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Integration between Customer Relationship Management and Business Intelligence

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ABSTRACT (MAX. 200 WORDS):
The main purpose of any Customer Relationship Management(CRM) system of any customer-focused organization is to build new and retain old relationships with its customers. Such CRM systems provide customer data so that its users or top management can make correct decisions in order to improve organization's performance. Nowadays, advanced analytics in the form of Business Intelligence (BI) can be used to perform extra analysis on such customer data. Doing so, users or decision makers can have the right customer information at right time at right location and the organization's performance can be improved. This research studies the integration between CRM and BI of a prominent customer-oriented organization named Skånetrafiken. In this research, a functional framework of CRM and BI integration is derived considering functional frameworks of individual CRM and BI. Also, this framework is primarily based on basic People, Process and Technology principle. This framework represents the importance of good quality data, benefits of BI and key enablers of any successful CRM and BI integrated system. The key enablers of such successful BI and CRM systems are such as customer-centric approach, enterprise-wide strategy, cross-functional integration and technology-driven business processes. This is a qualitative research where data is collected in the form of semi-structured interviews and analyzed further using coding techniques.

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List of Abbreviations:

BI   Business Intelligence
CRM   Customer Relationship Management
ETL   Extract, Transform, and Load
OLAP   Online Analytical Processing
WAP   Wireless Application Protocol

1 Introduction

The customer is considered to be the most important stakeholder in almost every industry and business ("'Customer is King': What it means in Today's Market. ," 2011). Businesses perform better economically if they acquire, satisfy, and retain their valuable customers, that is, manage customer relations properly (Buttle, 2004). Organizations can build great relationships with their customers by introducing digitalization. It can enhance and facilitate the relationships with customers in many ways. This can be achieved by the successful employment of Customer Relationship Management systems (Stefanou, Sarmaniotis, & Stafyla, 2003). The main purpose of implementing CRM systems in the organization is to improve customer relations of the organization by building new relationships and maintaining old relations with the customer(I. Chen & Popovich, 2003).

Business Intelligence (BI) has the capability to contribute to business decision making and in turn, provide improved performance of the organization. BI happens to be a beneficial factor for several customer-focused organizations as it provides a competitive advantage of strong customer centricity. (Handzic, Ozlen, & Durmic, 2014) This article stresses the importance of integrating Business Intelligence with Customer Relationship Management (CRM) systems so as to improve the usage and benefits of CRM systems within the organization. BI with CRM can be beneficial because it enables improved business strategy and organizational performance (Handzic et al., 2014).

Moreover, integration of CRM with BI provides benefits such as the cost optimization within the organizations and improved data quality (A. Khan, Ehsan, Mirza, & Sarwar, 2012). CRM can provide a lot of data about customers and that data can be used to get the valuable information using Business Intelligence (BI). However, one of the key aspects of CRM and BI integration is customer-centricity as both the systems are formed to serve the customers better. Also, it is essential to ensure that data available in CRM is aligned with data requirements by BI, in order to gain benefits from BI and CRM integration (Mruthyunjayappa, n.d.).

A framework based on CRM and BI frameworks is created and tested using a case of Skånetrafiken in context of customer-centric business processes, cross-functional integration, enterprise-wide strategy and technology-driven processes. The framework is based and referenced to People, Process, and Technology principle. However, it is also derived by considering CRM and BI functional architecture. Skånetrafiken, a non-profit transport organization in Sweden, is identified as a research case site to conduct the research. The site identification was carried out considering its usage of CRM along with BI.

In this research, we studied the theoretical framework of CRM and BI. Based on the analysis of already existing literature, we came up with a combined and integrated framework for CRM and BI integration. Being the qualitative research, the data required for analysis were collected in the form of semi-structured interviews of CRM and BI professionals in Skånetrafiken. This data was analyzed using coding techniques and the findings are discussed in the last section.

1.1 Problem Area

The main purpose of any CRM system of any organizations is to establish a long-lasting relationship with its customers. Such organizations are generally organized around their customers. (I. Chen & Popovich, 2003) Being customer-centric is one of the key success factors for the implementation of CRM (Croteau & Li, 2003). Interdepartmental integration, communication of CRM and strategy among employees are also proved to be influential factors (Mendoza, Marius, Pérez, & Grimán, 2007). Although many companies are able to gather a lot of customer data, due to lack of analytical capabilities, most of them fail to synthesize that data for improving customer relations (Davenport, Harris, Long, & Jacobson, 2001). So, in order to improve the benefit of CRM system within an organization, the focus should be given on how to better utilize the data in the context of customer-centricity, enterprise-wide and technology strategy (I. Chen & Popovich, 2003).

However, many companies are not able to take maximum advantage of CRM systems because of lack of analytical capabilities needed to drive behavioral change (Hall, 2004). Even though some CRM systems might offer some basic analytics, but that is not sufficient to leverage customer information available in CRM (Hall, 2004). Lack of analytical abilities of CRM system might lead to loss of profitable customers to the competitors (Bull, 2003). Therefore, there is a pressure from industry on CRM vendors to partner with BI vendors in order to integrate BI with CRM (Dyche, 2002). Integration of BI into CRM helps to better utilize CRM data and to improve benefits from CRM (Baars & Kemper, 2008; Dyche, 2002; Hall, 2004; Ramamurthy, Sen, & Sinha, 2008).

Additionally, there is a strong relationship between high-quality customer data and successful implementation of CRM in an organization (Peltier, Zahay, & Lehmann, 2013). However, since data in CRM is sourced from different sources, therefore, data quality is an issue in CRM(Akoka et al., 2007). Improvement of data quality needs to have IT infrastructure and processes in place, and BI can contribute to improvement in data quality with reduced IT infrastructure cost by avoiding redundant processes (Watson & Wixom, 2007).

Any complex CRM implementation in any organization can cost anywhere between $60 Millions to $ 200 Million (Maklan, Knox, & Ryals, 2005). Implementation of BI needs a lot of investment, in terms of hardware cost, software cost (that can typically cost around $60,000), implementation cost, maintenance cost, and personnel cost (Negash, 2004). These figures indicate a huge amount of investments involved in the implementation of these technologies, highlighting the importance of research in the area of integrating BI in CRM. Most of the research available in this area is based on literature review and there is a lack of empirical evidence indicating the benefits of CRM and BI integration and the factors affecting this integration. Also, the existing research suggests some benefits mainly in terms of detailed analysis and improving data quality. But as discussed in detail in the literature review, challenges with CRM and benefits of using BI seem to complement each other, and there is the scope of coming up with more specific benefits of using CRM and BI together.

1.2 Research Question

As mentioned above, the main purpose of this research is to evaluate the CRM and BI integration framework in order to improve the existing Customer Relationship Management.

Considering the purpose and the problems faced in the successful implementation of CRM and BI, the following Research Question is formed-

RQ- How can Customer Relationship management be improved by integrating Business Intelligence?

1.3 Purpose

Business Intelligence has received significant importance both in industries and in academics (H. Chen, Chiang, & Storey, 2012). This research involves analysis of the outcomes of integration of Customer Relationship Management (CRM) system and Business Intelligence (BI) system. In this research outcomes of CRM and BI integration from the perspective of an organization are presented. And, an analysis of these outcomes with existing literature in terms of benefits and factors affecting the integration is performed. The purpose of this research is to find out if integrating BI with CRM is considered beneficial by personnel working with BI and CRM, in an organization that has integrated BI with CRM.

The outcomes of this research would specify different benefits that organizations could expect by complementing CRM and BI with each other. This research would also specify the enablers for successful implementation of BI and CRM. Since there is lack of empirical evidence in this area, this research could be a valuable contribution to the area of CRM and BI integration and might provide scope for future research in designing the framework to ensure seamless CRM and BI integration, and framework to evaluate performance and CRM and BI integration by the organizations.

1.4 Delimitation

The focus of this research is on studying the benefits of the integration of CRM and BI, in an organization that has implemented BI along with CRM. This research does not focus on providing a framework for successful integration of BI and CRM, because there is no sufficient empirical evidence proving that BI and CRM integration has benefits. Therefore, the focus is to understand, whether, in an actual organization setting, BI and CRM integration has been beneficial and in what areas. However, an attempt shall be made to identify factors that influence BI and CRM integration.

2 Literature Review

2.1 Customer Relationship Management

Customer relationship management refers to deal with customers in a manner to develop strong relationships with customers that helps to satisfy and retain existing customers and acquire new customers (Kumar, 2010). To build better relationships with customers it is important the organizations have a customer-centric approach and use technology to achieve this (Sharp, 2002). CRM systems enable an organization to use people, processes, and technologies together to manage customer relationships. CRM enables integration of front office functions. The front office functions involve interaction with customers through different modes like **face to face, email, internet, telephone, television, radio,** and wireless application protocol (**WAP**, for wireless data access using mobile networks). The key components of front-office functions are **sales, marketing and customer service**. CRM enables automation of these functions to manage customer relationships (Kincaid, 2003).

2.1.1 Goals of CRM

CRM helps to increase the number of customers by better management of customer relationships. They also discussed, that CRM also helps businesses/organizations to grow and expand (Murrawat & Nasershariati, 2011). CRM systems are expected to help organizations to (Buttle, 2009);

a. improve customer focus,
b. integrate different processes involving customers like sales, marketing, and other services,
c. automate marketing processes, for example, by targeting right customers for any marketing campaign, and
d. automate sales cycle.

2.1.2 CRM - People, Process, and Technology

Customer Relationship Management is to develop and manage relationships with clients/customers, which helps an organization to achieve its goals (Kumar, 2010). CRM is a combination of people, process and technology that seeks the knowledge about the organization's customers (I. Chen & Popovich, 2003).
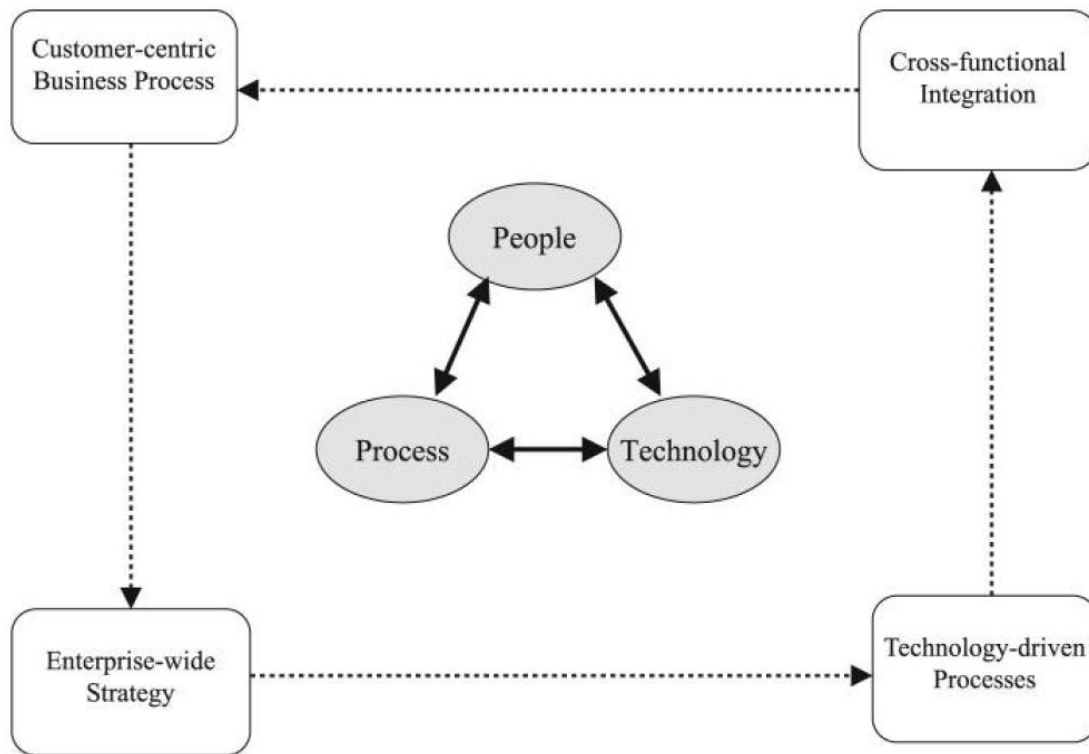
Figure 2.1: CRM based on People, process, technology

Adapted from: I. Chen and Popovich (2003, p. 676)

Figure 2.1 shows the CRM implementation model that integrates three key elements of people, process, and technology in the context of a customer-centric business process, cross-functional integration, enterprise-wide strategy and technology-driven processes.

Table 2.1: People, Process and Technology Principle (Bohling et al., 2006; Bose, 2002; I. Chen & Popovich, 2003)

	Customer-centric business process	Enterprise-wide Strategy	Technology-driven Processes	Cross-functional Integration
People	Awareness of customer-centric strategy among employees	Alignment of task by people with enterprise-wide strategy and awareness	Technology acceptance and training to people to keep pace with technology driven processes	Cooperation and coordination among functional departments
Process	Re-designing of processes according to	Enterprise-wide customer oriented business	Processes fostering Innovations	Processes in place to ensure integration

	changing needs and preferences of customers	processes	and technology adoption	between different departments
Technology	Ready to accept innovative technologies and its challenges	Alignment between IT and Enterprise-wide strategy	IT innovations as enablers to achieve desired goals of non-IT organization	Cross-functional integration to reap benefits of Technology

People

Customer oriented cultural mindset and full attention of the implementation team is mandatory for successful implementation and utilization of CRM. Each employee is responsible for sharing the knowledge and information across different functional departments within an organization. In addition to this, the on-going ***enterprise-wide*** training and education programs must be conducted and attended to improve the usage of existing technology or adopt new innovative technologies (I. Chen & Popovich, 2003). The success of CRM implementation depends on multiple factors such as ***cooperation and coordination among intradepartmental and interdepartmental functional entities of the organization,*** doing and learning the culture of the organization and ***enterprise-wide CRM strategy*** (Bohling et al., 2006). Top management support plays an important role when disagreements and objections happen across functional departments (I. Chen & Popovich, 2003).

Process

According to the surveys conducted by Boston Consulting Group and Deloitte Consulting, it has been proved that "retaining customers is more profitable than building new relationships". Generally, CRM focuses on a single customer rather than a group of customers. It also needs the organizations should be organized around the customers and their needs. So, it is considered to ***an enterprise-wide customer-centric business model*** (I. Chen & Popovich, 2003). A ***customer-centric firm*** treats every individual customer separately and unequally so as to fulfill their needs as per their preferences (Bose, 2002). This involves continuous processes that need redesigning of core business processes considering the customer's changing needs and preferences. The main goals of such ***customer-centric model*** could be - 1. Increasing revenue 2. Encouraging customer loyalty 3. Cost reduction and 4. Operations effectiveness. The changes in organizational culture are an equally important aspect of successful implementation of CRM (I. Chen & Popovich, 2003).

Technology

IT has always been an enabler for any organization to achieve their goals or improve the organization's performance. Technology aspect of CRM was proved to be a significant influence on business performance among SMEs when the research conducted in Malaysia (Ismail, Talukder, & Panni, 2007). ***Technology innovations*** are useful for CRM applications that collect and analyze customer data by identifying customer patterns, behaviors, design and develop predictive models, improve response time and quality to customers' queries and complaints and thereby deliver effective service or product to their customers. The key

infrastructures of CRM applications are data warehouse systems and the internet (I. Chen & Popovich, 2003).

2.1.3 Common Issues with CRM

Data in CRM comes from different channels and sources, which often leads to a collection of bad quality data (Akoka et al., 2007). Data quality issues in CRM cause problems for organizations to take maximum advantage of benefits CRM can offer (Reid & Catterall, 2015). Data management forms an essential part of the better utilization of CRM and therefore, leads to better customer relationship management (Peltier et al., 2013). Proper customer data management is positively related to the quality of customer relationship and therefore, the success of the business (Soltani & Navimipour, 2016).

Another issue with CRM is that although CRM has a lot of data, there is lack of advanced analytical capabilities (Hall, 2004). Even though organizations are effective in dealing and interacting with customers, to be successful in competition, data analysis techniques need to be used to create holistic view of customer (Xu, Yen, Lin, & Chou, 2002). From this discussion, it is clear that though CRM has a lot of data, utilization of that data to get maximum useful information is a challenge.

