effort. Dissatisfied customers can, according to Kietzmann et al. (2011), communicate their dissatisfaction very quickly, or express their dissatisfaction to a large audience. It is therefore paramount for companies to listen to customer input and take it on board.

Social media offer new perspectives, particularly in the case of crisis and incident situations. Direct access to information in nearly all situations aids a quick distribution of information. It is not only negative effects that can be communicated, recovery information can also be passed on speedily. People affected by incidents can not only be
reached by organisations, they are also able to exchange information and network with others similarly affected (White 2011). In times of crisis, companies can suffer damage to their reputations. The damage is more extensive, the more extensive the responsibility for the damage is. This damage can be mitigated by an appropriate communication strategy. As increasing numbers of people are spending their time on online activities, it is therefore necessary to adjust crisis communication to this fact (Coombs 2007).

The 4C model is one way of developing a communication strategy for social media. According to Kietzmann's 4C model (et al. 2011) a company should firstly examine and understand its social media ambitions (cognize). In doing so, it is important to analyse where conversations are being held and who is holding them, as well as what the main influencing factors are and which powers are available. Next the company should develop a strategy which is congruent with the various channels and describes the goals to be reached (congruity). Metrics, which allow success to be measured, need to be defined for this. As a second step the company needs to act as a curate. There must be a clear understanding of the circumstances under which a firm engages in discussion and when it does not. Competent and astute staff must be selected for this task, seeing as communication can never be totally regulated. "Chase" is the last point to be taken into account. A company must always be on the lookout for new information in its environment. This is a factor which is costly in terms of time. Assumptions which have been made about social media need to be constantly reassessed and adapted to new situations.

There is, however, criticism surrounding the use of social media. Privacy, security and robustness are some of the critical points, which are a continual source of discussion. An additional factor is that not all groups of people know how to use social media, nor do they have internet access and/or they do not want it. And if they do have access, it may be that these people do not want to use social media (White 2011). The seriousness of such information is hard to gauge. Blind trust or lack of trust can lead to problems, as the quality of the information is not always guaranteed. Social media changes the communication of companies and their customers enormously. Many established means of communication and management techniques are no longer effective or only work in an altered format. Customers no longer want to be talked about, they want to be part of the dialogue. According to Wirtz (2008) the customer should experience
communication primarily as a, "want". Intrusive or unwanted communication leads very rapidly to negative effects. Company communication needs to adapt and become part of the communication.

The following table shows the most important findings from the analysed social media and technological trends literature in an overview.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Research</th>
<th>Key Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Devices</td>
<td>Micic 2006</td>
<td>Showed that new devices have one thing in common: they provide the user with information and they are subject to short product and innovation cycles. While prices fall, the functionality and pervasiveness of technology improve. Although mobile telephones were initially status symbols, they have now become technology for the general population. This is one of the reasons why it is useful to implement mobile telephones as the information backbone. The mobile telephone is representative of trends such as continuous advances in technology, falling prices, better operability and wide distribution.</td>
</tr>
<tr>
<td>Social Media</td>
<td>Wigley &amp; Fontenot 2010</td>
<td>Described, how the control of communication has changed. Normal people have themselves become providers of information and are in direct competition to corporate providers. Demonstrates how, with a 4 layered model, social media within an organisation can be established. The input and communication from customers increasingly takes over the role of marketing.</td>
</tr>
<tr>
<td></td>
<td>Kietzmann et al. 2011</td>
<td></td>
</tr>
</tbody>
</table>

Table 6: New Technological & Social Trends

New media and technologies are spreading within Switzerland at an ever increasing pace. This trend does not only result from lower prices but also from improved user friendliness, which results in the fact that not only tech savvy people can use the devices (Micic 2006). The fact that more and more people can become providers of information themselves (Wigley & Fontenot 2010) has extensive consequences for organisations. If they want to maintain the lead in communication, they have to be fast, competent and react in a customer orientated way, otherwise they may end up in a position of disadvantage. Should communication be missing in the event of a problem, then it is very likely that those concerned will become active themselves via the new media channels. In this situation it is no longer possible, from the point of view of the organisation, to control this information.
2.4 Conclusion from Literature

The tangible consequences and their application for the SFR case from the findings of the literature review are described here.

2.4.1 Conclusions from Customer Satisfaction Research

What happens, if an incident impairs the quality of a service? In this situation, the customer uses a service whose quality is not of the expected standard. The customer satisfaction declines (e.g. Hinterhuber & Matzler 2009). Literature has shown that customer satisfaction and company success are mutually dependent. Customers have expectations of the quality of service. Positive expectations are important, as customers then also anticipate positive expectations in future. Negative experiences then carry less weight (Zollondz 2006).

This problem is of specific interest to the SFR, as it needs to understand what the extent of the nature of support in the area of customer information might be and how this affects customer satisfaction. It is necessary to examine how customer satisfaction is affected if a customer is not informed of an incident or is informed too slowly, and what happens if he or she receives timely information.

- What influence do breakdowns have on the satisfaction of passengers?
- What effect does information have on customer satisfaction?
- How can problems due to dissatisfaction be minimised by customer information?
- What impact does service quality have on customer information?

The investigated models on customer satisfaction research (C/D Paradigm, Oponent-Process-Theory, Kano-Model) all simultaneously show that customers become dissatisfied when their expectations in the requested service are not met (e.g. Bruhn et al. 2006; Concépcion et al. 2009; Homburg 2003; Luk & Layton 2002; Kano 1984; Solomon 1980).

A rail customer expects that the train will depart punctually and will reach its destination. However, this is not always necessarily the case. Studies show (SBB 2008)
that on routes with frequent delays, the level of expectation is adjusted and passengers schedule in appropriate delay time. However, customer satisfaction in these regions is also drastically lower than that in other regions and the company’s image is negatively affected (SBB 2009c).

Approaches which consider customer satisfaction as a minor feature are not relevant for the SFR. As a monopolistic company financed by taxes, public pressure for reasonable service provision is very high due to the monopoly on long-distance transportation.

Among the positive consequences of a high customer expectation, price sensitivity and customer loyalty are of particular significance for the SFR (Schwenk 2006; Künzel 2005) as their customers generally cannot switch to another provider without problems.

As Solomon (1980) has shown, emotions change over time. A dynamic adjustment to stimuli takes place. This is relevant for the SFR as customers do not perceive regularly recurring positive performances as special. This is only brought to mind again through problems such as incidents. If the train is regularly late, customers become equally accustomed to this effect.

Attribution theory is based on the assumption that people seek reasons for specific events (Solomon 1980). They not only notice events but want to identify the reasons for them. Satisfaction can rise or fall depending on the attribution. This is an important point for the SFR. If incidents occur which were not caused by the company, the reasons for these must be communicated4. Customers expect a company to have their service under control, which has been proven by various authors (Holloway et al. 2009).

Communication and interaction with customers is crucial for the success of the service recovery:

“While these moments of interaction provide an opportunity for a firm to satisfy and even to delight the customer, there likewise is an opportunity to disappoint the customer.” (Bitner et al. 2000: 139)

Although customer satisfaction cannot reach the desired state during delays, it is certainly possible to demonstrate competence. Competence can be demonstrated by

4 The SBB already accommodates this through a communications guideline. For self-induced problems (e.g. faulty engines) the company apologises for the delay, while for non-self-induced problems (e.g. suicide) they ask customers for their understanding.
professional management of the incident situation. Transparent customer information takes on a significant role in this context. In addition to notifying customers that an incident exists, it signals to the customer that the company is aware of the situation and is attempting to restore it to normal.

Various authors have proven that customer satisfaction can rise above the original level after incidents have been resolved (e.g. Gustafsson et al. 2005; McCollough et al. 2000; Hess et al. 2003). A vital point for the SFR during incidents is communication. This is a crucial quality factor, as it can be assumed that a customer who is informed about an incident before the start of his journey will avoid this incident, for instance by not starting his journey until after it is resolved, or by using alternative transport. If the passenger has already been affected by the incident, but is constantly updated about the status and alternative transport options, satisfaction should remain stable.

The distinction between basic, performance and excitement factors is relevant to the SFR (Kano 1984). Punctuality would be a basic factor for most travellers. Customer information is also a factor, as it is a prerequisite for using the railway. During breakdowns it can develop into a performance factor if information follows regarding alternative travel options despite the incident. Further services can also be helpful which make customers aware of leisure offers, shopping opportunities or links to other forms of transport.

Service quality characteristics, according to Parasuraman (et al. 1994), can be described in various dimensions. The zone of tolerance is first and foremost significant to the SFR for customer satisfaction in the rail environment. This defines the extent to which a customer is prepared to tolerate problems. For the SFR, the zone of tolerance must be as large as possible (Zeithaml & Bitner 1996). This allows the absolute quality level to be as high as possible. Various quality dimensions in rail transport can be positively influenced through customer information. Increased transparency leads to greater satisfaction and affects various other dimensions.

The model from Parasuraman (et al. 1994) shows how criteria for service quality in rail transport can be defined. The aspects for integration in this research relate to criteria that can be: empathy, reliability, responsiveness, comfort and reliable connections which can be significantly improved when combined with effective information technology. If for example a problem arises which influences the punctuality of the
train, it is possible to inform the customer in good time so that he will notice the responsiveness and the convenience will be influenced as he may be able to deal with something else instead of standing idly on the platform. This effect can have similarly positive consequences for the transparency that occurs for the customer.

It is therefore necessary to transfer the basic service into an integrated service package. In the rail sector, therefore, not only must the transport service be high quality, but also the complementary services such as customer information (Specht et al. 2006; Concéption et al. 2009).

There are consequences for the research design as a result of the conclusions that were described. In addition, a key subject is the question of how the customer associates his expectations with the SFR’s service offering. An important question is how they use the resource of information in order to maintain customer satisfaction. It is also interesting to investigate whether an SRP is demonstrated as being resolved (e.g. Gustafsson et al. 2005; McCollough et al. 2000; Hess et al. 2003) What has to be investigated is which information system the company employs and which conceptional foundations are present or in progress. Also, quality aspects such as relevance and speed of information in particular play an important role, as Parasuraman (et al. 1994) has shown. Also to be investigated is the SRP (e.g Hinterhuber & Matzler 2009). Here it needs to be checked whether the SFR starts to make service offerings that can lead to an enthusiasm effect.

2.4.2 Conclusions from Crisis Management

In the area of crisis management a few key points for improving customer information in crisis situations were identified.

Communication is a key success factor in crisis situations. Natural disasters cause incidents in the rail environment with great regularity, sometimes with serious consequences for the affected customers. An example from Germany demonstrates this. Various German newspapers and magazines (Stern 2007; FAZ 2009) expressed huge criticism of the German railway after Hurricane Cyril caused massive disruptions in rail traffic. Media criticism did not relate to the weeks of breakdowns, as after all a natural disaster is not an influencing variable that can be controlled by the company. A more considerable point of criticism was the company’s information policy, which provided
entirely unsatisfactory information about affected sections of routes and traffic restrictions. Here, customer information failed.

Paul Watzlawick’s theory plays a role here, which describes that it is impossible not to communicate (Watzlawick et al. 2011). A simple example is a situation in which a train stops on a route. If an announcement is made, such as the communication that the reason for the incident is a fault at the signal box, the customers accept this as information. If no announcement takes place, this is also communication. The customers can for instance assume the information that the rail company does not take punctuality very seriously or does not have the problem under control. This increases the level of dissatisfaction. In addition, customers start to organise themselves. On Facebook groups\(^5\) are built, which inform about incidents on the Swiss rail network.

Mitroff’s (1996) model can be applied to the SFR. Customer information can play an important role in the detection of signals. If, for example, delays continue to occur on the same routes, this could cause larger problems in the future, for instance because maintenance was neglected.

The different phase models and formation phases have shown one thing. Incidents can frequently be harbingers of a crisis or crises in their formation stage. It is therefore extremely important to pay close attention even to incidents. Here, customer information is one of the components of crisis management, which along with communication can help to minimise problems.

Reputation is considered to be an important asset in a company and is highly significant for the guarantee of long-term development. This particularly applies to a company like the SFR, which draws subsidies from the public domain and is therefore under high pressure to justify itself. Competence, integrity and trustworthiness are attributes that signify a good reputation. To this we can add the company’s prominence and distinctiveness, but also credibility and confidence. Confidence is considered to be advanced by the trust-giver. Confidence and reputation mutually reinforce each other – the more confidence the stakeholders have, the better the reputation of the organisation (Eisenegger 2005). The reputation of the SFR is currently under fire. E. g. Factory closures or high managerial salaries (Tagesanzeiger 2010; Solothurner Tagblatt 2010)

lead to a negative public response. Delays on the rail network, problems with infrastructure and a poorly financed pension fund are creating increased media presence for the company – mostly in a negative context. The contribution of customer information can be helpful. Early communication of problems on the SFR rail network shows that the company has its duties in hand. However, it must also be stated that customer information is only a component of comprehensive reputation management, and must be embedded in a broad range of measures.

Speed of information delivery is crucial in crises. Only when management quickly suspends the usual processes can a crisis be brought under control. For this to be possible, a focussed awareness of the crisis situation by management is necessary. Additionally, the key stakeholders must notice that a crisis is present, that a serious problem exists and that appropriate actions and measures are necessary. But what happens if a company is not able to act quickly? According to Knight & Pretty (1997), the assumption often prevails that in periods of crisis a company should be led in the same way as in normal periods. Companies tend towards complacent or apathetic behaviour. Within companies in healthy financial situations, the opinion can dominate that they are invulnerable. Effective crisis management affects companies positively overall, as they then return to the market more quickly and increase their productivity (Knight & Pretty 1997).

The investigation of the crisis management produced valuable input for the research design. It showed that in particular, in the case of crises and incidents, efficient communication is a key success factor if the organisation wishes to remain in existence (Knight & Pretty 1997). Therefore, it is also appropriate here to investigate the factor of information in the context of disruptions and the effect this has on the reputation and the communication of the organisation (Eisenegger 2005).

2.4.3 Conclusions from Incident Management

Reactive and preventative incident strategies are significant for the SFR. The primary aim must be to avoid incidents by way of prevention. Maintenance and monitoring are key factors that can prevent the occurrence of incidents in the rail network. However, the cost/benefit ratio must always be considered. An almost 100 percent resistance to incidents is not feasible, and significant approaches to this value in all areas would be
associated with immense costs. The exception is in the area of rail safety. Here, 100 percent resistance should be aimed for as accidents resulting in human casualties are possible.

Customer information cannot provide any contribution to resolving the incident. However, it can have the effect of minimising disruption, in that passengers are informed and therefore the number of people affected is reduced as far as possible.

If an incident occurs, the customer must be informed about the consequences for their itinerary. Equally, the information aspect must be considered when recognising incidents, so that the customer can receive information as soon as possible and the information should be delivered proactively. The effect has already been described in the section on customer satisfaction: negative consequences can be minimised.

Within the scope of this research, it has to be investigated whether the SFR uses or should use preventative and/or reactive strategies, in order to provide a higher level of customer satisfaction. As already described in the conclusions on crisis management (section 2.4.2), the factor of information also plays a key role which makes it valid for investigation.

**2.4.4 Conclusions from Trends**

Social and technological trends are already having an impact today. Trends such as individualisation, increasing mobility or penetration of society affect the SFR. The use of public transportation to reach the workplace, changing work sites or frequent travel activities are no longer restricted to just a few people from management or sales, but are the norm for a part of the working population (Micic 2006). This has an impact on the travel behaviour of rail customers. They expect punctual trains and do not want to waste time waiting for trains. Customer information must therefore be proactive and inform customers thoroughly in the event of incidents. Travel is no longer an experience, it serves as a transfer from one place to another.
Falling technology prices contain considerable potential for optimisation. Display boards for customer information in stations are very expensive\(^6\). Mobile end devices are an alternative, which almost every traveller already carries anyway.

Far-reaching consequences for the SFR arise from these trends. The social and technological trends have ramifications for the SFR business model.

This creates great potential to learn more about customers. At present, customer information takes place through various channels, but the information itself is standardised. In conjunction with the establishment of new customer segments in particular, it could be interesting to investigate travel data or the use of information channels. From the customer’s point of view, there are several different criteria for success. What has already emerged from customer surveys (SBB 2008), however, is the customers’ desire for a high degree of reliability and the need for optimal information about individual itineraries. Thus the SFR had to create a timetable information system for the iPhone within a very short time frame, as this was expected by the market. Greater efficiency, better quality information and more convenience are a result of this trend. Mobile telephones are a classic example of this development.

Increasing numbers of people are using social media. The SFR cannot afford to ignore this trend. In the meantime, there is a page on Facebook\(^7\), independent of the company, which reports on disruptions. The SFR are now rethinking their approach to Facebook, after they blocked staff access to it. In the future, the pages should be accessible again (Netzwoche 2012).

In general terms, the SFR should consider developing a social media strategy for the communication of incidents. The Kietzmann et al. (2011) 4C model could be useful here. A rapid distribution of information via these channels could help to avoid damage to reputations and keep customer satisfaction on a level par. The SFR needs to note that social media not only helps the company, but that customers are in contact with each other too.

---

\(^6\) The criterion of sinking technology prices cannot be applied to these devices as they mostly must fulfil special requirements and are only produced by a few companies. The devices must for instance work at very extreme temperatures in winter or in the heat of summer, they must not reflect light or dazzle, etc.

Within the scope of the research design, it has to be investigated if and how social media affects communication in the event of a disruption and also which consequences these new information channels have for the SFR.
2.5 Framework

In this chapter, a framework is developed on the basis of the literature studied. The objectives to be investigated are illustrated in the diagram below. The key starting point for the problem is the subject of customer satisfaction and how this can be kept stable in incident situations.

The next figure gives an overview about the development of customer satisfaction. A customer perceives the worth of a service on the basis of quality, expectations and the image of the service provider. The perceived performance will be valuated with the expected service. Dependent on this comparison, satisfaction, dissatisfaction or enthusiasm will arise (e.g. Homburg 2003; Kano 1984).

![Diagram showing the framework of customer satisfaction](image)

Figure 15: Customer Satisfaction (adopted from Homburg 2003)

The decisive triggering element is always the incident. This influences customer satisfaction in incident situations (e.g. Bruhn et al. 2006; Concépcion et al. 2009). How
satisfaction then develops is highly dependent on the company’s reaction. If the company demonstrates a low problem solving competence during incidents or annoys the customer further through their management of the incident (Concépcion et al. 2009), customer satisfaction will decrease. If the company demonstrates a high problem solving competence and the customer also perceives this, customer satisfaction can rise through the SRP or will remain stable (e.g. Gustafsson et al. 2005; McCollough et al. 2000; Hess et al. 2003). Crucial to this are two points of customer perception:

- Perception of incident recovery response
- Perception of communication response

2.5.1 Competence of Incident Recovery

According to this approach, if the company can minimise the damage and is quickly able to make up for the delay again, this should lead to a positive customer perception or at least to less dissatisfaction. Magnini (et al. 2007) states that it is frequently not the incident itself that is a problem for customers, but the way in which this is dealt with by the service provider. Speed in restoring the original state is an important variable for the SFR here, as according to Parasurman (et al. 1994) punctuality and reliability are of high importance for customers in rail transport. The speed with which the original state is restored is important to the customer’s perception (Michel & Meuter 2006). If it is possible to reduce his delay so that there are no missed connections, his satisfaction will remain stable.

Thus the following proposition can be derived for the SFR:

\[ \rightarrow PI: \text{The greater the ability of a company to restore a situation to its original state following an incident, the lower the negative influence on customer satisfaction.} \]

2.5.2 Customer Information as a Basic Factor

The SFR must demonstrate a good communication and problem solving competence. If it achieves this, the customers will remain satisfied. Added to this is the perception of information quality; this must also be high. Information must reach the right target groups and be formulated to suit the addressees, adapted to customer needs and
provided quickly, using the right information channels. If these criteria are met, according to the proposition in this thesis, customer satisfaction will remain stable. If no information, or incorrect information, is provided during incidents, customer satisfaction will fall. Information about incidents also belongs to these basic factors, as it is generally a simple correction of standard information (new times, possible changes, alternative routes). If this information is missing, customer annoyance will go up, as demonstrated by regular readers’ letters in the media. Based on this, the following proposition can be made:

→ **P2**: Customer information is a basic factor. If incidents occur, customers expect quick and relevant information about them. If this is not provided, the level of customer satisfaction will fall.

### 2.5.3 Communication Competence

The zone of tolerance defined by Parasuraman (et al. 1994) is first and foremost significant to the SFR. This defines the extent to which a customer is prepared to tolerate problems. For the SFR, the zone of tolerance must be as large as possible. This allows the absolute quality level to be as high as possible.

Various quality dimensions in rail transport can be positively influenced through customer information. Increased transparency leads to greater satisfaction and affects various other dimensions.

The SFR must aim not to allow the “zone of tolerance” to become negative because then customer satisfaction will be negatively influenced. Instead, the customer’s expectation level must be kept stable by way of active communication in incident situations (Zeithaml & Bitner 1996).

With regards to communication competence, Hess (et al. 2003) has illustrated that successful communication during incidents leads to a positive perception by the customer, which keeps his satisfaction stable. The base level for the customer satisfaction is the level when no incident appears. The quality of information is therefore a central success factor. Based on this, the following proposition can be made:

**P3**: As the perception of the information quality increases, the greater the likelihood that customer satisfaction will return to or increase above base levels.
2.5.4 Cause of Incidents

In addition, according to Holloway (et al. 2009), the customer expects a company to have control of its service. Customers are more accommodating with incidents that are not caused by the service provider than with those which are (Concépcion et al. 2009). Based on this, the following proposition can be made:

\[ P4: \text{Incidents within SFR control will have a stronger negative influence on customer satisfaction than incidents outside SFR control.} \]

2.5.5 Overview of Propositions

On the basis of the literature review, several influencing factors have been identified that have an effect on customer satisfaction in the case of an incident. The Black Box “Impact” will now be clarified and is to be investigated by way of propositions.

In addition, the acquirement of the interaction between the propositions and the model of customer satisfaction has to be examined.
2.6 Conclusion

A company’s success and customer satisfaction are closely related, as various studies have shown (e.g. Töpfer 2007; Jaworksi & Kohli 1994). A high quality of service leads to high customer loyalty. High customer loyalty is accompanied by higher price elasticity, so that customers do not switch suppliers so quickly (Hinterhuber & Matzler 2009).

In the case of incidents causing delays, the service recovery paradox (Matos et al. 2007) will be important for the SFR. If the SFR provides high quality communication during an incident and crisis management also works well in other respects, customer satisfaction can even be higher than if no incident had occurred.

A key difference in contrast to recent decades is the perception of risks. Early anticipation of problems allows damages to be avoided or minimised. According to Mitroff (1996), it is management’s task to ensure the early detection of signals that can grow into crises. What does this mean for incident information in the SFR? Certain routes are more prone to incident than others. There can be various reasons for this. Older equipment or geographical features can lead to a higher susceptibility to breakdowns. A communications strategy is required for these routes which manages the expectations of customers. Risk management can be combined here with the confirmation/disconfirmation paradigm approach, which can ensure that expectations do not turn out quite as high as anticipated.

In accordance with the Kano (1984) model, customers evaluate services and products using three factors: basic factors (minimum requirements), performance factors (exceed expectations) and excitement factors (are not expected but create enthusiasm when found) (Kano 1984; Matzler et al. 2005). Normal travel information can be identified as a basic factor (departure time, arrival time, platform, possible days of travel, etc.). Information about incidents also belongs to these basic factors, as it is generally a simple correction of standard information (new times, possible changes, alternative routes). If this information is missing, customer annoyance will go up, as demonstrated by regular readers’ letters in the media. Performance factors and excitement factors must be considered in the implementation of customer information. Possible areas of
application could be automated seat reservation for certain trains, or automated itinerary information via SMS.

The railway’s implementation of technology in many cost-intensive areas is long-term orientated, and less strongly subject to technological trends than is the case with mobile telecommunications or software manufacturers. The reason for this is clear: new routes and stations cannot be built quickly and are associated with high investment. This also applies to rolling stock (trains, wagons) which can have depreciation cycles of over 30 years. The field of customer information is dominated by technology that is closely related to the information industry. Continually falling technology prices (Micic 2006) and the associated pervasiveness among the majority of the general population allows for the implementation of new technology.
3 Methodology
3.1 Introduction

The methodology chapter describes the research approach, methods used, research tools and data collection. This is followed by sections describing the data analysis, the scientific quality criteria and a description of the ethical principles that were taken into account. The diagram below shows an overview of the chapter structure:

![Diagram of Research Method]

Figure 17: Structure of Research Method

While pure research, which is mostly found in natural sciences, deals with the scientific establishment, verification and discussion of theories from, for example, engineering, economics and the social sciences, such theories are also relevant in the discovery of new knowledge in professional practice. Here the focus is not the verification or extension of existing theories and models, but their application to derive practical benefit through application (Kromrey 2009).

The methodology was designed to verify the propositions and develop measures that will refine customer information delivery within a critical incident framework in the context of the SFR, the case organisation.
3.2 Rationale for Chosen Research Paradigms

The term research paradigm originates from Greek and is defined as, for example, model or pattern, but also boundary and preconception. Literature distinguishes between four different approaches: positivism, post-positivism, critical theory and constructivism. A research paradigm can be specifically defined as:

“…a set of basic beliefs (or metaphysics) that deals with ultimates or first principles. It represents a world view that defines, for its holder, the nature of the ‘world’, the individual’s place in it, and the range of possible relationships to that world and its part […]”. (Guba & Lincoln 1994: 107)

A research paradigm reflects scientific methods and issues, and defines convergent and generally accepted viewpoints, attitudes, methods and criteria which determine scientific practice. It defines the space in which science operates and structures research in a subject area with regard to its fundamental assumptions and methods.

For this investigation specific paradigms were evaluated as to their suitability to answer the research question and provide a foundation for the selected methodology. As described in the first two sections, during service disruptions, the customer and his/her satisfaction are significantly shaped by his/her perception of a company’s performance (e.g. Matzler et al. 2005; Matos et al. 2007; Luk & Layton 2002; Kano 1984).

Research in the area of customer satisfaction requires a complex understanding of how customers perceive incidents. For instance, the same customer might perceive an incident differently on a day when he/she is pressed for time compared to a day when he/she has enough time. Alongside these subjective factors, objective factors also played a role, such as the duration of the incident or the experienced frequency (e.g. Homburg 2003). With the selected research paradigm, both the subjective and objective factors must be taken into account.

As a consequence of the nature of the question i.e. ‘how’ a phenomenon can be understood, the post positivism paradigm was considered as a foundation for guiding the research approach.
The research followed Popper’s (2007) approach, whereby recognition of the identification of positive findings should take place. A positive finding is present, according to Popper (2007), if a previously defined investigation under defined conditions yields proof of validity. Popper described the problem of induction, whereby for formal-logic reasons it is not valid to derive general laws from individual cases; instead it is only possible to refute general propositions by falsifying theories. This approach was used for the analysis of secondary quantitative data. Here, data from the SFR market research institute was used to check the validity of the propositions and conclusions from the interviews.

This research followed the recommendation of Veal & Ticehurst (2004), who suggest that researchers should try to mix research methods so that the findings provide broader insights into the issues being investigated.

There is very little specific literature on the subject of customer information during service disruptions in rail transport. It was therefore necessary to gather a large amount of information through interviews with specialists from this subject area. Furthermore, a major focus of this research was that the findings gained could be implemented into projects at the SFR company and therefore produce actionable outcomes. These framework conditions can be best implemented using qualitative methods. This research therefore follows the case study approach, which takes into account this framework’s conditions and requirements.
3.3 Rationale for Chosen Research Methodology

Crucial to the choice of research methodology is the research question: what are the success factors for customer information of SFR-customers in critical situations to keep customer satisfaction stable? For the chosen research methodology the most important issue to consider is the question itself (Punch 2005), as different research questions will lead to different research methods. The influencing factors for this thesis included the advantages and disadvantages of various research paradigms, the target result of the research, quality criteria and which approaches have been used in similar research projects.

Qualitative research approaches are very widespread in research on customer satisfaction, service recovery, customer expectation and incident management (e.g. Patterson & Spreng 1996; Concépcion et al. 2009; Bowen & Chen 2001). These are generally used when organisation and industry-specific subjects are the object of research and the investigation goes into depth (e.g. Bowen & Chen 2001). Central to this study is customer satisfaction within a company (SFR) and a specific industry (passenger transportation and logistics). As the focus here is on the customer’s perception and the related reactions to the SFR company, qualitative approaches offer methods that allow meaningful information collection.

The research follows the epistemological approach of exploration and description. The aim of the research is to develop a model for improving customer information. For this purpose, the relevant dimensions of the area need to be determined and important objects identified. The exploration should help to determine the areas of important content and create a picture of the subjects to be surveyed. In addition, it serves as an investigation of the issues to be gathered and the deduction of viable survey methods (Lamnek 2005).

According to Yin, there are three conditions that must be taken into account if the case study approach is to be used (Yin 2008):

- “How” and “why” questions are likely to favour the use of case studies. This is because such questions deal with operational links needing to be traced over time.
This study focuses very strongly on the question of “how”: namely how can customer satisfaction be maintained? Quantitative topics and issues also play a minor role. In order for the results to be relevant for the SFR company, a direct analysis of the company is essential. Data was therefore gathered using interviews, internal documents, analysis and investigation.

The aim from this study is to understand the specific case of the SFR, to identify aspects of theory derived/tested that can be extended beyond the SFR to contexts of a similar description and to derive practical measures from which stabilisation of customer satisfaction in incident situations will be allowed.