2.2 Business Intelligence

BI software is a set of technologies, like, data warehousing, data mining, OLAP, visualizations, that helps organizations to use data asset, to make better decisions (Chaudhuri, Dayal, & Narasayya, 2011). They are the analytical tools that use operational data to present complex information to decision makers of the organization. The main goal of using Business Intelligence systems is to improve the timeliness and enhance the quality of the data that acts as an input for several decision-making tasks. The central idea of using BI in any organization is to get the actionable information at right time, location, and form that can help the decision maker in decision making (Negash, 2004). However, as per experts, BI can be viewed in different ways. Data warehousing experts view BI as a supplementary system and treat it as a technology platform for decision support applications. Data mining experts view BI as an advanced decision support system with algorithms applications and data mining techniques. Statisticians view BI as a forecasting and multidimensional analysis tool (Sahay & Ranjan, 2008).

A key strategy to any organization is to understand, transform and shape the data to achieve competitive advantage and its business success factor is gathering a vast amount of data flowing within and across the whole enterprise processes and making sense out of it (Williams & Williams, 2003). On one hand BI represents an analytic process which transforms data into information about current market activities, positions and competencies and goals that the organization should chase and try to opt to stay competitive. On the other hand, it represents information system concepts like data mining, querying and reporting, OLAP that offer different ways for goal-driven and flexible analysis of the data. Therefore, it is inferred that BI system is a combination of decision support systems and data warehousing (Sahay & Ranjan, 2008).

2.2.1 Business Intelligence Framework

Data Sources & Data Movement

Figure 2.2 depicts the general BI framework. There can be multiple data sources including external data sources, which provide data on which business intelligence is to be applied (Watson & Wixom, 2007). Data is moved to data warehouse servers using the sourcing process called as Extract, Transform, Load (ETL) (Fjermestad, 2009). This process helps in preparing the data by the cleansing of extracted data, data transformation to make it suitable for analysis and then loading it into the data warehouse (Phillips-Wren, Iyer, Kulkarni, & Ariyachandra, 2015). Complex Event Processing Engines help in the usage of operational data for the information to be available almost in real time (Chaudhuri et al., 2011).

Data Warehouse Servers

The transformed and cleansed data is stored in data warehouses (Watson & Wixom, 2007). Relational or like a multidimensional database can be selected as engines for storing and retrieving data from the data warehouse (Datta & Thomas, 1999). Engines like MapReduce Engine in data warehouse help in the execution of complex queries (Chaudhuri et al., 2011). Data warehousing is one of the key requirements and foundation technologies for BI (H. Chen et al., 2012).
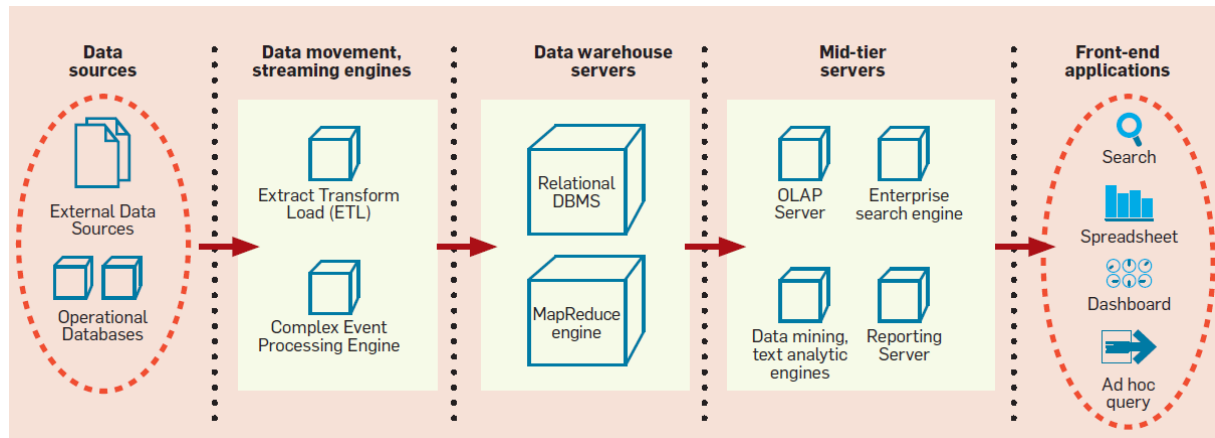
Figure 2.2: Business Intelligence Framework

Adapted from: Chaudhuri, Dayal and Narasayya (2011, p.90)

Mid-Tier Servers

In between data warehouse and front-end applications lie "Mid-tier servers", like OLAP Server, Enterprise search engine, Data mining, text analytic engines, and Reporting servers (Chaudhuri et al., 2011). Online Analytical Processing (OLAP) is the process of retrieving and navigating data from the data warehouse for viewing or further analytics (Jukic, Jukic, & Malliaris, 2008). Enterprise Search technique which is one of the foundational technologies in BI uses indexing or keyword-based search to retrieve data and analyze it (H. Chen et al., 2012). Data mining is a process that applies various analytical techniques, including statistics,

and simulation to data to convert it into useful information (S. Khan, Ganguly, & Gupta, 2008). Text Analytics helps to analyse the data available in form of large texts like emails and reviews (Chaudhuri et al., 2011).

Front-end Applications

Finally, the output of Business Intelligence is made available to users through front end applications such as search, ad-hoc queries, spreadsheets, and dashboards (Chaudhuri et al., 2011). The visualizations, that is the way in which information is presented to the decision makers, plays a key role in decision-making process and can influence the accuracy of decisions (Speier, 2006).

2.2.2 Benefits/Goals of Business Intelligence

BI offers benefits such as (Chaudhuri et al., 2011; I. Chen & Popovich, 2003; Watson & Wixom, 2007):

a. Cost reduction by avoiding redundant data management processes
b. Timely delivery of data
c. Advanced analytics for better decision making (Saldanha & Krishnan, 2011)
d. Enables business strategies (for example, organization transformation, new customers identification, and customer retention (Habul & Pilav-Velic, 2010)
e. Use of BI tools helps in having trusted data in place, McDonnell (A. Khan et al., 2012)
f. Business performance management (for example, implementation of scorecards and dashboards)
g. personalized customer offers (H. Chen et al., 2012)
h. Provides a holistic view of the customer (Habul & Pilav-Velic, 2010)

2.2.3 Business Intelligence Success Factors

Success of BI in an organization depends mainly on following factors (Phillips-Wren et al., 2015; Watson & Wixom, 2007; Yeoh & Koronios, 2010):

1. Ensuring proper usage of information by users/ decision makers

2. IT infrastructure, trainings, and other support from the organization

3. Alignment BI strategies with business strategies

4. Proper governance of issues like data quality, funding, and project management

2.3 BI and CRM Integration

Figure 2.3, BI and CRM integration, partially adapted from Chaudhuri, Dayal & Narasayya, (2011, p. 143); Baars & Kemper (2008, p. 90), depicts how CRM can be integrated with BI. The CRM system enables interaction with customers using different modes like face to face, emails, telephone etc, and data is collected from these sources (Baars & Kemper, 2008). Marketing, sales, and services are customer-facing activities and CRM helps in automating

them (Buttle, 2004). Data from CRM system and other systems is sourced into BI tools, as explained in BI architecture.
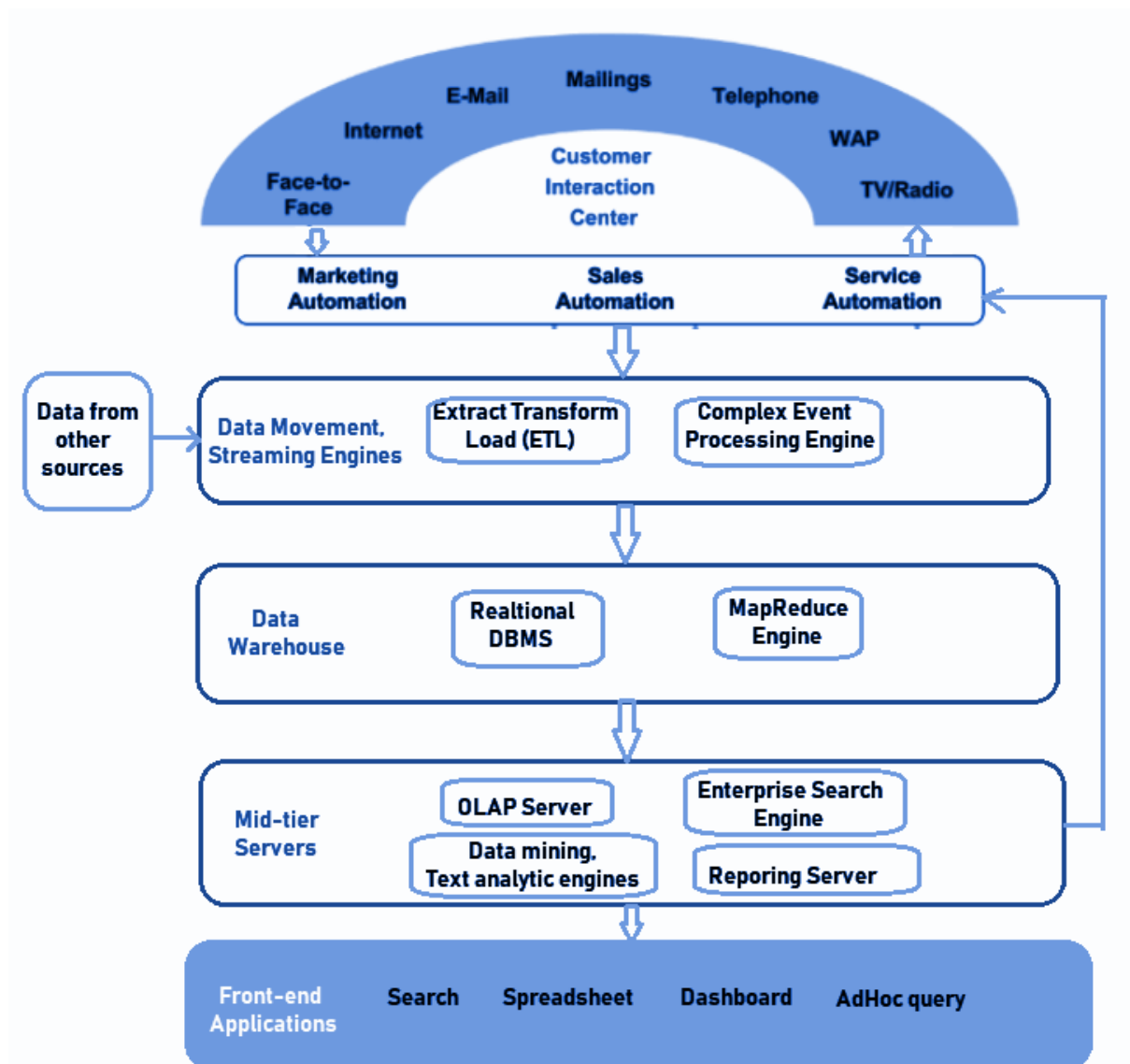
Figure 2.3: BI and CRM integration

Partially adapted from: Baars and Kemper (2008, p. 143; Chaudhuri et al. (2011, p.90)

2.3.1 BI and CRM integration benefits

Integration of CRM with data warehouse can help in better utilization of data generated from CRM. CRM's integration with data warehouse helps organizations to in cost optimization. This is achieved by reduction in data processing time, availability of data on time, management of data quality, which contributes to better understanding and retention of customers (A. Khan et al., 2012).

BI tools like OLAP and data-mining help to come up with information about customers, that help in better understanding the customers (J. S. Chen & Ching, 2004). BI usage facilitates personalized customer offers leading to better customer relations (Chaudhuri et al., 2011; H.

Chen et al., 2012) Management of any organization needs accurate and consistent data to make the decisions at the operational level. BI helps for such data transformation and in turn, helps decision making. That is why it is very important to integrate such data sources to achieve the desired goals sought by the organization (Harper, 2017).

The data coming from CRM systems and other sources like customer survey and social media can be used by the BI-tools for further analysis to extract information in the form of reports, visualizations, etc (Chaudhuri et al., 2011). This information in different forms gives knowledge about customers and helps in decision making to the employees as well as top management. The quality of such data is a crucial factor for successful integration of CRM and BI (Reid & Catterall, 2015).

2.4 Theoretical Framework

CRM implementation always gets influenced by the quality of customers' data available (Alshawi, Missi, & Irani, 2011). Data warehouse which is a foundation technology for BI, helps in maintaining data quality(Handzic et al., 2014). Therefore, CRM and BI complement each other, CRM provides data and BI can perform advanced analytics and provides easy to understand information (Baars & Kemper, 2008). Business Intelligence contributes to the system such that it correlates, consolidates, and transforms customer data into customer intelligence which will help to perform better understanding of customer behavior. Usage of BI on top of CRM can benefit organizations in many ways such as customer-related information can be accessed quickly, quality of data can be maintained, advanced data analysis tools that generate higher level and quality summary and detailed reports (I. Chen & Popovich, 2003). Following table 2.2, represent how goals of CRM and benefits of BI linked. The table is based on literature discussed in previous sections:

Table 2.2: The relation between Issues in CRM and Benefits of BI

Goals of CRM	Benefits of BI
Improve Customer Focus	Provides panoramic customer view and enables business strategies for new customers identification, and customer retention
Marketing Process Automation (Eg. Targeting campaigns)	Personalized customer offers and campaigns, single customer marketing
Issues in CRM	**Benefits of BI**
Issues with data quality	Facilitate having trusted data in place and avoid redundant data management processes
Basic Analytics	Advanced Analytics
Only CRM data considered	Data considered from multiple systems

Above table is diagrammatically depicted in following figure 4. Based on the past research, the existing framework for successful implementation of CRM has been modified to include data and Business Intelligence. The framework, as depicted in Figure 2.4, can be used to study how CRM and BI integration can improve the existing CRM systems to understand the customer better.

Figure 2.4: Towards theoretical framework

Partially adapted from: I. Chen and Popovich (2003, p. 676)

The success factors for BI which as discussed are, ensuring proper usage of information by decision makers, IT infrastructure, trainings & other support, alignment with business, maintaining data quality, project management etc. (Phillips-Wren et al., 2015; Watson & Wixom, 2007). These factors involve people, process, and technology (Yeoh & Koronios, 2010). Therefore considering BI success factors and CRM success factors; a. Customer-centric processes, b. Enterprise-wide strategy, c. Technology-driven processes, and d. cross-functional integration (I. Chen & Popovich, 2003). There is a similarity in success factors, as depicted below:

a. IT infrastructure, trainings & other support ------> Technology driven processes

b. Alignment with business strategies -------> Enterprise wide strategy

c. Maintaining data quality, project management -------> Technology Driven processes

d. Proper usage of information by users/decision makers --------> Enterprise wide strategy and Customer-centric processes

Coordination and cooperation among various enterprise-wide functional entities should also be needed during the integration of CRM and BI systems to maximize its usage (like education or training of employees) (Bohling et al., 2006). Organizational culture and the attitude of its employees should be considered and adaptive according to the surroundings so as to accept the technological emersion of Business Intelligence (Pearlson, Saunders, & . 2016). Further, technology innovations in terms of Business Intelligence and its integration might have the ability to do the advanced analysis as required to enable the effective

communication between customers and organizations (Finnegan & Currie, 2010). According to People, Process and Technology principle, when the CRM system gets integrated with BI, the enterprise-wide changes in business processes come by default. During such changes, it needs to be ensured that focus of each process is a customer. The business processes should be organized around the customer considering their requirements, preferences or interests. (I. Chen & Popovich, 2003).

Additionally, the success of the integration of any information systems depends mainly on enterprise-wide strategies, focus on processes, re-skill and training of resources, utilization of knowledge, and support from management for IT infrastructure and funding (Sumner, 1999). These are also related to people, processes, and technology. Therefore, theoretical findings indicate that for successful usage of BI with CRM, the following are key enablers:

    a. Customer-centric process

    b. Enterprise-wide strategy

    c. Technology Driven Processes

    d. Cross-functional integration

Following Figure 2.5 is an extension of figure 2.4, and depicts theoretical findings from literature review:
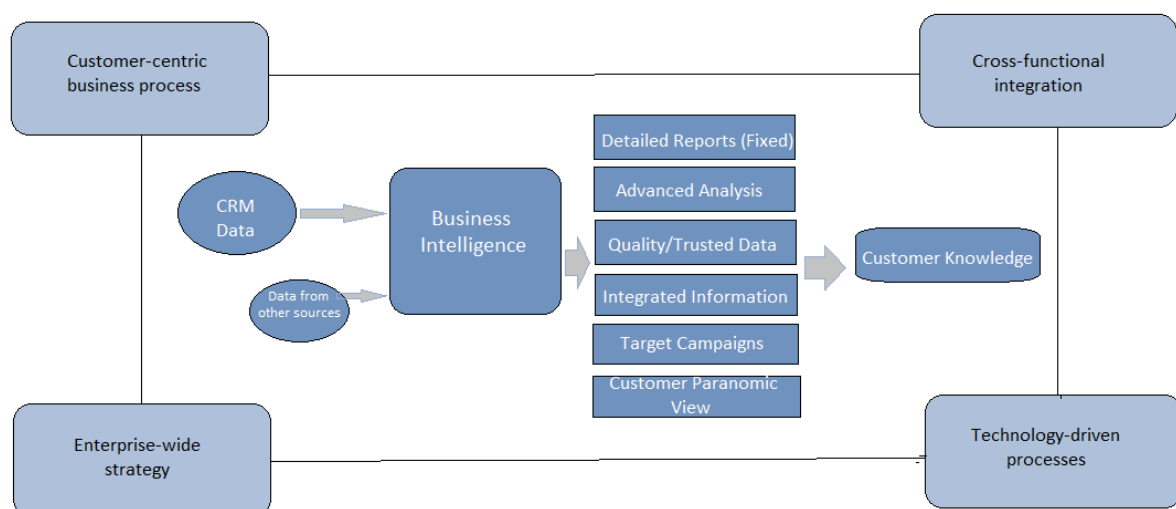
Figure 2.5: Theoretical framework

Partially adapted from: Chaudhuri et al., 2011; I. Chen and Popovich, 2003

The theoretical framework depicted in figure 2.5, shall be used to guide the research using empirical data, to analyze the empirical findings against the theoretical findings.

3   Research Method

3.1 Research Design

This section explains the research approach, data collection method, empirical site, and analysis methodology. There is a separate section for each of these topics. Research approach section describes the approach taken for the research and reason behind selecting a particular approach. Similarly, in data collection method section, there is a detailed explanation of methodology with reasoning, details of informants, and explanation of data collection instrument. Empirical site section gives a background of the empirical site selected and reason behind the selection the empirical site. Analysis section explains the methodology adopted to carry out the empirical data collected during the research.

3.2 Research Approach

This research attempts to explain how BI complements CRM to achieve CRM goals and overcome CRM challenges. This type of research is known as explanatory research (Bhattacherjee, 2012). The explanations are provided in terms of benefits of using BI with CRM and also explain the factors enabling the success of this integration through empirical findings. The research shall follow following steps:

1. A literature review is conducted to identify concepts related to the research topic and discuss these concepts in relation to the research question. The existing literature is discussed and analyzed. Based on the literature review and theoretical findings, a theoretical framework is developed to guide this research.
2. A suitable empirical site, where customer focus is a key component of organization strategy is identified. Qualitative data in form of interviews is collected from the empirical site.
3. This data is then analyzed to come up with findings and these findings are categorized with guidance from the theoretical framework.
4. The findings are then discussed in light of the literature presented in literature review and conclusions are derived from these discussions.

3.3 Research Strategy

The qualitative research method is used to carry out this research. Qualitative research is based on qualitative data collected through qualitative techniques like interviews, focus groups (Bhattacherjee, 2012). For this thesis, a case based study is conducted in an interpretive way. The empirical findings shall be interpreted in relation to existing literature in the area. In this thesis research, a relevant framework is identified and modified in accordance with existing research and literature available. Since there is lack of empirical evidence or theory regarding usage of CRM and BI together, this framework and existing literature would guide this research with a possibility of generation of new concepts.

Since this research involves testing the theoretical framework, this is a deductive research. In a deductive research, the researcher tests the concepts suggested by theory (Bhattacherjee, 2012). In this case, concepts are suggested by the theoretical framework containing benefits of using BI and CRM together. The theoretical framework also suggests factors affecting the

successful integration of BI and CRM. These benefits and factors shall be compared against the empirical findings from the research.

This research is conducted at the organizational level and therefore, the unit of analysis is the organization. We have decided to carry out research at single case site, Skånetrafiken, which is discussed in later sections. The intention is to study one case in-depth to test the existing concepts with the possibility of generating new concepts. This case based study would provide scope for further research. Also, the case site should be selected considering its relevance to the research question (Bhattacherjee, 2012). Therefore, in this case, the case site selected is the one using BI along with CRM, which is in line with the research question. However, since this is an interpretive research, the possibility of modifying research question during research was not ruled out.

3.4 Data Collection

Interviews are used as data collection method in this research. The interviews were semi-structured. The set of interview questions were predetermined, and interview topics were fixed, however, the ordering of the questions have been changed, and some questions have been added or omitted if they were inappropriate for the interviewees. The framework discussed in the literature has been used as a guide to determine interview focus areas and to come up with interview questions. Based on the framework, the interview questions have focused on; a. enterprise-wise wide strategy, b. customer-centric business processes, c. cross-functional integration, d. Technology-driven processes and e. Data quality. Additionally, open-ended question for interviewees to share their opinion which is not covered in question was asked. In addition to this, before coming up with the interview, an informal meeting was scheduled with relevant stakeholders, to ensure that relevance of case site. This informal discussion also helped to get a direction of deciding upon the research approach and interview topics.

Bhattacherjee (2012), discussed that interviewees should be selected carefully, considering their involvement and relevance to research. In this case, respondents were requested with expertise in CRM, BI or both. The key roles and responsibilities of the respondents were not exactly same, which ensured that different perspectives are obtained in the research. Three of the interviews were face-to-face interviews and three of them were telephonic. As discussed in Bhattacherjee (2012), before the interviews, the interviewees should be asked if they want to make their response anonymous and the interview can be recorded if interviewee gives the permission. Hence, before conducting every interview, interviewees were asked if they want to keep their response anonymous and are comfortable with recording the interview. To avoid the biases by the interviewees, the research topic in depth was discussed as per interviewees' requests after conducting interviews. The main purpose of recording interviews is to improve the accuracy as it might affect the recalling ability of the interviewers (Recker, 2013).

These interviews were conducted in a semi-structured pattern as intention was to engage the two-way communication. During such interviews, the responses are not only the answers of the questions but the reasons behind those answers can also be determined or asked. Also, due to this, they can also add extra essential information or knowledge about which the interviewer might not be aware of (Recker, 2013). In this case, such conversations helped to understand and get the complete picture of CRM and the need of BI within organization. Also, initially we were not aware that though Skånetrafiken is in transport industry, it just

provides administrative and digital solution. They have contract with travel or transport companies as shown in Figure 3.1. Also, for the data analysis, the audio recordings of the interviews were transcripted so that data analysis techniques can be performed to conclude findings of the research.

Helsingborg you have little frozen though near we are in time and we can make in every, we can fall in every line, every bus stop, we can see, unless it's very good. We have a contract with a transport company, you have to follow the timetable if you can't do this yo get less salary.

Figure 3.1: Transcription text - Travel Company Contract

Table 3.1 gives the details of the interviews. Interviewee codes are given instead of their names as all of them wished to keep their response anonymous. Abbreviations for interviewers are used as following-

Sunjita Sunjita = SS

Supriya Rajendra Shinde = SRS

Table 3.1: List of Interviewees and related information

Interviewee Code	Name	Role	Medium	Duration
CM	Anonymous	CRM Specialist	Face-to-face	00:32:32
CB	Anonymous	CRM System Lead	Face-to-face	01:02:52
AO	Anonymous	Frequent BI-user	Face-to-face	00:31:49
HT	Anonymous	CRM Developer	Telephonic	00:51:30
AL	Anonymous	Systems Manager	Telephonic	00:23:16
MS	Anonymous	Product Owner	Telephonic	00:18:53

Following Table 3.2 gives an explanation of the purpose of asking those specific question.

Table 3.2: Interview Questionnaire Explanation

Question No.	Interview Question	Purpose	Category

1.	Could you please Introduce yourself and your role within the organization? (Which organization level do you represent?)	To understand the professional background of the person and organizational level	Introduction
2.	What is your understanding of CRM? (in terms of purpose, goals)	To understand if every employee of the organization has similar knowledge about CRM	Enterprise-wide Strategy
3.	How, do you think, the CRM goals are aligned with organization's strategy/goals?	To know if the whole organization following the same strategy or aware of the strategy	Enterprise-wide Strategy
4.	What CRM tools are currently implemented by the organization?	To understand if the entire organization uses the same technology for similar tasks	Enterprise-wide Strategy
5.	How you think, you could improve the usage of CRM?	To understand upto what level the employees are aware of the strategy and think in that direction	Enterprise-wide Strategy
6.	How is it ensured that the team working on BI is aware of goals of CRM?	To know if the awareness of CRM goals is spread among all employees	Enterprise-wide Strategy
7.	How well do you think CRM helps you to understand the customers?	To understand if the CRM is helping to achieve primary strategy of any customer-oriented enterprise	Customer-centric processes
8.	What do you think could be improved in CRM to understand the customers better?	To understand if the efforts have been taken to achieve customer-centric goals of the company	Customer-centric processes
9.	What problems do you face in CRM?	To understand if there are any problems in CRM to get the information about the customers	Customer-centric processes
10.	How are these problems resolved?	To understand if these problems were resolved and how	Customer-centric processes
11.	How often is the system used and for what purpose?	To find out how is the usage of technology within the organization	Technology - driven processes

12.	What are the other systems to which CRM is integrated or might be integrated in future?	To find out the organization is up for the technological usage	Technology - driven processes
13.	How is CRM integrated to BI?	To understand if the two technologies - CRM and BI are integrated. If yes, then how.	Technology - driven processes
14.	What type of CRM data is analyzed using integrated BI and upto what extent?	To analyze how the enterprise utilizes BI tools to complete the desired tasks.	Technology - driven processes
15.	What degrees of training was required and provided to relevant stakeholders for maximization of BI usage over CRM?	To know if the required efforts are taken to maximize the usage of available technologies	Technology - driven processes
16.	What processes have changed for successful integration of BI and CRM?	To understand if the required changes were done in the processes to maintain the balance when the technological changes were made and also if the organizational culture is adaptive.	Technology - driven processes
17.	How the CRM data is accessed by BI systems?	To understand more about the accessibility across different departments	Cross-functional Integration
18.	How often do you communicate with BI professionals?	To understand about the communication happening across different departments	Cross-functional Integration
19	What do you think is the purpose/need of using BI with CRM?	To get more knowledge about the transparency of knowledge among employees	Cross-functional Integration
20.	What is your view on the quality of data collected from CRM?	To get knowledge about the quality of existing data	Data
21.	Do you follow any guidelines or processes or tools to maintain the quality of the data?	To know if any efforts are taken by the organization to maintain quality of data	Data
22.	What do you think a. Is there sufficient data available and the issue is with data quality b. Sufficient data is not available c.	To understand if there is any issue. If yes, what is the exact issue with data	Data

	both (In case of b or c ask what additional data should be collected)		
23.	Do you think if there is any need of further analyzing the data coming from CRM?	To get the employee's opinion on the need of using any advanced technology	Benefits of BI and CRM integration
24.	What do you think could be improved in CRM?	To get the employee's opinion on making the integration better	Benefits of BI and CRM integration
25.	Do you think Business Intelligence integration with CRM has improved/or can improve the value from CRM?	To get employee's opinion on the benefits of CRM and BI integration	Benefits of BI and CRM integration

3.5 Empirical Site

The empirical site is selected based on theoretical sampling. The theoretical sampling strategy suggests that the empirical site shall be selected based on suitability of the site in accordance with the research area (Bhattacherjee, 2012). Therefore, the empirical site selected is an organization who has implemented BI on top of CRM which is inline with the research question.

The empirical site selected for this research is Skånetrafiken which is responsible for public transport in Skåne region of Sweden. Its mission is to drive public transport which is financed by the citizens of Skåne and run by the public transport committee. Around 57% of the costs are financed by ticket revenues and other external returns, the remaining cost is the taxes from Region Skåne ("Skånetrafiken ", 2017). Proper information management using information systems helps them to gain information about several important stakeholders contributing to transport information system (Mruthyunjayappa, n.d.). Skånetrafiken uses Customer Relationship systems to know their customers better, however, there are additional effective ways of BI to analyze customer information thoroughly.

3.6 Analysis

As our research has interpretive research approach, we have used Qualitative Data Analysis method to analyze the data collected from the interviews conducted at case site. The data was collected in the form of interviews. For qualitative research, there are many techniques for data analysis such as coding, memoing, critical incidents, and discourse analysis (Recker, 2013). We have analyzed the content using coding technique explained in the following section.

3.7 Analysis technique

As the coding technique is commonly used for qualitative data analysis and was suitable to this research given vast amounts of interview data, the coding technique was chosen for analyzing the interview transcription (Appendix 3). From the repetitive readings of the interview transcripts, most important and frequently mentioned words and phrases were collected and highlighted as per observed patterns of the content of transcripts. The words and phrases having similar context were grouped together and were coded with a relevant category name. By frequent reading and understanding of the content of transcripts, we tried to find a logical connection between these words, phrases, and categories. These categories were further classified as concepts. The concepts were named after repetitive reading of transcriptions and observation of codes and categories, finding the logical connection between them.
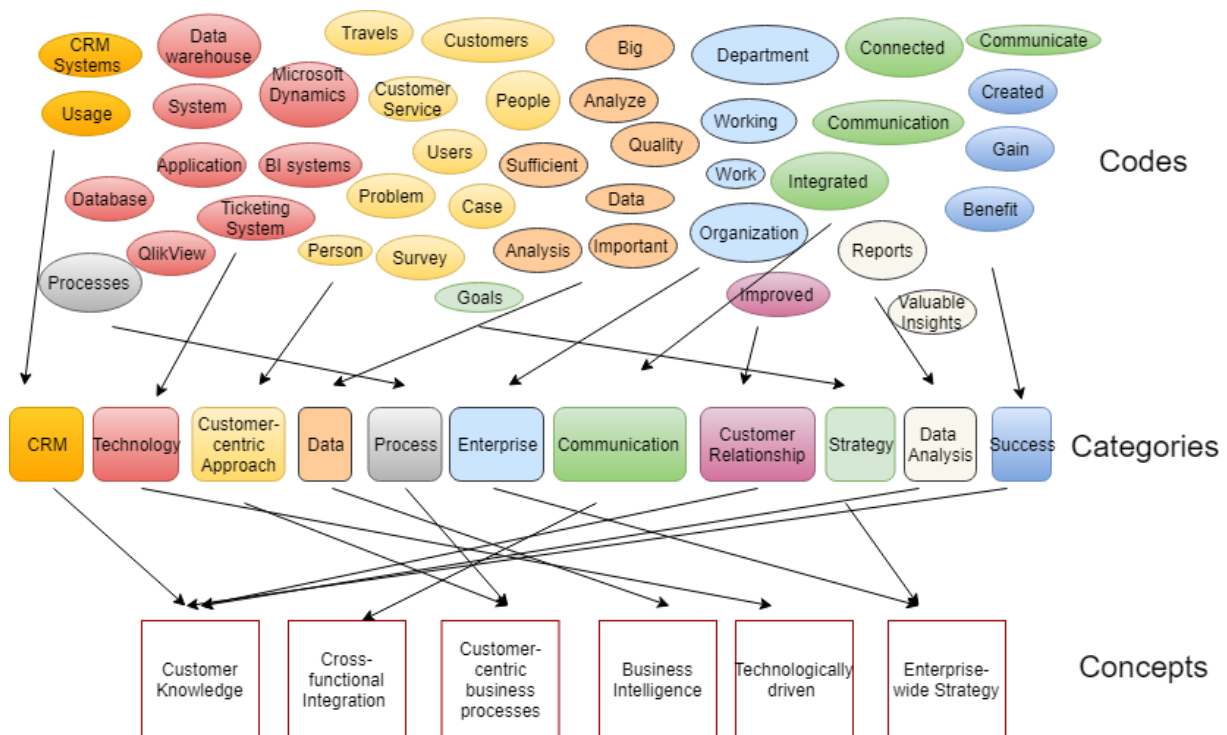
Figure 3.2: Representation of Codes, Categories, and Concepts

Categories derived are such as CRM, technology, customer-centric approach, data, process, enterprise, communication, customer relationship, strategy, data analysis, success, etc, based on related themes. These codes further classified as customer knowledge, cross-functional integration, business intelligence, technologically-driven and enterprise-wide strategy. These concepts represent the five elements of the proposed framework as shown in Figure 3.2. It has been influenced by "Grounded Theory Approach", though our research study is deductive and had no intentions to perform Grounded Theory.