This research employs these methods within a case study approach. According to Yin (2008), a case study as a scientific research method is an empirical study which investigates a current phenomenon within its physical context, especially if the border between phenomenon and context are not clearly evident. Case studies are often used if the researcher has little or no control over the results, otherwise experiments would lend themselves as a research instrument. Direct observations often serve as an important data source. The case study approach allows data to be gathered and theories to be formed/extended (Eisenhart 1989; De Weerd-Nederhof 2001). The data for this research is drawn from two sources: interview data from employees in the area of customer information and an analysis of data capturing the current environment within the SFR, such as analysing internal documents and data to describe customer information processes and identify key issues. (Denzin 1978; Lamnek 2005). The use of the single case study approach leads to various limitations within the scope of this study.

For most companies, it is not common for data about customer satisfaction to be made available to third parties. They are rather unlikely to be prepared to pass on this information particularly when it is negative. With the SFR, this was only possible as the author of this thesis is employed by the SFR and has ensured anonymity of those involved in the project and discretion in the use of secondary quantitative data provided.
To make universal statements, verification with other companies would be necessary, which would exceed the scope of this study. All statements in this thesis are therefore limited to the SFR case.
3.4 Rationale for Case Selection

The research field of customer information in rail environments is a subject area that is rarely studied. Literature is scarce, and when available, it is mostly linked with other fields of application. In such situations, qualitative methods are of great benefit. The case study allows the exploration of facts with semi-standardised interviews.

According to Mayring (2002), the strength of the case study lies in the depiction of a case’s complexity, which represents all areas of life and functional connections within a defined timeframe and interpretation of the connections to be displayed. The case analysis helps to verify variables and research assumptions so that their conclusiveness can be proven. The key idea during the whole investigation process is to draw on the case as a whole.

One of the difficulties in this research project is that the SFR is the only company in Switzerland that develops rail-specific customer information systems (SFR makes their customer information systems available to private railways in Switzerland at a reasonable price, so that for these companies, it is not worth developing their own systems).

A pragmatic approach is also used for the case selection. The researcher is employed by the SFR. Therefore it is a unique opportunity to study its communication system in depth.

The definition of the case is key to the success of the project. In classic case studies, the case can be an individual with particular characteristics. This is often the case in clinical studies. There a patient with individual symptoms that have not occurred in any other person is studied. Case studies have already been used to deal with a multitude of subjects. These could be programmes, processes or organisational changes, and there are numerous classic examples here which restrict themselves to single cases (Mayring 2002). In this investigation of the contribution of customer information to the improvement of customer satisfaction during delays, the case is obvious. The SFR is the central object of investigation. The first goal is to analyse the existing and potential strategies and derived processes, to look at the organisational positioning of customer information within the company, and to examine the status quo. The most important
goal, however, is to investigate which requirements exist for a best practice model for the CCSCI implementation.

The main topics are as follows:

- How is customer information currently provided?
- How and why do SFR experts envisage changes?
- What are the strengths and weaknesses of the current situation?
- How can improvements be achieved?

Testing of the theories confirms a single case study such as the SFR provides the opportunity to examine propositions for falsification. Furthermore, the SFR case can serve as a tool to investigate and explore the most important variables and relationships (Eisenhart 1989; Yin 2008).

“One rationale for a single case is when it represents the critical case in testing a well formulated theory.” (Yin 2008: 47)

A further reason for adopting a single case study is that the SFR is exceptional. There is no other comparable railway in Europe regarding the complexity of the network, the high degree of capacity utilisation and the customer integration (SBBi 2010; SBBi 2009). The SFR is rooted in heavy settlement which makes the rail network unique and enables above average passenger loads. In addition, the political conditions (the SFR is state-owned), multilingualism (information must be presented in German, French and Italian), cultural diversification (differences in mentality between German, French and Italian-speaking Switzerland) and the geographical location (its position in the centre of Europe makes Switzerland an important country for through travel) all-in-all make this case unique. Although there are individual countries which have similarities (e.g. multilingualism in Belgium or topography in Austria), the factors very rarely appear together. Although it would be possible to investigate individual factors in various European states in isolation, this would exceed the scope of this project. In addition the case study should be used to generate knowledge useful for concept and management decisions, in cooperation with experienced and highly qualified employees from the field of customer information (Amabile et al. 2001; Leonard-Barton 1990).
Another reason for the choice of the single case study approach was the framework for the implementation of the project. Being an employee of the SFR, the author had access to all relevant information and was known to the employees from the area of customer information. As the company also had a strong interest in obtaining an objective analysis of the situation, the research was focused on the SFR case. Another factor which meant the single case study approach was appropriate was the limitation of the subject. A comparison with other train companies would make sense from an academic point of view and would provide further valuable findings, however it would contradict the scope of a DBA, as the target of this research is to provide a practical benefit for the SFR.
3.5 Research Process

The case study approach for this research project is based on a multi-dimensional approach. Within the case study qualitative methods have been used, as described in this section. Measures were applied for the purpose of verification, in that the different findings underwent testing with regards to their plausibility. The main problem to be avoided in the design of the case study is the “one-group post-test-only-problem” (Ruigrok et al. 2008).

The case study approach for this research project is based on Yin’s model, which is depicted in the following sections. The author follows an approach consisting of planning, design, preparation, data collection, analysis and result (Yin 2008). The details of the case study follow this approach and are represented below. The following questions are always fundamentally answered:

- What is the process?
- Who is interviewed?
- How large is the sample?
- How is the questionnaire developed?
- How are quality criteria accommodated?

The process follows an approach in several steps which serves as an examination of the formulated propositions and then allows suitable measures to be defined which can improve customer information in the SFR as a result. This multi-stage process is shown in the figure below:
The first step was research preparation, which focussed on developing the interview guide, inspecting the first documents and the first preliminary talks with employees from the area of customer information. The comprehensibility and completeness of the interview questions were then tested in a pre-test. On the basis of this, the interview guide was amended and further questions added. Finally the data was gathered. This was composed of three parts: information from interviews, documents and the SFR database. New documents were determined on the basis of the interviews. These documents resulted in new interviewees, and the database in turn produced new documents and interviews. Within this iterative process, the relevant data for this study was obtained. The next step was to evaluate the data, which was based on qualitative content analysis. Finally, the results were analysed and conclusions were drawn.

The process is described in detail in the following sections.
3.5.1 Preparation

The preparation of the research process included the creation of the interview guide, a first inspection of available documentation and an initial identification of potentially relevant employees for interview.

3.5.1.1 INTERVIEW GUIDE

The key research instrument in this project was the interview guide. As the qualitative research focused on specialist knowledge and ideas, but not on personal preferences, opinions or other critical factors, the questionnaire focused on the exploration of the research question. The interview guide therefore contained many open-ended questions with the opportunity to answer freely. Open questions have the great advantage that no methodological or statistical knowledge is needed to interpret and understand the results. However, they can help to illustrate the occurrence of statistical values (Spiel & Pellert 2001).

In carrying out the qualitative interviews, three instruments were used: a short questionnaire (Appendix B), an interview guide (Appendix C), interview minutes and edited interview minutes (Appendix E). The description of research instruments below follows explanations from Lamnek (2005).

The short interview guide served to establish reference data (period worked in the field of customer information, role, length of employment, specialised knowledge, personal reference data etc.) and to begin the conversation with simple and easy-to-answer questions.

The experts at the SFR were asked 21 open questions. The aim was to investigate the subject of customer information in disruption situations as thoroughly as possible.

The creation of the interview guide is based on the recommendations of Flick (et al. 2005), Lamnek (2005) and Mayring (2008). The Literature Review (Chapter 2) was decisive for the development of the interview guide. The questions derive from the subject areas which were examined. The structuring of the guidelines was aligned with the strategy, business process and operative solution. This categorisation made it possible to ask the different management levels in a more target group orientated manner, and showed whether there was a consistency or anomalies between the various
levels. The objective was to deal with all the topics, and gain the most uniform view possible of the customer information area, and as much information as possible from the experts.

The target of the Interview Guide was to deal with the subject of customer information in disruption situations in as much detail as possible. The interviews were conducted as open discussions with an Interview Guide (Schnell et al. 2005). The object of the Interview Guide was to structure the discussions and to prevent relevant aspects from being forgotten. Other than that, the interviewee was encouraged to speak as freely as possible. If any relevant points were not covered or were inadequately covered during the course of the interview, then the interviewer dealt with this accordingly (Kromrey 2009).

The Interview Guide consisted of six sets of questions, which were derived from the literature review:

- Overall, the first two subject areas provided information about the connection between strategy, business architecture, organisation and processes in the field. Here it had to be evaluated whether a strategic alignment in the area existed and whether from that a tangible business architecture could be derived. Investigation topic was whether the process follows the variables strategy, organisation, process, systems (e. g. Drucker 2007; Homburg 2003).

- In the third set, the focus was on the analysis of customer needs. Here it was investigated how the identification of customers and their needs was achieved and whether there was a standardised procedure as to how this knowledge was spread within the business area which was relevant for customer information. The identified variables were customer needs and customer satisfaction (sections 2.3.1.1 and 2.3.1.2) crisis (section 2.3.3) and incident (section 2.3.4).

- After focussing on a more abstract analysis of customer needs in the third set of questions, the fourth set examined the physical inclusion of the customers and how they came into contact with the SFR employees. Relevant variables were stakeholder management (2.3.3.4) and communication (section 2.3.3.1)

- The fifth set focussed on the physical implementation of the customer information in the form of media, channels and communication (section 2.3.1.3)
In the open section, the interviewees got the opportunity to speak about other subjects and to bring in other ideas which had not yet been touched upon.

The interview guidelines were developed for an expert interview which should produce an orientation guide. As not all of the questions were pertinent to each interviewee, questions could be omitted or added depending on the discussion partner.

Generally, all questions were formulated as open questions. As the selected research concerns a specialist topic, questions were based on knowledge and facts. The only exception is the question regarding research propositions. For this, the interviewees were confronted with the proposition and asked for a personal judgment or opinion regarding the accuracy. This was also formulated as an open question, so that as much information as possible could be gathered. Depending on the answers given, additional questions were asked which delved deeper into the respective topic.

3.5.1.2 DOCUMENTATION

As the author of this thesis is employed by the SFR, access to a variety of documents was assured. These were inspected, analysed and filed in an initial evaluation.

3.5.1.3 INTERVIEWEES

As IT performs a service function for the other departments as a business enabler, there were a large number of contacts in this department. In the preparation phase, a list of interviewees was created based on organisational charts and direct contact with those who worked in customer information. This was continually expanded in the course of the research process until the final number of interviewees was fixed.

3.5.2 Pre-Test

In order to guarantee high quality interviews, a pre-test was carried out (Lamnek 2005). This helped to identify which questions were unclear or imprecise. The pre-test was carried out with three employees – a software developer, a project leader and an employee from signalling and control.

The interviews were carried out in meeting rooms or employees’ offices, as this required less effort for the interviewees and a relaxed atmosphere was achieved.
Following the recommendations from Mayring (2008), after the pre-test phase, some of the questions in the interview guide were changed, as the first version required a few adjustments.

The aim of the pre-test was to answer the following questions:

- Do the interviewees understand the questions?
- Are there fundamental variances in the response spectrum?
- Are the questions worded in an open way and do they allow broad answers?
- Are there difficulties in answering?
- Is there sufficient theoretical significance?

Adjustments to the original interview guide were carried out on the basis of the pre-test. The version that was used in the interviews is attached in the appendix.

3.5.3 Methodical Triangulation and Data Collection

The objective of triangulation is to lend more credibility to a research project. As calculations are prone to error or can cause problems, by applying various methods which each have their own strengths and weaknesses, a more valid analysis should be produced. The weaknesses of one model should be compensated by the strengths of another (Lamnek 2005). According to Denzin (1978), the application of multiple methods allows a better view of reality, that will be validated by the results of various calculations. Mayring (2008) claimed, that one advantage of triangulation lies in the fact that, dependant on research design and - interest in different methods of qualitative and quantitative tools – these can be combined in order to gain new insights.

According to Lamnek (2005), one of the strengths of triangulation is its ability to complement. In other words it is concerned with how to put together a situation, like a puzzle, so that the various views complement each other but are not necessarily congruent.

In this research project, the application of the triangulation method was followed. By way of the analysis of interviews, documents and secondary quantitative data, similar to
Lamnek’s example (2005) an example of the case study should be produced, that is put together like a puzzle. Should the image not correspond, then it would be explicitly highlighted.

Three sources were relevant for data collection in this research project: interviewees, SFR documents and the analysis of SFR marketing data. Data collection is described in this chapter. An overview of how the data collection process took place is provided as an introduction.

3.5.3.1 DATA COLLECTION PROCESS

Data collection took place in an iterative process. Initially, 12 employees from the area of customer information were identified as potential interviewees. These were selected using SFR organisational charts and from the author’s network of connections, as he already knew a number of contacts due to his position as an internal employee.

In initial conversations with interviewees, documents were identified which contained information relevant to the research process. On the basis of these documents, further interviewees were identified, who in turn provided documents, information and further interviewees.

The SFR marketing department was also relevant. This department made available data that was relevant for the evaluation of customer satisfaction. Further documents and interviewees were also identified here in the course of conversations.

3.5.3.2 INTERVIEWS

At the start, the interviewer carried out an initial round of discussions with the SFR experts. The purpose was to take stock of the current customer information: it was necessary to identify relevant documents, consult experts with regards to the current situation, and gather ideas and visions. This input was the basis for measures and the verification of propositions. During the interviews, further interviewees and documents appeared which were analysed. Additional interviews were carried out with the new respondents, so that a complete picture from the point of view of the SFR emerges. A total of 21 interviews were undertaken.
3.5.3.2.1 Selection of Interviewees

Selecting the interviewees required a high degree of care, as many subject areas can only be revealed by employees from the organisations concerned (Pryzborski & Wohlrab-Sahr 2008). Important selection criteria for interviewees were function, influence and experience in the area of customer information. Function was evaluated by job description and the corresponding role model. Influence was deduced by hierarchical level and the opportunities for influence and budget that was available to the respective person/organisational unit. The employees’ subject-specific competences in particular were significant for the case study.

<table>
<thead>
<tr>
<th>Description</th>
<th>Tasks for further research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Job description, competences</td>
</tr>
<tr>
<td>Influence</td>
<td>Hierarchical level, budget, competences, number of employees</td>
</tr>
<tr>
<td>Experience</td>
<td>Term of employment</td>
</tr>
</tbody>
</table>

Table 8: Selection Criteria (adopted from Pryzborski & Wohlrab-Sahr 2008)

Here, the various business units\(^8\) involved in customer information and the departments contained within these were considered (a more detailed description of the SFR and the organisational unit of customer information can be found in section 4.1 Research Background). Three departments are essentially responsible for customer information. In the passenger transportation division, there is a customer information department which is responsible for providing customers with information onboard trains. The infrastructure division has a customer information department which takes responsibility in stations. Both departments coordinate through regular meetings which are institutionalised but not depicted in the company’s organisation. The SFR IT department is also involved, appearing as a service provider for the divisions.

The table below shows the different roles, business units, responsibilities and specialist knowledge of respondents.

---

\(^8\) In the SFR, large departments (infrastructure, cargo, passenger transportation and property) are called divisions.
<table>
<thead>
<tr>
<th>Roles</th>
<th>Business Unit (No. of Interviewees)</th>
<th>Responsibility</th>
<th>Special Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Architect</td>
<td>IT (4)</td>
<td>Definition of IT architecture for applications</td>
<td>IT know-how, processes, IT systems</td>
</tr>
<tr>
<td>Program Manager</td>
<td>Customer Information Infrastructure (1), Customer Information Passenger Transportation (1)</td>
<td>Management of a group of projects in the business unit</td>
<td>Business architecture, business strategy, customer needs, processes</td>
</tr>
<tr>
<td>Product Manager</td>
<td>Customer Information Infrastructure (2), Customer Information Passenger Transportation (2)</td>
<td>Definition of requirements, transformation from customer needs to projects</td>
<td>Business architecture, processes, customer needs, IT systems, business units</td>
</tr>
<tr>
<td>Engagement Manager</td>
<td>Customer Information Passenger Transportation (2)</td>
<td>Accounting, resource management, administration, financing of projects</td>
<td>Customer needs, organisation, business processes</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>Customer Information Passenger Transportation (2), Customer Information Infrastructure (2)</td>
<td>Definition of processes, business architecture, analysis of organisational units</td>
<td>Processes, business units, business architecture, strategy</td>
</tr>
<tr>
<td>Business Unit Manager</td>
<td>Customer Information Infrastructure (3)</td>
<td>Organisation, administration and guidance of the organisation unit</td>
<td>Strategy, business architecture, organisation, processes, customer needs</td>
</tr>
<tr>
<td>Market Researcher</td>
<td>Marketing Department Passenger Transportation (2)</td>
<td>Realisation from the quarterly quantitative survey</td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Interviewees

The low number of interviewees in various roles (Program Manager, Product Manager) is due to the fact that there are no more employed in these roles. As there were only 36 employees in the field of customer information at the time of the interviews (as of December 2009), coverage is nonetheless very high, as demonstrated by the total number of 21 employees who were prepared to take part in interviews (although the two employees in market research are only secondarily involved with customer information).

3.5.3.2.2 Execution of Interviews

In carrying out the interviews, the author followed Lamnek’s (2005) remarks on the execution of problem-oriented interviews. The emphasis of the questions was on the
propositions developed in the literature review. The existing conceptual ideas were to be verified or changed in the course of the interviews. In problem-orientated interviews, the researcher’s role is to check their own theoretical concepts through induction and deduction (Lamnek 2005).

The author prepared intensively for carrying out the interviews with the pre-test, the literature review and his own research within the SFR. An initial filtering of facts took place through clear conceptual ideas in the form of propositions. These were investigated by way of open questions. Sometimes related topics were discussed, and sometimes the propositions were discussed directly with the interviewees to obtain further input.

The interviews were carried out as follows (Hopf 2005; Lamnek 2005):

A) Introduction
At the start of the conversation, the author briefly introduced himself, explained the content of the research project and the ethical guidelines that applied (above all participants’ anonymity and ensuring that information given by individuals was not traceable (see also section 3.8).

B) General Information Capture
Initial data was captured through general questions on customer information and the role of the respective interviewees in this area.

C) Specific Survey
Specific subject areas were discussed in more depth with the respective interview partners through the questions in the interview guide and the propositions. The interviewees were not only questioned with regards to their specific subject areas, but also with regards to their appraisal of other topics. The interview partners were also asked whether they agree or disagree with the propositions in general.

D) End of Discussion
The interviews were ended with an open sequence. Here customer information employees were once again encouraged to elaborate on open issues, their own assessments, missing topics, suggestions for improvement, criticism etc that had been dealt with so far in the conversation.
Additional material from the interviews which had nothing to do with the research topics was left out and blanked.

3.5.3.3 ANALYSIS OF SFR DOCUMENTS

According to Mayring (2002), document analysis includes not only materials of particular significance, but also all evidence that can be used as a source to explain human behaviour. A major benefit of document analysis is that the materials already exist and do not need to be created specifically for the study.

Various papers were analysed during the document analysis. Relevant among them were concepts, requirements, marketing information, strategy papers and background documents.

During the document analysis, the extent to which requirements and strategies can be mapped to the propositions was investigated and whether there is an awareness of a problem with regards to customer information in incident situations.

3.5.3.4 ANALYSIS OF THE SFR DATABASE

According to Popper, all observations of empirical science must fundamentally be able to be refuted by experience (Popper 2007). Statements in empirical science (theories, hypotheses) which describe reality must also fundamentally be measured by it. The starting point for every investigation is the questions to be answered. The answers are the subject of data analyses. These can be divided into two types. In the centre are corroborative (is it true?) and explorative (what happens?) studies. In this research paper the explorative type is used.

An analysis of secondary SFR data will be carried out within the case study. The conditions under which the SFR gathers its data are therefore briefly described here.

The data is compiled by the SFR for several reasons, two of which are particularly relevant to this thesis:

- It forms the basis for decisions made by SFR management
- Political institutions assess customer satisfaction

The essential aim of the quantitative survey is the description and exploration of the question of how customer information can be improved during critical incidents. The
survey is descriptive of customer expectations and their needs. The interpretation of the survey results, which should provide detailed references to attitudes, is explorative in nature. The essential questions that have been incorporated in the SFR survey that was undertaken are as follows:

- Which incidents affect customer satisfaction and how?
- Are there correlations between frequency of rail use and acceptance of incidents?
- How frequently are customers affected by incidents?
- Is the information provided sufficient?
- How is the quality of information rated?
- Are there preferred media channels?

In 2008, the SFR sold 2.2 million Half-Fare travel cards and 370,000 General Subscription travel cards (SBB 2009). With a Half-Fare travel card, the holder pays just half of the normal fare on almost all public transport routes in Switzerland (railways, postbuses, bus services, city transport, ships), with the exception of short routes. The routes with a 50 percent discount are therefore identical to those which are offered with a discount of at least 50 percent or free travel with the General Subscription. The General Subscription card is a season ticket for public transportation within Switzerland, which allows free travel on almost the entire public transport network in Switzerland and in the principality of Liechtenstein. Through the sale of these tickets (a total of 2.6 million in a population of 7.7 million), the SFR has access to an almost complete customer base, as the Half-Fare cards pay for themselves after just a small amount of travel due to their low price of just under CHF 200. Thus almost every traveller in Switzerland has one of these tickets. The random sample for the SFR survey was drawn on the basis of this. The table below gives an overview of the sample:
A large number of telephone interviews are carried out by the SFR every quarter, with the aim of measuring customer satisfaction. The basis of this survey is a standardised questionnaire (see appendix). The survey is carried out by the SFR marketing department, who made the data collected available for this research project. The large pool of data allows the research to be termed representative (Kromrey 2009).

The quality criteria underlying the statistical material must also be briefly mentioned here. The information described is based on data from the SFR marketing department (SFR-Marketing 2009):

- **Objectivity**: In order to guarantee a high degree of objectivity, according to Dieckmann (2007) the sub-population must be formed so that the behaviour of the overall population can be inferred as accurately as possible from the partial survey. This was achieved by a random sample of 4028 individuals from the SFR database (see Table 4 for requirements). According to the SFR, the sub-population corresponds to the typical customer group relevant for measuring customer satisfaction.

- **Reliability**: The reliability of the survey results is very high, as the SFR repeats the surveys quarterly. There are generally no major deviations. A change in customer satisfaction after major incidents in individual regions was also often measured, again demonstrating the reliability of the research tool used in this scenario.

- **Validity**: The statistical evaluations which were undertaken on this secondary data for this study were validated with significance tests (Chi squares). If these did not produce any significant figures, the analyses were rejected.
The used data file was selected because it represents an average quarter. There was no numerous or slight number of incidents.

3.5.3.5 RELEVANCE OF THE SECONDARY DATA

The SFR collects customer satisfaction data on a quarterly basis in Switzerland. This data is not specifically tailored to the needs of this research. Despite this however, it still has a large significance. The focus of the SFR market research institute is placed on the customer’s perspective. In the context of this research, it makes sense to use parts of this data, as it helps, in addition to taking the customer’s point of view.

Generally considered to be the biggest problems with secondary research are the ambiguous quality of data collection and the lack of focus on the problem (Raab et al. 2009).

As was explained in the previous chapter, the investigation was carried out using professional market research instruments with scientific quality criteria, and the results were verified once again by the SFR market research institute. The SFR undertakes the collection of data using a significant amount of human and financial resources (see also section 3.5.3.4).

Also to be taken into consideration is the focus on the problem. Secondary data should only be used if this is a given. In this research, this is the case. One of the strategic management targets within the SFR executive committee is the improvement of customer information in the event of incidents (SBB 2009). A multitude of questions from the quantitative investigation are therefore aimed at dealing with this complex subject.

The information needs of this research project are therefore covered with the data obtained. The data from the secondary research analysis can be used in order to obtain supplementary information and also to validate the data obtained from the primary research.
3.5.4 Data Analysis

The data analysis is based on three different sources. Interviews, documents and statistical analysis of secondary data were studied in order to obtain material for this research project.

3.5.4.1 INTERVIEW ANALYSIS

The interviews were minuted by hand in note form, and then later transferred into Word documents to allow better illustration of the results. The interviews were recorded in the form of selective minutes (Mayring 2002). In the selective minutes, only very specific subjects were documented which corresponded to the list of criteria. Mayring (2002) points out that the risk with this process is that information that is open to interpretation can be lost. This risk was dealt with by discussing the minutes again with the interviewees, with the aim of ensuring completeness and correctness. Furthermore, the interviews focussed on a large number of specialist topics where interpretation played a minor role.

The phenomenological analysis approach was followed for the evaluation of the interviews. The basic idea behind this is to describe the phenomenon from the point of view of the subject. The intentions of the interviewees are at the forefront here. Phenomena are reduced to their essence for investigation (Mayring 2002). This approach is suited to this research project as the emphasis here is less on interpretations and more on substantive questions. This thesis follows Giorgi’s (1985) four stage approach to interpretation:

1. After transcription of the interviews, the entire material was examined in order to gain an overview and grasp the meaning, and to obtain a general impression.

2. In the second stage, points of central significance were identified using interview data. Here the focus was on identifying the subject areas in which there was a particularly great need for action according to employees. In addition, there was also an evaluation of which questions produced only a few results, and which produced extensive statements and information for the research project.

3. The third step was the sequencing of the results. Here information from SFR employees was interpreted with regards to the propositions.

4. Finally, the various units were then contextualised and weighted.
According to Meyring (2002), phenomenological analysis has three functions:

- **Critical function** – prevailing trends in individual areas and in the basic methodological concept are questioned
- **Heuristic function** – new points of view, aspects and alternatives are suggested and put into research practice
- **Descriptive function** – a broader insight is developed into important subject areas from the perspective of the subjects affected.

Within this study, the critical function is irrelevant. However, there is a focus on the heuristic function, as new points of view in the area of customer satisfaction are primarily of interest here. In addition, there is a descriptive function which reflects the perspectives of various organisational units with their differing interests and thematic insights.

### 3.5.4.2 DOCUMENT ANALYSIS

Starting with the literature review for this study, a catalogue of topics was created. The issues dealt with deliberately resemble the interview topics and propositions, as these are intended for verification.

The document analysis in this research project follows Mayring’s (2008) approach, whereby all sources that can be used to explain human behaviour may be relevant. In the area of customer information, access was available to a large number of documents, such as from the fields of strategy, concept, studies, analysis, etc. These provided information on a wide range of topics that could be discussed in greater depth during the interviews. A further advantage was that information was already available and did not need to be created explicitly for this study. This made it possible to understand lines of development and strategies that may not have come to light during the interviews.

The following criteria for the epistemological value of documents were used, based on Mayring (2008):

- **Type of document**: strategy paper, concept, solution outline, PR document, etc.
- **Internal features**: what topics/content does the document deal with
The analysis of the documents not only helped to reveal new material, but also to assess the validity of other material.

3.5.4.3 ANALYSIS OF SECONDARY DATA CAPTURED BY THE SFR

The secondary data was provided by the SFR marketing department. A large number of questions from the area of customer satisfaction research were relevant for this research. This data was further processed using statistical methods. Contingency tables were used to analyse data with a focus on the main points. Significance tests were carried out using chi-squares.

Also the secondary data is an additional source of evidence. It will help to check whether the interview data and SFR documents link together.
3.6 Case Study Scientific Quality Criteria

Case studies must also satisfy the scientific quality criteria of reliability, validity and objectivity and ethics. However, not all scientists are in favour of the case study approach. Whether, how and when it can be applied is the subject of numerous scientific debates Yin (2008).

3.6.1 Construct Validity

Construct validity indicates whether the measurements show the theoretically expected correlation to the measurements of other measurement instruments.

“The construct validity of a procedure refers to the quality of the conceptualisation or operationalisation of the relevant concept. Construct validity needs to be considered during the data collection phase.” (Ruigrok et al. 2008)

Measurement instruments are, as a rule, composites of several elements. It is therefore necessary to check whether the concepts were assessed with the correct operational measures and whether the results agree with the theoretical findings (Yin 2008). Yin suggests three possibilities for improving construct validity:

- triangulation of the data obtained,
- creation of chains of evidence, and
- confirmation of results with key experts.

In this project, all three of Yin’s suggested options are employed. The results of the qualitative data are verified with the analysis of documents and the analysis of secondary qualitative data. The methodical triangulation allowed for checking of the construct validity of the concepts generated through the interview data.

Clear chains of evidence are key components of reasoning. From the introductory research question to the final conclusion, a clear comprehensibility and reciprocal deduction of the results must be guaranteed (Yin 2008). This was ensured by the following process:
- A methodological triangulation was carried out.
- The interviews were evaluated using phenomenological analysis.
- Documents were categorised, indexed and assessed.
- The secondary data analysis was described and evaluated using significance tests.

The verification of the results takes place in two stages in this project. In the first stage, all interviewees are asked one more time to verify the findings and to review the minutes. In the second stage, a discussion takes place with SFR experts. Their task is to verify the information already gathered. The extent of the statements’ validity was verified in a cross-check.

3.6.2 Internal Validity

According to Yin (2008) internal validity mainly concerns explanatory case studies, when an investigator is trying to explain why event \( x \) led to event \( y \) and not to descriptive or exploratory studies, where this research belongs to. Yin (2008) suggests that internal validity can be used by some case study tactics, e. g. pattern matching, explanation building, rival explanations and logic models. The scientist must show plausibly, logically and comprehensibly how he drew his conclusions from the study of the data. Criteria which can be defined and are indicative of internal validity according to Yin (2008) and Ruigrok (2008) were followed in this research: a plausible research framework was developed for the case study and derived from Literature (Chapter 2.5) and methodical triangulation helped to verify the results with the aid of multiple perspectives. This was done by a method triangulation with different data sources and by developing clear chains of evidence linking concepts.

3.6.3 External Validity

External validity implies that research results must be generalisable. This means that research results should not only be valid within their own defined limits; they must also have validity in other environments (Ruigrok et al. 2008). This is a critical point for case studies. It is not generally possible to draw statistical generalisations for an overall
population with either single or multiple case studies (Yin 2008). Yin differentiates between statistical and analytical generalisation. With analytical generalisability, the aim is to make parts of the theory accessible to a broader field and to show that the empirical observations can be generalised.

Even a large number of cases cannot provide population generalisability. Instead, the goal must be to reveal the relevant parameters in order to use these in further research. In this case, a single case study can be acceptable according to Yin (2008). This study follows this suggestion. The fundamental success factors for high customer satisfaction during incidents are illustrated by means of the SFR case study. The findings require verification in further studies to explore their application in companies exhibiting different environments.

3.6.4 Reliability

Reliability focuses on the idea that researchers who capture and analyse the same data will produce the same findings as others before them (Denzin & Lincoln 1994). Transparency and replicability are crucial criteria here. Transparency arises through careful documentation of the steps carried out, including the conditions and environment. The aim of this process is, according to Yin (2008), to minimise ambiguities and errors.

In this project, reliability was supported by a three step approach:

- Data was gathered quantitatively and qualitatively, which allowed triangulation.
- The various instruments were tested with a pre-test.
- All interviews were minuted and documented, as were the relevant conditions.
- Trails of evidence were carefully documented.
3.7 Limitations

In this research, limitations were identified. The first point is the application of the case study approach. The reason for applying this methodology was the focus on the SFR. The case was chosen as the company is a monopoly supplier of information systems for customer information on Swiss railways. Thus it was necessary to delve into the depths of the organisation. On the other hand, the “customer” was the central investigation object in the area of customer information. Only if this is understood in broad terms can a customer information system be successful. Using the quantitative study, parts of the results could be generalised. This was not always possible in the qualitative sections of the study. However, the focus here is to be found in analytical generalisability, rather than the transfer of results to other possible areas (Yin 2008).

Investigating the data with available studies or other literature was extremely difficult. Although there are a large number of studies on the subjects of customer satisfaction, communication and other areas, these are mostly not focussed on the rail environment. Specific literature on the topic of customer information could not even be found in the SFR’s library, which contains a plethora of rail-specific magazines and books. Two things could therefore be declared: this thesis is to a certain extent original, as no comparable works were able to be found by the author – however, the statements must be verified in further works as there is an absence of second or third opinions.

It can generally be declared that it is very difficult to generalise the results. The investigated information is focussed on the SFR. If the results should be expanded to other companies or industries, it would be beneficial to investigate more companies (e.g. airport operators, international state railways, logistics service providers).

This thesis is very tightly focussed on the Swiss market. This can be especially seen in the factors of customer satisfaction and information quality. A train delayed by five minutes is unlikely to attract much attention in many other comparable countries (Germany, France, Italy). In Switzerland however, this is still the case and customer satisfaction is affected. The expectations of service quality are closely related to previous experiences with the SFR, as the surveys and analysis of customer satisfaction and loyalty have shown (e.g. Brown 2002; Freter 2008).
3.8 Ethical Considerations for this Research Project

The treatment of ethical questions in science is an important point. Research does not take place in an empty or anonymous space; other people are generally involved. While this factor can sometimes be neglected in natural sciences, in the field of social sciences it is almost always the case. Research shows what happens in people, documents it and works with the information acquired. Therefore within the research project, the rights of those concerned must be taken into account. Especially with interviews in which employees provide information about their own organisation, it is necessary to edit these so that the identity of the informant cannot be inferred. The people must be protected so that they cannot be identified by their organisations through the information they provide, so that no negative consequences can arise (Newman & Brown 1996).

In order to address potential ethical issues, various points were taken into consideration which should help to minimise potential problems:

- All those involved received a briefing about the research project. They were informed about the process, the aims and the content.

- Every participant took part in the project voluntarily. No pressure was exercised at all. Furthermore, every participant was free to leave the project at any time, without fear of consequences of any kind.

- The data gathered was anonymised. The link between information provided and individuals was disguised.

- If it was not possible to completely anonymise the data, for instance because there was only one specialist in the subject area, the information provided was submitted once more for review and approval. The individual then had the opportunity to retract statements if desired.

- The interviewer followed the ethical guidelines laid down by Charles Sturt University.
3.9 Conclusions

This work followed the single case study approach. The analyses of various research projects in the area of customer satisfaction, incident management and crisis management have shown that the case study methodology is very widely spread in this area and enjoys a high level of acceptance (e.g. Patterson & Spreng 1996; Concépcion et al. 2009; Bowen & Chen 2001).

In the context of this research, a single case study methodology was used as it allowed for a deeper understanding of the investigated organisations (Yin 2008). With the aid of interviews, the study of the internal documents and the secondary analysis, it was possible to investigate the SFR organisation in all its complexity. As another target of the project was also to demonstrate concrete methods for improvement, the single case study approach was once again the best option. In order to provide as complete a picture as possible, the triangulation methodology was also applied.

The qualitative interviews allowed for an insight into all areas that were concerned with the theme of customer information. With the 21 interviewees, a large number of the employees involved could be questioned, who were involved in this subject in various areas of the business (passenger transportation, infrastructure, IT). These employees also made available documents, which were an important source of supplementary information. This insight completed the secondary analysis with quantitative data. Since these documents were also collected with a view to improving customer information, they could also be used for analysis.

In observing the scientific quality criteria (construct validity, internal validity, external validity and reliability) the recommendations of Yin (2008) and Ruigrok (et al. 2008) were followed.

In particular, the ethical questions also had to be considered. As the SFR was in the middle of a reorganisational process, the information obtained from all interviewees had to be dealt with in confidence (see also section 3.8).
4 Data Analysis
4.1 Introduction

The aim of this chapter is data analysis. The focus is on the consequences of the gathered data. In addition, patterns are to be identified, propositions derived and potential for improvement examined.

The propositions will be systematically analysed here. Three different data sources are available for analysis:

- Qualitative interviews were carried out with specialists in the field of customer information.
- The SFR’s professional practice was described with the help of internal literature.
- Further details were given through a secondary analysis of data that was provided by the SFR marketing department.

The analysis chapter is structured as follows:

- In section 4.2, the SFR company and the customer information system is described in detail.
- Section 4.3 to 4.6 analyses the propositions. To this end, the proposition is described first, followed by the data analysis and conclusions. The propositions are analysed on the basis of the current data (business experts, professional practice, secondary data analysis), followed by conclusions at the end of each section.
- In section 4.7 a model for the customer information in the SFR is developed.
- Section 4.7 contains conclusions relating to the propositions and the identified pattern.

The practical impact on customer information, with suggestions for improvements and concrete measures as well as findings relating to the literature studied, are described in chapter 5.
4.2 Description of the Case Company SFR

The Swiss Federal Railway (SFR for short; German Schweizerische Bundesbahnen SBB; French: Chemins de fer fédéraux suisses CFF; Italian: Ferrovie federali svizzere FFS; Rhaeto-Romance: Viafiers federalas svizras VFS) is the Swiss national railway company with headquarters in Bern.

Until the end of 1998, the SFR was Switzerland’s national railway. This changed on 1st January 1999. On this date, the company changed from federal administration to a public corporation under special statutes. The company’s stock is 100 percent owned by the Swiss federal government. According to federal guidelines, the company is to be directed from a market economy perspective. There is a peculiarity, however. In common with the Federal Council, 9 targets are defined for the next four years. A performance agreement contains the extent to which the company receives state funding, for instance to finance infrastructure activity. The management of passenger and goods transport must be economically viable, with a focus on service provision and not profits. Investment and profits should be balanced out as far as possible. The infrastructure division receives federal grants. Products and services that are rendered with this financing must be available to other railways without additional cost (UVEK 2009; SBB 2009b).

4.2.1 Customer Information in the SFR

The field of customer information is represented at various levels within the SFR. At the highest level the customer information strategy board can be found (1). Here, the representatives of upper management set the basic strategic agenda.

---

9 Federal Council is the official name of the Swiss government.
Generally, the heads of the infrastructure and passenger transportation business units are represented there. These are of particularly great importance because they have the necessary budget sovereignty. Orders are given from this board to customer information management (2). Customer information management essentially has the task of preventing duplication. This can occur, for instance, if different business units are interested in particular data. If such activities are not coordinated, almost identical information systems can be (and frequently have been in the past) developed. On the basis of decisions made by the strategy board (1), customer information management (2) formulates concrete projects which implement the strategic decisions. The business units in which the projects will take place must be determined. The rule that all projects relating to customer information in trains are to be carried out by the passenger transportation division basically applies. Projects which concern customer information in stations and on the tracks are carried out by the infrastructure division (3). The projects are operationally carried out by the business units (4). Several projects are generally combined into a comprehensive programme. A considerable role is played by the IT department (5). This is responsible for the provision of all IT services within the SFR.
4.2.2 Current Challenges

Information in the event of service disruptions currently represents the biggest challenge for the SFR in the area of customer information (SBBi 2010a). The SFR wants to provide customers with optimum forecasts in incident situations so that they are best able to continue their journeys. According to the SFR, the goal is to maintain the customers’ ability to act, to offer them alternatives and optimally support them during incidents, without them feeling patronised. For this reason, further investments in the field of customer information should take place in the coming years.

4.2.3 The SFR in Figures

The SFR can be represented in figures as follows (SBB 2009):

<table>
<thead>
<tr>
<th>Type of company:</th>
<th>Public limited company (German: AG) under the Swiss Federal Railways Act (SBBG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founded:</td>
<td>1st January 1902, public company since 1st January 1999</td>
</tr>
<tr>
<td>Registered office:</td>
<td>Bern, Switzerland</td>
</tr>
<tr>
<td>Management:</td>
<td>Andreas Meyer (CEO), Ulrich Gygi (Chairman)</td>
</tr>
<tr>
<td>Employees:</td>
<td>27,822</td>
</tr>
<tr>
<td>Turnover:</td>
<td>7,987 million CHF</td>
</tr>
<tr>
<td>Total assets:</td>
<td>31,418.1 million CHF</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.sbb.ch">www.sbb.ch</a></td>
</tr>
<tr>
<td>Passengers per year:</td>
<td>322.6 million</td>
</tr>
<tr>
<td>Goods per year:</td>
<td>12,531 million tonne kilometres</td>
</tr>
</tbody>
</table>

Table 11: SFR Fact Sheet (SBB 2009)


4.3 Proposition 1: Incident Recovery Competence

This section will analyse proposition 1. This is thematically related to the perception of the incident recovery process and the ability for organisational incident response. The proposition is based on the literature review finding that customer satisfaction does not fall after resolved incidents, but can also have positive effects (e.g. Michel & Meuter 2006; Maxham & Netemeyer 2002; McCollough et al. 2000).

\[ P1: \text{The greater the ability of a company to restore a situation to its original state following an incident, the lower the negative influence on customer satisfaction.} \]

Proposition 1 assumes that the company’s ability to resolve an incident is essential for maintaining customer satisfaction. If this is possible without a negative impact on the passenger’s scheduling, customer satisfaction remains stable.

4.3.1 Interviews

The SFR experts confirmed this proposition (21 people\(^{10}\)). The SFR’s goal is to minimise the effects of incidents. The main quality characteristic of incident recovery, according to SFR experts, is the speed with which the original state is restored. Quick and reliable communication is also relevant to quality (16 responses). In the SFR experts’ opinion, this is related to the customers’ freedom to choose. As long as they know how long an incident will last and what alternatives are offered by the SFR, they can decide for themselves whether they will make use of these or find their own solutions. The SFR experts referred to the general SFR processes that are relevant to the case of incidents:

- The effect of incidents on long-distance trains must be minimised. Long-distance services have the highest priority.
- Regional trains have a higher priority than city trains.
- Incidents affecting city trains have the lowest priority.

\(^{10}\) The detailed analysis from the interview comments from this section is shown in an overview table in Appendix F
These rules are intended to keep the impact of incidents on passengers as low as possible. Long-distance trains are less frequent than local trains (generally every 60 minutes between major conurbations). A delay here can mean longer waiting times and delays for the passengers and missed connections to other trains. This applies similarly to regional trains. These have a higher priority than city trains, as they are also affected by the problem of a lower frequency and missed connections. Incidents affecting city trains have the lowest priority as these usually run several times per hour and a cancellation or missed connection does not lead to particularly high waiting time.

According to the SFR experts and the operations staff involved, there is great potential for optimisation in the customer information process during incidents. Customer information is still largely manually provided (mentioned by 3 experts). Incidents must be manually entered into the IT system. This is carried out by operations staff. These employees’ most important activity is to determine the allocation of various trains to different routes (railway lines). When incidents occur, there is a problem of overload. The employees are responsible for resolving the incident. Various different measures can be used for this: setting new routes, requesting replacement trains or buses, mobilising incident teams, etc. At the same time, the same employees must also compose incident information and distribute this on the IT system. This leads to overload (mentioned by 3 experts). The bigger the incident, the greater the overload. Particularly in the event of serious incidents, the focus is on resolving the incident and customer information has a lower priority. Although incident recovery competence is then positively perceived, the positive effect can be ruined again by the lack of information. Further automation and optimisation in incident processes are therefore desired by the SFR experts.

The largest numbers of incidents, according to the SFR experts, are incidents whose effects are so small that customers feel no impact. This confirms the results of the secondary data analysis, which reveals an extremely high level of customer satisfaction despite a large number of incidents that are recorded internally. For future research it could be of interest to investigate the threshold at which incidents begin to be perceived as a nuisance to the customer.

According to the SFR experts, a quick resolution of an incident is important for two reasons (5 respondents). Firstly, the customer should be able to continue their journey
without restrictions so that their satisfaction remains as high as possible. Another reason, according to the SFR experts, is related to the extremely heavily-used SFR track network. An incident with a long duration, for instance a blocked route, not only leads to restrictions there, but also affects the timetables of the whole SFR network due to the high number of dependencies. The longer an incident continues, the greater its effects on the whole network, and the more difficult it is to restore original conditions. An initially small defect can grow into a large incident which affects a large number of people. Thus the SFR has a very strong interest in resolving incidents as quickly as possible.

A further reason for the company’s strong motivation to minimise delays due to incidents is standards set by the government’s transport department (UVEK)\(^\text{11}\). A performance mandate obliges the SFR to minimise the number of minutes of delay per year. This means that 90 percent of trains must arrive at the station with less than three minutes of delay per train. The size of annual bonus payments for the SFR management and also for many other SFR employees is related to whether this mandate is satisfied.

Four SFR experts felt it to be a shortcoming that there is frequently no exact analysis of incidents. To them it is obvious those certain routes are poorly maintained or that timetables are too tight, so that minimal problems in standardised operational processes can grow into incidents that impact customers. Action is only taken when incidents are concentrated in certain locations. The SFR experts suggest that incidents should be centrally compiled, assessed and analysed so that timely medium-term improvements and corrections can be carried out through proactive measures.

Two experts agreed with the proposition, but pointed out that the majority of incidents are resolved before they even become obvious to the customers. This would be a very important quality characteristic for the company, but would not be visible at all. In this respect, the SFR’s actual performance in the field of incident management is in fact significantly underestimated.

Incident recovery plans exist at the SFR for standardised problems. The experts who were interviewed could immediately refer to checklists, handbooks and resources which they can put into use in the event of a problem so that they don’t have to think about

---

\(^{11}\) Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation (UVEK)  
[Translation: Swiss Department for Environment, Transportation, Energy and Communication]
solutions. Therefore, every employee knows immediately what to do for example in the case of track switcher or points disruptions if they receive an incident report. Due to standardisation, no time is lost. One expert described the action for the elimination of faults. Firstly, there is the preparation phase, where the employee is trained and sensitised for incident situations, for example by way of processes in place and measures to be taken. The next phase is the incident classification. These are categorised according to cause and effect. Depending on the category, various resources can be used. The next step deals with the elimination of the problem and the communication to the control centres which are responsible for the customer information. After completion of the fault, the documentation of it takes place.

The experts from operations brought up a further quality aspect that is presumably underestimated: during major incidents, employees assist travellers directly at stations. These employees are trained and recruited from all functional levels and departments of the SFR. When a problem occurs, these employees are released from their usual duties and are assigned to the station. There they communicate with those affected by the incident and provide individual support, including among other things distributing food and drinks. The staff on site constantly ensure that enthusiasm is generated. Even with long-lasting incidents, the SFR press office frequently receives letters of thanks and positive reader’s letters are published in newspapers, which protects the company from criticism.

### 4.3.2 Current Professional Practice at SFR

In 2006 and 2007, an SFR project team analysed the basic principles for successful customer information. In an internal document (SBBi 2007a), the project team determined that incident management must be established and put into operation across the network. The SFR considers incidents to be all events which, if not dealt with, lead to deviations from normal traffic (SBBi 2007a). The aim of incident management is to resolve every event (incident) as quickly as possible if it has an impact on customers. This means that it is pertinent to transmit all information to the various points that have direct contact with the customer (drivers for unattended trains, train staff, employees at information counters and sales points) and to enable customers to inform themselves (displays, loudspeakers, mobile technology). The significance of customer information
is revealed in various projects that have been started. These are based on the “SFR Customer Information Strategy” (SBBi 2007), which defined the following guidelines:

- **Vision:** Best in Customer Information (anytime, anywhere, anyway).

- **Mission:** We guarantee passenger information for our customers before and during their journey. In the case of an event (the SFR refers to incidents as events) we will provide timely and authoritative information so that our customers know how and when they will reach their destination. In the case of an event we will personally advise our customers.

The document (SBBi 2007a) defines nine topics that were intended to support the company’s vision (see comments on proposition 2). The topics are:

- Audio information in the station
- Visual information in the station
- Event information in the station
- Audio information on the train
- Visual information on the train
- Event information on the train
- Customer information via the Internet
- Customer information via mobile devices
- Event information external to the railway

The SFR’s defined goals show that the company places a high value on customer information during incidents. A paradigm shift became apparent in the years 2006 and 2007. While customer information was previously an “ongoing activity” (SBBi 2011), from 2007 it was handled as an independent section of a major programme. Within the programme, a large number of projects were carried out which led to changes in the defined fields of activity with new information systems. The key element was the creation of an information backbone which combined data from various systems (timetable data, real-time data on train locations, forecast data, etc.), thus allowing for semi-automated customer information that does not need manual intervention during normal traffic, and requires fewer interventions during incidents (SBBi 2008). The goal of high quality customer information through various information channels was placed on the same level as other strategic goals (e.g. increased punctuality) (SBBi 2011).
A further effect comes into the equation with long distance services. The SFR has the most dense and highly frequented rail network in Europe (SBBi 2010). A small incident on heavily travelled routes leads to disruption across the whole rail network, as secondary incidents occur due to many interdependencies. The company consequently stipulated that incidents must be avoided as much as possible, and if they do occur, then their impact is to be communicated to customers as quickly as possible (SBBi 2011).

The SFR uses a multi-stage process for incident management. On the one hand, the company’s highest priority is to keep incidents at a good level through maintenance and lifecycle management. On the other, the company also has the goal of minimising the effects of events, or eliminating them as quickly as possible (SBBi 2010a; SBBi 2010b).

The infrastructure and passenger transportation divisions are responsible for a smooth flow of traffic.

The passenger transportation division focuses on rolling stock management and light maintenance. The aim is to make the vehicle fleet available for services in a safe condition, in good time and economically (SBBi 2010b). Trains are currently serviced every three days, according to a defined plan. During breakdowns, the quickest possible recovery should be facilitated by a widespread network of service points. Short downtimes are possible due to a network of service points throughout Switzerland.

Within the infrastructure division, two business units deal with topics in incident management. The maintenance department is responsible for servicing, maintenance and renovations, and the assets & technology department for the lifecycle management of assets (SBBi 2010a).

Maintenance is responsible for carrying out repairs, servicing and renovation tasks. In doing so, they must observe not only business criteria, but also legal conditions (laws, international agreements, safety regulations). During maintenance, preventative tasks to preserve the company’s assets are primarily carried out – defective equipment is repaired and expansion projects are put into practice. These tasks take place in close coordination with the assets & technology department, which includes lifecycle management. According to the company’s vision, by the year 2014 all assets will be covered by lifecycle management and details of their condition will be accessible at the push of a button (SBBi 2010a).
Alarm and incident management has been used by the SFR since 2007 (SBBi 2007b). The DERI system (French: Dérangements à l’Infrastructure / Incidents in the Infrastructure), an alarm and incident management system, is a workflow management software solution that displays and controls incidents, causes and measures taken. To enable this solution to be used, the incident management processes within the SFR first had to be standardised.

The various documents show that the SFR deals thoroughly with incident management. The following generic model, based on prevention and reaction, can be derived from the procedures in the passenger transportation and infrastructure divisions:

- Prevention: through maintenance, servicing and lifecycle management, assets and rolling stock are kept in a condition that avoids incidents as much as possible.
- Reaction: here, the original state must be restored as quickly as possible and with minimal impact on customers, using various service points, decentralised repair services, and tools for process support and communication.

The SFR’s preventative and reactive incident management coincides with Heil (1995) and Meyer’s (2007) concepts, which were covered in the literature review.

An additional inference can be made from customer satisfaction measurements over the years. An SFR presentation revealed the progression of customer satisfaction in recent years (SBBi 2009).

This suggests that satisfaction is at a stable level (between a minimum of 74.8 and maximum of 76 percent). However, as the number of incidents during this period was not established, no further conclusions can be drawn from this.

A possibility for future research work in this respect could exist in areas with building sites or a high frequency of disruptions which are topics evaluated in regional newspapers and magazines. Here, critical comments can regularly be found when the disruption frequency is too high.
4.3.3 Secondary Data Analysis

The secondary data analysis takes place in two stages. The first step is to investigate how customer satisfaction appears in general, and the second to study how incidents influence this.

First it is necessary to check how satisfied rail customers are with the SFR in general. Very positive results emerge here, as the statistical data proves. Respondents were able to give their perception of the company on a scale of 10 (very satisfied) to 1 (not at all satisfied). It emerged that most interviewees had a very positive image of the SFR. While 13.8 percent of respondents are very satisfied, only 0.9 percent expressed the response at the other extreme, “very dissatisfied”.

The following figure shows that most customers are satisfied in general at a very high level.

![Customer Satisfaction Chart]

**Figure 20: Customer Satisfaction**

12 3230 Valid Statements (Table 34: Statistics Customer Satisfaction in General)
Grouped numerically, the figures reveal yet another picture. If the figures 10 to 8 are interpreted as a positive perception, figures 7 to 5 as neutral and everything below 5 as negative, the following chart emerges:

![Customer Satisfaction in General](image)

**Figure 21: Customer Satisfaction in General**

It appears that 62 percent of respondents perceive the company positively, 33 percent neutrally, but only 5 percent have a negative opinion. However, the number of negative voices must be assessed with caution, as a customer that regularly has a poor opinion will presumably give up the company’s services at some point. As the survey is only carried out with current customers, the negative perception in the general population is likely to be larger than is expressed by the low figures here.

First it is necessary to gain an overview of how often customers have experienced delays. The secondary data analysis generally shows a positive result. The number of customers who never or who rarely experience delays are the vast majority. 64 percent of people surveyed have not experienced any incidents and 22 percent only once or twice in the survey period. By implication, it is apparent that negative responses are also infrequent. Only 2.1 percent experienced incidents more than ten times, and 3 percent between six and ten. Thus the SFR has a low delay quota, even compared at an international level (Brun 2009).
It was also examined whether the delays were felt to be unpleasant by those affected. It emerged that almost half (46.5 percent) of people affected by delays never felt these to be unpleasant, and around 37 percent of respondents felt them to be unpleasant once or twice. People who felt the delays to be unpleasant six times or more made up around six percent. This therefore proves that the frequency of unpleasant delays is very low.
First it must be investigated how the delay frequency affects customer satisfaction. Subsequently it must be checked how the number of incidents experienced affects the customer’s satisfaction. Finally, it must be analysed whether and how these values relate to the frequency of rail use. Of the respondents who provided valid information, it was revealed that 64 percent never experienced incidents in the survey period.

The data evaluation in Figure 24 shows that most incidents take place over a period of between 1 and 10 minutes (61 percent). Incidents with a duration of longer than 30 minutes were only found among 9 percent of respondents. The average length of delay is 14 minutes. With delays like this, trains do not generally wait for others. The consequence for many passengers is that they miss connecting trains and the overall delay increases. Customer information must be updated here, otherwise the situation is unsatisfactory for many customers.
Customer satisfaction differs considerably between customers who quickly received information and those who received it late or not at all.

4.3.4 Conclusions Proposition 1

There are a number of signs that support the confirmation of proposition 1. The interviews with the experts showed that the SFR is doing everything to resolve incidents as quickly as possible to keep their impact to a minimum. All of the experts interviewed agreed with the validity of the proposition.

Analysis of the documents revealed how the SFR deals with incidents. For the company, precise customer information is a strategic goal with which customer satisfaction can be increased. In incident situations in particular, it becomes vitally important (SBBi 2007). However, no internal SFR documents could be identified during this study to demonstrate a direct correlation between customer satisfaction and incident management (Meyer 2007). The review of the documentation also revealed extensive activities in this area. The company attempts to prevent incidents from happening at all

14 Pearsons Chi-Square 0.411 (Table 40: Chi-Square Satisfaction with CI)
through a very high use of proactive measures. The SFR tries to avoid incidents before
the customer is affected from them by asset and lifecycle management (SBBi 2011).
However, if they do occur, the original state should be restored as quickly as possible
through the decentralised structure. Analysis of secondary data revealed a correlation
between customer satisfaction and the impact of incidents. The longer an incident lasts,
the more dissatisfied customers are. It is therefore vital for the SFR to restore normal
conditions as quickly as possible if they wish to maintain the goal of high customer
satisfaction.

The enthusiasm effect is produced by personal employee contact and not so much by
the resolution of the incident itself. Excitement does not occur during quickly resolved
incidents where staff are not used to assisting customers. This is also shown in various
studies (e. g. Hartline & Ferrel 1996; Güngör 2007). Direct customer contact leads to
more customer satisfaction as if the same service is provided with indirect customer
contact. Güngör (2007) describes this as a result of an emotional relationship between
the service provider and the customer.

After applying the different research methods, proposition 1 can be considered as valid.

<table>
<thead>
<tr>
<th>Research Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>Professional Practice</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>Secondary Data Analysis</td>
<td>Can be confirmed</td>
</tr>
</tbody>
</table>

Table 12: Confirmation of proposition 1
4.4 Proposition 2: Customer Information as Basic Factor

With incidents, problem-solving competence is closely linked to communication competence (Holloway et al. 2009; Zhu et al. 2004). The following proposition must therefore be investigated:

\[ P2: \text{Customer information is a basic factor. If incidents occur, customers expect quick and relevant information about them. If this is not provided, customer satisfaction will fall.} \]

4.4.1 Interviews

The moment customers are informed that an incident has occurred, they know that the SFR is working to resolve the problem. In this respect, they have a positive attitude that the situation will improve. In return, communication competence is positively perceived.

The SFR experts’ knowledge comes predominantly from situations in which no incident information is provided. Negative customer feedback is then very quickly received either through complaints offices, station staff or letters to the press. Newspaper forums, Facebook and Twitter are now also a frequently used opportunity to communicate dissatisfaction with the SFR.

Experts in the IT industry expressed very critical views over these facts (7 responses)\(^{15}\). Since August 2012 social media (Facebook, Twitter) are openend for SFR employees, but there is no systematical analysis of the communication. This was generally viewed as being negative as due to this, important information was lost and the fact is that this media is increasing in popularity amongst more and more people. One expert claimed that it was especially bad that due to the blocking of these websites within the SFR, no reaction from the employee was possible either. Even when disruptions had come to an end, there were often still negative comments communicated via Facebook and Twitter.

\(^{15}\) The detailed analysis from the interview comments from this section is shown in an overview table in Appendix F
Customer satisfaction can certainly remain stable by the delivery of customer information, but the employees have not so far been able to identify any excitement effect like postulated in the SRP (16 respondents).

As one of the experts noted, false or misleading information has a particularly serious effect. If, in addition to an incident, customers also receive incorrect information, such as an incorrect departure time or point of departure, complaints mount up, which leads to a decline in customer satisfaction. According to the expert, a positive effect cannot be identified, although a negative effect is possible – if there is not high quality customer information during incidents, customer satisfaction falls very sharply, which was also confirmed in the literature (e.g. Holloway et al. 2009).

With their concept of disruption information, the SFR set the target of providing the customer with an extra value in the case of a disruption and also of achieving a clear improvement in customer satisfaction. The fact that provision of reasonable customer information in particular during disruption times, where the regular travel schedule can no longer function is shown to be scrutinised in a train service, according to one expert also shows that the SFR has realised how important the topic is. The questioning of projects in the area of customer information due to a bad economic viability has clearly lessened. In the meantime, customer information is now viewed as a cost centre which makes the financing easier, as no quantitative economic calculation has to be shown anymore and the topic can be dealt with in the strategic field of “improvement of customer satisfaction” (SBB 2009c).

4.4.2 Current Professional Practice at SFR

In order to improve the quality of customer information, the SFR initiated a project that was intended to significantly improve communication during incidents (SBBi 2006).

The SFR incident customer communication includes three phases – event, impact and measures – as shown in the figure below using the example of a passenger accident:
Communication takes place according to a clearly defined process. The incident occurs and employees immediately communicate the cause of the incident (initial information). Further details are not yet communicated as these are not yet clear. The initial information consists of details such as train defect, passenger accident, points of failure, etc.

After a solution is found, the relevant concept (concept information) is communicated. Concept information might be that trains will not run for the next two hours and that regional buses should be used instead.

As soon as further measures and detailed solutions are available, communication of this information takes place (detailed information). The detailed information would then explain that buses will depart every 15 minutes from the front of the station until the incident has been resolved.

The initial and concept information are not train-specific. Rail passengers will know what they have to do during an incident, but do not yet know the specific trains. The detailed information is different; this provides the customer with train-specific information.