Additionally, these codes were referenced in transcripts and text was highlighted with different colours based on the categories they fall into. For instance, yellow colour was used to highlight key points related to customer-centric processes and green colour was used to highlight the benefits from the use of BI along with CRM. Following Figure 3.3 is an example:

Row 3	SRS	Okay. So according to what is the goal or purpose of using business intelligence in this organization?
Row 4	AO	Yeah, well I don't know how much you know about our business. We have kind of two main goals which the whole organization is trying to... to reach and one is that we will have more satisfied customers eight of 10 should be happy with it and the other one is the market share and we compare ourselves with the car. So we want more people to let the car stand at home and travel by bus or train instead. And our goal is a 40% market share is what we want to achieve and right now we have 29%. I don't know if I answered your question.
Row 5	SRS	Yeah yeah. Purpose of using bi within organization and there is CRM system as well. So with that?
Row 6	AO	Well. That I don't know so much about actually how how the system works. So we can reach our goals because we ....we work in different areas and how the system works. I don't think I'm the right person. But what... what I want is that a lot of customer data should be put together with other data so you can cross a different candidate than then I mean if like today. The weather is nice can we see an increase or decrease in our buses with travelers or the more people and getting their bicycles, that kind of thing. I think that would be very interesting. For example, just to cross whether date I am traveling. They see over time and see difference.
Row 7	SRS	Okay, so, and how do you think the goals of using the BI align with the organization strategy or organizations ...

Figure 3.3: An example of referencing text based on concepts

In addition to this, we used NVivo software as well for determining the keywords as shown in figure 3.4. NVivo is a software program that can be used to perform qualitative data analysis for qualitative research. NVivo software is generally used by researchers to manage data and ideas, query and visualize the data, and generate reports out of the data. We have used NVivo for visualizing the data. Our main purpose of using this software is to improve the effectiveness and efficiency of the analysis. (Bazeley & Jackson, 2013)

In this way, coding technique helped to draw the results and conclusions that are discussed in later sections.

Figure 3.4: Word clouds generated from NVivo

3.8 Research Quality

While performing this research certain standards of conduct have been followed to ensure research ethics are followed while conducting research.

3.8.1Reliability

Reliability of a research is a replication of the research multiple times to arrive at similar results (Bhattacherjee, 2012). Consistency in results is important to ensure reliability of results (Recker, 2013). This research is carried out the empirical site, where CRM and BI are being used together. And the findings are analyzed with literature available from different sources, in order to ensure the reliability of the research. Different principles of interpretive research, like the principle of interaction between researchers and subject (Klein & Myers, 1999). During the interviews, we tried to ensure that interviewees are comfortable and are able to share honest opinions.

The techniques selected to carry out a research influence the reliability of the research (Hevner & Chatterjee, 2010). The techniques to carry out research were selected to ensure the reliability of the research. For instance, the literature review consisted of a review of literature from leading IS journals, along with journals from other disciplines. This is considered as a good practice to write a literature review in IS research (Webster & Watson, 2002). Similarly, research methodology selected is qualitative research, because the emphasis was required on the context of the research and there was a need of carrying out the research in a natural setting. The qualitative research approach is suggested to be used when the emphasis is on the context (Recker, 2012). Also, interviews conducted were semi-structured, because asking irrelevant questions to the interviewees could negatively impact the reliability of the research (Recker, 2012). Therefore, the interviewees were selected based on the relevance of their experience in relation to the research topic. Also, semi-structured interviews ensured that irrelevant questions or the questions with which interviewees might not be aware of were skipped, or modified based on interviewee's knowledge. Before conducting the interviews, a casual meeting was conducted with relevant stakeholders to understand the research settings and identify interviewees.

3.8.2Internal and External validity

The validity of research is very important and should not be compromised (Bartunek, Rynes, & Ireland, 2006). In order to build internal validity, it is important that the findings are compared with similar and conflicting literature (Eisenhardt, 1989). In this research, the findings are compared with the literature, to ensure the validity of the research.

Internal validity refers to causality in research, that is, the impact of the independent variable on the dependent variable (Bhattacherjee, 2012). In this case, the CRM effectiveness depends on its integration with BI and other factors involving people, process, and technology. In case of research, maintaining the internal validity of the research is a challenge as there is little control on independent variable (Bhattacherjee, 2012). However, with appropriate data collection techniques and data management, internal validity could be maintained and research could be made credible (Bhattacherjee, 2012). The data collection technique and analysis is explained in detail. The interviews have been transcribed verbatim are made available along with the research report. Additionally, the interview questions have been formulated in a way, that helps to understand the impact of CRM and BI integration and other factors to achieve benefits. The theoretical framework had been decided with reference to findings from the literature and have been documented clearly.

External validity refers to applicability of research to other organizations or settings (Bhattacherjee, 2012). A detailed description of the research context, settings, and research methodology is represented to ensure that researchers are able to transfer the findings to other settings. The details in research report can help understand the context before applying the research findings to a setting with similar context.

3.8.3 Ethical aspects

Ethics are an important aspect of any research since it usually gets manipulated by the organizations or people in wrong ways to accomplish their purpose and, hence involve in actions that contradict the standards of scientific conducts. Basic ethical principles of any research include - 1. Voluntary participation and harmlessness 2. Anonymity and confidentiality 3. Disclosure 4. Analysis and reporting (Bhattacherjee, 2012). In our research these ethical principles have been followed. **Voluntary participation and harmlessness.** The participation of interviewees was voluntary. We asked our point of contact from case site to connect us to the participants who want to participate in our research voluntary. Two of the participants did not initially realize that the interviews will be conducted in English and were not comfortable to speak in English, so they stepped back and were not insisted to participate. **Anonymity and confidentiality.** All participants were free to keep their identity as anonymous so all of them preferred to keep their identity anonymous. Also, they were requested before the interview if we can record the interviews so that it would be convenient for us to perform analysis on data and they were promised that these recordings were not disclosed outside the university and will solely be used for the research. **Disclosure.** The participants were provided the research plan document of our thesis so they can decide if they want to participate or not. **Analysis and reporting.** During the analysis of the data collected, few unexpected and negative results were also found which are mentioned and discussed later. The ethical issues in writing are generally referenced to honest reporting, plagiarism, co-author contributions, and appropriate use of language. The research was carried out by keeping these aspects in mind (Recker, 2013).

3.9 Biases

Interviews are a more personalized form of data collection and might have a risk of causing biases. As mentioned earlier, the identities of the participants are anonymous, so the risk of biases is mitigated while collecting data. Being anonymous, the interviewees did not hesitate to provide an honest and true responses to the questions. To get the responses in detail, the probing techniques such as pausing and waiting after the response, explaining the questions in detail if not understood and repeating their responses to ensure the correct understanding of the response by the interviewer are important (Bhattacherjee, 2012). These techniques have been adopted to help interviewee understand the question and to get the responses with expected details from the interviewees.

4 Empirical Findings

Customer-centric processes

The aim is to keep the customer at one single place and to be updated about their customers, so the customer's database is updated every night (Interview 1, Row 6). Attracting customers (Interview 2, Row 4), and ensuring customers communicating with the organization is of importance to them (Interview 1, Row 6). One of the major goals of the organization is to have highly satisfied customers with an aim of having eight out of ten customers satisfied (Interview 3, Row 4). The organization strives to know more and more about the customers and to understand their customers better (Interview 3, Row 84). They aim to have customers closer to them so that they can know them better (Interview 4, Row 34). They work hard towards understanding their customers'/passengers' needs and provide them services that make their travel convenient (Interview 5, Row 6). Customer delight is of high importance (Interview 5, Row 6).

Cross-functional Integration

Different departments communicate well with each other in the organization and are always ready to help each other (Interview 2, Row 36). Both BI and CRM users communicate with each other, they are aware of needs and information available to them (Interview 2, Row 38). BI professionals help other departments to be aware of the usage of BI because it is a big but powerful system (Interview 4, Row 83). There are discussions between BI and CRM users regarding what kind of report could be helpful, what reports should be static or dynamic, and whether reports are required to be displayed in CRM or in BI user interface (Interview 4, Row 95). There is the scope of improvement in communication between CRM and BI people (Interview 6, row 19).

Enterprise-wide strategy

The enterprise wide strategy is focussed towards the goal of having satisfied customer and to encourage people to travel using public transports (buses and trains) and not by their cars (Interview 3, Row 4). In order to that tools like CRM and BI are used to know customers and target suitable campaigns to customer (Interview 4, Row 8). The purpose of using BI is aligned with the goals of the organization towards having satisfied customer, but there is a scope of improvement in the alignment (Interview 3, Row 10). The targets of different departments are aligned with each other and the goal of the enterprise, additionally to ensure this alignment, different departments are aware of targets of other departments (Interview 6, Row 27).

The employees have a clear vision on what they want to do and how their goals can be achieved (Interview 1, Row 8). The employees are made aware of benefits of the systems used in organizations have to offer and they can use the system in the best possible way (Interview 1, row 18). For instance, CRM people make marketing department aware of how they could benefit from the usage of CRM and BI (Interview 1, Row 42). There is awareness regarding the fact that to benefit from systems in place, proper usage of those systems is required, and therefore, proper training need to be delivered to ensure that (Interview 3, Row 86). Skills in business need to be improved to use information from BI (Interview 6, Row 4).

Technology Driven processes

There are technology updates and upgrades done like introduction of new ticketing system as and when required (Interview 4, Row 107). It is ensured that system upgrade is done properly, it is one of the most critical task which has to be completed without major system changes and upgrade failures (Interview 1, Row 22). Additionally, with introduction of new processes, new roles have also been created in the organization to manage CRM and BI integration (Interview 4, Row 103). Additionally, with introduction of BI, trainings are provided to different users, for example, how to look at the reports generated using BI (Interview 5, Row 32). Another example is the training given to bus drivers to turn GPS on, so that, GPS data can be tracked, and reports can be generated (Interview 5, Row 33; Interview 5, Row 35). Within the organization Microsoft Dynamics 365 is used as a CRM tool and QlikView, Power BI and Excel as BI tools. (Interview 1, Row 6; Interview 2, Row 14; Interview 3, Row 27; Interview 4, Row 16; Interview 5, Row 31)

Data Quality

In order to use BI systems, data quality is given high importance, so that good quality data is used by BI and can be analyzed further to derive useful information or knowledge (Interview 1, Row 20; Interview 1, Row 22; Interview 1, Row 49). There are processes and guidelines in place to ensure data quality (Interview 2, Row 20) and data quality has been improved over time (Interview 4, Row 57; Interview 4, Row 59). For instance, quality assurance is in place to test data quality and approve it (Interview 5, Row 8). There are processes in place to ensure smooth data transfer from CRM to BI, every night data is exported from CRM to BI for further analysis (Interview 1, row 35; Interview 2, Row 20; Interview 4, Row 71). Also, when CRM and BI were being integrated there were new processes in place to ensure that required data is exported in correct form to for applying BI on it (Interview 4, Row 103). Additionally, an analysis in NVivo of all the text from interviews indicate that the data and customer was most talked about and referenced a lot in interviews.

Figure 4.1 - Word Cloud generated for all interviews

Benefits from CRM and BI integration

Advanced analysis of Data from CRM

During the interviews, interviewees agreed that application of Business Intelligence over data collected in CRM is beneficial in management of customer relations, in many ways. One of the ways is simplicity to export and analyze the data (Interview 1, Row 22). Sufficient amount of data is available in CRM and it is analyzed using BI tools like Qlikview (Interview 1, Row 29). Using BI, the data from CRM can be analyzed more, to understand the customer behavior, like travelling, complaining etc. (Interview 1, Row 37; Interview 1, Row 57; Interview 2, Row 40). Using BI more detailed analysis can be performed, than in CRM alone (Interview 1, row 45; Interview 6, Row 8).

Usage of BI with CRM enable usage of data/information easier and people are able to trust data more (Interview 2, Row 14). CRM has basic analytics like sorting by type of customers, customers having cars etc., but more detailed analysis of this data is required (Interview 2, Row 22). Use of BI tools helps in understanding the customer better (Interview 3, Row 27).

Compliance with Customer Privacy

BI helps to store the customer data in compliance to regulations like Customer Data Privacy (Interview 2, Row 24). The data and fixed reports in CRM contain customer personal data that has to be deleted as per privacy regulations (Interview 4, Row 95). According to customer data privacy regulations, personal details like name and address might have to be deleted, which are maintained in CRM system (Interview 4, row 73). However, BI helps to perform analytics on data from CRM and generation of reports, without storing the personal data of customers (Interview 4, Row 95).

Targeting campaigns

The combination of CRM and BI helps to target campaigns to the right target audiences (Interview 2, Row 16). Data from CRM is used by different departments of the organization to perform statistics and use these for campaigns (Interview 4, Row 6). The reports from BI help in understanding the customer travel behavior and offers can be made to customers accordingly (Interview 5, Row 35). Therefore, BI helps to have more structured information which helps in better targeting of customers (Interview 6, Row 8). Our findings with regard to the role of BI in targeting campaigns suggest that BI helps in better targeting different campaigns to different customers.

Analysis of Data from Different Sources

CRM and BI integration helps in cross-referencing of data from the different system and not only CRM. For example, if the weather is nice, what effect does it have on number of travelers by bus, have it decreased since most people are preferring bikes over buses in good weather (Interview 3, Row 6). Such data from different systems can be seen over time and can be compared using Business Intelligence (Interview 3, Row 6). For example, no. of travelers increasing or decreasing during summer due to vacations (Interview 5, Row 53). Integration of CRM with BI helps in analysis of CRM data along with details from other systems, for example, a consolidated view of refund requested due to delay and traffic situation at the time

of delay in bus or train (Interview 4, Row 109). An Integration of systems helps in having an integrated big picture, which is difficult if there are different databases for different systems (Interview 3, Row 70).

Better representation in form of reports

Use of data warehouse and other BI technologies help in performing advanced analysis and make reports (Interview 4, Row 67). Though there are some reports in CRM, but they can also be moved to BI (Interview 1, Row 45). Also, these basic reports in CRM system are more static, whereas, the reports generated using BI are dynamic and provide users with much more options (Interview 4, Row 73). BI integration with CRM enables users to make customized reports (Interview 4, Row 91). In BI systems there is a flexibility to make reports as per user needs along with fixed reports (that are difficult to be customized), providing a better solution to read information from data as compared to CRM (Interview 4, Row 109). BI enables to have real-time reports, hourly reports, weekly reports etc. (Interview 5, Row 14; Interview 5, Row 22). BI enables better visualizations and therefore enables better comparison of data (Interview 5, Row 31)

BI enables communication between different departments by having information from different sources like sensors in the buses, and traffic information at a single place (Interview 4, Row 83; Interview 5, Row 31). BI helps in information sharing among different partners involved like bus company, traffic company (Interview 5, Row 31). And this information sharing helps ensure that everyone is viewing at the same information, maintaining consistency (Interview 5, Row 33). BI reports and information sharing helps to keep track of activities, like time in bus arrival, adherence to time table by bus companies, which ensures better customer satisfaction (Interview 5, Row 35).

5 Discussion

Customer-Centric Approach

In order to better manage customer relations, it is important for an organization to have customer-centric approach (Sharp, 2002). From the findings, it is observed that during each interview discussion, the customers of the organization were focused and important for each employee. With reference to figure 4.1, it is clear that customer has been talked about a lot and referenced multiple times during the interviews. Therefore, it can be concluded that case site is organized around the customers to fulfill their requirements by analyzing them and their behavior. In other words, the enterprise-wide goals are customer-centric. Customer-centric approach enables successful implementation of CRM (I. Chen & Popovich, 2003). Therefore, it is clear that customer-centric approach is an important factor for the success of BI and CRM integration.

Cross-functional integration

Cross-functional integration is one of the enablers for successful implementation of BI and CRM (I. Chen & Popovich, 2003; Bohling et. al., 2006; Finnegan & Currie, 2010). The findings suggest that at Skånetrafiken, there is proper communication among different departments. The employees are ready to help each other. There is sufficient communication between CRM and BI users and they understand each other's goals, ensuring alignment. Some of the interviewees have agreed that there is the scope of improvement in communication between different departments. Possibly, an improved communication could lead to much better benefits. The findings in this concept suggest that the **information sharing** with other stakeholders within the organization and other business partners have become easy. Now it is ensured that everyone is looking at the same information, using the reports generated using BI tools. Therefore, there is **single view** for similar kind of information This, in a way, enables cross-functional integration.

Enterprise-wide strategy

Enterprise-wide customer strategy is one of the success factors of implementation of CRM and BI. (Bohling et al, 2006) The employees of the organization should be aware of the customer-centric business strategy of the organization (I. Chen & Popovich, 2003). The findings also suggest that employees are focused to achieve the customer-oriented goals of the organizations, that is to maximize the number of satisfied customers using public transports. The findings suggest that the goals of the different departments are well aligned with each other. However, some of the employees urged the improvisation in the strategic alignment. In addition to this, communication across different departments and organizational education and training contribute to spreading awareness among the employees (I. Chen & Popovich, 2003). It is found that the employees are aware of the need of one system to be in good condition to maximize the benefits of another system. However, more skill building is suggested by the employees to maximize the existing benefits.

Technology Driven processes

Findings suggested that the required technology upgradations and updates such as the introduction of new ticketing system, are done properly as per desired time schedule. This suggests that employees are open to exploring innovations within the organization.

Innovations in technology is an important aspect of CRM and BI integration. Also, usage of trending and up-to-date CRM and BI tools such as Microsoft Dynamics 365, QlikSense, Power BI, and Excel, shows the employees' interest in technology innovations. In addition to this, overall technical challenges were considered important and required actions were taken by the employees regarding the same. Theoretical findings suggested that technology-driven processes, like user training and spreading awareness, are important for the success of CRM and BI (I. Chen and Popovich, 2003; Watson & Wixom, 2007). Similarly, findings from this thesis show that education and training were provided to the users when the integration of BI and CRM happened that is important for spreading technology awareness within the organization.

Data quality

The findings suggest data and data quality are given a lot of attention (figure 4.1). There are proper guidelines and processes followed to ensure quality data is used for analysis. To use BI for detailed analysis of data, it is important that there are processes in place, that ensure, high quality, well-crafted data goes to BI (Baars and Kemper, 2008). Therefore, it is clear that along with people, processes, and technology, sufficient attention should be paid to data as well. Therefore, following framework in figure 5.1, could be updated with data along with, people, processes, and technology.
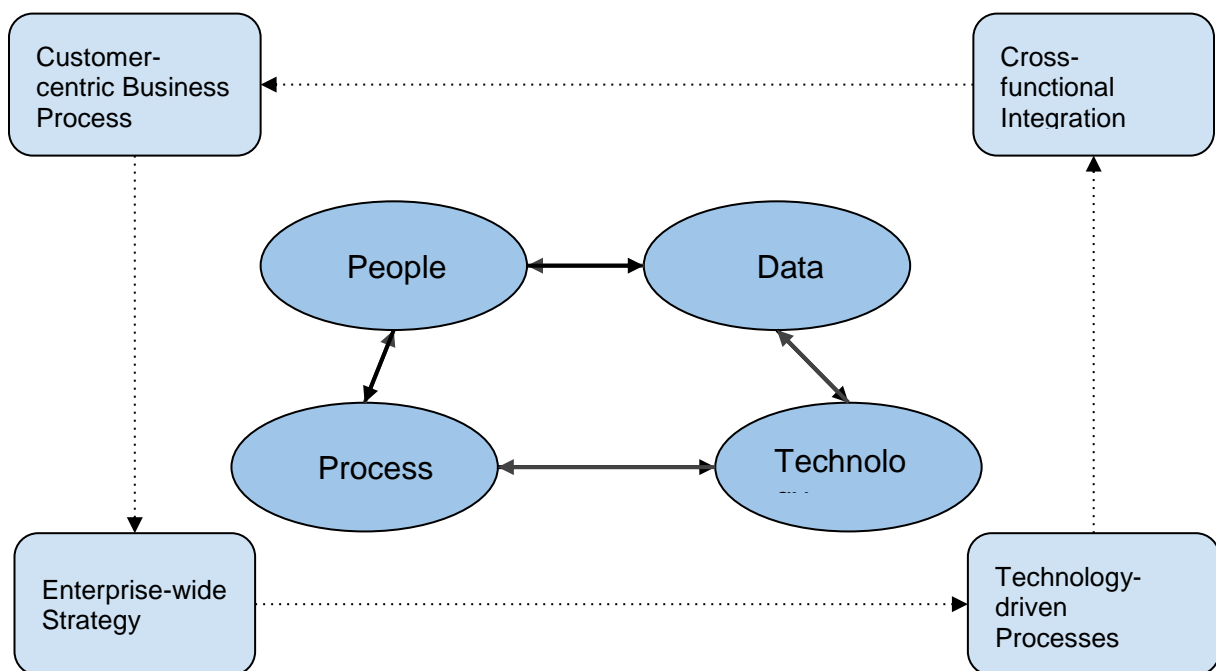
Figure 5.1: People, Process, Technology & Data integration for CRM
Partially adapted from: I.Chen and Popovich (2003, p.676)

Additionally, there is an acceptance in place that data quality has been improved post implementation of CRM with BI. However, the cause of this data quality improvement could be BI tools (Watson & Wixom, 2007), like data warehouse, or processes and guidelines being followed. However, since, data quality is improved, and there is a single point of information, the data can be more trusted by business users. This is in line with literature suggesting that BI helps to have trusted information McDonnell (n.d. cited in Khan et al., 2012). Therefore, in

our theoretical framework, we shall be replacing the trusted/quality data with trusted data. As data quality is the output of BI is not clear from the findings.

Benefits from CRM and BI integration

Advanced analysis of Data from CRM

CRM is well complemented by BI because it enables advanced analytics on CRM data and helps decision makers (Saldanha & Krishnan, 2011). The findings from this research also suggest that usage of BI with CRM help in the detailed analysis of CRM data available in CRM systems. The detailed analysis helps in understanding the customer better, for instance, in terms of customer behavior. Though CRM has basic analytics like sorting etc., in it, the much advanced analysis could be performed using BI.

Usage of BI helps in building trust on data available and use of information becomes easier which is in line with the claim by McDonnell (n.d. cited in Khan et al., 2012), that BI technologies help in having trusted source of data in place. There is an agreement that usage of BI over CRM, have helped them better utilize the CRM. Better analysis of data could be performed with BI.

Targeting campaigns

Our findings with regard to the role of BI in targeting campaigns suggest that BI helps in better targeting different campaigns to different customers. Existing research also suggests, that although CRM suggests prediction to impact customer actions, but BI facilitates improving customer retention, and improvement in sales (Habul & Pilav-Velic, 2010). Use of BI facilitates personalized customer offers (Chen, Chiang & Storey, 2012; Chaudhuri, Dayal & Narasayya, 2011). This facilitates automation of marketing processes, which is one of the goals of CRM (Buttle, 2009). Also, customer relationship marketing technique targets single customer and try to build and retain a strong customer relationship having the flexibility to fulfill their changing needs effectively (I. Chen & Popovich, 2003). Therefore, it can be concluded the BI facilitates CRM to target customers with more personalized offers and to improve customer relations.

Analysis of Data from Different Sources

Though CRM offers some basic analytics on CRM data, BI offers advanced analytics not only on CRM data but also on data from other sources. For instance, how the no. of travelers change as per weather or different seasons and possible causes of these change. BI helps to generate an integrated picture by combining data from different sources, leading to better segmentation of customers (Habul & Pilav-Velic, 2010). Considering information from different sources is important for organizations to make better decisions (Harper, 2017). In our opinion, having data from different sources along with CRM, analysis using BI avoids ignorance of other possible causes of a customer behavior trends, ensuring more accuracy in the information. This contributes to having an **integrated view** considering different data.

Better representation in form of reports

An advanced analysis can be performed on the data using BI and other related technologies (Chaudhuri, Dayal & Narasayya, 2011). The findings from the research also suggest that data warehouse and other BI tools can be used to perform advanced analytics on the data coming from CRM and other sources as well. Further, the use of BI can also be maximized by moving CRM reports to BI system for accessibility convenience. Also, it is noticed that the reports from CRM are static, whereas reports from BI are dynamic and provide better visualizations which help the users to get the panoramic view of the customer and, hence, help in making decisions faster (Speier, 2006). In this way, reports from BI integrated with CRM are able to provide exact customer's information requested by the user. In addition to this, findings also suggested that BI is able to provide the real-time reports based on the data received on the hourly or weekly basis (Chaudhuri, Dayal & Narasayya, 2011). Using such real-time reports, the decision makers, suggested by findings, can have actionable information at right time at a right location that can improve decision-making process (Negash, 2004).

Furthermore, it is important to have accuracy and consistency of the data shared by different sources so as to make correct managerial decisions (Harper, 2017). Findings suggested that BI enables the communication among different departments that receive data in the form of different sources and, hence, enhances information sharing among them, for instance, sensors in the buses, traffic information and survey information. Findings suggest that this also helps in maintaining the information accuracy and consistency. The tracking activities such as bus arrival and departure timings and their adherence to the standard schedule in real time, and in turn, achieving better customer satisfaction (Reid and Catterall, 2015).

Customer Data Privacy Regulations

Even though not asked specifically almost all respondents mentioned about data privacy-related regulations. Therefore, the focus is not on collecting more data, but to effectively use existing data in CRM using BI. Respondents have mentioned that BI systems would help them to comply with new data regulations because they might not need to keep personal data in CRM. They would rather be able to keep data required for analysis in BI systems and at the same time being compliant with new data rules. Because BI system would allow them to keep data without personal details of customers. It was also mentioned in the interviews that use of BI over CRM would help the organization to change its strategy from knowing the customers to enable the customers to know the organization.
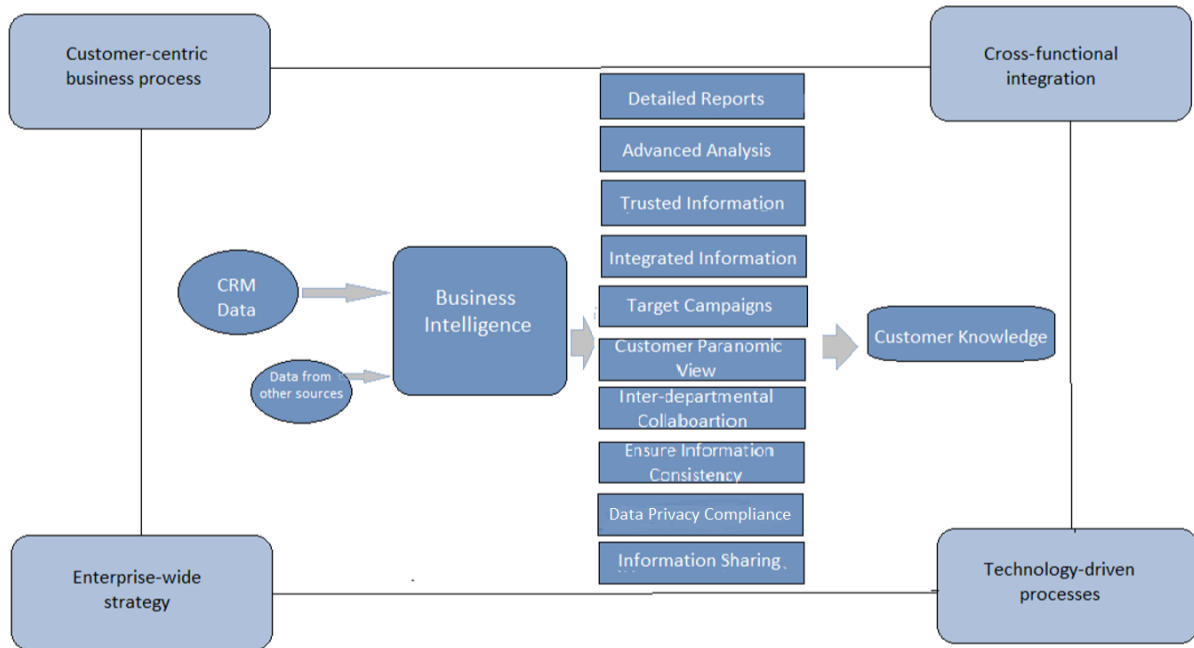
Figure 5.2: BI and CRM integration

From the findings and above discussion, it is clear that People, process, and technology have an important role to play in order to successfully implement CRM and drive business value from it. Therefore, along with people, processes, and technology, attention should be paid to data as well and Business Intelligence can play an important role in improving the existing CRM systems.

There is an agreement that although BI over CRM has improved the usefulness of CRM, still a lot more can be achieved by this integration in future. This would need more awareness among employees regarding what CRM and BI have to offer for them. There needs to be an awareness among employees that there are tools available that can benefit them in some. This could be improved by ensuring active participation by users at different levels.

6 Conclusion

The benefit of using CRM and BI comes mainly from the central idea that both BI and CRM complement each other in terms of benefits and challenges. Benefits of using BI and CRM together as suggested from theoretical findings were in line with the empirical findings. The case research helped to come up with specific benefits of CRM and BI integration in an organization setting. The benefits include detailed reports, both static and dynamic. Information sharing across departments and business partners becomes easy using CRM systems, therefore enabling better decisions. All users and business partners are able to trust the information from BI systems based on CRM data and have a consistent view of the information. Since analysis using BI systems helps to get a panoramic view of the customer, better customer segmentation can be done enabling better targeting of campaigns. Therefore, it could be concluded that use CRM and BI, helps in integrating people, processes, technology, and data leading to improvement in customer relationship management. BI enabling GDPR compliance, which is a challenge in CRM systems is an unexpected finding from this research and needs further attention.

However, there are factors which need to be taken care of, to ensure successful BI and CRM integration. These factors include appropriate processes and guidelines to maintain data quality. Another factor is organizational culture, which in this case was to be customer-centric. The organization level innovation and willingness to adopt new tools and technologies play an important role in the successful integration of CRM and BI. And finally, the collaboration among different stakeholders, alignment between the goals of CRM, BI and the organization is critical to successful integration of CRM and BI.

7 Limitations and Scope for future research

The guidance has been taken from a framework defined based on existing research and literature. Therefore, there are chances that some important areas or topics are missing in the framework and subsequently in the interview. This research is limited to qualitative analysis and data is collected from the interviews only. However, if quantitative data would have been obtained, the case would have been stronger.

This research provides scope for future research. Future research could be backed by quantitative data along with interviews. This research could be replicated at different case sites, in different industries, or in different geographies to improve generalizability. This research didn't focus more on customer data privacy rules and regulations perspective of CRM and BI, however, the findings suggest that future research could be carried out in this area as well.

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9   Appendix A

<table>
<tr><td colspan="1"><h2 style="text-align:center">Interview Guide</h2></td></tr>
<tr><td>Interview Discussion Area: Integration of Customer Relationship Management and Business Intelligence</td></tr>
<tr><td>Dates: 4 May 2018 - 11 May 2018</td></tr>
<tr><td>Duration: 45-60 minutes per interview</td></tr>
<tr><td>Interview Setting: Face-to-face / Telephone</td></tr>
<tr><td>Language: English</td></tr>
<tr><td>Recording Method: Audio Recording</td></tr>
<tr><td>Interviewers: Sunjita Sunjita and Supriya Rajendra Shinde</td></tr>
<tr><td>Number of Interviews: 6</td></tr>
<tr><td>Opening and welcome: We would like to thank you for participating in our research. The title of our research is "Integration between Customer Relationship Management and Business Intelligence" where in the integration of CRM and BI will be discussed. We hope that shared Research Plan document gave an overall idea of research topic.</td></tr>
<tr><td>Main Topic: Our main topic of thesis is to study how the Customer Relationship Management can be improved by integrating Business Intelligence. We hope that this research would be able to contribute to the CRM and BI research area and of course to the organization's betterment.</td></tr>
<tr><td>Interview Findings: The results of the analysis from the data collected from the interviews will be solely used for the research purpose. They will not be disclosed outside the university. Your responses can be kept anonymous if you chose to be. Your name will not be disclosed anywhere. Please feel free to answer the questions and ask for explanation if the question is not clear. We would like to thank you for participating in our research. Your response would be really helpful for us.</td></tr>
<tr><td>Interviewee's Selection: Being a valuable entity of CRM and BI systems, you have been chosen for our research interviews. Your response will be valuable to us considering your huge contribution, experience and knowledge within this organization, Skånetrafiken. Please feel free to ask if you have any queries regarding research or interviews. We would, once again, like to thank you for your time and attention.</td></tr>
<tr><td>Interview Questions:
Introduction:
1. Could you please Introduce yourself and your role within the organization ? (Which organization level do you represent?