For ease of comprehension, the key information types transmitted to the customer are defined in the table below:
<table>
<thead>
<tr>
<th>Information</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Initial information               | When an incident occurs, the customer should be informed of its existence as quickly as possible.  
*Example:*  
Passenger accident on the Bern-Fribourg route. Train cancellations and delays should be expected. Duration of the incident is unknown.                                                                                                                                 |
| Concept information about measures| After an incident has occurred, a rough concept for the applicable measures is generally created based on the OCL templates (OCL = location checklists, e.g. "... trains between A and B will be diverted via C"). The concept information informs the customer about measures taken.  
*Example:*  
Rail replacement buses will run between Niederwangen and Flamatt in the Bern-Fribourg region. The Bern-Lausanne IC services will be diverted via Neuchâtel.                                                                 |
| Detailed information about measures| Concrete customer information about individual trains and stops affected by an incident.  
*Example:*  
The IC 123 service is delayed by 15 minutes.  
The IC 321 service between Bern and Lausanne is cancelled.                                                                                                                                                                         |

Table 13: Incident Information (SBBi 2006)

With this progressive information, the SFR attempts to provide the maximum quality of information at every moment during incidents. The customer always has information and knows that the company is working to resolve the problem. At the same time, the SFR can work on the solution in the background, and communicate this depending on status. This allows communication to be rapid, without irritating the customers with false information.

This disruption information was not explicitly described by the SFR as “Basic Factor” as with Kano (1984), however the organisation looked at this as an expansion on the service of “train travel” which can be put into the context of this concept.

### 4.4.3 Secondary Data Analysis

A data comparison proves that customer satisfaction with information provided in the case of unpleasant incidents is largely identical to customer satisfaction during incidents in general. In both evaluations it emerges that around 70 percent of respondents feel that information is insufficient. The overall relationship (73 percent yes compared with 27
percent no) is identical in both evaluations. Thus it can be determined that dissatisfaction is not contingent on psychological factors.

The significance test proves that customer satisfaction does not differ in unpleasant situations. The different groups perceive the incident as equally unpleasant.

![Figure 26: CI during Incidents](#)

### 4.4.4 Conclusions Proposition 2

The analysis shows that customer information is seen by the customer as a basic factor. From the customer’s perception, information about the incident is a part of the basic service provision. This correlates with the theory from Kano (1984), which states that it is not possible to achieve enthusiasm with basic factors.

The perception of communication competence and positive feedback with regards to incident recovery competence is considered sound. Interviews with the industry specialists and an investigation of professional practice showed that the company

---

16 Pearsons Chi-Square 0.668 (Table 42: Chi-Square Satisfaction in Unpleasant Situations)
initiated a large number of activities that achieved a substantial improvement in communication, which was also reflected in customer feedback (SBBi 2010). The stability of customer satisfaction and a positive perception is preserved, but an excitement effect or an increase above the initial level like stated in the SRP could not be discerned.

<table>
<thead>
<tr>
<th>Research Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>Professional Practice</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>Secondary Data Analysis</td>
<td>Can be confirmed</td>
</tr>
</tbody>
</table>

Table 14: Confirmation of proposition 2
4.5 Proposition 3: Information Quality

With incidents, problem-solving competence is closely linked to communication competence (Holloway et al. 2009; Zhu et al. 2004). The following proposition must therefore be investigated:

\[ P3: \text{As the perception of the information quality increases the greater the likelihood is that customer satisfaction will return to or increase above base levels.} \]

4.5.1 Interviews

According to the experts, the SFR places a lot of value on the quality of information (10 responses). It must therefore be intelligible for all customers. In Switzerland, intelligibility primarily means multilingualism. The three languages within the country (German, French and Italian) must be covered as well as, in the tourist areas, English. On top of that, the SFR pays particular attention to ensuring that all customers have access to the information, according to the experts, which involves a multitude of mass communication. Therefore, there is no preference for new media. All information is distributed, as far as possible, via all channels. When, for example, a disruption occurs, this is publicised by way of loudspeakers, customer contacts (SFR employees informing the customers), electronic noticeboards, SMS, telephone hotlines, Teletext and the internet. All customers, regardless of age, status or ability should be able to receive the information.

As well as the receipt of information, accuracy is also a primary criterion, according to the experts. Therefore, the concept of the disruption information (first, concept and detail information – see section 4.4.2) is viewed as well in the context of the background of accuracy of information. The experts explained that the step by step approach ensured that the information is always just delivered as soon as it becomes available. Information about new developments is only delivered when it is absolutely certain that this will not change again.

\[ \text{17 The detailed analysis from the interview comments from this section is shown in an overview table in Appendix F} \]
The intelligibility of the information is also thoroughly checked. The experts say that when new information concepts and media channels are implemented within the SFR, these are tested by an independent institute on a representative target group.

Only when they confirm the understanding of the transmitted information, is the official release of the new channel or information concept given.

Punctuality was also named as an important criterion. The information must then be available when it is needed. According to one expert, the principle of “yesterday’s news is old news” is also relevant. In the context of the SFR, this means that the information has an expiry value. It can therefore happen, particularly with loudspeaker announcements, that there is an unfortunate time delay resulting in a build up of announcements, as these are transmitted electronically via the server to the loudspeaker. As these are often in use with communicating other messages, which in many train stations is the case when transmitting in three languages, the situation often occurred where the message was delivered as the train had already left. This problem has since been solved by allocating a point of expiry to each announcement. Should the communication not be made within a defined time period, the message is automatically deleted.

The speed of the delivered information plays a particularly important role. All SFR experts (21 people) agreed with this statement. However, it is important to consider the conflicting priorities between information quality and speed. As soon as information must be revised, the effect is reversed and customer satisfaction falls. Within the SFR, the guiding principle is “information that has been provided cannot be taken back”. With increasing frequency of network use, the space for decision-making in information provision decreases. Reciprocal dependencies are the reason for this. If, for instance, a connecting train will depart in five minutes, information about alternatives with a connection time of longer than five minutes is pointless. However, as delays of less than three minutes are not dealt with, problems can arise. This turns the positively intended effect into a negative one, and customer satisfaction falls.

All experts were of the opinion that high quality is crucial for customer satisfaction. This was often evident with complaints where not only the disruption was criticised, but also quite often the fact that the information was not delivered or that incorrect information was given.
4.5.2 Current Professional Practice at SFR

The quality of information is the aim of many concepts within the SFR. The steps in one concept that deals with adapting the communication to the customers are described as follows: Provision of customer information via various channels and media (internet, mobile devices, print press, telephone, Teletext, SMS, screens, loudspeakers) to passengers at the train station, on the train, at home or in transit. The customer information contains information about the travel timetables (planned and in reality, therefore updated in real time), the arrangement and communication of planned and unplanned events (such as disruptions). For other information, counter staff, train attendants and customer service staff are also available for the customer. (SBBi 2990b).

What is also important here is that what is implied is referred to in the statement about customer information relating to the timetable (planned and current status) so that all delays in the context of the up to date travel timetable are communicated and reach the customer.

In a presentation on the topic of customer information (SBBi 2009) the following features of quality are defined:

- Consistent delivery – consistent delivery of customer information amongst the whole transport system (door to door).
- High quality customer information in the case of an incident: acquiring timely and obligatory information for the customer – also in the case of a disruption
- High quality of the facts: consistent, accurate, obligatory and timely facts.
- Individual customer information: tailor made customer information and with this the possibility of targeted information.
- Development of mobile services: required expansion of mobile services.

Here as well, the SFR aims at a transparent communication in the case of a disruption. By way of new IT systems, the SFR wants to achieve communication of changes faster. Particular attention should be paid to obtaining quality of facts which, by reducing the manual aspect should be possible to achieve (SSBi 2009a).
The SFR was quick to recognise the problem of prompt customer information. Consequently, as early as 2004, production began on a system that was able to provide customer information in real-time. This system, named CUS and referred to earlier, gathers information from a number of systems and can predict the arrival times of trains with a high degree of precision at any moment (SBBi 2011). Various data is consolidated (e.g. forecast data, timetable information, train information, track occupancy) and processed so that it can be transmitted to various output systems (SBBi 2008). Status monitors allow customers to be informed about incidents on their route in real-time. This service is now also available through mobile services, so that customers with the appropriate devices have access at all times to necessary information, including alternative routes.

A study of the documents showed that the SFR has initiated a large number of projects to inform customers as quickly as possible about incidents on their network. The investment shows that the company is very aware of the problem.

### 4.5.3 Secondary Data Analysis

With the secondary data analysis, information can be obtained about whether the quality of the customer information was adequate. Thus, in a disruption that was unpleasantly perceived, the SFR questioned whether the information was delivered quickly enough. The result can’t be satisfying for the SFR as only 51 percent of the customers received the information promptly. All of the others either received the information too late (24 percent) or received no information at all (25 percent).
Customer satisfaction differs considerably between customers. Here, a considerable potential for optimisation is shown. In almost a quarter of disruptions, those affected received inadequate information. It can therefore be seen here that the SFR is conceptually on the right path but in realising customer needs, it is still lagging behind regards who received information quickly and those who received it late or not at all. Customers informed quickly felt the SFR’s service to be significantly better than the other customers. The most dissatisfied by far were, as expected, the customers who received no information at all.

Also noteworthy is that a large proportion of people affected by incidents were not informed at all, namely 25 percent. A considerable potential for improvement is possible and necessary here, especially as the company has defined the improvement of customer satisfaction as a key strategic aim. The locations (station or on the train) at which these people did not receive information and why this information was not provided must therefore be further investigated. There could be two reasons:

- The information was not available.
- The information was not communicated to the customers.

---

18 3590 Valid Statements (Table 45: Satisfaction and Speed of Information Delivery)
Significance exists to a very high degree. Customers who received information quickly differ considerably to the others.
The people who received the disruption information promptly were clearly more satisfied with the SFR’s service (very good, quite good) than the people who received the information too late or not at all. Here, a distinctly higher dissatisfaction with the service is shown.

Figure 28: Speed of Information Delivery and Customer Satisfaction\textsuperscript{19}

\textsuperscript{19} Pearson's Chi Square 146.299 (Table 46: Chi-Square Satisfaction and Speed of Information Delivery)
4.5.4 Conclusions Proposition 3

Proposition 3 has been confirmed. The experts in the interviews indicated a very high level of sensitivity for the quality of information. In particular, the accuracy and the speed are the essential criteria for quality. The relevance of the information increases in the case of a disruption as the customer can no longer rely on his knowledge of the timetable. Therefore, in this case, the quality of the information is more important than ever. With respect to complaints about disruptions, information that was not delivered is particularly a frequent reason for dissatisfaction.

The literature also showed a high level of sensitivity for the customer information in the case of disruptions. Conceptual work was identified in the form of IT projects that were implemented over the past year or that are still in progress.

The necessity of these has been shown in the analysis of the secondary information. One quarter of SFR customers received no adequate information in the case of a disruption which leads to dissatisfaction.

All of the topics studied have shown that rapid customer information is of key importance for maintaining customer satisfaction during incidents. All of the participants in the interviews agreed with this, document analysis showed that the SFR has begun a major project for providing real-time information, and secondary analysis of the data also confirmed this.

<table>
<thead>
<tr>
<th>Research Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>Professional Practice</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>Secondary Data Analysis</td>
<td>Can be confirmed</td>
</tr>
</tbody>
</table>

Table 15: Confirmation of proposition 3
4.6 Proposition 4: Cause of Incidents

Two fundamental types of incident can be distinguished: incidents for which the SFR is responsible (e.g. faulty trains, signal failures), and incidents on which the company has no influence (e.g. landslides, suicides). Both have an impact on customer satisfaction (Holloway et al. 2009; Zhu et al. 2004). The following proposition must therefore be examined:

\[ P4: \text{Incidents within SFR control will have a stronger negative influence on customer satisfaction than incidents outside SFR control.} \]

4.6.1 Interviews

The SFR experts partially agree with these propositions (9 responses). SFR customers are able to distinguish whether an incident is within the company’s control or not. If the incident was not caused by the SFR, customers generally understand. Complaints are less intense when this is subjectively felt than they are for incidents caused by the company.

The SFR takes this into account in its communication. When they are responsible for an incident, the SFR “apologises” to customers; with incidents out of their control they ask for “understanding”. However, the SFR experts could not clearly assess whether customers actually appreciate this differentiation, or whether this is a “cosmetic” influence.

Several SFR experts (14 people) regarded this proposition very differently however. Although it would be confirmed in many cases, it is not possible to generalise. Incidents that are outside of the control of the SFR are also attributed to the company if customer satisfaction is generally low. This can be seen in areas where problems regularly occur, for instance due to building work. Here, even when incidents occur that are not caused by the SFR, they are attributed to the company. Customer satisfaction is then extremely low.

---

20 The detailed analysis from the interview comments from this section is shown in an overview table in Appendix F.
The propositions are only valid in areas where customer satisfaction does not fall below a certain threshold. When this threshold is exceeded, the cause of the incident loses its significance. From that moment, all negative events are attributed to the SFR.

The experts held the opinion that the most important factor of incident recovery is competence. It is essential that this is present. If it is not, then it makes no difference to the passenger what the cause of the disruption is.

### 4.6.2 Current Professional Practice at SFR

In their concept for the improvement of customer information during incidents, the SFR describes how this should be handled (SBBi 2006a). The customer’s need for information increases exponentially in the event of an incident. While it is rather low in a normal situation, as commuters know their usual connections and other travellers can obtain information in good time at counters, a large number of customers are affected by breakdowns. The primary goal of the CUS project (SBBi 2006a) is therefore to inform customers promptly and appropriately during service disruptions. Information must be transmitted regarding delays, new connections, broken connections, platform alterations, unusual stops and alternative itineraries. Customers should also be informed about incident causes, and if necessary, apologies are to be communicated. This is a crucial point. The document illustrates the communications strategy, as previously established by the experts in the interviews. In their communications, the SFR distinguishes between an “apology” for incidents within the company’s sphere of influence, and a request for passengers’ “understanding” when incidents are outside of their control. In the CUS 3.0 concept, the SFR gives examples of this (SBBi 2006a):

- Apology: train defect, signal failure, overhead line failure, points failure, power cut
- Understanding: bomb threat, foreign strike, passenger accident, weather

The document (SBBi 2006a) strongly expects that customers would perceive this differentiation. However, even after discussion with the interviewees, it was impossible to confirm on which verifiable or measurable facts this assumption is based.

A study should be initiated for the SFR as to whether customers actually perceive this differentiation, and if this is the case, to what extent it influences customer satisfaction.
4.6.3 Conclusions Proposition 4

In an environment where the frequency of incidents does not exceed a critical threshold, it is beneficial to communicate incident causes, as this prevents a negative influence on customer satisfaction. If there is doubt over the SFR’s incident recovery competence due to frequent incidents, communication will have little impact. Communication of incident causes will no longer influence the customer’s perception as every incident will be interpreted negatively and will be attributed to the SFR.

The proposition cannot be confirmed. As soon as the basic satisfaction falls below a particular level, communication of incident causes is irrelevant. Customer satisfaction will then decrease regardless of the cause of the incident. Future research work should therefore consider the level at which this effect occurs. Further studies should also investigate whether customers consciously perceive the difference between an “apology” and request for “understanding” or whether the company attributes too much importance to this point.

<table>
<thead>
<tr>
<th>Research Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>Was not confirmed</td>
</tr>
<tr>
<td>Professional Practice</td>
<td>Was not confirmed</td>
</tr>
<tr>
<td>Secondary Data Analysis</td>
<td>Non-applicable</td>
</tr>
</tbody>
</table>

Table 16: Confirmation of proposition 4
4.7 Model of Customer Information

On the basis of the literature review and the data analysis which was carried out, the model was detailed from the research questions. As a result of the knowledge obtained it is now possible to convey this in a model which is relevant in the context of disruptions within the SFR.

![Customer Information Model Diagram]

Figure 29: Customer Information Model

In order to create the model, various sub-models have to be investigated which will then be investigated in the complete context at the end.

4.7.1 Submodel 1: Incident – Incident Recovery Competence– Customer Satisfaction

The data analysis has shown that the best incident that exists is the one that the customer is never aware of. Should an incident occur, it is down to the SFR to eliminate it. The quicker this can happen, the smaller the negative effect on the customer satisfaction will be.
Incident Recovery Competence is closely linked with the expectations of the customer. If these are fulfilled (in the case of a disruption as well), then the perception remains the same. In addition, customer satisfaction will not decrease in the case of a disruption. However, a positive increase cannot be noticed either. What also has to be taken into account is the image of the Incident Recovery Competence? If the image is already negative (which on many routes which are often affected by disruptions can be the case), then a positive Incident Recovery Competence makes no difference. The customer satisfaction still remains negative. Furthermore, the Incident Recovery Competence has an impact on the perception of quality. Customer information is an important attribute of the quality in the provision of train travel service. Should disruptions occur, then the customer must at least be informed of the consequences and the alternative travel possibilities.

Questionnaires and various letters written to newspapers show that positive customer satisfaction can be achieved in disruption situations when a personal interaction between people takes place, in other words when an SFR employee is in direct contact with a passenger. In this exceptional situation there are indications that an SRP occurs. This conclusion can be drawn as it requires a certain effort to write a letter to a newspaper or to get into direct contact with the SFR in order to express praise. The step needs to be taken to consider how the personal contact can be increased in order to permanently achieve this effect of enthusiasm.
The following conclusions can be drawn and are now explained:

- The image of the organisation is of primary importance. If the reputation is damaged once, then even a good Incident Recovery Competence cannot help. Disruptions are then basically perceived as negative, regardless of whether the organisation is to blame or not. A positive image leads to a higher tolerance and generates a maximum level of no dissatisfaction.

- Incident Recovery Competence is an attribute of the level of quality of a provider of train travel. Customers understand in principle that incidents can occur. However, an organisation must show a high level of competence in its ability to solve problems if it wants to avoid dissatisfaction.

- It is generally not possible to identify an SRP, usually the customer satisfaction remains as stable as possible. However, should a personal interaction between an SFR employee and a customer take place, then as an exception, an SRP could occur.

4.7.2 Submodel 2: Customer Information – Basic Factor – Customer Satisfaction

The analysis showed that customer information is a basic factor in incident situations according to Kano’s model (1984). If there is no customer information delivered, the satisfaction falls. When information is delivered, the best case for the company is stable customer satisfaction. Excitement effects can only take place if personal contact with employees is provided.
The following conclusions can be drawn and are now explained:

- Customer information is a basic factor, particularly in the case of a disruption situation. In disruption situations, as an inadequacy in the provision of service in train travel seems to be exposed, the customer expects a qualitative, high quality communication, which will improve his own situation.

- If information about disruptions is supplied, then the customer remains as satisfied as he was before. An SRP cannot be identified. If there is no information about the disruption or the level of quality is too low, then his dissatisfaction increases.

4.7.3 Submodel 3: Incident – Information Quality – Customer Satisfaction

The quality of information has a general effect on the perception of the Incident Recovery Competence. If the customer perceives the quality of information to be positive or neutral, then the customer satisfaction remains stable and the influence on the Incident Recovery Competence is positive or neutral. If the quality of information is bad then this has a disastrous effect. Customer satisfaction sinks further and the satisfaction with the Service Recovery Competence will also sink further.

Speed is the main success factor for a good level of customer satisfaction. If the information reaches the customer in time then he can still fulfil his travel plans. Customer satisfaction then remains stable or can develop positively. The positive
development only occurs however in exceptional situations, for example when the customer can use his time more effectively and a change in the travel plans can bring about an improvement to his situation.

The following conclusions can be drawn and are now explained:

- A positive perception of the quality of information leads to a more stable level of customer satisfaction in the case of a disruption. If the quality of information is bad then the level of customer satisfaction sinks further, as another reason for dissatisfaction is added.

- Fast information can, in exceptional situations, lead to a positive level of customer satisfaction, however as a general rule this level remains the same. Slow or late information leads to dissatisfaction or additional annoyance.

- The same goes for the perception of the Incident Recovery Competence: a positive perception leads to a more positive perception, a negative one leads to further aggravation.

**4.7.4 Submodel 4: Incident – Communication of Incident Cause – Customer Satisfaction**

The investigation has shown that the communication of the reasons for disruptions is closely linked with the general satisfaction. If the satisfaction is high, the customer can more easily deal with disruptions, in particular when they are not caused by the
organisation. The disruptions caused by the SFR are also judged more mildly, which leads to a more stable level of customer satisfaction.

The case is completely different when the customer satisfaction is already negative. Then, all disruptions are assessed negatively, even when they are not caused by the SFR. This leads to an even worse level of customer satisfaction, regardless of the cause of the disruption.

The following conclusions can be drawn and are now explained:

- If the customer satisfaction is generally good or neutral, then a stabilisation of the customer satisfaction takes place.

- If the customer satisfaction is already negative, then even the communication of the reasons for disruptions makes no difference. The satisfaction level falls even further.
4.8 Data Patterns

After investigating the propositions, the results will be presented in a summary here.

Incident recovery is not only relevant for maintaining customer satisfaction, but also contributes to the stability of the entire network. Due to the high frequency of trains on the SFR network, almost every incident has consequential effects, even impacting other areas. The company therefore attempts to prevent incidents from occurring as much as possible through proactive measures.

In general, the SFR confirms what Davies & Walter (1998) have stated: small problems can grow into huge crises if they are not dealt with in time. Due to the problem of disruptions re-occurring, the Incident Recovery Competence is a crucial influencing factor for a high level of customer satisfaction even when the customer in direct contact has not felt any effects.

The speed of incident recovery is of the greatest importance. The SFR does everything to resolve incidents as quickly as possible. Incidents of a longer duration have a very negative effect on customer satisfaction, as the secondary data analysis showed. The longer they last, the more dissatisfied customers become. The SFR’s strategy of resolving incidents as quickly as possible, or doing everything to prevent them from occurring at all, is therefore absolutely correct.

For proposition 2, no indications were found that the SFR make use of the SRP. However, the problem here is that there is not yet a complete body of data about incidents. The decentralised organisational structure means that the various business units sometimes use different data collection methods, and sometimes do not record incidents at all. However, the specialists interviewed could not discover any enthusiasm effect, so the proposition could not be assessed as being valid.

However, in principle, it can be stated that a prompt and efficient delivery of customer information especially in disruption situations is a part of the “train travel” service. Here as well it can be seen that prompt information leads to a positive perception but does not lead to SRP. According to the interviews, the effect of enthusiasm is obtained when a personal contact between the customer and an SFR employee occurs. Out of all measures this must be taken into account.
Positive feedback when information quality is high led to confirmation of proposition 3. However, there were again no indications of an enthusiasm effect and so the second part of the proposition was not rated as valid. Information must be correct, intelligible, complete and received by the customer on time. If the customer gets all of this information, then he is more likely to remain satisfied in a disruption situation.

The proposition showed that speed is a crucial success factor in communication during incidents. If customers receive information promptly, satisfaction remains constant. Speed is the crucial success factor during incidents.

The cause of the disruption, as described in proposition 4 does not play that significant a role for the passenger. Customers often don’t perceive any difference between “apology” and “sympathy”. In particular, when disruptions occur more frequently, these no longer have any meaning. Here it can therefore be seen again how important the Service Recovery Competence, as described in proposition 1 is.

<table>
<thead>
<tr>
<th>No</th>
<th>Proposition</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The greater the ability of a company to restore a situation to its original state following an incident before it has a negative effect on a customer’s schedule, the lower the negative influence on customer satisfaction. The faster a company reacts following an incident, a) the greater the perception of incident recovery competency and b) the lower the negative influence on customer satisfaction.</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>2</td>
<td>Customer information is a basic factor. If incidents occur, customers expect quick and efficient information about them. If this is not provided, customer satisfaction will fall. During incidents, information can trigger enthusiasm in customers and even lead to a positive perception.</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>3</td>
<td>As the perception of the information quality increases the greater the likelihood is that customer satisfaction will return to or increase above base levels.</td>
<td>Can be confirmed</td>
</tr>
<tr>
<td>4</td>
<td>Incidents within SFR control will have a stronger negative influence on customer satisfaction than incidents outside SFR control.</td>
<td>Was not confirmed</td>
</tr>
</tbody>
</table>

Table 17: Confirmation of propositions

On the basis of the data analysis, various patterns were identified which are listed in the section below.
4.8.1 Service Recovery Paradox

The SRP could not be proven in a rail context. Various factors may be responsible for this. Incidents in rail transport are frequently associated with unpleasant consequences, when they occur. Customers reach their destination late, which can have negative consequences. It is therefore often impossible to bring about the desired situation, namely to be in a specific place at a specific time.

Generally, it can be said that customer information cannot lead to an SRP. The data material showed that customer information is a basic factor. The various approaches for investigating customer satisfaction, such as the Kano model (Kano 1984) or opponent-process theory (Solomon 1980) proved that customers become accustomed to stimuli. The same was confirmed by customer satisfaction analysis in this study. If customers regard customer information as a basic factor, customer satisfaction cannot increase any further, despite improvements. This also corresponds with the finding that the SRP cannot be proven in the SFR environment. Customers expect information especially during incidents, therefore improvements can only stabilise customer satisfaction and not increase it. Improvements through new media channels or customising information will only create a temporary enthusiasm effect, after which they will also become basic factors and customer satisfaction can once again only be stabilised.

Attribution theory is also relevant (Oliver & DeSarbo 1988). If the cause of an expectation being met is attributed to the service provider, i.e. the SFR, this does not lead to a particularly high level of satisfaction, as this is expected. Customers who expect a good flow of information will not experience additional enthusiasm. This corresponds with the application of the Kano model and non-emergence of the SRP. On the other hand, attribution theory explains that constantly good performance leads to high satisfaction as customers will expect this in future. Therefore if there are delays that were not caused by the SFR, customer satisfaction will not decrease.

Improvements for the future can be brought about particularly by exploiting technical potential. Customer segmentation, new information channels, information customisation and new location-independent media allow completely new services that can have positive effects on customer satisfaction. However, it must be assumed that these innovations do not lead to an SRP either, as only the quality of the basic factor is
improved. Even if customers are enthusiastic at first, over time the enthusiasm factor will transform into a basic factor.

4.8.2 Customer Satisfaction by Removing Uncertainty

Punctuality is the crucial factor. Whether an incident is acceptable or not is significantly determined by the perceived duration of the incident – “perceived” because an acceptable delay can vary in length depending on the traveller’s situation. Depending on the extent of time pressure, the location, time of day and controllability of further travel options, varying durations of delay are acceptable. The decline in satisfaction is exacerbated if customers do not know why they have to wait.

Delay uncertainties are a major problem. If passengers have no information about the duration of the delay, they will be uncertain and become more dissatisfied. Taylor (1995) and Parasuraman (et al. 1994) have demonstrated that transparency is a considerable factor in evaluating service quality. This obscurity leads to dissatisfaction above all when customers are under time pressure. If a customer knows the reason for a delay and receives initial information about a potential duration, then the uncertainty should be reduced. It may be of interest for future research work to study in detail how time pressure affects customer satisfaction during delays.

Another key success factor during incidents is that of speed. Those affected must be informed as quickly as possible so that their uncertainty is reduced and customer satisfaction remains stable. If the customer knows that the company is working to resolve the incident, transparency is created and in turn uncertainty is reduced. The model of initial, concept and detailed information (see section 4.3.4.2) is therefore a step in the right direction, as current knowledge is always communicated and the customer is informed.

A further point with a positive effect on reducing uncertainty is the communication of incident causes (according to attribution theory, e.g. Oliver & DeSarbo 1988). This does not lead to the SRP, as mentioned above, but does reduce customers’ uncertainty. If they know the reason for the incident and potentially the duration, they can adapt their plans. This affects customer satisfaction. Customers will not experience any enthusiasm, but their dissatisfaction will be less intense.
4.8.3 Customer Contact

The results of the qualitative survey showed that employees in customer information had no direct contact with rail passengers as end customers. They receive requests through stakeholders who are above them within the company hierarchy.

An important point is the improvement of customer contact. Although employees talk to their internal clients, the end customer is not included. This is particularly unsatisfactory because the clients also generally have no customer contact. Beyond their own experiences and private contact, there is little direct reference, which is unlikely to have an insignificant effect. The company’s IT division is strongly affected by this, as all customer information projects are carried out by them. One measure in particular comes into question here. Employees must have direct contact with customers. This could for instance work through stages in which employees are used to guide customers at the stations in the event of incidents. Thus they would not only get to know the situation better, but would also be faced with direct reactions and would also see the effects that information systems can have, both positively and negatively. Another important stakeholder group are employees at counters and train conductors who have regular contact with rail passengers. Committees should be established which can gather regular and structured feedback from employees.

4.8.4 Action orientation

It has generally been shown that customers are greatly interested in information that communicates how they can continue their journey despite an incident. Communicating the cause of the incident is rather secondary, as illustrated by proposition 4.

The approach put forward by Zhu et al. (2004) assumes that customers differentiate between incident causes. Investigations in this thesis revealed that this can only be confirmed for the SFR as long as incidents do not occur often.
4.9 External Validation

The data analysis up to now has been exclusively with regard to the case of the SFR company. In addition to this, in this chapter a further external validation will be carried out. The goal of this chapter is to provide evidence that current Deutsche Bahn approaches match the findings of the SFR case. A complete external validation is not the focus of this research question and can be part of further research. The focus is the validation of special aspects of customer information. To do this in a complete way, a second case study has to be done, which would go beyond the focus of this research.

The negative aspects of delays and therefore a lower level of reliability were also apparent with the Deutsche Bahn. The failure to make connections due to delays leads to huge levels of annoyance for the customer, in particular when no operative counter measures are put into action, which could minimise the effects of incidents (EI 2005). Here as well, it is shown that Incident Recovery Competence plays a central role for the maintaining of customer satisfaction. If no communication of disruptions takes place or if the time taken to resolve the problem is too long, then dissatisfaction occurs.

Ambiguity is a key theme for the entire public transport system. Fiedler (2005) showed that uncertainty amongst passengers leads to huge levels of dissatisfaction. The reason for this is the disruption of the travel plans and the resulting loss of time. The lack of information about the disruption leads to a projection of all causes and for a deviation from the travel company concerned, although many delays are attributable to external sources. Therefore, Fiedler (2005) recommends that reasons for disruptions are communicated to customers. This is in contrast to the results of this research. However, Fiedler did not investigate what effect the communication of reasons for disruptions has on customer satisfaction. The Deutsche Bahn would also need to investigate here whether, from a certain level of frequency of disruption, the communication of the reasons still has a positive effect on customer satisfaction. In accordance with this research project, it is shown that the quality of the customer information is essential for the maintenance of customer satisfaction (Fiedler 2005). An enthusiasm effect does not occur, although the lack of information does lead to a negative attitude towards the company. Here as well, it is shown that customer information is a basic factor, which, when it does not take place, leads to dissatisfaction.
The VDV (2012) describes in its annual report how important the quality of information is for a high level of customer satisfaction. By supplying consistent customer information, via stationary and mobile devices such as Smartphones, the train companies can generate a distinct added value for its customers. Moreover, the information should not only be placed in public travel locations, but it should also be available in hotels, conferences and airports. In addition there are new solutions and tools that link social media with customer information and as a result lead to a higher level of customer satisfaction (Gooßes 2011). The Deutsche Bahn is already active in this area. For example, on Facebook (http://www.facebook.com/deutschebahn), it provides a page where all possible questions to do with the Deutsche Bahn are answered.

Comprehensive validation involving more rail companies is not possible within the framework of this research. The comparison with the Deutsche Bahn has however supplied evidence that a similar investigation would lead to similar results here.
4.10 Limitations

The focus of the research design was on the SFR company. The selected research design was revealed to be a sensible approach for evaluating the propositions. However, the single case study approach which was chosen has its limitations, as described in the research methodology chapter (chapter 3).

Other approaches could be used to gain additional information for further research work.

The research could be expanded to other rail companies within Switzerland. The question of whether other approaches are in place within smaller, non-state owned regional providers and what results can be achieved should be investigated here. Insights could be obtained with a comparative case study.

An international comparison with other rail companies in a multi-case study could also be useful. Other European states in particular have railways with comparable structures. Further findings could be obtained by carrying out comparative studies and by working out best practices or benchmarks.

Further research designs would be feasible within the SFR. For instance, it would be possible to obtain findings through structured observations such as during incident situations at railway stations.

Group discussions with technologically competent customers could also be helpful in determining which channels, devices or information services are useful.
4.11 Conclusion

The aim of this chapter was to analyse data and derive findings from this. The propositions defined in the literature review were systematically studied, which led to clear findings with regards to the research question which was developed in the first chapter.

This was accompanied by patterns that provided fundamental insights with regards to customer information. It became clear why there was no evidence of the SRP, that speed is the crucial success factor in customer information, and that SFR employees in the field of customer information should increase their direct contact with customers.

However, the data analysis could only provide a limited range of information. Several alternative research designs which could provide further findings were therefore described in chapter 5.
5 Conclusions and Consequences
5.1 Introduction

The literature analysis in the field of customer satisfaction research illustrated that customers understand technical problems. However, this is closely related to the company’s image and feelings of fairness in the exchange of services. A small selection of newspaper headlines from recent months shows that this positive image is in danger of being overturned: “Pro Bahn harbours major misgivings” (Bieler Tagblatt 2009), “200,000 commuters forced to stand in heat” (Solothurner Tagblatt 2009) or “SFR: Massive incidents on the Swiss rail network” (Basellandschaftliche Zeitung 2009). The situation is critical for the SFR. Rising user numbers of over 6 percent in recent years (SBB 2009g) have led to a heavy strain on the infrastructure and a highly concentrated timetable. Within this context customer information is of great significance. Within this closely interwoven network, even small incidents can have far-reaching consequences. As the railway network cannot be quickly expanded (building regulations, heavily settled areas, lack of expansion space, environmental protection), the technology which controls the whole system gains increasing importance.

In this overall context, customer information has the task of informing passengers about problems. The aim of this thesis was to create conceptual foundations for customer information in the SFR, with the objective of providing reliable information about problems even in the event of delays and thereby maintaining customer satisfaction.

Various subject areas were analysed in a broad literature review, which helped to establish propositions. The aim was to create a conceptual framework which could provide input for the expansion of current customer information. The methodology chapter described the approach and how the propositions would be examined using qualitative and quantitative surveys. The analysis chapter described the results and the practical implications that emerge.

In this conclusion, the results for the research question and the research problem are summarised, the implication for theory and practice are described. The chapter concludes with the limitations and identified research topics for the future.
5.2 Research Question Conclusions

The initial research question was:

**What are the success factors for customer information of SFR-customers in critical situations to keep customer satisfaction stable?**

Within this study it was possible to answer this question by analysing various propositions.

It was demonstrated that the ability to resolve incidents quickly is a crucial factor in maintaining customer satisfaction for the SFR. The quicker the company is able to resolve an incident, the fewer dissatisfied customers are found. Along with communication, incident management plays an important role here (section 4.3). The SFR attempts to use proactive maintenance work as far as is economically feasible to prevent incidents from occurring at all or to resolve them so quickly that customers do not notice them. Quick resolution of incidents also has a positive influence on customer satisfaction. Customers understand that incidents can occur in a complex technological environment. The quicker an incident is resolved, the more positive the influence on the perception of the SFR’s problem solving competency, and therefore on customer satisfaction.

It was shown that there is no excitement effect created by customer information as this is a basic factor, as demonstrated while investigating proposition 2 (section 4.4). If customer satisfaction is to remain stable, then it is essential for the SFR to strengthen this area. New technologies and media are specifically targeted to be developed. Although these alone do not lead to an increase in general satisfaction or an enthusiasm effect, should new developments and therefore connected services not be introduced, or if they are introduced too late, e.g when new social media trends or new technologies are not put into effect in time, dissatisfaction will arise, according to Kano (1984).

Customer satisfaction as a basic factor must be equally available to all customers and at a high quality, otherwise dissatisfaction arises (section 4.5). High quality predominantly
signifies high speed, as information is often only valid for a few minutes and customers want to adapt their individual plans. Quality is the deciding factor in order to achieve a high level of customer satisfaction. If the information is received in time (the passenger can still react to it) and it is comprehensible (the passenger knows what he should do with it), then customer satisfaction remains stable, as long as the frequency of such a disruption remains within reason.

As it was illustrated that rail customers only distinguish between incidents with internal and external causes as long as the frequency stays within the “zone of tolerance”, the SFR should continue to work to resolve incidents as quickly as possible, regardless of the cause (section 4.6).

After doing the analysis the initial questions can also be answered:

- Which processes and stages are relevant during incidents?
The incident recovery process is the most important in critical situations. If incidents are solved quickly, satisfaction and perception of SFR’s competence will be positively valued. In addition, customer satisfaction will not decrease in the case of a disruption. The general image of the company is important for the perception. If the image is negative, then the positive incident recovery competence makes no difference. Customer satisfaction remains negative. The customer information process is also very important. Customer information reduces uncertainty in incident situations and allows customers to deal with the new situation. It is important for SFR to guarantee that these two processes are of a high quality to keep customer satisfaction generally high.

- Which factors are crucial to the success of customer information?
The most important factor is the speed of information delivery. Uncertainty is reduced when the information is delivered quickly. The secondary data analysis showed that customers who were informed quickly felt that SFR’s service was significantly better than did the other customers. The most dissatisfied by far were, as expected, customers who received no information at all. So the most important factor is the speed of information delivery. This shows competence because the customer knows that SFR is working to solve the incident and they can adapt their travel behavior.

- Which factors are relevant for customer satisfaction during incidents? The most important factors are the Incident Recovery Process and high quality customer information. The personal involvement of SFR employees in incident situations
is also important for a positive general perception. Direct customer contact leads to greater customer satisfaction than if the same service is provided with indirect customer contact. So the investment in technology makes sense, but SFR has to check if it is helpful to invest in more human resources to improve customer contact.

In order to answer the research question, on the basis of this research, the following success factors can be defined:

- High problem solving and communications skills: disruptions are to be communicated and eliminated quickly. Customers accept disruptions however they expect solutions as well. The SFR must demonstrate a high level of problem solving ability (e. g. Matos et al. 2007; Maxham & Netemeyer 2002).
- Quality of customer information: customer information must be available with a high level of quality (e. g. Parasuraman 1996; Bruhn et al. 2006). Above all, it must reach the passenger quickly, so that he can adjust his travel plans. The information must also be comprehensible and correct.
- Adapting to trends: new technological developments are penetrating society faster than ever (Horx 2008; Micic 2006). For companies, this means that trends that are used and that can be used for customer information should be put into practice, as the company can demonstrate its competence in this area. Should the company not do this, then other companies will take this opportunity and the SFR will lose its acceptance.
- Maintaining the “zone of tolerance” (e. g. Parasurman et al. 1994): the zone of tolerance needs to be observed. This applies to the frequency of the disruption and for the elimination of these. As soon as this is violated, then dissatisfaction occurs, irrespective of the cause of the disruption.

Measures and suggestions for implementing the findings are described in section 5.4 (implications for professional practice).
5.3 Implications for Theory

Generally, it must be noted that this research work does not offer a new contribution to the literature. However, the SFR case study does serve to verify existing work and confirm their findings.

The SFR case has shown that critical incidents affect customer satisfaction. Waiting times, as investigated by Kumar (1997) in a study of supermarket queues, also have negative consequences in rail transport. However, the findings by several authors (e.g. Etzel & Silverman 1981; Matos et al. 2007; Maxham & Netemeyer 2002) that customer satisfaction can rise above the initial level after an incident is resolved, as assumed in the SRP, was not confirmed during this study. It was shown that according to Kano’s (1984) categorisation, customer information is a basic factor during incidents, and therefore no enthusiasm could be identified. This study confirms Kano’s model, which notes that no enthusiasm can be created from basic factors; instead, dissatisfaction arises if they are not present (Kano 1984). Customers who received no information or incorrect information in incident situations were very dissatisfied.

According to the attribution theory (Heider 1958) people search for reasons for their actions. Considering this theory, people have no problem with incidents when they are not caused by SFR (e.g. landslides). This could not be confirmed in this research. As soon as basic satisfaction falls below a particular level, communication of the causes of an incident is irrelevant. Customer satisfaction will therefore decrease regardless of the cause of the incident, even if the problem was not caused by SFR.

Parasurman (et al. 1994) defined a model for measuring service quality in rail companies. In this he described that there is a “zone of tolerance” where customers tolerate problems. This effect was confirmed within the SFR case study. It was examined whether information on the reason for an incident results in a difference in the perception of customer satisfaction. It was revealed that as long as incidents do not occur too frequently, customers do indeed perceive them differently. However, if incidents occur with greater frequency, the cause does not matter and customer satisfaction will decrease regardless of the reason for the incident. It was therefore
demonstrated that customer information can potentially exert a positive influence on the dimensions of “reliability, empathy, responsiveness and comfort” in Parasuraman’s (1994) model. This extends the “zone of tolerance”. Here, too, it was shown that there is no excitement effect as in the SRP (e. g. Etzel & Silverman 1981; Matos et al. 2007; Maxham & Netemeyer 2002), but instead at best an increased “tolerance” of incidents. The results of this research correlated with these findings, and thus the SFR case study confirmed Parasuraman’s model.

Incidents to which a company does not react can become crises (e. g. Elliot et al. 2005; Sapriel 2003). Speed in communicating incidents and solving problems is of vital importance in preventing them from growing into crises (Knight & Pretty 1997). Proposition 3 (section 4.5) demonstrated how essential it is to communicate incidents quickly. Proposition 1 (section 4.3) dealt with restoring the original situation and resolving incidents. It was shown here that customers expect a company to be able to quickly resolve incidents and restore the situation to the original state. If so, customers will be satisfied. In incident management, it was revealed that reactive and proactive strategies are important (Meyer 2007). SFR customers do not notice many incidents as the company has invested a great deal in proactive measures so that incidents are immediately detected. The aim is to prevent them reaching the customer. Although resolving incidents that are not detected by proactive measures does not lead to improvements in the area of customer information, it does affect the overall quality and so leads to a positive customer perception. The communications strategy whereby a company communicates problems even when there is not yet a solution (Gillingham & Noizet 2007; Bierck 2000) is implemented by the SFR with their “initial information”. Here, the SFR’s professional practice correlates with the literature’s recommendations and reveals good results.

Technological and social trends have an effect on the SFR as a company. Changes in information and communications technology in particular have a serious impact on the field of customer information. Customer needs are diversifying (Kimita et al. 2009) and companies must accommodate this. Successful companies offer individualised products (Silveira et al. 2001; Fogliatto & Silveira 2008). Numerous mobile applications (SBB 2011) are available and offer individualised services, which also leads to positive customer feedback. Again, the SFR case corresponded with current findings here.
5.4 Implications for Professional Practice

During the literature review and qualitative and quantitative surveys, a need for optimisation of the area of customer satisfaction was revealed. Two fundamental directions emerged:

- The internal view focuses on the improvements that are possible and beneficial within the SFR as a company.
- The external view focuses on the customer. This will describe how it is possible to extend customer information so that the company can maintain or expand its competitive advantage.

To find improvements in the area of customer information during incidents, a four-stage approach was selected:

First, a summary is made of the initial situation, which is based on the various interviews. Next, the target situation is defined. This takes into account the various findings from the literature review and surveys, including the evaluation of the propositions. The transfer from the initial situation to the target situation takes place through optimisations within the SFR organisation and through the provision of new information and information channels to customers. This also takes into account findings from literature and the various interviews.
5.4.1 Initial Situation

This section will once more briefly summarise the essential elements which are regarded as possible areas of action. The focus is on the identified causes of problems from the analysis chapter (chapter 4):

- The organisation of the area of customer information is very complicated. The complex committee and process landscape leads to protracted rounds of coordination and by association to reduced efficiency.
- Innovations (e.g. new media) are slow and lead to discussions which can prevent quick introduction.
- No overall business architecture could be discovered for customer information. The only department with detailed documentation was IT.
- There is no systematic development of customer information. This leads to organisational conflicts and to IT being an important driver, rather than the business divisions.
- Stakeholder analysis revealed a lack of contact between employees in customer information and rail passengers. Other organisational units were always the clients, and the rail passenger as an end customer played hardly any role.
- There is currently no targeted response to customer segments. The categorisation of commuters and other travellers is too rough to be promising.
- New media are very slowly integrated into the customer information concept.

All of these points have consequences for the SFR. Different organisational responsibilities lead to difficulties at the start of new projects. There is a need for optimisation here. Projects are slow to start, and their content is focussed on the functional requirements of the relevant organisational unit while the most important stakeholders – passengers – are not always the centre of attention, as the interviews revealed (SBBi 2009a; SBB 2010b). For this reason different measures are defined in section 5.4.3.

5.4.2 Target Situation

The demonstrated shortcomings are to be resolved in the target situation. Customer information should be constructed so that it can provide an important contribution to increasing customer satisfaction, in that it incorporates customers’ needs and requirements in a suitable form. In addition, the organisation should be able to act as
efficiently as possible, use synergies efficiently and optimally implement resources. In
detail, this should occur through the implementation of the following measures:

- The organisation of customer information should be constructed so that tasks,
  competences and areas of responsibility are structured without redundancy and
  synergies are optimally used.
- The overall business architecture for customer information should demonstrate a
  short-, medium- and long-term perspective, from which concrete imple-
  mentation measures can be derived.
- Clear concepts on how to respond to and optimally cater for different target
  groups should exist.
- Customer information should proactively inform during incidents.

The suggested measures should achieve various improvements: comprehensive business
architecture allows long term investments to be planned whilst reacting to short and
medium term demands. Such demands repeatedly arise for the SFR as stakeholders such
as the government or the federal transport agency (BAV) create standards that must then
be met (SBBi 2009).

The interviews also revealed that customer segmentation does not yet exist to a
sufficient extent. Customer segments may allow individual customer information in the
future. In conjunction with a device strategy, customisation of information channel and
customisation of information, it is possible to address customers in a more target group
specific way.

Segmentation and customisation make it possible to be more proactive. New devices
and the mobile telephone network and wireless LAN coverage across almost all of
Switzerland allow services to be provided at any location and any time. This allows
significantly higher proactivity to be guaranteed in the future.
5.4.3 Measures

The data analysis in customer information provided numerous results. There is no clear strategic direction for customer information. Although projects and initiatives try to anticipate corporate strategy, a firm strategy could provide clear benefits.

It has been shown that the company is in a good position with established customer information issues and that in normal situations customers display wide acceptance. Incident situations where customers do not feel adequately informed become critical. A further difficulty is the unclear situation with information channels that cannot be positioned in the traditional domains of the station or train. An organisational and media concept can solve this.

Customer segmentation can provide a considerable contribution to the comprehensibility of information and a target group oriented customer response. The introduction of programme management is aimed at improving management. These initiatives are topped off with the introduction of KPIs to measure success, and measures that rely on a close cooperation with end customers. Measures are defined which will help to reach the target situation within the SFR.

- Development of an organisation concept: through clear organisational interfaces, the competences are clear and every organisational unit knows its tasks. Redundancy is removed and synergies are increasingly used. Coordination efforts and virtual organisational units become less important, so that less effort is needed for administration and coordination. The subject of customer information becomes easier to manage, and conflicts due to unclear rules disappear.
- Definition of customer segments: customer segments are defined and it is known what media they use. Information systems and services in the area of customer information can be developed to suit target groups.
- Customer cooperation: Employees in the area of customer information know the needs and requirements of rail passengers and know how these can be implemented.
- Definition of KPIs: KPIs measure various activities in the area of customer information. Clarity therefore very quickly emerges as to whether customer needs were met or not. Bad investments can be recognised earlier and therefore avoided. A purge of the entire customer information landscape will be possible if it is clear which information channels are still accepted by customers.
- Development of programme management: overall programme management coordinates projects and the associated resources. Programme managers know all activities and purposefully manage these. Through prioritisation, a company-wide perspective and the use of synergies, efficiency is improved.
- Definition of a media concept: A media concept should investigate the prioritisation of individual channels and analysis of media use by end customers. Furthermore, lifecycle management of individual information channels must be established, which keeps development and removal under control.

The described measures are designed with the aim of a “quick win” concept and are interdependent. Significant improvements should be possible within a year of implementation. A detailed description of the measures is described in Appendix I.

5.4.4 Optimisation of Customer Information

The current situation shows that the demands of comprehensive and holistic customer information can be accommodated by implementing the most modern IT systems. The traveller can find information about his journey from home using the internet, Teletext, the telephone or printed timetables. At stations there are information counters, display boards, loudspeaker announcements, timetable notices and rail staff who can give information. In trains during the journey, the offering continues. Employees provide information about connecting trains, displays show further departures and information is also available by loudspeaker. Added to this now are mobile information systems such as netbooks, laptops, smartphones and mobile telephones which can be used by the customers themselves to make information enquiries from the most varied locations. In
recent years, the SFR has made great efforts to make information accessible outside of stations. Information about incidents and other exceptional circumstances can be accessed by SMS or via the internet. The first steps are being made with the development of different applications (SBB 2011).

Technical innovations are closely related to developments in the economy and society. The view has long prevailed that the railway is a conservative business, as new tracks, signal boxes and trains not only have depreciation periods of up to 50 years, but also require immense investments. Today it appears that information is to be regarded as a significant production factor for the majority of the economy (Kuhlen 2004). With information systems within the railway, the task is to gather, process and distribute knowledge and information. The SFR as the provider of a public service must make the most simple, comprehensible and high quality information possible available to end customers.

Another important factor for customer information is mobility. More and more people are no longer physically tied to a fixed workplace. For them, it must be possible to travel from one place to another within a reasonable timeframe without hours of preparation. This has consequences for the customer information services in the SFR. The importance of the mobile sector is increasing. The consequences of this development are described in the following sections.

5.4.4.1 EXPANSION OF CUSTOMER INFORMATION

Customer information systems are categorised by the SFR according to their location of use. Up to now the dimensions of station and train have dominated. This thesis has shown that an expansion into a new dimension is necessary, that of mobile customer information. In the established models, this area does not yet firmly appear. Therefore it must be urgently introduced. Consequently, the various customer information systems can be illustrated in the following matrix:
Consequently, customer information can be divided into two categories: interactive and non-interactive customer information systems: Traditional customer information systems are all media which are bound to stations and trains and have limited interactivity. Mobile customer information systems are interactive and can be used at a large number of locations.

Traditional customer information systems feature a general illustration of the travel situation, can be used without additional devices and allow almost all people to access information by reading or listening. This information cannot be modified by passengers.

In contrast, mobile customer information systems allow an individual configuration of information, but also require knowledge of how to use the systems (computers, internet, SFR applications, mobile telephones etc.).

The next decision is the time of information provision. With on-trip information, the customer receives information during the journey about arrival times, departure locations, incidents or alternative travel options. Pre-trip information is significant before the start of the journey. With this, the customer can plan his journey and choose between different alternatives (Arnet et al. 1999). Here it is necessary to consider eliminating these terms. Categorisation into stationary information for all channels which are tied to a particular location and mobile information for all information that is available everywhere, seems to represent today’s requirements better. The distinction

<table>
<thead>
<tr>
<th></th>
<th>Interactive</th>
<th>Non-Interactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station</td>
<td>Information counters, information terminals, telephone information</td>
<td>Display boards, announcements, timetables</td>
</tr>
<tr>
<td>Train</td>
<td>Conductor information</td>
<td>Information monitors, announcements</td>
</tr>
<tr>
<td>Mobile*21</td>
<td>SMS, internet timetable, incident information, telephone information, teletext, Social media</td>
<td>Pocket timetables, schedules</td>
</tr>
</tbody>
</table>

Table 18: Customer Information Systems (blue indicates areas of action)

---

21 All media in the mobile category can also be used at the station or on trains, but are not additionally listed in those categories.
should be extended to the attribute of interactivity, namely whether the information can be modified by the customer or not. The model of information must consequently be extended to include the category of mobile information:

<table>
<thead>
<tr>
<th>Pre-trip Information</th>
<th>On-trip Information</th>
<th>Mobile Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information available before the start of the journey.</td>
<td>Information available from the start of the journey.</td>
<td>Information available at all times and everywhere.</td>
</tr>
</tbody>
</table>

Table 19: Information Types (blue indicates areas of action)

This definition shows the strengths of mobile information. As soon as information from traditional information systems is available for mobile information systems, mobile customer information encompasses both the areas of pre-trip and on-trip information. Despite this, increasing use of IT-based information systems does not lead to the elimination of conventional ones. The reasons for this are complex. Commuters generally only need information about incidents or abnormalities, as they generally know their route and times very well. On the other hand, the number of people who are still not familiar with new media and rely on conventional systems (i.e. elderly or disabled people) must not be underestimated. Despite all of this, the benefits of mobile customer information systems are obvious: individualised information is available any time and anywhere. The freedom of travel planning and dependence on local media are drastically reduced.

In addition to this is the trend that not only young people are familiar with technology. A large part of the working population must have user knowledge otherwise they will not be employable on the job market in industrialised countries. However, more and more older people also use these technologies, as their operability has drastically improved and there are a multitude of useful and target group orientated applications (Horx 2008).

5.4.4.2 FUNDAMENTAL REQUIREMENTS

Customers should receive comprehensive, timely and reliable information about their itinerary before and during the journey. This should be available from any location. While the paradigm previously applied in rail companies that pre-trip information should be weighted more heavily as it supported a customer's conscious choices and
that uncertainty in rail use therefore disappeared (Arnet et al. 1999), this statement is not to be questioned with the current state of technology, but to be extended on the basis of mobile customer information. The most complete customer information possible should consist of the following elements:

- An itinerary from the starting point to destination (door to door), which takes into account all transport possibilities (buses, trains, city trains etc.)
- Information about total travel time and cost
- Information about changes (waiting times, walking routes, disability information)
- Additional information such as buffet cars, classes, load forecasts
- Causes of incidents, alternative itineraries and possible downtime

In addition, there are demands regarding information quality:

- Customer information must be punctually received. This means that the incident information must be accurate.
- Information must be immediately comprehensible to customers.
- Customers should only be informed about incidents that are actually relevant.

Technology requirements are added to make these demands viable:

- The technology must allow individualisation of information.
- Devices used and customer technology must be adequate for current standards.
- The end customer must be able to use the available devices (mobile telephone, laptop, etc.).

5.4.4.3 COMPONENTS OF A NEW CUSTOMER INFORMATION SYSTEM

The customer information system is based on a multitude of different components. Centralised and decentralised data sources (timetable data, route planning, station information etc.), guidance and control systems, and data from surrounding countries are processed into customer information data with the help of a user interface. This customer information is transmitted to trains, stations and all other information channels. Additionally, employees in operations control centres also have the opportunity to transmit information directly to trains and stations.
The essential innovations for future customer information are in the area of mobile information (highlighted in blue in the figure below) as other areas are fully developed and no material innovations are to be expected there. The figure illustrates the various components, whereby the areas of station and train are the traditional components, whilst mobile components and those independent of location are highlighted in blue. Thus it is necessary to expand the existing systems with these components.

![Customer Information System Diagram](image)

Figure 36: Customer Information System (adopted and extended from SBBi 2011)

### 5.4.4.4 BASIS OF A NEW CUSTOMER INFORMATION SYSTEM

Extensive telecommunications networks (WLAN, UMTS, SMS, etc.) and affordable mobile end devices distinctly extend the opportunities for customer information. Information about incidents and other exceptional situations (e.g. major events) which is otherwise not available through traditional customer information systems can be transmitted to any mobile device.

A modern customer information system which meets current needs should take into account three dimensions: information, end devices and user segments. The essential components are explained here:
Information

From the point of view of rail passengers, the transmitted customer information must meet the following criteria:

- **Completeness**: the entire itinerary must be covered, from door to door, including transfer services by bus or other public transport. Connection information (walking routes, waiting times, arrival/departure platforms) also belongs to this criterion.
- **Punctuality**: information must be up-to-date. If information comes too late, it is no longer useful in that the customer can no longer adapt his travel patterns.
- **Proactivity**: during deviations from the usual situation, the railway company has an obligation of provision and must make channels available that proactively deliver the deviation information.
- **Mobility**: the passenger should have the opportunity to access information at any location.
- **Comprehensibility and user-friendliness**: the information provided must be immediately comprehensible and intuitively accessible.

The interweaving of other services with customer information by the SFR is a positive step. As soon as an itinerary is chosen, the appropriate ticket can be bought over the internet with just a few clicks. Transfer services, such as buses or trams, are not interwoven at present, however the SFR is in the process of remedying this (20Min 2009a). Fundamental improvements are still possible in comprehensibility and user-friendliness. This aspect is frequently lost, particularly with large volumes of information. Thus a crucial step is to tailor information to the individual and to hide all other aspects that are not of interest to the traveller.

Connection information is not always correct, even for regular routes, as trains sometimes arrive at or depart from different platforms. This can have serious consequences for passengers, especially at large stations if they have short connecting times and go to the wrong platform, missing their connecting train. In incident situations this occurs more frequently, which increases the customer’s irritation. Here, too, a stronger integration of information should be worked towards. If a train is at a different platform, this means that the information must also be available in a system so that it can be provided to customers.
Customer Segments

Customer segmentation can be carried out according to the most diverse criteria. Age, usage behaviour, level of education etc. are just some of the many possibilities. Therefore it is logical that there cannot be a single customer information system that makes everyone happy. The very pervasiveness of IT in all areas leads to there being more and more people who feel overwhelmed by technology. Whilst young people often learn very quickly how to deal with mobile telephones, automated machines (bank, tickets) or the internet, the use of these devices can lead to problems for older people, the disabled, those from other cultures or those with poor education. There must therefore be various options in information provision:

- Traditional solutions: information must be provided so that it is comprehensible for the general population and no additional devices are necessary.
- Standardised solutions: for different customer segments, standard solutions are developed which conform to the group’s needs with just a few adjustments.
- Tailored solutions: customers must be able to freely configure customer information systems so that these meet their individual requirements.

End Devices

A key subject in customer information is that of end devices. These must have a direct benefit, otherwise the customer will ignore the services provided. The technological development of recent years has brought many innovations. Mobile devices are affordable and available for the majority of the population (in 2009 there were 8.9 million mobile telephone accounts registered in Switzerland, with a total population of 7.7 million inhabitants (ComCom 2009)). In traditional customer information systems, only marginalia are likely to change in the coming years. Display boards, loudspeakers, information boards and customer counters have existed for a long time. The related services are established and have reached a high degree of maturity over the years. Considerable innovation in terms of information provision is not really to be expected here. If innovations take place, these are likely to be focussed instead in the technological field (new display devices, better loudspeakers etc.).

With mobile end devices, development is just beginning. At present, the SFR limits itself to transmitting available customer information to these devices. There are no innovations that tap the potential of end devices. Currently, devices catch on due to their
superior technology or the best marketing. At the same time, product cycles are becoming shorter and shorter. For the providers of customer information, this means that services must also be adapted to this trend. Services that were considered innovative before the new millennium (SMS, Teletext) are now outdated. For the SFR, this means that they must actively participate in driving innovation. They must quickly adapt to changes and offer new services. In the past, international standardisation committees such as the Union Internationale des Chemins de fer (UIC) were often drivers of innovation at an international level. In the area of mobile end devices, this will never be the case. The markets move faster than international committees can work, and therefore set a de facto standard to which rail companies must orient themselves if they want to achieve high customer acceptance.

Processes and Organisation

In order to put the new approaches into practice, it is necessary to adapt the SFR’s processes and organisation in the area of customer information. However, this topic will not be covered as this would exceed the scope and focus of this study.

5.4.4.5 PACKAGE OF MEASURES

For the realisation of the new customer information system, measures are defined. The aims of the measures are:

Mobile customer information: The SFR acts proactively and analyses the potential of new technologies in a continuous process. The company is in a position to quickly and purposefully develop new information channels and interfaces which keep pace with current technological developments.