Enterprise-wide Strategy:</td></tr>
</table>

2. What is your understanding of CRM? (in terms of purpose, goals)
3. How, do you think, the CRM goals are aligned with organization's strategy/goals?
4. What CRM tools are currently implemented by the organization?
5. How you think, you could improve the usage of CRM?
6. How is it ensured that the team working on BI is aware of goals of CRM?

Customer-centric processes:
7. How well do you think CRM helps you to understand the customers?
8. What do you think could be improved in CRM to understand the customers better?
9. What problems do you face in CRM?
10. How are these problems resolved?

Technology-driven processes:
11. How often is the system used and for what purpose?
12. What are the other systems to which CRM is integrated or might be integrated in future?
13. How is CRM integrated to BI?
14. What type of CRM data is analyzed using integrated BI and upto what extent?
15. What degrees of training was required and provided to relevant stakeholders for maximization of BI usage over CRM?
16. What processes have changed for successful integration of BI and CRM?

Cross-functional Integration:
17. How the CRM data is accessed by BI systems?
18. How often do you communicate with BI professionals?
19. What do you think is the purpose/need of using BI with CRM?

Data Quality:
20. What is your view on quality of data collected from CRM?
21. Do you follow any guidelines or processes or tools to maintain the quality of the data?
22. What do you think a. Is there sufficient data available and the issue is with data quality b. Sufficient data is not available c. both (In case of b or c ask what additional data should be collected)

Benefits of BI and CRM integration:
23. Do you think if there is any need of further the data coming from CRM?
24. What do you think could be improved in CRM?
25. Do you think Business Intelligence integration with CRM has improved/or can improve the value from CRM?

10 Appendix B

Application of Coding technique

Code	Categories	Concepts
CRM System	CRM	Customer knowledge
CRM System	CRM	Customer knowledge
CRM System	CRM	Customer knowledge
CRM System	CRM	Customer knowledge
CRM System	CRM	Customer knowledge
BI System	Technology	Technologically driven
BI System	Technology	Technologically driven
BI System	Technology	Technologically driven
BI System	Technology	Technologically driven
BI System	Technology	Technologically driven
BI tools	Technology	Technologically driven
BI tools	Technology	Technologically driven
Customers	Customer-centric approach	Customer- centric Business processes
Customers	Customer-centric approach	Customer- centric Business processes
Customers	Customer-centric approach	Customer- centric Business processes
Customers	Customer-centric approach	Customer- centric Business processes
Customers	Customer-centric approach	Customer- centric Business processes
Customers	Customer-centric approach	Customer- centric Business processes
Data	Data	Business Intelligence
Data	Data	Business Intelligence

Data	Data	Business Intelligence
Data	Data	Business Intelligence
Data	Data	Business Intelligence
Reports	Data analysis	Customer Knowledge
Reports	Data analysis	Customer Knowledge
Information	Data analysis	Customer Knowledge
Person	Customer-centric approach	Customer- centric Business processes
Person	Customer-centric approach	Customer- centric Business processes
People	Enterprise	Enterprise-wide Strategy
Users	Enterprise	Enterprise-wide Strategy
Working	Enterprise	Enterprise-wide Strategy
Work	Enterprise	Enterprise-wide Strategy
Case	Customer-centric approach	Customer- centric Business processes
Case	Customer-centric approach	Customer- centric Business processes
Processes	Process	Customer- centric Business processes
Processes	Process	Customer- centric Business processes
Improved	Customer Relationship	Customer knowledge

Improved	Customer Relationship	Customer knowledge
Goals	Strategy	Enterprise-wide Strategy
Goals	Strategy	Enterprise-wide Strategy
Connected	Communication	Cross-functional Integration
Connected	Communication	Cross-functional Integration
Integrated	Communication	Enterprise-wide Strategy
Integrated	Communication	Enterprise-wide Strategy
Integrated	Communication	Enterprise-wide Strategy
Organization	Enterprise	Enterprise-wide Strategy
Organization	Enterprise	Enterprise-wide Strategy
Organization	Enterprise	Enterprise-wide Strategy
Department	Enterprise	Cross-functional Integration
Travels	Customer-centric approach	Customer- centric Business processes
Travels	Customer-centric approach	Customer- centric Business processes
Travels	Customer-centric approach	Customer- centric Business processes
Travels	Customer-centric approach	Customer- centric Business processes
System	Technology	Technologically-driven

System	Technology	Technologically-driven
Quality	Data	Business Intelligence
Quality	Data	Business Intelligence
People	Customer-centric approach	Customer- centric Business processes
Analyze	Data	Business Intelligence
Analyze	Data	Business Intelligence
Analyze	Data	Business Intelligence
Analysis	Data	Business Intelligence
Communicate	Communication	Cross-functional Integration
Communication	Communication	Cross-functional Integration
Usage	CRM	Customer knowledge
Customer Service	Customer-centric approach	Customer- centric Business processes
Customer Service	Customer-centric approach	Customer- centric Business processes
Service	Customer-centric approach	Customer- centric Business processes
Ticketing system Ticket	Technology	Technologically driven
Survey	Customer-centric approach	Customer- centric Business processes
Application	Technology	Technologically driven

Microsoft Dynamic	Technology	Technologically driven
QlikView	Technology	Technologically driven
Problem	Customer-centric approach	Customer- centric Business processes
Database	Technology	Technologically driven
Data Warehouse	Technology	Technologically driven
Important	Data	Business Intelligence
Gain	Success	Customer Knowledge
Valuable Insights	Data Analysis	Customer Knowledge
Sufficient	Data	Business Intelligence
Bus	Transport	Skånetrafiken
Big	Data	Business Intelligence
Benefit	Success	Customer Knowledge
Created	Success	Customer Knowledge

11 Appendix C

Interview 1

SS= Sunjita Sunjita
SRS= Supriya Rajendra Shinde
HT= Respondent

INTERVIEW- Skånetrafiken. 9 May 2018. 00:51:30

Row 1	SS	So, first of all, can you please introduce yourself in terms of your role

		within the organization.
Row 2	HT	I am responsible for CRM system from IT point of view. So I am responsible for CRM system regarding IT systems and regarding customer service also.
Row 3	SS	Okay. What is your understanding of CRM in terms of its purpose and its goals?
Row 4	HT	its very good because that's my main job. So that's what I'm working on one all time. So 9 on 10 may be.
Row 5	SS	So can you please tell what according to you is the purpose and goal of CRM. What do you see as the main purpose of it?
Row 6	HT	the main purpose is to keep track of all customers and all the activities that connected to us customers and also to take care of the communication between the company and the customers. In our case, we have our goal is to keep each customer in one place in all our environments and that should be in the customer relationships system and together when that when we add on those activities for example customer questions or or a score notifications or phone calls or everything connected to that customers so we can have a good view of the customer activities. And one important thing is the database updated which We have done a customer database containing approximately 600,000 customers.. I haven't counted them for a while but all the customers we have 360,000 customers that are connected to MidCom, which is an account we do an account at Skånetrafiken. For all those customers we do update that information every night. So if customer department or dies or whatever and then we have information. The next day. So, we have a very good quality of the customers in database we have. With almost no duplicates. It might have some but that's a part of a percent. A very few duplicates in database. Our goal is to see the customer relationships system. Many of my colleagues think that this is the system with poor customer service. So they can keep track on a register different customer services cases, but for me it's the knowledge of Skånetrafiken where we have all information that we are allowed to have necessary for us to have regarding the customers. So that we can, for example, communicate, when the customers in the correct manner we can we can deliver the correct communication to the right customer at right time. If We have more information about the customer and its status and its behavior and where they live and so on. let the person and then we can have different tools to take care of that. So we have a tool called Microsoft Dynamics 365 and together with that would have another tool called

		people dimensions takes care of all the mainly mass mailing the customers. So if you want to send out to all our customers having their account. We do that using that tool a very, very close connected to dynamics 365. quite good at the moment we have changed a lot of things during last year because system wasn't that good one. It was delivered from CGI but we changed a lot. And we have installed on completely different platform. We have a lot of information in a moment, but our goal is to add on more information. For example, we don't have information about the new ticketing system where you buy the tickets on your cell phone, That's one something that one will do as soon as we can keep track of all of those customers and communicate with them regarding to the things that happened or they want to tell us. Is it so much so much information. I think it's good all information is valuable to us.
Row 7	SS	Okay, what do you think are the CRM goals in the purpose for which CRM is used? They are aligned with the organization strategy?
Row 8	HT	I don't think that we have a strategy. Me and my colleagues do have a strategy. Yeah. Unfortunately, I don't think on a higher level they have realized the benefit of having a customer relationships system. For example, and sales manager must ensure. They should be. So hope that my interviews is anonymous. We have a clear vision about what we want to do and how we want to do it but if you look at top management, they haven't realized the benefit of having a correct customer relationship system and what the benefits with that unfortunately. But that's the way it is. Many people think that this system is case management system for customer relations. But that's the thing we are using it for what purposes. It's important for us to keep track of this information.
Row 9	SS	How often do you think the system is used in the organization?

Row 10	HT	Yeah we do. Absolutely. All people on customer service or customer centers are using it on a dayly basis because we have all case management or communication with the customers included in this system. So it's used very much from customer service. From other departments, We have a Communication Department, for example, and they use it every week. But then on an ordinary employees level, I don't think they use it because they don't need to but marketing department and customer service department are using it a lot and we are serving the Business Intelligence system with information form the customer relationship systems. So there are more people using the data, than they're using actual system. We do export activities and so on. From the CRM system to the BI system and the BI system is QlikView. You know. I think you have interviewed people regarding that. And they analyze it as well.
Row 11	SS	And can you tell us what are the CRM……
Row 12	HT	One more thing is that the customers who use it because we have that information about my account in the system connected system, which means that when your customer to log into my account, you're connected to CRM system and we do have information you can change information you can keep track on your call so and so on. So, so we have customers using it. Then employees using it. Then We have at least 5000 logs everyday and we have about 200 people creating a new my account every day. So a lot of duties in the CRM system.
Row 13	SS	Okay. Can you tell us what are the CRM tools that are currently implemented in the organization?
Row 14	HT	Customer service, My Account and customer mass mailing, customer communication to customers using People Dimensions and my account is why, for example, connect your travel card or wherever you registered your tickets.
Row 15	SRS	So you mentioned about Microsoft Dynamics. So are there any other tools like Microsoft Dynamics you're using currently?
Row 16	HT	Yeah well of course we do use for example case we're not using marketing for example because we have Qlik dimensions to using case, some of them are using frames, but we have customers system. So it doesn't look like the models including microsoft dynamics CRM. It's quite customized for example recording to complete the different setup because of that we have certain way to handle customer cases. So, and the marketing module is not included. As I said, because of the dimensions. The normal module when

		customer information is included. We don't have any bi module included yet. It might be included later on. But so, and I don't think that marketing either because the quality of the marketing module from Microsoft is not good yet.
Row 17	SS	Okay. Okay. And how do you think that the usage of CRM can be improved? If you think that can be can be improved.
Row 18	HT	The first thing that we realized that we had to do when we started that competition was that we had to to improve the quality of the system. So information was correct. some reason to read the data in the system. It was absolutely fill of duplicates and bad data. So the first thing is to improve the quality and to deliver modules that you can use. For example, when we have created campaign module for marketing or for communication so they can run their campaigns and now we have added more information into the system. So let me get data knowledge and then what we do my and my colleague, Lisa, we try to inform all the people in the organization the benefit with a CRM system and what you can do if you're using the data so it's the matter of communication and improving quality so that people realize that they can trust the system.
Row 19	SS	Okay, thank you. And how do you think that CRM helps you to understand the customers?
Row 20	HT	We have a lot of customers. We have a couple of 100,000 customers. We can divide them into different groups, for example, we can see how people are logging into system, we can see how people are traveling, we have spotted so that we can divide customers into different segments and communicate with them in that way. So we are in the beginning about your segmentation of customers but this we can see. But, one important thing is when we get in contact with the customer when they call us. For example, we do have a vertical view of the customer example we can interview when we when we take a look at the customer, we can see the number of traveling cards, the number of cases, we can see one day the last time, or we can see where I live on. A lot of things regarding the customers in the same view so that we do have a very good 360 view of the trusted customer and trying to find all the time as well. As per my point of view, we can do whatever because we do have a lot of information. So for example, we can see the age of the people connecting so you can see. Yeah, the general and so on. So we can make analysis. That's not our job to make analysis. It's the BI team to do that we're delivering correct

		information and then they can do the analysis.
Row 21	SS	Okay. And apart from what you have mentioned regarding the qualities do you face any other problems in CRM?
Row 22	HT	Yes we have. In our program, we had a lot of problems because of our partner did deliver a system that wasn't created that well so that we had to rewrite a lot of things, but from my point of view, the system that we have today, I cannot see any problems we have a good and big platform so it's not slow. It's fast and we can find the data that we want to have. Of course we're looking forward to new features that have been arriving in future releases, but at the moment I think it's a very very good system. Because also that it's easy to handle and easy to export the data and or analyze the data that you want to do. So I can see many problems with it. The problem is when if you are not configuring the system in a proper way, then you might run into problems so that it's not possible to upgrade or something like that, but I think we have taken care of that. And as I mentioned we upgraded in the beginning of this year. So, so I think we are. We don't have a good stable platform. The jobs that we're doing is to connect more information to rebuild those pictures that was made before. So that the system is really running well. But that's what we do rest of this year. Next major step is to upgrade again. And then to move the platform from services to Asher but I don't think that will happen this year. That will happen next year.
Row 23	SS	And what are the other systems to be CRM is integrated or might be integrated in future?
Row 24	HT	The system that we have integrated with?

Row 25	SS	Yes. We have integrated with some server from regarding to the My Pages and customer service. And then we have connected to the system calle Boktrans which is a system for traffic information. We are connected to the BI system. Then we have connection to external API library. We call it the state does contain all regarding to creating a customer and so on. So it's very very close to the CRM system, but it's an external system as well. We are connected to the route ticketing system or cubic and we are connected to logging service called my account, but it's not account but it's a logging service that's created. We are connected to an external partner called Regan regarding to Capone so that we can handle if customer donates money for travel that he couldn't make something like that but that's something we have I think that's connections that we have, we are integrating using this talk, but not much more we do have other integrations as well because of the nature of integration and Bistalk might be good. In some cases, but not in all cases. So we got into the word willing to serve an epic commerce epic. So I think that's the system at the moment we are connected to. For example, then you have the app connected to my accounts. So when you see your personal information on the app if you're creating account or login that information is spread directly from CRM so we might have some other customer information from our systems, but the goal is that all the information should be in CRM and it should be just in one place, but we have your name and your address in one place. We don't have any duplicates in customer databases. We are not there yet. We're trying to use or integrate all the customers, but we are very, very close to achieving that goal.
Row 26	SS	Okay. And you have talked about quality of data already but is there anything else that you would like to add on to quality of data collected from CRM?
Row 27	HT	That's something that I'm working with to find if the quality is not correct and integrated but regarding to the customers where we have social security number, we have a very good quality. Regarding to the people that are riding bus and not delivering the social security number, we don't know and that's not that important because, for example, they say that. Yaah. So we have different levels all the customer information. We have different company rules. For those customers, where we need very good quality and that's why we have 62000 customers. We do have a very good quality but then of course we have customer information with just a name, and nothing else. But then that's the way it is. It's okay it should be like that. Regarding to the data quality the other parts we're working on. We're running a product with traffic information so that the quality is correct. It wasnt before, but I think we have sold up and I think we are every day analyzing

		the quality of the data that we store regarding to the tickets so that it's upgraded. We have a lot of information on other things. So the quality is good and guaranteed and the goal is of course to have 100% good quality data.
Row 28	SS	So, are there any guidelines or processes or any tools which are used to maintain the quality of data.
Row 29	HT	Yeah. I'm working on the QlikView so that I analyze the data in local QlikView installation and not BI system and then using it for. You could use any SQL tool as you want but with the tools that are included in that same Dynamic CRM you can't do what I need to ensure good data quality but when external tool of some kind, you can do that. And I think you need to have that it's something that we need to be able to ask those questions are not included in the quite simple dynamics for selecting people compared with the external source.
Row 30	SS	Okay. So I would also like to ask that. What do the thing is there's sufficient data available and but there are issues with the data quality or do thing that sufficient data is not available or it's both like sufficient data is also not available in CRM and there are issues with data quality as well?
Row 31	HT	Regarding the amount of data we are running a project that I should go to the meeting this afternoon regarding to integrate to the new ticketing system, Singapore, so that we do have a lot of information . We don't have that today so that we are not integrated system yet but I hope we can do that in a near time. I do think so that we have the information that we need. At the moment we have integrated in a lot of information we have imported a lot of information. What we don't have integrated in CRM that could be done during this summer is information about selling when the customer from the web shop are buying things we don't have that information in CRM. So we will change that so we have that information and we will add on some more information as well so that we can. That's an order from the communication department that we should do some changes but they are on the way to be delivered. But otherwise the big problem is right now we don't have a good connection to the new things that are created. So I can see what people or how many people are buying tickets with new app and we cannot communicate with them. We can't do

		mailing to them because we don't know who they are. That's integration that we have to fix.
Row 32	SS	Okay. And do you think there is any need of further analyzing the data coming from CRM? I mean, do you think that there is need of analyzing the data more, that you have a lot of data available, but you think that it can be analyzed more or it is being analyzed more?
Row 33	HT	I think it could be analyzed more if you want to know about what kind of analyze they do. But you could do more analyzes them. But I don't know if we are allowed to do that because you could for example around the license regarding to show how people travel and so on. But now, we are going into legal questions that we are allowed to do that or not. Those things that you should be able to do. We don't have that information. In CRM, they don't have travel information, but they do have it in BI system and they do have the customer information. So from that point of view, they should be able to do the analyzes.
Row 34	SS	Okay. And how do you think CRM is integrated to BI, how is the data from CRM moved to BI?
Row 35	HT	They are reading data every night. They are allowed to read what data they want to. It's updating. Even though it's not online but it's updating every night.
Row 36	SS	Okay. And what do you think is the purpose and need of using a BI with CRM
Row 37	HT	Purpose is of course to analyze to get better knowledge about, how customer travel, how customer buying the tickets. What kind of issues the customer have recording to work complaints and all. And so…..because of the customer system to deliver information about…..about the customer; the age, the gender, should be possible to do that kind of analysis, your collecting traveling information on ticket, information with the customer. So you can see what kind of behavior people do have . For example, travel a lot, complain a lot or if they using different parts of skane, pr differences

		in age or some thing...that should be possible
Row 38	SS	And how often do you communicate with BI professionals or how do the people using CRM communicate with people who are using BI. How often is that?
Row 39	HT	I have my colleague Nelson and Stefan..in malmo… I communicate with them…They are very very occupied I don't ask them to do things but when they ask me to receive data, then they can get that. We meet not every day but every week. But we meet at the office. But we don't have that many meetings. If you want analysis then I think you ask from them and not from me. I am doing my analysis that I need to have for my point of view in my own, but from a company point of view to make bigger and more analysis that should be a question from management or from the different departments to them. when they know that they can get information that they need from from the CRM system or systems where they're getting information from all systems on them and they can collect information from CRM
Row 40	SS	Okay. Do you think that there are enough trainings or enough awareness provided in the organization to relevant stakeholders, that we have BI and we have a lot of data in CRM and how they can be used together to make maximum use of CRM data
Row 41	HT	I don't think we have, we're trying to show inform people about it and we are informing people about it but there might be more information about ….with…. for example…. with examples where you can see…that you can, we can see the information and the most important thing is that if you….if you have the information from the BI…you can take action on them…but just seeing that we have 300,000, we have 400,000 customers they can see information , but they can't take action on. For example, they might see that there are customers not using the system that are between 40-50 years old, then they can take action on that. But having a good project where you can show the information or see that they can have a benefit of it. Skånetrafiken can have benefit. Perhaps we can increase the traveling using information that should be a good project…if we could communicate with customers so that they do travel a lot, or buy more tickets or sell the cars, that should be nice.

Row 42	SS	So is it ensured that the team working on business intelligence, they are aware of purpose of CRM and goals of CRM so that they could provide information.
Row 43	HT	Nelson is where all information we have. So, they are working with CRM with other companies We don't know what they tell
Row 44	SS	So, the one thing is the data you have. And the other thing is how BI can help you to extract useful information from that data, then people using CRM can use that information. So do you think that people have this knowledge that what information should we provide to CRM users, which could benefit them?
Row 45	HT	I think so…yeah we're trying to…… we have a lot of reports in the CRM system and we are removing them from a CRM system, creating them or should create them in the BI system so that we are using the correct tool for the correct thing, in the BI we should do big analysis than in the CRM system, you should dig into individual customers and see their behaviour. we have, we do have reports in CRM system that should go to BI system. That should be….there should be a long…if…. if you want to do some job. I don't know what what purpose with this interview is, but if you want to do a jobs regarding BI and CRM, there should be reports that we do have on the customer service for example forms for example…..that should…. could be created in some BI tool…for example QlikView but we could use our tools as well, so that, customer service has easy way talking to management. You had a question before regarding data quality.
Row 46	SS	Yes,
Row 47	HT	there are things data quality but depends on how the system was customized before that data quality was not that good. We are trying to the change that…so that we do have better information regarding cases and we can prefill our service level agreements or measure service level agreements with. the quality was very good, but regarding the cases we are we are in the project where we try to update the data. And see for example, measure for how long have been working with a particular case, for how long has the customer waited to get an answer and so on. And that's where we need to improve data quality and change the system so that it's not behaving in the way as now. In very short, It's about how close a case, we know how long we're working with the case how long we are working how…..how long it takes from the cases reported from Casper until we take action we solve the problem. And that's a very, very important thing that we have to do….

Row 48	SS	Do you think an integration with BI systems can help you achieve this?
Row 49	HT	Not the BI system…..we have to change the CRM system…but then to make analysis…you need to have better data quality…regarding that. At the moment have to update the data quality in CRM system, before you can do those analysis. You could do the show of that and same time we could work updating the data quality, so that it could come out something very nice from it. If you want. But then you have to interview customer service and my colleague Lisa, to get information on exactly what they want to measure., so that we can prepare the data in the way that they can measure what they want.
Row 50	SS	Okay. And do you think that when BI came into place alongwith, for using data from CRM, there was some processes that have been changed for…. so that it's used successfully. the BI and CRM. Together they are used successfully?
Row 51	HT	I don't think so. But it could be in the future. I don't think so, yeah but it could be in the future, it could be for example analysis regarding service level agreements, you could measure for example how long people have to wait until to get an answer and we could we could work more exactly with those figures, that should be nice to do. I think that the most things to work with because having the goal to improve, excel in that… that's…. that's quite tricky but to improve the way that we handle solve our work with the customers it should be easy.
Row 52	SS	Okay
Row 53	HT	That could be an interesting project together with our partners regarding to fix data quality. Right now Carin and Lisa, do have a job regarding to what they want to measure, so you could ask them.
Row 54	SS	Yes.. Okay…Do you think that when business intelligence is used on the data from CRM. This has improved the value one can get from CRM?
Row 55	HT	Could you take that one again?
Row 56	SS	So do you think that if we use business intelligence also along with our CRM data, so, it improves the value we can get from CRM system?

Row 57	HT	Yes….we can…. we can improve….because we have a customer information we can improve analysis but we can also on the other side, say that we should be able to improve the way we're using CRM if we good tools….analyzing tools…..that we can see the fact…we can see for example, if we are getting better or we are getting worse regarding to taking case of our customer cases, and how many customer cases we have during the day and so on. And then if we take any further, we could do a lot more things, regarding to if we have had more information. I think we could…we could do further more and further better analysis that we do today. Then we need to think to add more data sources. But there are lot of things we could do with the data we have
Row 58	SS	So I think we are done with questions. And is there anything else that you would want to add regarding usage of CRM and bi together.
Row 59	HT	Not at the moment, I think we have been talking at lot. I think it's very important that we have a good CRM system. It's very important that we have a good BI tools so that we can analyze the data and then it's up to people like you, people like people from…from the different departments, find out what they want to achieve. If you don't have a big….good data quality, you can't do any any good analysis. Of course if the quality of the data is correct then you can see a lot of things in BI tool.
Row 60	SS	Okay, so I think we are done with the interview and thanks a lot for your time and your valuable inputs.
Row 61	SRS	Thank you so much. Have a nice day.
Row 62	HT	Thanks. What will be your next step?

Interview 2

SS= Sunjita Sunjita
SRS= Supriya Rajendra Shinde
AL= Respondent

INTERVIEW- Skånetrafiken. 9 May 2018. 00:23:16

Row 1	SS	Okay, so let's start. So to start with, can you please introduce yourself and your interests of your role within the organization

Row 2	AL	I'm the manager for the IT system department and we handle infrastructure and some applications as well as our web our CRM analysis tools
Row 3	SS	What are your understandings in terms of purpose and goals in terms of CRM and BI?
Row 4	AL	My understanding is that I think we do a lot more than we do today. we have a lot of potential in there that we don't maximize the benefits. And know the initial ambition was to have complete view about our customer that tells everything about they do. but we don't have that in all cases. But I think more important is to attract customers that is with us.
Row 5	SS	Do you think that the use of CRM be improved in the organization?
Row 6	AL	I think so. I think they can use it more to try to sell more. I think we could focus more on analyzing the data. Try to be more specific when you are checking customers' emails. And I also think that there is a question that has to do with the resources. May be there the best resources we have but we need more people to work.
Row 7	SS	Okay, so how would you say the BI is integrated with the CRM currently?
Row 8	AL	I think..difficult question. I think I'll talk about qlikview analysis. I think we extract data from CRM repository and it's anonymous and statistical level without any personal life information. and I think perhaps we could dig deeper there and more incentives I think more people will get in our CRM and travel with us.
Row 9	SRS	So do you work in CRM or BI or may be the combination of both? What is your main domain of working?
Row 10	AL	I work mostly with the IT systems and not with the applications. For instance, I am not using them myself and my team works for IT infrastructure what you call it.
Row 11	SRS	And what BI and CRM tools do you use or your team use?
Row 12	AL	Microsoft dynamics is the main tool and then we have something called boomrang system.

Row 13	SRS	And what Business Intelligence tools? Any business intelligence tools like Qlikview or QlikSnese?
Row 14	AL	then we have QlikView that extracts the data from warehouse. I really think that we could increase the usage within the organization. They quite easy to use. Then we can also say that people mistrust the data sometimes that's in it. But its getting better and better.
Row 15	SRS	Do you think there is scope for the improvement of bi and CRM usage ?
Row 16	AL	I think they need the combination of both. Also we have different campaigns for people who have newly moved because they should travel happily and attract them by new offers. But I think there's much more than that we could do.
Row 17	SS	what is your view on the quality of data that is collected from CRM?
Row 18	AL	I think the data is much better now than it was a year ago, because we had a lot of doublets like same peson's wife because they registered with this team.. That included a lot of cleaning within the system so that's good. but then sometimes it's difficult to find someone that takes responsibility for the day. Maybe they work with something else that can be put in our data warehouse and extract it somewhere and sometimes I don't think they could find all the folks because we can be a lot of people that would be involved in finding. That looks strange. And we cant have that many people on the bus. But it's getting better all the time. And I think that's really, really important that people talk about artificial intelligence and machine learning that the data has to go. But its getting little better everyday.
Row 19	SRS	Are there any guidelines or processes to maintain the quality of data?
Row 20	AL	That's a good question. Because I don't really know. I think often in practice people note this that ohh this cant be right then they change it themselves we do have some processes in place like we have updated the register where everyone Sweden is where they have the address. So we update every night. That makes it a little bit more correct.
Row 21	SS	Okay. So, do you think that there is a need of further analyzing the data that is available in CRM since CRM has a lot of data ? Do you think it gets analyzed further?

Row 22	AL	I think people analyze it within the CRM. We don't talk about KPI application but just sorting the different things like sorting by what customers do we have and what customer do have the most cars and so over, but it definitely have the room to do more advanced analysis on it.
Row 23	SS	and do you think there is sufficient data available and the issue with the quality of data or do you think sufficient data is not available, there's a need of collecting more data or do you think there is a lack of data and an issue with quality. What do you think?
Row 24	AL	That's an interesting question. From our point of view, the more data the better. It can get more. But on the other hand we need to have the systems to store that data not at least when GDPR and things have changed. We don't. You know. Be careful not to save more than we need. I think if we can get more customers in our CRM, that would be better. May be not extend the data once we have. (11.07)
Row 25	SS	Okay. Do you got any idea of like what type of CRM data is currently analyzed using the BI tools or the BI systems?
Row 26	AL	Ohh.. I don't know it by heart actually. I could check in the application. I think there are a lot of work type of errors we have. How long we are open when you get Some money in return when the train is late. That type of data. And nothing currently might be used to follow up our own processes more, then we do campaigns. We need to see at the application what type of data we use. Yeah, I think that is fine. That's fine and okay
Row 27	SS	So do the CRM users have access to the reports or any kind of any information which is analyzed by BI systems and they provide the information to CRM users?
Row 28	AL	I think the more information is in BI tool than it is in CRM.
Row 29	SS	and CRM users can use it for their benefit.
Row 30	AL	Sorry I did not get the question.

Row 31	SS	See. There are two things. One is we have BI data then we have CRM system. The data from CRM system is analyzed by BI system and some reports could be generated or some useful information could be generated which could be then used by CRM users. So currently is there information being used, or is there a plan that in future some information can be used or what are your views on it?
Row 32	AL	I think it is used by few persons perhaps that are better active in the BI tool and the application. I think the people that are using CRM system are may be more than BI tool. Its available if you wanted to have.
Row 33	SRS	Okay. So how often do the bi professionals and CRM professionals communicate with each other or is there any inter department communication happening?
Row 34	AL	In department? How do you say?
Row 35	SRS	I mean if one person from one department needs information about say related to the customers travel time in specific area in specific time so do the other person or the employees from the other departments are coordinating with the person in another department?
Row 36	AL	I think our organization is quite small and I would say that the communication between department is quite good. Its not difficult to help or talk to each other. That works quite well actually. But we have dig deeper. For example, if you want to see someones travel you can see what travel card they have . We cant see every trip that person has made. That we have to go to sales system.
Row 37	SS	What do you think is the level of communication between BI and CRM users when it comes to set their expectations for instance CRM system users might want to have some benefits of CRM where bi could help and BI would want certain kind of data from CRM where CRM could help. So are both the departments communicating enough to be aware of their needs, so that they can help each other.
Row 38	AL	Yes I think so. They have a good picture of what data exists where. I think its quite good. You can always ask ohh well..I need this data.
Row 39	SRS	So, do you think CRM helps to understand the customer better or do you need BI on top of CRM to understand the customer better?

Row 40	AL	Good question. I think all the information that you could have about the customer its in CRM but if you want it on aggregate level for example what people live in Lund , where they travel and so fourth. Then the QlikView the BI tool is better for that. The conclusions from that are better from the BI tool. If you could look into the information of one single customer then people understand it better.
Row 41	SS	Do you think there are enough trainings or guidance provided to CRM and bi users to let them know what they can do more with those in terms and like what BI users can do more with CRM in place and what CRM users can do more with BI in place. So, are there any kind of trainings or any communication to those users for them to have a clear vision on this?
Row 42	AL	Not any like official training on that. But I know CRM people talk to market department. They have meetings where they are like ohh this is great.. we could use this so much more. So I think an increased focus on communication between with parties with their complaints within the organization. I think you have to market a bit and I think we could be better on that in a dialogue with people doing marketing telling in our system what do they have.
Row 43	SS	Do you think any processes have changed for using bi along with CRM to have this in place successfully to gain maximum benefit out of using bi on top of CRM so were there any processes which have been introduced or modified?
Row 44	AL	May be. I think that people are putting requirements into the development of our CRM. That's also known as customer service function because they also use it in handling errors. But I think the importance and power of marketing and sales department has increased including requirement and how to develop the CRM system and BI tools. But then we have a pipeline of things that we want to do. Then We have a history of focusing on the statistics of buses and trains where they do wish to focus on customers. I don't remember the question. Was it about the processes that could be improved. Yes I would say they have.
Row 45	SS	Okay. And how would you rate the alignment of BI - CRM goals with the enterprise wide strategy or the strategy of the company as a whole?