Additional information: Additional information provides benefits for the rail passenger and therefore increases customer retention. As the railway has access to a large number of customers, it can distribute information from other organisations by way of targeted communication and thereby exploit new sources of income.

Proactivity: If the customer is proactively informed about problems during or before his journey, he perceives this positively. Various media channels such as the internet and mobile telephones allow the customer to receive information about incidents before arrival.
Individualisation: The customer can compile his own services from the SFR’s offering. Using mobile end devices he has access to all information on his route at all times.

Services and Media Channels: Customer segments are defined. On this basis it is possible to provide differently processed information to customers. Every customer segment receives a target group orientated response. In addition, it is possible to provide additional information depending on target group.

Analysis of Mobile Devices: The SFR knows the new developments that are taking place in the technology market. It can productively position new applications with partners’ market entry and does not have to respond reactively to new trends. The SFR gains competitive advantages as a result of swift reaction.

The measures are described in detail in Appendix I.

5.4.5 Conclusions for Practical Implications

A new customer information model and the associated reinforcement of mobile communication is a key challenge for the SFR.

In several areas, the SFR is already on the right path (implementing new devices, developing mobile applications) whilst in others the foundations have not yet been laid.

As an employee of the SFR, it is the author’s goal to set in motion and help to accomplish as many of the measures described here as possible.
5.5 Implications for further Research

This research showed the importance of Kano’s model for customer satisfaction (Kano 1984; Matzler et al. 2005). Customer information is a basic factor and does not lead to enthusiasm, as assumed in the propositions. But if this elementary basic factor of delay in problematic situations is not provided, the customer can become very unsatisfied.

During this research a lot of ideas were identified which could be of interest for further research, but which would have exceeded the scope of this project and could not be dealt with:

- The relationship between satisfaction and incidents with external influences not in the control of the provider is known: if the customer knows this, his dissatisfaction is significantly lower than if the provider is negligent. Future projects should study which communications strategy minimises customer annoyance.
- A further subject emerges in the environment of opponent-process theory. A possible investigation topic here would be the effects of negative stimuli. Can the customer become habituated to them, and if yes, how strong can the negative stimulus be, without losing the customer? The aim could be an optimisation of the service levels.
- In the field of customer segmentation, customers can be categorised as profitable and unprofitable. A further study should investigate whether such a concept is politically desirable or whether no segmentation should take place here. The other question arising is what influence and which optimisation strategies are possible for a rail company in this area.
- Crisis management for most companies in passenger transport is usually ideally equipped for large disasters. Accidents with casualties or fatalities are covered by most crisis management plans. For further studies it would be interesting to examine how far simmering crises, which could develop into disasters for an organisation, are covered by an efficient risk management plan and dedicated awareness programme.
- How could a communications strategy look for areas and routes that are particularly affected by incidents? And how could this be incorporated into a risk and crisis management concept?
- What effects do the new social media (such as Twitter, Facebook etc) have on the communication within the SFR. Which opportunities, which risks exist for the company here?
- The SFR is planning a new pricing system which would offer route- and time-related fares for tickets. A further study should examine in which form individualised customer information can provide benefits here.
- It must be examined how communication through individual electronic media should differ from non-hi-tech media (display boards, loudspeaker, etc.). It would be interesting to study whether fundamentally different communication style and address would be necessary here or whether standard information can simply be individualised.
- The length of delay when it is beneficial to inform passengers, should be studied. The aim is to define a time frame within which those affected can adapt their travel plans.
- Levels of satisfaction/sufficiency: It is unclear which information is felt by passengers to be “sufficient” or “insufficient”. The individual concepts must be investigated and the criteria to be used and how they can be operationalised must be defined with customers.
- The question of whether all incident causes have the same effect on customer satisfaction should be examined in a further project. Incident causes such as landslides could have fewer negative effects than breakdowns due to poor maintenance. It would be necessary to investigate here whether there are further influencing variables, such as the length of the incident, how quickly it is addressed, etc.
- The generalizability beyond theoretic concept is not a focus of this project. This issue can be investigated in further research projects.
- The results of this research should be validated with further cases (e.g. other rail companies)
6 References
6.1 Literature

(Abel et al. 1998)
[Translation: Introduction to the empirical educational science]

(Adams 1963)

(Albiez et al. 2008)
[Translation: Three-stage Customer Segmentation: an Approach to Potential-Oriented Business Management in the Pharmaceutical Market]

(Allen & DiCesare 1976)

(Allison 1971)

(Amabile et al. 2001)

(Arnet et al. 1999)

[Translation: Intelligent Customer Information in Public Transport: Overview and Fundamental Principles]

(Ashcroft 1997)

(Athanassopoulos et al. 2001)

(Atteslander 2003)

[Translation: Methods of Empirical Social Research]

(Bauer et al. 2005)

[Translation: Dynamic Customer Segmentation – Considerations and Case Study]

(Baxter 2006)
(Beck 1994)
[Translation: Risky Freedoms – Social Individualisation Processes in the Modern Era]

(Bernstein 1996)

(Bhatt 2000)

(Bierck 2000)

(Bitner et al. 2000)

(Bitner 1990)

(Blank et al. 2007)
[Translation: Business Administration]
(Bourne 2005)

(Bowen & Chen 2001)

(Bruhn 2008)
[Translation: Quality Management for Services]

(Bruhn et al. 2006)
[Translation: Dynamics of Customer Expectations in the Service Process]

(Brun 2009)
[Translation: International Comparison of Public Transport]

(Bornstedt 2007)
[Translation: Purchase Decision-Based Benefit Segmentation on the Basis of Individualised Limit Conjoint Analysis]
(Boulding et al. 1993)

(Brown 2002)
[Translation: Torment your Customers – They Like It]

(Burkart 2002)
[Translation: Communication Studies]

(Cadotte et al. 1987)

(Camphausen 2007)
[Translation: Strategic Management: Planning, Decision and Control]

(Casell et al. 2006)

(Casell et al. 2006a)
(Cavana et al. 2007)

(Clark 1951)

(Cook & Campbell 1979)

(Coombs 2007)

(Coombs 1999)

(Concépcion et al. 2009)

(Crisis Experts 2003)
(Davidow & Malone 1992)

(Davies & Walter 1998)

(De Weerd-Nederhof 2001)

(Denzin 1978)

(Denzin & Lincoln 2005)

(Dieckmann 2007)

[Translation: Empirical Social Research: Fundamental Principles, Methods and Applications]

(Drea & Hanna 2000)

(Drucker 2007)
(Duden 2007)
[Translation: The large Book of Loanwords. Derivation and Denotation of Loanwords]

(Edwardson 1998)

(EI 2005)
[Translation: Delays and broken connections]

(Eisenegger 2005)

(Eisenhart 1989)

(Elias 2001)
[Translation: The Society of Individuals]
(Elliot et al. 2005)

(Erevelles & Leavitt 1992)

(Etzel & Silverman 1981)

(Fiedler 2005)
[Translation: Avoiding delays – recommendations for a reliable services in public passenger transportation]

(Fink 1986)

(Fischer 2008)
[Translation: Traceability Management: How a Company Can Limit the Risks of Product Recalls]

(Fisk & Coney 1982)
(Fisk & Young 1985)

(Flick et al. 2005)

(Flyvbjerg 2006)

(Fogliatto & Silveira 2008)

(Foote Whyte 1943)

(Foscht 2002)

[Translation: Customer Loyalty – Integrative Concepts and Analysis of Behavioural and Profitability Impacts]

(Freeman 2004)
(Freter 2008)
[Translation: Market and Customer Segmentation. Customer Oriented Market Acquisition and Development]

(Fuchs-Heinritz et al. 2008)
[Translation: Dictionary of Sociology]

(Gabay et al. 2009)

(Garcia 2006)
Garcia, H. (2006): It’s not the crisis that counts, it’s the way the crisis is handled, Strategic Direction, Vol. 22 No. 4, pp. 20-22.

(Garcia 2006a)

(Gillingham & Noizet 2007)

(Giorgi 1985)
(Gooßes 2011)

[Translation: New grounds in customer information. Increasing customer satisfaction and acquiring new customers by the use of new information systems]

(Guba & Lincoln 1994)

(Güngör 2007)

(Gustafsson et al. 2005)

(Hair et al. 2006)

(Hammersley 2002)

(Harrald 1998)
(Hartline & Ferrell 1996)

(Hauser & Brauchlin 2004)
[Translation: Integrated Management in Practice. The Implementation of the St Gallen Success Concept]

(Heider 1958)

(Heiderich 2001)
[Translation: Information Flow After Unplanned Events in Technical Order Processing]

(Heil 1995)
[Translation: Fault Elimination in Operational Processes]

(Hess et al. 2003)

(Hinterhuber & Matzler 2009)
(Hippner & Wilde 1997)

(Holloway et al. 2009)

(Homburg 2003)

(Homburg & Rudolph 2001)

(Homburg & Stock 2001)

(Hoogedorn et al. 2008)
Hopf (2005)
[Translation: Qualitative Interviews – an Overview.]

(Horx 2008)
[Translation: How We Will Live: Our Future Begins Now]

(ITIL 2009)
http://www.ogc.gov.uk/guidance_itil.asp

(Jaworski & Kohli 1994)

(Jeschke & Schulze 2006)
[Translation: Complaint Management and Internal Marketing]

(Johnston & Michel 2008)
(Johnson & Peppas 2003)

(Kaiser 2004)

[Translation: Customer Satisfaction as a Success Factor. Dimensions and Measurement Opportunities]

(Kanning & Bergmann 2009)

(Kano 1984)

(Keiningham et al. 2005)

(Kietzmann et al. 2011)

(Kim & Park 2003)
(Kimita et al. 2009)

(Knight & Pretty 1997)

(Krafft 1999)
[Translation: The Customer In Focus – Customer Focus, Customer Satisfaction and Customer Value?]

(Kromrey 2009)
[Translation: Methods of empirical Social Science]

(Kuhlen 2004)
[Translation: Information Ethics – Dealing with Knowledge and Information]

(Kuhlen 1997)
[Translation: The Information Market. Opportunities and Risks in the Commercialisation of Knowledge]
(Kumar et al. 1997)

(Künstle 2003)
[Translation: Reputation and Business in the Media Age]

(Künzel 2005)

(Lamnek 2005)
[Translation: Qualitative Social Research]

(Lee & Harald 1999)

(Lengfeld 2004)
[Translation: Fairness and the Two Levels of Industrial Conflict – Empirical Findings in Operational Attitude Research]
(Leonard-Barton 1990)

(Levitt 1983)

(Liberman et al. 2004)

(Lincoln & Guba 1985)

(Liu et al. 2011)

(Luhmann 1996)
[Translation: Theory of Social Systems]

(Luk & Layton 2002)
(Magnini et al. 2007)

(Maister & Lovelock 1982)

(Maletzke 1964)

[Translation: Psychology of Mass Communication]

(Martin 2005)

(Masaaki 1997)

[Translation: Gemba Kaizen: Permanent Quality Improvement, Time Savings and Cost Reductions in the Workplace]

(Matos et al. 2007)

(Matzler et al. 2005)

[Translation: Asymmetrical Effects in the Development of Customer Satisfaction: Consequences for Importance-Performance-Analysis]
(Maxham 2001)

(Maxham & Netemeyer 2002)

(Mayring 2008)
[Translation: Qualitative Content Analysis: Basic Principles and Techniques]

(Mayring 2002)
[Translation: Introduction to Qualitative Social Research: A Manual for Qualitative Thinking]

(McCollough et al. 2000)

(McLuhan 2001)

(Meffert & Bruhn 1997)
[Translation: Service Marketing: Basic Principles – Concepts – Methods]
(Meyer 2007)
[Translation: Logistical Incident Management in Customer Oriented Supply Chains]

(Michel & Meuter 2006)

(Micic 1996)
[Translation: The Future Radar. The most important Trend, Technologies and Topics for the Future]

(Mitroff 1996)

(Narver & Slater 1990)

(Neufeld 2007)

(Newman & Brown 1996)
(Ojasolo 2001)

(Okumus 2003)
Okumus, F. (2003), A framework to implement strategies in organizations, Management Decision, Vol. 41 No. 10, pp 871-882

(Oliver & DeSarbo 1988)

(Parasuraman et al. 1994)

(Parsons 1993)

(Patterson & Spreng 1996)

(Pauchant & Mitroff 1992)

(Perry 2003)
(Pesqueux & Damak-Ayadi 2005)

(Plowman 1997)

(Pollit & Smith 2002)

(Popper 2007)

(Priluck 2003)

(Pritchard 1969)

(Pryzborski & Wohlrab-Sahr 2008)

(Pullen 1993)

(Punch 2005)
(Raab et al. 2009)

[Translation: Methods of Marketing-Research: Basics and Practice]

(Raithel 2008)

(Reis et al. 2003)

(Riege 2003)
Riege, A. (2003): Validity and reliability tests in case study research: a literature review with “hands-on” applications for each research phase, Qualitative Market Research,: Vol. 6 Issue. 2, pp. 75-86.

(Rizk-Antonious 2002)

[Translation: Quality Perception from the Customer's Perspective. Be Better Received by Customers – Concepts and Practical Examples from 5 Sectors]

(Rommel & Winter 1999)

[Translation: Adam Smith for Beginners: Prosperity and Nations: an Introduction]

(Rosenberger & Pfizenmayer 2009)
(Rötzer 1996)
[Translation: Interaction – the end of traditional mass media]

(Ruigrok et al. 2008)

(Sapriel 2003)

(Sauerwein 2000)
[Translation: The Kano Model of Customer Satisfaction: Reliability and Validity of a Method for the Classification of Product Features]

(Scheibelhofer 2008)

(Scherler 1996)
[Translation: Communication with external Stakeholders as Success Factor in Crisis Management in a Concern]

(Schneider & Kornmeier 2006):
[Translation: Customer Satisfaction]

(Schnell et al. 2005)

[Translation: Methods of Empirical Social Research]

(Schultz et al. 2011)

(Schwenk 2006)

[Translation: Customer Satisfaction as Challenge: Consequences, Measurement, Management]

(Shaluf et al. 2003)

(Shannon 1949)

(Shrivistava 1993)

(Silcock 1981)
(Silveira et al. 2001)

(Smallman & Weir 1999)

(Smith 2005)

(Solomon 1980)

(Specht et al. 2006)

(Spiel & Pellert 2001)
[Translation: Development of a Questionnaire for Global Evaluation of Apprentice]

(Spreng et al. 2009)
(Story & Hess 2006)

(Symon et al. 2000)

(Taylor 1995)

(Töpfer 2007)
[Translation: Customer Management – Customer Satisfaction, Customer Retention and Customer Value]

(Trim 2004)

(VDV 2012)
[Translation: Annual Report 2011/2012]

(Veal & Ticehurst 2004)


(Wong & Sohal 2003)

(Wong & Weiner 1981)

(Yin 2008)

(Yin 1993)

(Zeithaml 1992)

(Zeithaml & Bitner 1996)

(Zhong & Low 2009)

(Zhu et al. 2004)
(Zollondz 2006)
6.2 Newspaper Articles & SFR Press Releases

(20Min 2009)
[Translation: Government Fed Up With Cisalpino Problem Train]

(20Min 2009a)
http://www.20min.ch/finance/news/story/24687623
[Translation: Public Transport Association – Fare Revolution Planned]

(20Min 2009b)
http://www.20min.ch/news/bern/story/17359561
[Translation: Disruption on Multiple SFR Routes]

(Aargauer Zeitung 2010)
[Translation: Thorny Discussion Over Boss’s Bonus]

(Basellasschaftliche Zeitung 2009)
[Translation: SFR: Massive Disruption on Swiss Railway Network]

(Bieler Tagblatt 2009)
[Translation: Pro Bahn Fosters Major Doubts About the SFR]

(Blick 2009)
Blick (2009): SBB meistern Fahrplanwechsel, Retrieved in December 2009. Link:
[Translation: SFR Master Timetable Change]

(Blick 2007)
Blick (2007): Teurere Zugbillets zu Stosszeiten, Retrieved in March 2009. Link:
[Translation: More Expensive Rail Tickets During Peak Hours]

(ComCom 2009)
[Translation: Mobile Telecommunications Market]

(DPA 2005)
http://www.welt.de/print-welt/article678119/Strompanne_Schweizer_Bahn_stellt_Zugverkehr_im_ganzen_Land_ein.html
[Translation: Swiss Railway Stops Rail Transport Through Entire Country]

(EDI 2009)
[Translation: 2008 Swiss Wage Landscape]
(FAZ 2009)
[Translation: Car Suppliers Plan to Overcome Crisis With Short Hours]

(Handelsblatt 2005)
[Translation: Swiss Railway grinds to a halt due to Electrical Failure – Over 100,000 Passengers Affected]

(Handelsblatt 2005a)
[Translation: Swiss Railway grinds to a halt due to Electrical Failure – Over 100,000 Passengers Affected]

(Link 2007)

(Netzwoche 2012)
[Translation: SBB and Post allows Facebook]
(NZZ 2005)
[Translation: Further Widescale Powercut For The SFR – Lightning Paralyses West Switzerland Rail Network]

(SBB 2011)

(SBB 2009)
[Translation: SFR Corporation In Figures]

(SBB 2009a)
[Translation: SFR Abandons Price Increase]

(SBB 2009b)
[Translation: A Strong Brand and its Output]

(SBB 2009c)
[Translation: Strategic Goals of the SFR]
(SBB 2009d)
[Translation: The SFR Has More And More Dissatisfied Passengers]

(SBB 2009e)
SBB (2009e): Aus Ihrer Sicht: der Kundenbeirat, Retrieved in November 2009:
Link:
[Translation: From Their Perspective: The Customer Advisory Board]

(SBB 2009f)
http://sbb-gb2008.mxm.ch/?lang=1
[Translation: 2008 Business Report]

(SBB 2009g)
SBB (2009g): Wachstum im Personenverkehr und Fortschritte bei SBB Cargo prägen das Halbjahresresultat der SBB, Retrieved in December 2009. Link:
[Translation: Growth in Passenger Traffic and Progress for SFR Cargo Characterise SFR Mid-Year Results]

(SBB 2008)
SBB (2008): Kundenzufriedenheitsumfrage der SBB 2008; quarterly survey from the SBB to measure the customer satisfaction index.
[Translation: SFR 2008 Customer Satisfaction Survey]
(SBB 2007)


[Translation: Bern-Fribourg Route Disruption Continues]

(SBB 2007a)

SBB (2007a): Der tägliche Kampf und das Bessere ist die Basis für unseren Erfolg, Retrieved in July 2009. Link:
http://mct.sbb.ch/mct/referate_070404_bilanz_meyer.pdf

[Translation: The Daily Struggle To Do Better Is The Basis For Our Success]

(SBB 2005)

http://mct.sbb.ch/mct/konzern_dienstleistungen/konzern_medien/konzern_medienmitteilungen.htm?cmd=63B9C5B3A651F4D3A5FC753E5CA3B671&book=&page=

[Translation: SFR Electrical Failure on 25th June 2005]

(SBB 2005a)

http://mct.sbb.ch/mct/medien.htm?cmd=CF4CEF190CC0DA7ED1ED1FCC3D2DC03C

[Translation: Obstruction in Central Switzerland]
(SBB 2005b)
Link:
http://mct.sbb.ch/mct/print/konzern_dienstleistungen/konzern_medien/konzern_medienmitteilungen.htm?cmd=CF4CEF190CC0DA7E6E7E8A190904DF8F&book=3&page=38

[Translation: Record Performance and Setback]

(Schweizweit 2009)
Link:
http://schweizweit.net/2008/08/19/sbb-verscharft-klassendisziplin/

[Translation: SFR Tightens Class Discipline]

(Solothurner Tagblatt 2009)

[Translation: 200,000 Commuters Forced To Stand In Heat]

(Solothurner Tagblatt 2010)

[Translation: Thorny Discussion Over Bonus For SFR Boss]

(Stern 2007)

[Translation: Transport Chaos After Cyril]
(Swissinfo 2008)
http://www.swissinfo.ch/ger/news_digest/Schweiz_nimmt_Cisalpino_in_die_Pflicht.html?siteSect=104&sid=10270298&cKey=1233486666000&ty=nd
[Translation: Switzerland Holds Cisalpino To Account]

(Tagesanzeiger 2010)
[Translation: Small Counter Leads To Major Delays]

(Tagesanzeiger 2008)
[Translation: The Least They Could Do!]

(Tagesanzeiger 2008a)
http://sc.tagesanzeiger.ch/dyn/news/wirtschaft/854228.html
[Translation: Strike in Tessin Threatens to Escalate]

(UVEK 2009)
[Translation: Strategic Goals for the SFR]

[Translation: Siemens – What Will Become of the Mobile Industry?]
6.3 Confidential SFR Publications

(SBBi 2011)
SBBi (2011): Domäne Anlagenmanagement. Source: SBB Project Request,
[Translation: Domain Asset Management]

(SBBi 2011a)
SBBi (2011a): IPhone-Application Download. Link retrieved in January 2011:
http://mct.sbb.ch/mct/en/reisezeit/mobiletools.htm?

(SBBi 2011b)
SBBi (2011b): Rollenbeschreibungen im Intranet. Source: SBB Intranet,
[Translation: Role Descriptions in the SFR Intranet]

(SBBi 2010)
in December 2010: http://mct.sbb.ch/mct/infra-dienstleistungen/infra-netze.htm
[Translation: Three nets – one product]

(SBBi 2010a)
SBBi (2010a): SBB Infrastructure. Source: Division Infrastructure, Power Point
Presentation.

(SBBi 2010b)
Intranet. Link retrieved in December 2010:
http://mct.sbb.ch/mct/personenverkehr_operating/operating_instandhaltung/oper
ating_instandhaltung_rollmaterialmanagement.htm

(SBBi 2009)
SBBi (2009): Die SBB in Zahlen. Standardpräsentation über die SBB. Source:
SBB Intranet.
[Translation: The SFR in Figures. Standard presentation about the SFR]
(SBBi 2009a)
[Translation: Customer Satisfaction 2009]

(SBBi 2008)
[Translation: Customer Information. CUS 4.0]

(SBBi 2008a)
[Translation: More trains, more seats, more information!]

(SBBi 2008b)
SBBi (2008b): Mobiles Informationstool für Kundenkontakte, Source: Department of Passenger Transportation.
[Translation: Mobile Information tool for Customer Contacts]

(SBBi 2008c)
SBBi (2008c): ZPG II, Source: Department of Passenger Transportation.

(SBBi 2007)
SBBi (2007): Strategie Kundeninformation der SBB. Source: Department of Customer Information Division Infrastructure, Power Point Presentation.
[Translation: Customer Information Strategy of the SFR]

(SBBi 2007a)
SBBi (2007a): Ereignismanagement im Bereich der Kundeninformation. Source: Department of Customer Information, Division Infrastructure, Power Point Presentation.
[Translation: Incident Management for the Area of Customer Information]

(SBBi 2007b)
SBBi (2007b): DERI (Dérangements à l’Infrastructure). Source: Department of Customer Information, Division Infrastructure, Concept.

[Translation: Incidents in the Infrastructure]

(SBBi 2006)

[Translation: Project Request CUS 3.0 - Customer Information during Incidents]

(SBBi 2006a)

[Translation: Customer Information during Incidents – Concept CUS 3.0]

(SBBi 2006b)
SBBi (2006b): Ansageregelment SBB. Source: Department of Customer Information Division Infrastructure.

[Translation: Regulation of Announcement SFR]

(SFR Marketing 2009)
SFR-Marketing (2009): Statistical Data from the SFR Marketing Department.
Appendix
A. Appendix: Quantitative Survey – Questionnaire

**Q00100 (QT1):**
Concerning rail travel with the SFR:
Approximately how often do you travel on SFR trains, whether for commuting, leisure or business purposes? Is it:

(INT) READ OUT ANSWER OPTIONS!

<table>
<thead>
<tr>
<th>Approximation</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Several times per week</td>
<td>124</td>
</tr>
<tr>
<td>At least once per week</td>
<td>2</td>
</tr>
<tr>
<td>At least once per month</td>
<td>3</td>
</tr>
<tr>
<td>3 to 11 times per year</td>
<td>4</td>
</tr>
<tr>
<td>1 to 2 times per year</td>
<td>5</td>
</tr>
<tr>
<td>Less often</td>
<td>6</td>
</tr>
<tr>
<td>Never</td>
<td>7</td>
</tr>
<tr>
<td>Don’t know / no response</td>
<td>9</td>
</tr>
</tbody>
</table>

FILTER: If travel at least 3-11 x/year on SFR trains (Q00100)

**Q00200 (QT2):**
How often in the last two months have you used, or planned to use a delayed train, regardless of whether it was delayed during the journey or arrived late at the station before your journey?

(INT) READ OUT ANSWER OPTIONS!

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
</tr>
<tr>
<td>1-2 times</td>
</tr>
<tr>
<td>3-5 times</td>
</tr>
<tr>
<td>6-10 times</td>
</tr>
<tr>
<td>More than 10 times</td>
</tr>
<tr>
<td>Don’t know / No response</td>
</tr>
</tbody>
</table>

FILTER: If delays experienced at least 1x in last 2 months (Q00200)

EDP – WORK VARIABLE FOR INSERTION Q00250:

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
</tr>
<tr>
<td>1-2 times</td>
</tr>
<tr>
<td>3-5 times</td>
</tr>
<tr>
<td>6-10 times</td>
</tr>
<tr>
<td>More than 10 times</td>
</tr>
<tr>
<td>Don’t know / No response</td>
</tr>
</tbody>
</table>

**Q00250 (QT3):**
And how often have you felt these delays during the last two months to be unpleasant?

(INT) READ OUT ANSWER OPTIONS!

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
</tr>
<tr>
<td>1-2 times</td>
</tr>
<tr>
<td>3-5 times</td>
</tr>
<tr>
<td>6-10 times</td>
</tr>
<tr>
<td>More than 10 times</td>
</tr>
<tr>
<td>Don’t know / No response</td>
</tr>
</tbody>
</table>

FILTER: If delays felt to be unpleasant at least 1x (Q00250)

**Q00300 (QT4):**
Now thinking only about the last time a delay was unpleasant for you: What type of train was it that was delayed? Was it a...

(INT) READ OUT ANSWER OPTIONS!

<table>
<thead>
<tr>
<th>Train Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional train, city train</td>
<td>128</td>
</tr>
<tr>
<td>Express train, Intercity, ICH</td>
<td>2</td>
</tr>
<tr>
<td>Don’t know / No response</td>
<td>9</td>
</tr>
</tbody>
</table>
Q00400 (QT5):
Were you already waiting at the station, were you already sitting in the train, or did you hear of the delay elsewhere?

[INT] DO NOT READ OUT ANSWER OPTIONS!
At the station................................................................. 129 1
On the train................................................................. 2
At another location..................................................... 3
Don’t know / No response.......................................... 9

Q00500 (QT6):
By how many minutes was this train delayed?

MORE THAN 97 MINUTES = 98
DON’T KNOW / NO RESPONSE = 99

Q00600 (QT7):
Were you informed quickly enough about this delay? Please answer...

[INT] READ OUT ANSWER OPTIONS!
Yes, I was informed quickly........................................ 131 1
No, I was informed late.............................................. 2
No, I was not informed at all........................................ 3
Don’t know / No response.......................................... 9
FILTER: If information provided about delays (Q00600)

Q00700 (QT8):
How many minutes did it take until you were first informed of this delay?

MORE THAN 97 MINUTES = 98
DON’T KNOW / NO RESPONSE = 99

Q00800 (QT9):
Was the information sufficient, i.e. did you then know personally what to do next?

[INT] DO NOT READ OUT ANSWER OPTIONS!
Yes, information was sufficient.................................. 133 1
No, information was insufficient............................... 2
Don’t know / No response.......................................... 9
END FILTER: If information provided about delays (Q00800)

Q00900 (QT10):
Did you feel well supported by the SFR during the actual delay? Please answer...

[INT] READ OUT ANSWER OPTIONS!
Yes, very well............................................................ 134 1
Yes, quite well.......................................................... 2
No, quite poorly....................................................... 3
No, very poorly........................................................ 4
Don’t know / No response.......................................... 9
Q00910 (QT11):
How could the SFR have helped you further during your specific delay other than with information?

Nothing................................................................. 135 1,
Other (NOTE)............................................................. 96,
Don't know / No response........................................... 99,
END FILTER: If at least 1 delay felt to be unpleasant (Q00250)
END FILTER: If at least 1 delay experienced in last 2 months (Q00200)
END FILTER: If travel on SFR trains at least 3-11 x/year (Q00100)
FILTER: If reply to travelling on SFR trains not NEVER or DN/NR (Q00100)

Q1400 (QT12):
How satisfied are you in general with the SFR on a scale of 1 to 10?  
1 means that you are "not at all satisfied" with the SFR's services, 10 means that you are "very satisfied" with the SFR's services. You can graduate your verdict with the scores in between:
1 not at all satisfied......................................................... 136 1
2................................................................................... 2
3................................................................................... 3
4................................................................................... 4
5................................................................................... 5
6................................................................................... 6
7................................................................................... 7
8................................................................................... 8
9................................................................................... 9
10 very satisfied............................................................ 10
Don't know / No response............................................. 99

Q1600 (QT13):
Which of the following railcards do you own?
(int) READ OUT ANSWER OPTIONS!
Half-fare card............................................................... 137 1,
GA.................................................................................. 2,
Route or network card................................................... 4,
Other card......................................................................... 4,
Do not have a card.......................................................... 5,
Don't know / No response................................................. 9,
END FILTER: If reply to travelling on SFR trains not NEVER or DN/NR (Q00100)
B. Appendix: Short Interview Guide

<table>
<thead>
<tr>
<th>Personal Data (Name, First Name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How long have you worked for rail companies?</td>
</tr>
<tr>
<td>How long have you worked for the SFR?</td>
</tr>
<tr>
<td>What is your education?</td>
</tr>
<tr>
<td>How long have you worked in the area of customer information?</td>
</tr>
<tr>
<td>Do you have specialised knowledge?</td>
</tr>
<tr>
<td>What is your role?</td>
</tr>
<tr>
<td>In what organisation unit are you located?</td>
</tr>
</tbody>
</table>
C. Appendix: Interview Guide

I. Questions concerning the strategy and business architecture

Q1: Do you have guidelines from the group for customer information?
Q2: If yes what do they look like?
Q3: If no, how do you decide what you do?
Q4: Who are your stakeholders?
Q5: Do concepts for the customer information exist? Is there a conceptual basis?
Q6: What is the strategy in the area of customer information?
Q7: Do you know the business architecture of your area?
Q8: Does information architecture exist in your area?
Q9: What happens when a stakeholder has new requirements?
Q10: How are new technologies and systems integrated in the company?

II. Questions concerning the organisation of customer information

Q11: Which organisation units are responsible for the area of customer information?
Q12: What is the role of your organisation unit in the area of customer information?
Q13: What are the competences your organisation has?
Q14: If there are intersections of competences what do you do?

III. Questions concerning the customer and the customer need

Q15: How are the customer's needs detected?
Q16: How do these results influence the strategy of customer information?
Q17: Are there measures, decisions, adoptions or anything else, which influence the area of customer information?
Q18: In what way are the customer needs transcribed into customer information?
Q19: Which groups of customers are identified?
Q20: Do surveys exist which match customer needs to customer groups?
Q21: Does the SBB know which customer groups prefer special media channels?
IV. Questions concerning the customer involvement

Q22: Have you direct contact to the customers (excluding contact in your free time)?
Q23: Do you know people/organisation units with direct customer contact who give information to you/your organisation unit?
Q24: Was anything new developed caused by direct customer feedback?
Q25: Why do you have/have no direct customer contact?
Q26: How do you find your “customers’”?

V. Questions concerning information, media channels and customers

Q27: Do you have a media concept?
Q28: Which mediums are provided?
Q29: Do you have surveys which show the matching between customers, situations and media channels?
Q30 Do you know if customers understand the provided information?

VI. Open Category

Q31: Do you have ideas, questions or any other kind of input?
Q32: Do you think there are any questions missing?
D. Appendix: Consent Form

Consent Form

Name of Research Project:

Name, Address and Phone of Investigator:
Frank Liebermann, Mühledorfstrasse 11, CH-3018 Bern

I understand that I am free to withdraw my participation in the research at any time and that if I do I will not be subjected to any penalty or discriminatory treatment.

The purpose of the research has been explained to me. I have been given the opportunity to ask questions about the research and received satisfactory answers.

I understand that any information or personal details gathered in the course of this research about me are confidential and that neither my name nor any other identifying information will be used or published without my written permission.

NOTE: Charles Sturt University* has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Head of this research project:

Charles Sturt University
Professor Dr. Denise Jarratt
Sub Dean Research and Sub Dean Graduate Studies
Faculty of Commerce
Wagga Wagga

Ph: #61 2 63 384 293
Fax:#61 2 63 384 769
email: djarratt@csu.edu.au

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.

Research Participant

Signed by: ______________________________________________________________

Date:  ______________________________________________________________
E. Appendix: Interview Transcript

<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the strategy and business architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 1:</td>
<td>Do you have guidelines from the group for customer information?</td>
</tr>
</tbody>
</table>

Findings:

A lot of documents were identified. The guidelines were related to the following topics:

- Strategy
- Processes
- Technologies
- Documents concerning projects and isolated media channels
- IT documentations
- Regulations

The relevant documents are listed in section 6.3

Finding: most interviewed people knew only documents from their specific area. Comprehensive documents like strategy papers were only known by a few people.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the strategy and business architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 2:</td>
<td>[Do you have guidelines from the group for customer information?] If yes what do they look like?</td>
</tr>
</tbody>
</table>

**Findings:**

**Vision:**
- Audio information in the station
- Visual information in the station
- Event information in the station
- Audio information on the train
- Visual information on the train
- Event information on the train
- Customer information via the Internet
- Customer information via mobile devices
- Event information external to the railway

**Strategy:**
- Precise customer information is a strategic goal with which customer satisfaction can be increased
- The customer is always thoroughly informed at the earliest possible time and in every location
- Possible strategy: customer information can also be used for marketing strategy, but is still controversial in Switzerland
- Incidents should occur as rarely as possible, as even small incidents can have consequential effects on the whole network
- Customer information should be automated as manual input leads to overload
- The aim is to centralise information. Customer information should no longer be provided separately and manually in every station, but come from a central location
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the strategy and business architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 3:</td>
<td>[Do you have guidelines from the group for customer information?] If no, how do you decide what you do?</td>
</tr>
</tbody>
</table>

**Findings:**

- Business unit starts projects, these must be carried out. As these also own the budget, this is the standard procedure.
- Assignments are delegated to employees by management.
- Resource allocation: first come, first served.
- We have roadmaps and a project portfolio. We work off these projects.
- Budgets are available for the department. If there are no decisions or guidelines, we improve existing systems with new functionalities or we write concepts for future developments.
Assessment Area: Questions concerning the strategy and business architecture

Questions 4: Who are your stakeholders?

Findings:

- Top management
- Business representatives
- Project managers
- Passengers
- All employees were able to identify specific stakeholders

Finding: Passengers were normally not called. When the interviewees were asked for them, the reaction was mostly “yes, obviously”.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the strategy and business architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 5:</td>
<td>Do concepts for the customer information exist? Is there a conceptual basis?</td>
</tr>
<tr>
<td>Findings:</td>
<td></td>
</tr>
</tbody>
</table>

The relevant documents are listed in section 6.3

- A conceptual basis exists
- The concepts are department-specific
- Overall concepts exist, but they are not known by all interviewees
- Overall concepts were only known by 2 interviewees

General finding: Each department has a very clear strategy and knows what to do. However, the overall-view is missing.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the strategy and business architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 6:</td>
<td>What is the strategy in the area of customer information?</td>
</tr>
<tr>
<td>Findings:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>– Strategy document is listed in section 6.3</td>
</tr>
<tr>
<td></td>
<td>– There is no specific strategy for customer information</td>
</tr>
<tr>
<td></td>
<td>– The customer should be updated at all times on the journey, during the journey and at the destination.</td>
</tr>
<tr>
<td></td>
<td>– There should be as much customer information as possible distributed however only information which is really necessary.</td>
</tr>
<tr>
<td></td>
<td>– The train station is responsible for fundamental information and on the train for passenger information. The area of mobile information is not yet up and running anywhere.</td>
</tr>
<tr>
<td>Assessment Area:</td>
<td>Questions concerning the strategy and business architecture</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Questions 7:</strong></td>
<td>Do you know the business architecture of your area?</td>
</tr>
<tr>
<td><strong>Findings:</strong></td>
<td></td>
</tr>
</tbody>
</table>

- Yes, it is known (5 people)
- No (2 people)
- Partially known (14 people)

(Most employees knew the business architecture for their own organisational unit, but only partially knew that of others)

General finding: Most of the employees described how the procedure of information processing and forwarding worked. In the majority of cases, they only had detailed knowledge of the procedures in which they were directly involved. A complete overview was in most cases not the norm.
Assessment Area: Questions concerning the strategy and business architecture

Questions 8: Does information architecture exist in your area?

Findings:

- Yes, it is known (4 people)
- No (11 people)
- Partially known (6 people)

(The information architecture was only known within IT and by some managers)

General finding: the situation here was also similar to that in question 7. Most of the employees described the information architecture in their own areas and overall knowledge was only present in a very basic way. A complete overview was in most cases not the norm.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the strategy and business architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 9:</td>
<td>What happens when a stakeholder has new requirements?</td>
</tr>
<tr>
<td>Findings:</td>
<td></td>
</tr>
<tr>
<td>- Business unit gathers the requirements</td>
<td></td>
</tr>
<tr>
<td>- A change control board plans these requirements</td>
<td></td>
</tr>
<tr>
<td>- Customers are informed that the changes will be implemented</td>
<td></td>
</tr>
<tr>
<td>- Customer needs come via feedback from employees in the field and customer surveys -&gt; with the exception of four people, passengers’ customer needs were only mentioned upon further inquiry</td>
<td></td>
</tr>
<tr>
<td>- Project suggestions are given to business units from the top down. Managers initiate projects</td>
<td></td>
</tr>
<tr>
<td>- Roadmaps and Portfolios for the business units are implemented. When changes appear, they must be adopted</td>
<td></td>
</tr>
</tbody>
</table>

General finding: new requirements are impacted by roadmaps, portfolios or a structured change process in the various areas.
### Assessment Area:

**Questions concerning the strategy and business architecture**

### Questions 10:

**How are new technologies and systems integrated in the company?**

### Findings:

- Business unit gathers the requirements
- A change control board plans these requirements
- Customers are informed that the changes will be implemented
- Customer needs come via feedback from employees in the field and customer surveys. With the exception of four people, passengers’ customer needs were only mentioned upon further inquiry.
- Project suggestions are given to business units from the top down. Managers initiate projects.

General finding: New technologies come into operation only very slowly. A strategy of “Late Movers” or “Followers” is adopted. The reason for this is that the investment requirements are generally very high and therefore there is often an unwillingness to invest in as yet untested technologies.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the organisation of customer information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 11:</td>
<td>Which organisation units are responsible for the area of customer information?</td>
</tr>
</tbody>
</table>

**Findings:**

**Passenger Transportation:**
- customer information in trains
- customer information at point of sales for employees
- internet services and mobile services for passengers

**Infrastructure:**
- customer information in stations
- mobile services for employees in the stations

**IT:**
- development of IT systems

Mobile information is not clearly located. Responsibility depends on the channels used, the organisation units and management decisions.
## Assessment Area: Questions concerning the organisation of customer information

### Questions 12:

What is the role of your organisation unit in the area of customer information?

### Findings:

- Requirement Analysis (IT)
- Definition of the IT architecture (IT)
- Development of IT systems (IT)
- CI for passengers in trains (Passenger Transportation)
- CI for employees in trains (Passenger Transportation)
- CI for passenger in stations (Infrastructure)
- CI for employees in stations (Infrastructure)
- CI for mobile devices (Infrastructure, Passenger Transportation, IT)
- CI for other railways (Infrastructure)

General Findings: the responsibilities for the departments are located very clearly. Every departments knows exactly their responsibilities. On the other hand the problems appear, that areas which offer good opportunities for reputation (like mobile technologies) are disputed. A lot of uncoordinated projects are started in this area, redundancies and disputes appear.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the organisation of customer information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 13:</td>
<td>What are the competences your organisation has?</td>
</tr>
</tbody>
</table>

**Findings:**

**Infrastructure:**
- creates all timetable information, this is updated several times per day
- additional information can be communicated
- all information in the station
- information during incidents
- additional information such as connection options, connecting trains
- provides information to station staff who pass it directly on to customers

**Passenger Transportation:**
- communicates all information that is relevant onboard the train
- determines train occupancy
- information from employees on the train

**IT:**
- carries out all business unit requirements
- develops solution approaches and concepts
- develops ideas for new solutions
- carries out assignments for business units

**General Findings:** it is the same finding as in question 12. The competences for the departments are very clear. Every department knows exactly their competences. On the other hand the problems appear, when something is not regulated.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the organisation of customer information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 14:</td>
<td>If there are intersections of competences what do you do?</td>
</tr>
</tbody>
</table>

**Findings:**

- Own superior decides
- With resource bottlenecks: “First come – first served”
- The strongest wins
- There are no intersections of competences
- Committees discuss until a solution is found

General finding: the competences are clearly regulated. Should problems occur, they are either very quickly solved or they remain dormant. This mostly leads to redundant activities which in turn result in a waste of resources.
### Assessment Area:

**Questions concerning the customer and the customer need**

### Questions 15:

**How are the customer's needs detected?**

### Findings:

- Through opinion surveys
- By employees with direct customer contact
- Through observation of other companies
- Market research
- Management wishes
- Personal experience

General finding: the majority of employees have no direct contact with customers and generally identify their requirements indirectly via the management or other senior level positions. Despite that, almost all employees claimed that their own personal experiences and feedback in this area impact their work.
<table>
<thead>
<tr>
<th>Assessment Area: Questions concerning the customer and the customer need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 16: How do these results influence the strategy of customer information?</td>
</tr>
</tbody>
</table>

**Findings:**

- The strategy is derived from customer needs; customer needs are gathered, then clustered and if a pattern emerges, this is incorporated into the strategy.

General finding: there is no direct feedback between the employees and the strategy areas. As the strategy is generally not known, it only reaches the employees indirectly via assignments or new projects.
### Assessment Area:
Questions concerning the customer and the customer need

### Questions 17:
Are there measures, decisions, adoptions or anything else, which influence the area of customer information?

### Findings:
- Compulsory standards by the federal transport agency (BAV) must be met
- Every year there are changes during the major timetable alteration
- Results of regular customer surveys are incorporated
- Expansions to the network, reductions/increases in frequency lead to new requirements and changes
- Management decisions lead to new requirements
- Incidents and problems on the network lead to new requirements
### Assessment Area: Questions concerning the customer and the customer need

**Questions 18:** In what way are the customer needs transcribed into customer information?

<table>
<thead>
<tr>
<th>Findings:</th>
</tr>
</thead>
</table>
| - Business analyses verbally describe customers’ needs  
- These are then translated into technical and systemic requirements  
- Employees develop ideas, report these to their superiors, superiors then initiate projects  
- Managers pass on ideas for development  
- Customer needs are compiled from surveys and translated into projects |

General finding: here the lack of contact to the end user can be seen again. Standard procedures from the discipline requirement management were described which had a strong focus on the service delivery within the SFR. How the customer indicated his requirements was of lesser importance and was dealt with indirectly.
### Assessment Area:

**Questions concerning the customer and the customer need**

### Questions 19:

**Which groups of customers are identified?**

#### Findings:

- Commuters
- Travellers
- Heavy user, normal user, sporadic user
- Various age groups
- Casual travellers
- Business Unit Leaders
- Departments
- Employees of the SFR

General finding: here, as in question 18, the lack of contact to the end customer can be seen. The business areas or departments were mostly named as customers. The end customer generally only came into mind when a specific situation occurred.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the customer and the customer need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 20:</td>
<td>Do surveys exist which match customer needs to customer groups?</td>
</tr>
<tr>
<td>Findings:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The customer satisfaction survey checks whether the measures taken have an effect on travellers</td>
</tr>
<tr>
<td></td>
<td>- Feedback from the personal environment</td>
</tr>
</tbody>
</table>

General finding: most of the employees are not informed about problems or success stories in the area of customer information. They get their feedback from their personal environment. A structured dialog between management and employees is not implemented.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the customer and the customer need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 21:</td>
<td>Does the SBB know which customer groups prefer special media channels?</td>
</tr>
</tbody>
</table>

**Findings:**

- Sources are customer surveys
- The older the customer, the less they use mobile media
- Mobile media are very widespread among young customers and their use is increasing

General finding: here, the situation is the same as in question 21. There is information available however it is only very occasionally forwarded and shared.
### Assessment Area: Questions concerning the customer involvement

#### Questions 22:

<table>
<thead>
<tr>
<th>Have you direct contact to the customers (excluding contact in your free time)?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Findings:</strong></td>
</tr>
<tr>
<td>- No, with the exception of train journeys and in free time</td>
</tr>
<tr>
<td>- Yes (only two responses)</td>
</tr>
</tbody>
</table>

General finding: The employees regard the internal organisation unit as their customer.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the customer involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 23:</td>
<td>Do you know people/organisation units with direct customer contact who give information to you/your organisation unit?</td>
</tr>
</tbody>
</table>

**Findings:**

- Customer guides (customer guides are employees from all departments who voluntarily assist at the station during major events)
- Assistants at sales counters
- Onboard train staff

General finding: direct contact only occurs here very occasionally and only on a personal / private level.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the customer involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 24:</td>
<td>Was anything new developed caused by direct customer feedback?</td>
</tr>
</tbody>
</table>

**Findings:**

- Navigo: the first online timetable for mobile telephones
- Timetable information via SMS
- iPhone and Android apps for mobile telephones
- Incident monitors: were developed due to criticism of poor information during incidents

General finding: despite the fact that the majority of employees have no direct contact to customers, a mass of new systems and changes are still initiated.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning the customer involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 25:</td>
<td>Why do you have/have no direct customer contact?</td>
</tr>
</tbody>
</table>

**Findings:**

- Job description does not require it (19 respondents), for the others this was required (2 respondents)
- Out of those interviewed, only 2 employees had direct customer contact

General finding: the employees working in customer information generally have no direct contact. They obtain their information mostly indirectly via senior level positions, documents, instructions or assignments.
### Assessment Area: Questions concerning the customer involvement

<table>
<thead>
<tr>
<th>Questions 26:</th>
<th>How do you find your “customers”?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Findings:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Assignments from management</td>
</tr>
<tr>
<td></td>
<td>- Job profile</td>
</tr>
<tr>
<td></td>
<td>- Experiences of other employees</td>
</tr>
</tbody>
</table>

General finding: the customers are nearly always internal positions, therefore the information reaches the employees by way of job description, assignments and senior level positions.
### Assessment Area:
Questions concerning information, media channels and customers

<table>
<thead>
<tr>
<th>Questions 27: Do you have a media concept?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Findings:</strong></td>
</tr>
<tr>
<td>- No, we don’t have a media concept</td>
</tr>
<tr>
<td>- Yes it is cited in section 6.23</td>
</tr>
<tr>
<td>- It contains a description of the provided channels</td>
</tr>
<tr>
<td>- Aim is coordination between the different projects in the company</td>
</tr>
<tr>
<td>- People shall be supported in every travel situation</td>
</tr>
<tr>
<td>- Different media channels are used to reach all relevant people</td>
</tr>
</tbody>
</table>

General finding: there are various media concepts available that are area specific. An overall concept also exists which has a strong focus on IT and is mainly geared towards IT strategy. This does not necessarily result in a disadvantage, as IT within the framework of a matrix organisation is the service provider for all departments. Consequently, it knows exactly which projects are in progress in which business areas.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Questions concerning information, media channels and customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 28:</td>
<td>Which mediums are provided?</td>
</tr>
<tr>
<td>Findings:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Displays</td>
</tr>
<tr>
<td></td>
<td>- Loudspeaker</td>
</tr>
<tr>
<td></td>
<td>- Posters</td>
</tr>
<tr>
<td></td>
<td>- Internet</td>
</tr>
<tr>
<td></td>
<td>- Mobile phones</td>
</tr>
<tr>
<td></td>
<td>- Mobile Applications for Android, Apple and Microsoft</td>
</tr>
<tr>
<td></td>
<td>- SMS</td>
</tr>
<tr>
<td></td>
<td>- Books</td>
</tr>
<tr>
<td></td>
<td>- Flyer</td>
</tr>
<tr>
<td>Assessment Area:</td>
<td>Questions concerning information, media channels and customers</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Questions 29:</td>
<td>Do you have surveys which show the matching between customers, situations and media channels?</td>
</tr>
<tr>
<td>Findings:</td>
<td>- I don’t know of any surveys</td>
</tr>
<tr>
<td></td>
<td>- Surveys exist, but they do not discuss the matching between media channels</td>
</tr>
<tr>
<td></td>
<td>- Customer satisfaction survey from Marketing Department</td>
</tr>
</tbody>
</table>
Assessment Area: Questions concerning information, media channels and customers

Questions 30: Do you know if customers understand the provided information?

Findings:

- It is analysed in the customer satisfaction survey
- Customers understand the information because it is tested with focus groups
- The information is tested within focus groups regards its comprehensibility. As a result of this, the intelligibility of the information is very good. The only things which are not always self-explanatory are expressions, for example “signal box disruption”, because not everyone knows what a signal box is and what relevance it has. However, as the information is always connected to a context of “delay” or “train cancellation”, and the consequences of these situations are clear, it does not prevent the message from being understood.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Open Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 31:</td>
<td>Do you have ideas, questions or any other kind of input?</td>
</tr>
</tbody>
</table>

**Findings:**

- Delays with broken connections should be automatically communicated via mobile media
- In addition, information should be provided on what facilities are available on trains for bicycles, the disabled, luggage etc.
<table>
<thead>
<tr>
<th>Assessment Area:</th>
<th>Open Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions 32:</td>
<td>Are there any questions missing?</td>
</tr>
<tr>
<td>Findings:</td>
<td>- No</td>
</tr>
</tbody>
</table>
### F. Analysis of Proposition

<table>
<thead>
<tr>
<th></th>
<th>I01</th>
<th>I02</th>
<th>I03</th>
<th>I04</th>
<th>I05</th>
<th>I06</th>
<th>I07</th>
<th>I08</th>
<th>I09</th>
<th>I10</th>
<th>I11</th>
<th>I12</th>
<th>I13</th>
<th>I14</th>
<th>I15</th>
<th>I16</th>
<th>I17</th>
<th>I18</th>
<th>I19</th>
<th>I20</th>
<th>I21</th>
<th>Y</th>
<th>N</th>
<th>0</th>
<th>Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>I confirm with this proposition</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y 21</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Statements</td>
<td>Manually inputs causes problems</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Priority is resolving incidents, not feeding IT systems for customer information</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Customer should be able to continue his journey</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>a small incident can affect the timetables of the whole SFR network</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>I agree, but most incidents are not recognised by the customers</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incidents are not analysed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Speed is essential</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Speed and quality is essential</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Direct contact to customer is important</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>12</td>
</tr>
<tr>
<td>P2</td>
<td>I confirm with this proposition</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y 21</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Statements</td>
<td>discomfort caused by the incident would not allow any excitement</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>information that has been provided cannot be taken back</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>If wrong or delayed information is provided, the positive intention turns into negative perception</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>When information comes, people know that the SFR is working on the problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>false or misinformation have a particularly serious effect</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>a positive effect cannot be identified, although a negative effect is possible</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

282
<table>
<thead>
<tr>
<th></th>
<th>I01</th>
<th>I02</th>
<th>I03</th>
<th>I04</th>
<th>I05</th>
<th>I06</th>
<th>I07</th>
<th>I08</th>
<th>I09</th>
<th>I10</th>
<th>I11</th>
<th>I12</th>
<th>I13</th>
<th>I14</th>
<th>I15</th>
<th>I16</th>
<th>I17</th>
<th>I18</th>
<th>I19</th>
<th>I20</th>
<th>I21</th>
<th>Y</th>
<th>N</th>
<th>0</th>
<th>Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Statements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>When information comes, people know that the SFR is working on the problem</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>false or misinformation have a particularly serious effect</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>a positive effect cannot be identified, although a negative effect is possible</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>P4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Statements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>When the number of incidents is too large, the origin is not of interest</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>
## G. Appendix: Interview Participants

<table>
<thead>
<tr>
<th>Role</th>
<th>Department</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Researcher</td>
<td>PT</td>
<td>Abels, Dirk</td>
</tr>
<tr>
<td>Engagement Manager</td>
<td>I</td>
<td>Barner, Roman</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>PT</td>
<td>Bauer, Katrin</td>
</tr>
<tr>
<td>Engagement Manager</td>
<td>P</td>
<td>Buckmann, Stefan</td>
</tr>
<tr>
<td>IT Architect</td>
<td>IT</td>
<td>Bonkowski, Johannes</td>
</tr>
<tr>
<td>Business Unit Manager (Leader Department</td>
<td>IT</td>
<td>Cortesi, Aurelio</td>
</tr>
<tr>
<td>Software Development)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chief Information Officer (IT)</td>
<td>IT</td>
<td>Dietrich, Andreas</td>
</tr>
<tr>
<td>Product Manager</td>
<td>I</td>
<td>Fraefel, René</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>I</td>
<td>Graf, Pascal</td>
</tr>
<tr>
<td>Product Manager</td>
<td>I</td>
<td>Hofer, Andreas</td>
</tr>
<tr>
<td>Market Researcher</td>
<td>P</td>
<td>Kerschbaumer, Franz</td>
</tr>
<tr>
<td>Program Manager</td>
<td>IT</td>
<td>Körsgen, Michael</td>
</tr>
<tr>
<td>Business Unit Manager (Leader Customer</td>
<td>P</td>
<td>Lehmann, Peter</td>
</tr>
<tr>
<td>Information (Passenger Transportation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Architect</td>
<td>IT</td>
<td>Linder, Urs</td>
</tr>
<tr>
<td>IT-Architect</td>
<td>IT</td>
<td>Liviero, Roberto</td>
</tr>
<tr>
<td>Product Manager</td>
<td>P</td>
<td>Mohr, Tilo</td>
</tr>
<tr>
<td>Product Manager</td>
<td>P</td>
<td>Nägeli, Thomas</td>
</tr>
<tr>
<td>Program Manager</td>
<td>PT</td>
<td>Schmid, Christoph</td>
</tr>
<tr>
<td>IT Architect</td>
<td>IT</td>
<td>Schilling, Holger</td>
</tr>
<tr>
<td>Business Analyst / Project Manager</td>
<td>I</td>
<td>Steiner, Jürg</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>PT</td>
<td>Pfandt, Gabriele</td>
</tr>
</tbody>
</table>

PT = Passenger Transportation, I = Infrastructure, IT = Information Technology, MD = Marketing Department

---

22 The role description is in Appendix H
### H. Appendix: Role Descriptions

<table>
<thead>
<tr>
<th>Role</th>
<th>Role Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Researcher</td>
<td>The market researchers' main task consists of collating empirical data by carrying out and analysing customer surveys. The objective is to identify trends at an early stage and relay them to the business units. For the customer information area, market researchers carry out a quantitative analysis of customer satisfaction on a quarterly basis, and present the results to the SFR top management and the relevant business units.</td>
</tr>
<tr>
<td>Engagement Manager</td>
<td>The engagement manager is the equivalent of an account manager in other companies. They are responsible for the internal initiation of business projects and ensure financing and staffing. In the customer information area, the engagement manager monitors new trends and how projects could be developed from them with the goal of improving customer information.</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>The key task of business analysts is the documentation and definition of company business processes. These are to be handled in such a way that they can be optimised or realised as IT solutions. In the area of customer information, business analysts define operating procedures and define communication concepts which are in turn presented to the customer as IT solutions.</td>
</tr>
<tr>
<td>IT Architect</td>
<td>The IT architect is knowledgeable of the business processes and IT environment. He/she knows the interfaces between the business processes and analyses how they can be supported with IT solutions. The IT architect develops roadmaps with medium to long-term scenarios. In the area of customer information, the role of the IT architects is primarily to analyse the interfaces between the many systems (timetable, forecast, customer information, language database, fault database), and to illustrate the synergies during the implementation of new systems. Long-term scenarios are developed by means of roadmaps.</td>
</tr>
<tr>
<td>Business Unit Manager</td>
<td>The business unit manager is responsible for an entire business unit and manages the unit autonomously. In the customer information area there are divisions for passenger services and infrastructure. Each has their own head of division. The heads are responsible for the entire execution of all the tasks in their division. The BU manager PT is responsible for the customer information in the trains, the BU manager for infrastructure for the customer information at the stations. Additionally, there is a BU manager for customer information in IT, who provides services to the others and is responsible for the IT technical implementation.</td>
</tr>
<tr>
<td>Role</td>
<td>Role Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Chief Information Officer (CIO)</td>
<td>The CIO is responsible for all topics relating to IT at SFR, and also represents these within the Group management. The CIO has a particular role in the area of customer information, as at present, it is not clear which division mobile solutions should belong to. Accordingly he/she provides impetus for innovation and seeks to initiate new solutions in the divisions.</td>
</tr>
<tr>
<td>Product Manager</td>
<td>Product managers are responsible for the further development and operative functioning of products. Products could be technical solutions such as ticket machines, trains or IT solutions. The objective is to ensure high-quality life cycle management, in order to guarantee that the operative life of products have a reasonable length. In the area of customer information, the product managers are responsible for technical solutions such as output devices (e.g. monitors, loudspeaker systems), conceptional solutions (instructions, guidelines for the output texts) or IT solutions.</td>
</tr>
<tr>
<td>Programme Manager</td>
<td>Programme managers manage a portfolio of projects, which are interrelated content-wise but partly belong to different cost centres and business units. The objective is to ensure that the synergies are utilised in an optimal way. In the area of customer information, the programme director ensures that the various projects (e.g. developing announcement texts, rolling out monitors, establishing control centres, developing software) interplay optimally and are in tune with each other.</td>
</tr>
</tbody>
</table>

The role descriptions are based on the available SFR-intranet document which describes each job (SBBi 2011b).
I. Appendix: Measures
On the basis of the survey, measures can be identified for implementation. In the description, the focus is on an explanation of which aims are to be achieved and what effect is possible within the area of customer information. The individual measures are structured as follows:

- Measure: The measure is briefly described.
- Proposition: The underlying proposition is described.
- Initial Situation: Analysis of the current situation.
- Target Situation: Describes how the situation might look after the measure.
- Impact: Illustrates possible improvements (e.g. cost savings, more efficiency).
- Activities: Presents the most important steps that are necessary for implementation.
- Dependencies: Points out other measures which are related to the one described.
**Measures for the Improvements in the Organisation**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Develop a strategy for the area of customer information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>The absence of a customer information strategy leads to redundancies and synergies remain unused.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>A strategy is present for the company as a whole and for individual sections. This is absent for customer information. A customer information strategy can be derived on the basis of the corporate strategy.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>A strategy is developed for the area of customer information. The individual divisions responsible for customer information know their tasks, competences and areas of responsibility and know how these are classified in the overall context.</td>
</tr>
<tr>
<td>Impact</td>
<td>Internal: there is less redundancy in the company. This reduces costs, unnecessary activities and duplication are avoided and synergies are used. Customer information becomes more consistent, resources can be used more efficiently. Planning generally improves as the strategy sets clear priorities and goals. External: customer satisfaction improves through a more consistent outward presentation. More efficient use of resources leads to better information sources and channels so that qualitative improvements are noticeable for the customer.</td>
</tr>
<tr>
<td>Activities</td>
<td>Analysis of corporate and section strategies as far as available. Based on this, embed in a concept how the strategy should look for customer information and with which measures this must be embedded in the company.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>The customer information strategy is the basis for all other measures.</td>
</tr>
</tbody>
</table>

Table 20: Customer Information Strategy
<table>
<thead>
<tr>
<th>Measure</th>
<th>Develop an organisational concept for the area of customer information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>An organisation with clear interfaces, role models and areas of competence can be managed efficiently.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>Customer information does not exist as a separate overall organisation. In the divisions of passenger transport, infrastructure and IT, several business units exist which are all incorporated differently into the respective business unit hierarchy. The various divisions have formed a virtual organisation whose aim is overall control. As the study has shown, this form of organisation only has limited suitability as redundancy and competence problems emerge despite a great deal of internal coordination. The causes are horizontal and vertical interrelations and committees that make efficient management difficult.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>The organisation is clearly constructed according to core competences and areas of responsibility.</td>
</tr>
<tr>
<td>Impact</td>
<td>Through clear organisational interfaces, the competences are clear and every organisational unit knows its tasks. Redundancy is removed and synergies are increasingly used. Coordination efforts and virtual organisational units become less important, so that less effort is needed for administration and coordination. The subject of customer information becomes easier to manage and conflicts due to unclear rules disappear.</td>
</tr>
<tr>
<td>Activities</td>
<td>Creation of an organisational concept. Depending on knowledge and possible organisational variations resulting from it, a reorganisation of the division is to be carried out.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Introduction of programme management, definition of customer information strategy.</td>
</tr>
</tbody>
</table>

Table 21: Development of an Organisational Concept
<table>
<thead>
<tr>
<th>Measure</th>
<th>Define key performance indicators (KPIs).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>By measuring the impact of projects and other activities, successes and poor developments can be measured. KPIs help to improve management.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>Currently, employees and management have very little information about the impact of individual activities in the area of customer information. Only a few subjects are measured to assess overall satisfaction. The impact of individual improvements and measures on customers’ perceptions is unknown.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>KPIs measure various activities in the area of customer information. Clarity thereby very quickly emerges as to whether customer needs were met or not. Bad investments can be recognised earlier and therefore avoided. A purge of the entire customer information landscape will be possible if it is clear which information channels are still accepted by customers.</td>
</tr>
<tr>
<td>Impact</td>
<td>Resources can be more efficiently implemented, as the impact of various activities becomes more quickly and easily visible. Poor developments are recognisable earlier, and the company becomes more crisis resistant.</td>
</tr>
<tr>
<td>Activities</td>
<td>Define KPIs. These are to be derived from the customer information strategy.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>KPIs must be defined for all other measures with the aim of measuring their effectiveness, and if not met, introducing improvement measures.</td>
</tr>
</tbody>
</table>

Table 22: Definition of KPIs
<table>
<thead>
<tr>
<th>Measure</th>
<th>Develop a system of programme management.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>Projects are not coordinated and are driven by individual business units. Overall project management allows company-wide management without the need for reorganisation. Projects can be carried out more efficiently with less redundancy.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>Every business unit has its own budget and is responsible for its own projects. As different customer information systems sometimes need or create the same information, duplications arise here which lead to inefficiency and redundancy.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>Overall programme management coordinates projects and the associated resources. Programme managers know all activities and purposefully manage these. Through prioritisation, a company-wide perspective and the use of synergies, efficiency is improved.</td>
</tr>
<tr>
<td>Impact</td>
<td>Through over-arching management, duplication can be avoided. Projects can be carried out more quickly and cheaply.</td>
</tr>
<tr>
<td>Activities</td>
<td>Business divisions establish a customer information programme. All projects from the area of customer information are allocated to the programme. A management committee with representatives from the business divisions is set up to report to programme leaders.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Definition of customer information strategy, definition of KPIs, development of a media concept.</td>
</tr>
</tbody>
</table>

Table 23: Development of Programme Management
<table>
<thead>
<tr>
<th>Measure</th>
<th>Develop a media concept for customer information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>A media concept describes the various output channels and how these can ideally interact. Company-wide control improves efficiency, ensures the removal of legacy systems and thereby reduces costs.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>The media channels over which customer information is transmitted are increased with new additions whilst the old ones are not removed. By networking systems, the complexity of the overall system increases and leads to constantly higher costs in new development and in operation. It is not clear how heavily the various media channels are used.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>A media concept should investigate the prioritisation of individual channels and analysis of media use by end customers. Furthermore, lifecycle management of individual information channels must be established, which keeps development and removal under control.</td>
</tr>
<tr>
<td>Impact</td>
<td>A media concept creates more transparency. In conjunction with a customer information strategy, optimisation can be carried out.</td>
</tr>
<tr>
<td>Activities</td>
<td>The current situation must be analysed in a media concept. In conjunction with the customer information strategy, measures must be defined which implement the media concept.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Definition of customer information strategy, definition of KPIs.</td>
</tr>
</tbody>
</table>

Table 24: Development of a Media Concept
<table>
<thead>
<tr>
<th>Measure</th>
<th>Improve contact between employees and end customers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>Through more intensive and professional contact with employees, better customer information systems can be created.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>The survey has shown that employees in the area of customer information have almost no professional contact with rail travellers. As there is also no measurement of satisfaction, it is possible to develop new information systems without any customer contact. Actual needs are not clear to employees; they develop their systems based on internal clients (i.e. other SFR employees).</td>
</tr>
<tr>
<td>Target Situation</td>
<td>Employees in the area of customer information know the needs and requirements of rail passengers and know how these can be implemented.</td>
</tr>
<tr>
<td>Impact</td>
<td>The user-friendliness of systems is materially improved, bad investments are reduced. Gaps are recognised and closed.</td>
</tr>
<tr>
<td>Activities</td>
<td>Provide employees with the results of customer surveys. At the same time, employees should interact with end customers within the framework of professional consultancy in the conception of systems.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Definition of KPIs, development of a media concept and customer information strategy and definition of customer segments.</td>
</tr>
</tbody>
</table>

Table 25: Intensification of Customer Contact
<table>
<thead>
<tr>
<th>Measure</th>
<th>Define customer segments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>Customer segments allow a more precise target group orientated response to customers and therefore better services and higher customer satisfaction.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>Currently it is not known which customer segments use which media channels. Furthermore, it can also not be understood whether customers would be negatively affected if individual channels were removed without replacement. The customer himself is not known; customers are currently only categorised as commuters and occasional travellers.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>Customer segments are defined and it is known what media they use. Information systems and services in the area of customer information can be developed to suit target groups.</td>
</tr>
<tr>
<td>Impact</td>
<td>Systems can be developed more specifically or removed in the event of lack of use, so that efficiency is improved and cost savings are possible. Furthermore, customer satisfaction should improve as better effects are achieved due to the more precise target group orientated response.</td>
</tr>
<tr>
<td>Activities</td>
<td>Survey of market research data and execution of customer segmentation by media use.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Definition of KPIs, development of a media concept, definition of a customer information strategy.</td>
</tr>
</tbody>
</table>

Table 26: Definition of Customer Segments
Measures for the Improvement of Customer Information

<table>
<thead>
<tr>
<th>Measure</th>
<th>Develop existing customer information towards mobile customer information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>The expansion of mobile customer information is the next step towards modern customer information. Individualised information retains customers and improves their satisfaction by providing individualised information in all travel situations.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>New mobile end devices, information channels and transmission technologies bring new opportunities for the company. The SFR accommodates these in that it already supports various new media and provides existing customer information so that it can be used on end devices. The particular potential of these devices is not yet tapped; existing information is simply broadcast and no reprocessing takes place.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>The SFR acts proactively and analyses the potential of new technologies in a continuous process. The company is in a position to quickly and purposefully develop new information channels and interfaces which keep pace with current technological developments.</td>
</tr>
<tr>
<td>Impact</td>
<td>The company is perceived as more innovative and stronger in the market. It can also set standards in the international arena.</td>
</tr>
<tr>
<td>Activities</td>
<td>Description of a conceptual basis for new media. Creation of a working group that analyses possible innovations and initiates activities early.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Mobile customer information must be included in the customer information strategy and embedded in the organisation.</td>
</tr>
</tbody>
</table>

Table 27: Mobile Customer Information
<table>
<thead>
<tr>
<th>Measure</th>
<th>Additional information about products and services on the route creates an additional market and allows refinancing of investments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>Additional information provides benefits for the rail passenger and in this way increases customer retention. As the railway has access to a large number of customers, it can distribute information from other organisations through targeted communication and thereby exploit new sources of income.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>Through various commercial providers, it is possible to offer rail passengers additional information, for example about cinemas, restaurants, hospitals, tourist information etc. So far the SFR does not use these opportunities.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>Rail passengers can compile various services from the additional information on offer and thus enhance their travel plans. Customer information can finance services itself and is therefore cost neutral within the company. The information is presented in a way that does not bother the customer.</td>
</tr>
<tr>
<td>Impact</td>
<td>The customer is loyal to the SFR and perceives the SFR as a competent service provider. The company must consider whether they want to use the opportunities for refinancing, as there is great potential here.</td>
</tr>
<tr>
<td>Activities</td>
<td>Additional information which could be relevant must be conceptually clarified. It must be studied which companies could emerge as partners and how far opportunities for further finance sources exist.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>The subject has dependencies to all other areas as it represents an opportunity for financing.</td>
</tr>
</tbody>
</table>

Table 28: Additional Information
Customers must have the opportunity to proactively receive incident information via various channels.

If the customer is proactively informed about problems during or before his journey, he perceives this positively. Various media channels such as the internet and mobile telephones allow the customer to receive information about incidents before arrival.

Customers frequently do not learn of incidents until they are at the station or on the train. The power to act is then no longer present and customer satisfaction drops. Although there are systems which proactively inform the customer about services, these are not widespread. Furthermore, reliability is limited as a great deal of incident information is not entered into the system until a later point.

The customer is proactively informed about the situation as soon as an incident occurs on his route. As far as possible, he can adapt his travel situation. Customer information systems are specifically managed with incident information so that the customer can proactively receive information relevant to him via internet or telephone.

The customer perceives the SFR as a competent and proactive company. Customer satisfaction is maintained during incidents.

A system must be developed that makes incident information available as a service for various end devices. Personnel resources must be available to gather incident information.

Individualisation of customer information is required to prevent spamming.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Customers must have the opportunity to proactively receive incident information via various channels.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>If the customer is proactively informed about problems during or before his journey, he perceives this positively. Various media channels such as the internet and mobile telephones allow the customer to receive information about incidents before arrival.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>Customers frequently do not learn of incidents until they are at the station or on the train. The power to act is then no longer present and customer satisfaction drops. Although there are systems which proactively inform the customer about services, these are not widespread. Furthermore, reliability is limited as a great deal of incident information is not entered into the system until a later point.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>The customer is proactively informed about the situation as soon as an incident occurs on his route. As far as possible, he can adapt his travel situation. Customer information systems are specifically managed with incident information so that the customer can proactively receive information relevant to him via internet or telephone.</td>
</tr>
<tr>
<td>Impact</td>
<td>The customer perceives the SFR as a competent and proactive company. Customer satisfaction is maintained during incidents.</td>
</tr>
<tr>
<td>Activities</td>
<td>A system must be developed that makes incident information available as a service for various end devices. Personnel resources must be available to gather incident information.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Individualisation of customer information is required to prevent spamming.</td>
</tr>
</tbody>
</table>

Table 29: Proactivity
<table>
<thead>
<tr>
<th>Measure</th>
<th>It must be possible to tailor customer information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>Customers are only interested in information that concerns their own route and needs. Other information is perceived as irrelevant or bothersome.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>Customers currently orient themselves towards standard information which is carried by standardised customer information channels. Individualised services are available, but are the exception and are mostly used for incident information. Hardly any deliberate new information is designed for new technology such as smartphones or the internet; only existing information is transmitted.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>The customer can compile his own services from the SFR’s offering. Using mobile end devices he has access to all information on his route at all times.</td>
</tr>
<tr>
<td>Impact</td>
<td>Customers perceive the SFR as a company that takes their needs seriously and offers individualised information. As customers are also proactively informed in incident situations, customer satisfaction does not decrease even during incidents.</td>
</tr>
<tr>
<td>Activities</td>
<td>A concept must be created for the individualisation of customer information systems. Services for different information channels should be defined on the basis of this.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>The measure should be carried out in conjunction with the end devices measure.</td>
</tr>
</tbody>
</table>

Table 30: Individualisation
<table>
<thead>
<tr>
<th>Measure</th>
<th>Define services and media channels for customer segments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>The target group orientated response improves understanding of the information provided. Resources can be more purposefully implemented and customer contact is improved.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>The SFR addresses all rail passengers identically. Information is processed with the requirement that it be equally understandable for all people. Individual knowledge or needs are not catered for. This leads to some customers receiving too much information, and others too little.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>Customer segments are defined. On the basis of this it is possible to provide differently processed information to customers. Every customer segment receives a target group orientated response. In addition, it is possible to provide extra information depending on the target group.</td>
</tr>
<tr>
<td>Impact</td>
<td>Customers understand information better and perceive the SFR as a competent company. Additional benefits are provided through additional information and customer loyalty improves.</td>
</tr>
<tr>
<td>Activities</td>
<td>Customer segmentation should be carried out. On the basis of this it should be investigated which media channels and ways of presenting information are ideal for the respective customer segments.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>Additional information is conceptually defined and technical opportunities for individualisation are available.</td>
</tr>
</tbody>
</table>

Table 31: Customer Segments
<table>
<thead>
<tr>
<th>Measure</th>
<th>Regularly investigate the innovation potential of mobile end devices.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition</td>
<td>Through regular analysis of new mobile end devices and cooperation with innovative partners, potential can be tapped early on which creates a market advantage for the SFR.</td>
</tr>
<tr>
<td>Initial Situation</td>
<td>There is currently no systematic analysis. Ideas and suggestions from individual people or business units drive new technology. Thus the SFR frequently brings new services onto the market too slowly. As new technologies and providers are constantly appearing on the market, it is difficult to react promptly and be quick on the market.</td>
</tr>
<tr>
<td>Target Situation</td>
<td>The SFR knows the new developments that are taking place in the technology market. It can productively position new applications with partners’ market entry and does not have to respond reactively to new trends. The SFR gains competitive advantages due to swift reaction.</td>
</tr>
<tr>
<td>Impact</td>
<td>The SFR is perceived as a competent and innovative partner and service provider. Customer satisfaction increases and refinancing options arise through partner models. Synergies can be expected in all areas of technology.</td>
</tr>
<tr>
<td>Activities</td>
<td>Innovation must be defined as a continuous process and not a one-off activity. Partner models with technology partners must be lined up. An innovation management department must be set up for targeted research.</td>
</tr>
<tr>
<td>Dependencies</td>
<td>It must be possible to tailor customer information and it must be compatible with end devices.</td>
</tr>
</tbody>
</table>

Table 32: Mobile End Devices
J. Appendix: SPSS Tables

Table: Customer Satisfaction in General

<table>
<thead>
<tr>
<th>Q14: GENERAL SATISFACTION WITH SBB</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid 1 not at all satisfied</td>
<td>29</td>
<td>.7</td>
<td>.9</td>
<td>.9</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>.9</td>
<td>1.1</td>
<td>2.0</td>
</tr>
<tr>
<td>3</td>
<td>33</td>
<td>.8</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td>4</td>
<td>58</td>
<td>1.4</td>
<td>1.8</td>
<td>4.8</td>
</tr>
<tr>
<td>5</td>
<td>298</td>
<td>7.4</td>
<td>9.2</td>
<td>14.0</td>
</tr>
<tr>
<td>6</td>
<td>217</td>
<td>5.4</td>
<td>6.7</td>
<td>20.7</td>
</tr>
<tr>
<td>7</td>
<td>544</td>
<td>13.5</td>
<td>16.8</td>
<td>37.6</td>
</tr>
<tr>
<td>8</td>
<td>1111</td>
<td>27.6</td>
<td>34.4</td>
<td>72.0</td>
</tr>
<tr>
<td>9</td>
<td>458</td>
<td>11.4</td>
<td>14.2</td>
<td>86.2</td>
</tr>
<tr>
<td>10 very satisfied</td>
<td>447</td>
<td>11.1</td>
<td>13.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>3230</td>
<td>80.2</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know / No response</td>
<td>112</td>
<td>2.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>686</td>
<td>17.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>798</td>
<td>19.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4028</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 33: Customer Satisfaction in General
Q14: GENERAL SATISFACTION WITH SBB

<table>
<thead>
<tr>
<th>N</th>
<th>Valid</th>
<th>3230</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Missing</td>
<td>798</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>7.59</td>
</tr>
<tr>
<td>Percentiles</td>
<td>25</td>
<td>7.00</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>9.00</td>
</tr>
</tbody>
</table>

Table 34: Statistics Customer Satisfaction in General
Table: Delay Frequency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Valid</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1457</td>
<td>36.2</td>
<td>64.0</td>
<td>64.0</td>
</tr>
<tr>
<td>1-2 times</td>
<td>504</td>
<td>12.5</td>
<td>22.1</td>
<td>86.1</td>
</tr>
<tr>
<td>3-5 times</td>
<td>201</td>
<td>5.0</td>
<td>8.8</td>
<td>94.9</td>
</tr>
<tr>
<td>6-10 times</td>
<td>68</td>
<td>1.7</td>
<td>3.0</td>
<td>97.9</td>
</tr>
<tr>
<td>More than 10 times</td>
<td>48</td>
<td>1.2</td>
<td>2.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>2278</td>
<td>56.6</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>41</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't know / No response</td>
<td>41</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>1709</td>
<td>42.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1750</td>
<td>43.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4028</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 35: Delay Frequency

Statistics

<table>
<thead>
<tr>
<th>Q02: FREQUENCY OF DELAYED PASSENGER TRAINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Table 36: Statistics Delay Frequency

Table: Unpleasant Delays
### Q025: FREQUENCY OF UNPLEASANT DELAYS

<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 Never</td>
<td>381</td>
<td>9.5</td>
<td>46.5</td>
<td>46.5</td>
</tr>
<tr>
<td>1-2 times</td>
<td>306</td>
<td>7.6</td>
<td>37.4</td>
<td>83.9</td>
</tr>
<tr>
<td>3-5 times</td>
<td>84</td>
<td>2.1</td>
<td>10.3</td>
<td>94.1</td>
</tr>
<tr>
<td>6-10 times</td>
<td>35</td>
<td>.9</td>
<td>4.3</td>
<td>98.4</td>
</tr>
<tr>
<td>More than 10</td>
<td>13</td>
<td>.3</td>
<td>1.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>819</td>
<td>20.3</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing Don’t</td>
<td>2</td>
<td>.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>know / No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>response</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>3207</td>
<td>79.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3209</td>
<td>79.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4028</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 37: Unpleasant Delays

### Statistics

**Q025: FREQUENCY OF UNPLEASANT DELAYS**

<table>
<thead>
<tr>
<th></th>
<th>Valid</th>
<th>Missing</th>
<th>Mean</th>
<th>Percentiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>819</td>
<td>3209</td>
<td>1.77</td>
<td>1.00</td>
</tr>
<tr>
<td>25</td>
<td>50</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td></td>
<td></td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>

Table 38: Statistics Unpleasant Delays
Table: Satisfaction with Customer Information in Delay Situations

Q02: FREQUENCY OF DELAYED PASSENGER TRAINS AND Q08: SATISFACTION WITH CUSTOMER INFORMATION Cross Tabulation

<table>
<thead>
<tr>
<th>Q02: FREQUENCY OF DELAYED PASSENGER TRAINS</th>
<th>Yes, information was sufficient</th>
<th>No, information was insufficient</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 times</td>
<td>113</td>
<td>42</td>
<td>155</td>
</tr>
<tr>
<td>3-5 times</td>
<td>78</td>
<td>27</td>
<td>105</td>
</tr>
<tr>
<td>6-10 times</td>
<td>27</td>
<td>12</td>
<td>39</td>
</tr>
<tr>
<td>More than 10 times</td>
<td>15</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>233</td>
<td>86</td>
<td>319</td>
</tr>
</tbody>
</table>

Table 39: Satisfaction with CI

Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>.411a</td>
<td>3</td>
<td>.938</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>.404</td>
<td>3</td>
<td>.939</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.005</td>
<td>1</td>
<td>.945</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>319</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.39.

Table 40: Chi-Square Satisfaction with CI

305
Table: Satisfaction in Unpleasant Situations

Q025: FREQUENCY OF UNPLEASANT DELAYS * Q08: SATISFACTION WITH CUSTOMER INFORMATION Cross Tabulation

<table>
<thead>
<tr>
<th>Q025: FREQUENCY OF UNPLEASANT DELAYS</th>
<th>Yes, information was sufficient</th>
<th>No, information was insufficient</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 times</td>
<td>167</td>
<td>65</td>
<td>232</td>
</tr>
<tr>
<td>3-5 times</td>
<td>41</td>
<td>14</td>
<td>55</td>
</tr>
<tr>
<td>6-10 times</td>
<td>19</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>More than 10 times</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>233</td>
<td>86</td>
<td>319</td>
</tr>
</tbody>
</table>

Table 41: Satisfaction in Unpleasant Situations

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>.668</td>
<td>3</td>
<td>.881</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>.693</td>
<td>3</td>
<td>.875</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.527</td>
<td>1</td>
<td>.468</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>319</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 2.16.

Table 42: Chi-Square Satisfaction in Unpleasant Situations

306
### Table: Delay in Minutes

#### Q05: LENGTH OF DELAY (MINUTES)

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>.0</td>
<td>.2</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>.1</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>.3</td>
<td>2.7</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>.4</td>
<td>3.6</td>
</tr>
<tr>
<td>5</td>
<td>72</td>
<td>1.8</td>
<td>17.5</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>.4</td>
<td>4.4</td>
</tr>
<tr>
<td>7</td>
<td>23</td>
<td>.6</td>
<td>5.6</td>
</tr>
<tr>
<td>8</td>
<td>23</td>
<td>.6</td>
<td>5.6</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>.1</td>
<td>1.0</td>
</tr>
<tr>
<td>10</td>
<td>81</td>
<td>2.0</td>
<td>19.7</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>.0</td>
<td>.5</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
<td>.2</td>
<td>2.2</td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>.1</td>
<td>.7</td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>.0</td>
<td>.5</td>
</tr>
<tr>
<td>15</td>
<td>49</td>
<td>1.2</td>
<td>11.9</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>.0</td>
<td>.5</td>
</tr>
<tr>
<td>20</td>
<td>27</td>
<td>.7</td>
<td>6.6</td>
</tr>
<tr>
<td>25</td>
<td>4</td>
<td>.1</td>
<td>1.0</td>
</tr>
<tr>
<td>29</td>
<td>1</td>
<td>.0</td>
<td>.2</td>
</tr>
<tr>
<td>30</td>
<td>26</td>
<td>.6</td>
<td>6.3</td>
</tr>
<tr>
<td>31</td>
<td>1</td>
<td>.0</td>
<td>.2</td>
</tr>
<tr>
<td>35</td>
<td>2</td>
<td>.0</td>
<td>.5</td>
</tr>
<tr>
<td>40</td>
<td>3</td>
<td>.1</td>
<td>.7</td>
</tr>
<tr>
<td>45</td>
<td>6</td>
<td>.1</td>
<td>1.5</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>.0</td>
<td>.2</td>
</tr>
<tr>
<td>60</td>
<td>16</td>
<td>.4</td>
<td>3.9</td>
</tr>
<tr>
<td>70</td>
<td>1</td>
<td>.0</td>
<td>.2</td>
</tr>
<tr>
<td>90</td>
<td>1</td>
<td>.0</td>
<td>.2</td>
</tr>
</tbody>
</table>

Total: 411

Table 43: Delay in Minutes
Statistics

Q05: LENGTH OF DELAY (MINUTES)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Valid</td>
<td>411</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>3617</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>14.27</td>
</tr>
<tr>
<td>Percentiles</td>
<td>25</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>10.00</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>15.00</td>
</tr>
</tbody>
</table>

Table 44: Statistics Delay in Minutes
Table: Speed of Information Flow

<table>
<thead>
<tr>
<th>Response</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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, I was informed fast</td>
<td>224</td>
<td>5,6</td>
<td>51,6</td>
<td>51,6</td>
</tr>
<tr>
<td>No, I was informed late</td>
<td>103</td>
<td>2,6</td>
<td>23,7</td>
<td>75,3</td>
</tr>
<tr>
<td>No, I was not informed</td>
<td>107</td>
<td>2,7</td>
<td>24,7</td>
<td>100,0</td>
</tr>
<tr>
<td>Total</td>
<td>434</td>
<td>10,8</td>
<td>100,0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know/No Data</td>
<td>4</td>
<td>0,1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>3590</td>
<td>89,1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3594</td>
<td>89,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4028</td>
<td>100,0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Table: Speed of Information Flow

**Q09: SATISFACTION WITH SFR SUPPORT * Q06: SPEED OF INFORMATION FLOW Cross Tabulation**

<table>
<thead>
<tr>
<th>Q09: SATISFACTION WITH SFR SUPPORT</th>
<th>Q06: SPEED OF INFORMATION FLOW</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, very good</td>
<td>Yes I was quickly informed</td>
<td>67</td>
</tr>
<tr>
<td>Yes, quite good</td>
<td>No, I was informed late</td>
<td>9</td>
</tr>
<tr>
<td>No, quite poor</td>
<td>No, I was not informed at all</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>79</td>
</tr>
<tr>
<td>Yes, quite good</td>
<td>Yes I was quickly informed</td>
<td>115</td>
</tr>
<tr>
<td>No, quite poor</td>
<td>No, I was not informed at all</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>166</td>
</tr>
<tr>
<td>No, very poor</td>
<td>Yes I was quickly informed</td>
<td>25</td>
</tr>
<tr>
<td>No, very poor</td>
<td>No, I was not informed at all</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>94</td>
</tr>
<tr>
<td>total</td>
<td>total</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>412</td>
</tr>
</tbody>
</table>

### Table 45: Satisfaction and Speed of Information Delivery

**Chi-Square Tests**

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>146.299&lt;sup&gt;a&lt;/sup&gt;</td>
<td>6</td>
<td>.000</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>152.009</td>
<td>6</td>
<td>.000</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>129.565</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>412</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.01.

### Table 46: Chi-Square Satisfaction and Speed of Information Delivery

310
# Table: Customer Information and Customer Satisfaction

## Q08: SATISFACTION WITH CUSTOMER INFORMATION

<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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, information was sufficient</td>
<td>233</td>
<td>5.8</td>
<td>73.0</td>
<td>73.0</td>
</tr>
<tr>
<td>No, information was insufficient</td>
<td>86</td>
<td>2.1</td>
<td>27.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>319</td>
<td>7.9</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know / No response</td>
<td>8</td>
<td>.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>3701</td>
<td>91.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3709</td>
<td>92.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4028</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 47: Customer Satisfaction during Delays

## Statistics

### Q08: SATISFACTION WITH CUSTOMER INFORMATION

<table>
<thead>
<tr>
<th>N</th>
<th>Valid</th>
<th>319</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>3709</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1.27</td>
<td></td>
</tr>
<tr>
<td>Percentiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>

Table 48: Statistics Customer Satisfaction during Delays
Table: Time until First Information Arrived

<table>
<thead>
<tr>
<th>Time (Minutes)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cum. Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60</td>
<td>1.5</td>
<td>21.8</td>
<td>21.8</td>
</tr>
<tr>
<td>2</td>
<td>44</td>
<td>1.1</td>
<td>16.0</td>
<td>37.8</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>.7</td>
<td>10.5</td>
<td>48.4</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>.2</td>
<td>3.3</td>
<td>51.6</td>
</tr>
<tr>
<td>5</td>
<td>74</td>
<td>1.8</td>
<td>26.9</td>
<td>78.5</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>.1</td>
<td>1.1</td>
<td>79.6</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>.1</td>
<td>1.1</td>
<td>80.7</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>.1</td>
<td>1.5</td>
<td>82.2</td>
</tr>
<tr>
<td>10</td>
<td>27</td>
<td>.7</td>
<td>9.8</td>
<td>92.0</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>.0</td>
<td>.7</td>
<td>92.7</td>
</tr>
<tr>
<td>15</td>
<td>4</td>
<td>.1</td>
<td>1.5</td>
<td>94.2</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>.0</td>
<td>.4</td>
<td>94.5</td>
</tr>
<tr>
<td>20</td>
<td>4</td>
<td>.1</td>
<td>1.5</td>
<td>96.0</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>.0</td>
<td>.4</td>
<td>96.4</td>
</tr>
<tr>
<td>30</td>
<td>5</td>
<td>.1</td>
<td>1.8</td>
<td>98.2</td>
</tr>
<tr>
<td>40</td>
<td>1</td>
<td>.0</td>
<td>.4</td>
<td>98.5</td>
</tr>
<tr>
<td>45</td>
<td>1</td>
<td>.0</td>
<td>.4</td>
<td>98.9</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>.0</td>
<td>.4</td>
<td>99.3</td>
</tr>
<tr>
<td>60</td>
<td>2</td>
<td>.0</td>
<td>.7</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Total: 275 6.8 100.0

Missing
- Don’t know: 2 .0
- No response: 50 1.2
- System: 3701 91.9
- Total: 3753 93.2
- Total: 4028 100.0

Table 49: Time until First Information Arrived
### Statistics

**Q07: TIME UNTIL FIRST CUSTOMER INFORMATION (MINUTES)**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Valid</td>
<td>275</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>3753</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>5.80</td>
</tr>
<tr>
<td>Percentiles</td>
<td>25</td>
<td>2.00</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Table 50: Statistics Time Until First Information Arrived