Row 46	AL	I think that we use it for internal purposes quite good and putting statistics on CRM about travels about the customers. So for internal reporting. So we could use it better in actively using it so to increase market shares or both.
Row 47	SS	Overall, what do you think that bi usage over CRM has gained has improved the value that can that one can expect from CRM? When CRM without bi is the benefit better with bi?
Row 48	AL	I think the focus should be on BI. If you want improvement, the improvement can be done on that side.
Row 49	SS	Okay. And As per current situation do you think that BI and CRM working together, they have improved the value of CRM in certain manner.
Row 50	AL	Yes. I think so.
Row 51	SRS	And that was the last question. And would you like to ask something in?
Row 52	AL	Would it be possible to see your reports when it's done?
Row 53	SRS	We will share the reports and transcripts of our thesis. We will share the results.
Row 54	SS	Thanks a lot for your time and your valuable insights.
Row 55	SRS	Thank you so much.

Interview 3

SS= Sunjita Sunjita
SRS= Supriya Rajendra Shinde
AO= Respondent

INTERVIEW- Skånetrafiken. 8 May 2018. 00:31:49

| Row 1 | SRS | Okay, so the first question is, could you describe yourself in terms of your role within the organization. |

Row 2	AO	Yeah, I work as a market analyst and I do lot of with customer service and preset the data that will get the organization customer insights and most of that is our customer service, especially we have one survey. Actually two. That we ask our customers who travel and on board on our trains and buses what they think about their service on board and we also have another survey where we also ask and it's not just our customers but also people living in Skane and so they some of them travel a lot with us and some of them don't travel at all. So we try to figure out why they don't travel with us or how can we get them to go travel with us.
Row 3	SRS	Okay. So according to what is the goal or purpose of using business intelligence in this organization?
Row 4	AO	Yeah, well I don't know how much you know about our business. We have kind of two main goals which the whole organization is trying to… to reach and one is that we will have more satisfied customers eight of 10 should be happy with it and the other one is the market share and we compare ourselves with the car. So we want more people to let the car stand at home and travel by bus or train instead. And our goal is a 40% market share is what we want to achieve and right now we have 29%. I don't know if I answered your question.
Row 5	SRS	Yeah yeah. Purpose of using bi within organization and there is CRM system as well. So with that?
Row 6	AO	Well. That I don't know so much about actually how how the system works. So we can reach our goals because we ….we work in different areas and how the system works. I don't think I'm the right person. But what… what I want is that a lot of customer data should be put together with other data so you can cross a different candidate than then I mean if like today. The weather is nice can we see an increase or decrease in our buses with travelers or the more people and getting their bicycles, that kind of thing. I think that would be very interesting. For example, just to cross whether date I am traveling. They see over time and see difference.

Row 7	SRS	Okay, so, and how do you think the goals of using the BI align with the organization strategy or organizations goals?
Row 8	AO	I don't really know actually.
Row 9	SRS	So the goal of organization must be customer oriented. So how does this help achieve these goals or are these goals of using business intelligence and the goals of the whole organizations are aligned?.
Row 10	AO	I don't know how there are aligned today, but they should be of course yes you can. I mean to us, we use Business Intelligence should be a tool to you and for to reach the goals that. I think we have a lot to do there. And that was. That's what I think. Because we have some developing to do there and just what I said about get a lot of data to a data warehouse where we cross different kinds of data for mean that should be something that you really want. And we, but we don't have that at the moment. Yes, I use more like Excel to look at my data them and I don't have so much other inputs that I came across when we exist.
Row 11	SRS	So what are the other BI tools that you use generally?
Row 12	AO	Well I will just say what I use. We have a QlikView application where we where we can where you get some data and also take out from that QlikView application to work with the data in Excel, because I think sometimes that application don't get what I want for me. So that's the main the two things that I use.
Row 13	SRS	Do you use them very often or how often?
Row 14	AO	Yeah. Almost every day.
Row 15	SRS	So both tools?
Row 16	AO	Yeah. Yeah. But so this day, we don't have like a CRM system that keeps track that we can use.

Row 17	SRS	So according to you, what is the purpose of using BI that doesn't need CRM. So if you are using only CRM and if you are using CRM plus bi so is it sufficient to use only CRM to get what you want in terms of results?
Row 18	AO	Well, I know I don't know much about the technical things I can just say what I would like to do with my data and how and how that it will be presenting that's not really my at my table if you know what I mean. And I don't know so much about it and hopefully some of my other colleagues can can give me better answers there but I'm just seeing what is useful to know and so you can get that insights to develop the organization.
Row 19	SRS	Do you think is there any scope of improving the use of BI tools. Do you think this is sufficient or there is a need to improve?
Row 20	AO	In our organization?
Row 21	SRS	Yeah.
Row 22	AO	Yes. Yeah, I would say that. As a user, I can feel that, as I said, I don't, I think I could do more if they were system that could collect more data and cross the data. That would be very helpful.
Row 23	SRS	So would you say that the BI system you are using helps to understand the customers better and and how does it help to understand customers better?
Row 24	AO	I'm not sure that this is that's it at the moments. No, not from my point of view what i what I what i do is that when I get in data different customer service in. I almost always have it in QlikView application forms always get it out from Excel and there I do all that's just manual some that is not a system that helps me.
Row 25	SRS	Excel is also a part of business intelligence.

Row 26	AO	Yes of course it is. of course that helps me to do calculations and less stuff. Of course. So I wouldn't have done it by hand.
Row 27	SRS	Of course. So you get the information about the customers. And so, you said that you do the surveys to know the customers better. So does this tool like Excel or QlikView help you to understand the customer better?
Row 28	AO	Yes, it does. Yeah.
Row 29	SRS	Okay. And do you face any problems while analyzing the data coming from CRM?
Row 30	AO	What do you mean by coming from CRM?
Row 31	SRS	Generally BI tools analyze the data which is coming from CRM systems.
Row 32	AO	Well, I'm not sure if I'm not sure if the data that I get come from the CRM. I don't know if you mean that the QlikView application is CRM system.
Row 33	SRS	and maybe the QlikView application is integrated with some CRM system or some other system?
Row 34	AO	In our organization?
Row 35	SRS	Yes.
Row 36	AO	Not that one now because that's just the data from the customer survey that gets into that application so that couldn't be a CRM system or something so yeah just thinking about where, where does it come from. But it would be useful. I think if you could. I mean, for example, we have our customer service, a lot of customers full shacks all the data. I don't know where that. Um, that's the gold mine with information,
Row 37	SRS	So do you think that information needs to be analyzed further that is coming from the customer survey?

Row 38	AO	I think that's I think there are a lot of useful information there and just imagine if you look at that the data and maybe just see how deep the trains getting time or are there a lot of comments on that you've been delayed. It can be interesting also to see to see what are the customers calling about us at the moment and see if we can if you can. May be you can be prepared in another way people what kind of questions will be asked. That kind of thing. And of course also with learn stuff becoming if you do, for instance, campaign and a lot of customers say they go out on Facebook concerns that this was a good campaign and then how to get to learn from that maybe this is very good to complain. Why is that so I think there are a lot of I think data just can do comments about the customers than anything.
Row 39	SRS	So it could be analyzed further.
Row 40	AO	Yeah. I think.
Row 41	SRS	Do you face any problems while working on Excel or while working on QlikView?
Row 42	AO	Problems. Just sometimes that I think that they actually can do more with this. I don't know if that's me or the program, I don't know, maybe, maybe, maybe more. I don't know.
Row 43	SRS	So whatever the data you collect from the surveys how would you say is the quality of the data?
Row 44	AO	I would say that is good and the server that I'm referring to now is the server that we we've done for many, many years and we need to have high quality on it. So we also make sure that the people who work with the survey are professional and do the job with quality. So it's good. Yeah.
Row 45	SRS	So are there any guidelines procedures to maintain the quality of data? And what are those?

Row 46	AO	Yes, there are. For instance, of course, we'll make sure that we have enough we have service that we get to our customers and collect them back again and when they are when they are traveling. So when they sit on bus, there would come person, whoever and ask you if you want to participate in the survey and they should be neutral mission to help you, but they should be nice to you and polite and then you fill in the form yourself and then we take the form back and we make sure that they are the amount of service should of course be as much as we'll talk how the how many people are traveling on in our system during that period of time and then we make sure if there are many people traveling for instance in malmo more service collecting so it should be a representative for the for how many for traveling and also a specific bus line we really, really make sure that there aren't many people traveling there. There are so many service that are collected enough so we know that you can say that this just statistically, there are enough to say something about the results so that of course we have to make sure and also the people that are working that are giving the service out and collect them back also have this mystery writing, then we are actually checking that they are doing their job actually work where someone is working to just make sure that How are they? Are they on the right tour? to or so on and so the some of the quality aspects that we are making sure we keep a high quality on survey and results as well.
Row 47	SRS	And so in the system?
Row 48	AO	So the quality in system?
Row 49	SRS	Yeah.
Row 50	AO	Okay. And all the papers service are scanned and so you can see it in the application and they are marked so that you know the survey is from the pass line at that time. So that's also something that the right surveys on the right comes into the right something, so to say. So I think it's I think it's a good system. It seems like in many years we have.

Row 51	SRS	Are there any tools to clean the data or you don't use any tool do it and even is there a need to clean the data?
Row 52	AO	I don't know that I don't what you do is that if less than 50% of the survey is filled in, you take it out. so it has to be at least 50% fulfilled to to to get them to the system. Okay. Yeah. And also on the end of the paper. The person who this is working on the trends has to fill in this service belongs to this line this times and so on. And then if it doesn't, isn't there. It's ours. Yeah. So, but I know there anything else that if you watch the data or something. And I'm not sure a lot more than that.
Row 53	SRS	Do you think that business intelligence with CRM can improve the value or will be useful for the organization?
Row 54	AO	Yes, I think especially if we can, as I said before, if you can have a lot of data that you can cross. See if if a lot of people we increase the amount of people who travel will that increase or decrease how happy you're for instances. Yeah. It would be very useful I think.
Row 55	SRS	Next question is about the options. What do you think the data is sufficient available and the and the issue is with the data quality and the second option is the sufficient data is not available and data quality is good and the issue is both insufficient data and the data quality?
Row 56	AO	Can I just see them?
Row 57	SRS	Yeah Sure.
Row 58	AO	With B, do you mean that the quality is good?
Row 59	SRS	Yes.

Row 60	AO	Yeah, I think that you need to know that the quality is good. Okay. And of course you need to have the amount of data that is needed to and so you know if statistically, you can say something about it. But if the quality isn't good. What can you say about them. But of course, the best is if you have the right amount and quality.
Row 61	SRS	So you think that the quality of data and the amount of data both are in right position.
Row 62	AO	Now I am just talking about that little area where I work. I think we have a good on both, but I don't think that we have that all over the organization. No, because I know at, for instance, when we are struggling. Sometimes we're thinking about it, is this really right but I can just speak about my area and that's where I think is good. Yeah.
Row 63	SRS	And what are the other systems to which the BI is integrated?
Row 64	AO	sorry other systems?
Row 65	SRS	Are there any other systems like CRM or the ERP to which BI system is integrated or they are using the combination of both?
Row 66	AO	I don't know that.
Row 67	SRS	Okay, okay. So most of the questions are related to CRM and BI actually.
Row 68	AO	Yeah well I don't work so much with the systems. So I don't. I'm just being more. I'm just saying, how can you use. How can you use more data so you can be more efficient and learn more about the customers so you can help organization more about Systems and how they work together right first.
Row 69	SRS	So you are working within the organization. So you might have an opinion. So if you would think, or if you could say how would you say that the BI is integrated CRM in your opinion?

Row 70	AO	that's what I'm coming back to the same. If you could have like one system throughout that can have all your different kinds of data to like as I said cross different kind of data. So you could get the big picture. It was also we have a lot of systems today and they were all alone. And so it's sometimes hard to see how the different kind of data, they have for each other.
Row 71	SRS	And do you have any idea about what kind of or what type of CRM data is analyzed using the business intelligence tools?
Row 72	AO	No, sorry. No.
Row 73	SRS	Okay, So do you have any accessibility to the data analyzed by CRM plus bi reports?
Row 74	AO	I don't know actually.
Row 75	SRS	Okay. And do you communicate with CRM professionals?
Row 76	AO	actually I normally say that no.
Row 77	SRS	and when the BI systems. When the organization started using the BI tools. So, were there any kind of trainings or education given to the employees, how to use the tools and how should be used?
Row 78	AO	Yeah, we have what we were what I asked for has kind of the game would be trying to guess most of our data in one system. And then we have some education about where to find the things still there are some difficult this to process the data still at the ambition is so that can be.
Row 79	SRS	So do you think the more training should be given?
Row 80	AO	I don't think it's about the training system at the moment can manage actually still put it in the system still has some difficulties do all the cross crossing.

Row 81	SRS	And maybe some trainings related to how to use the systems better?
Row 82	AO	Maybe I also think if you sometimes also if you if you start to use the tool you kind of think that I would like to be able to do that and then you can maybe just put that wish to someone who works with and say it would be very useful if you can do that in that and then made it that can be something that can be improved. So just start using the tool. Sometimes I think this better to know what is it that you really need.
Row 83	SRS	Do you think when the BI came into the picture there were some business processes that changed?
Row 84	AO	I'm sure it did, but I'm not sure, but it is is there to help. So I hope I hope so I don't have any examples that I can give you, I'm sure. Yeah. I was unsure how much they are integrated today maybe we are and of course the, the goal is to know more about our customers in our business. So hopefully it has to be there.
Row 85	SRS	So last question might be repetitive but do you think the business intelligence in integration with CRM will improve the value of CRM and business intelligence and it will add into the value of the organization as well.
Row 86	AO	Yeah, and I think if you use it the right way and if you know how to use it. I think it's has to be good value, but the system's themselves, they don't do the work. So we have to know how to use them and to know for but yes of course it can be very helpful.
Row 87	SRS	So we are done with the questions and would you like to add some more to this interview?
Row 88	AO	No. As I said, and hopefully you meet some other and know more about it and I'm more about what I would like to do with it. How we can be useful in the organization and that's more mine from the view. Yeah, but I don't have anything else to it.

Row 89	SRS	Thank you so much for your time. It was really useful for us.
Row 90	AO	Thank you.

Interview 4

SS= Sunjita Sunjita
SRS= Supriya Rajendra Shinde
CM= Respondent

INTERVIEW- Skånetrafiken. 4 May 2018. 00:32:32

Row 1	SS	Okay. Could you please introduce yourself, your role in the organization.
Row 2	CM	I am an object specialist and I mainly work with the case part of the system. I don't… I mean we have customers connected to cases. But the other part with the customers and mails outwards and that type of thing. It's not my role I work with cases mainly.
Row 3	SS	So, by cases..?
Row 4	CM	When people complained when they're late on the train. They want compensations when they get hurt somehow, that type of cases that people call they…. they send it on our websites you can do and you can call and you…we have Facebook, Twitter chats. So that's the different ways to contact us and that's what people here are working with that's sitting here in this area.
Row 5	SS	Okay, so what is your understanding of CRM, you know, in terms of purpose or what are the goals?

Row 6	CM	There are different purposes of the CRM system. If we see to first this location here, their main goal is to solve cases and to help people. But there are also another goal and that is for people in different parts of the organization to use statistics and so forth and use this for campaigns to customers that.. people that already are our customers. So. there's different goals with the work that they do in the system. But here… for the people that's working here it's mainly to..to solve cases and help persons that are lost or so in our… our credulous.
Row 7	SS	And how do you think the CRM goals are aligned with organizations strategy and goals?
Row 8	CM	that's difficult. The strategy, I think the CRM system is mainly them for using the customer data to use the customers in the system and to make campaigns against the customers that contact us somehow. Yeah, I think so, yeah.
Row 9	SS	Okay, so how often is the system used, the CRM?
Row 10	CM	the CRM system here…. Here it's used daily, for…there are first line, the first line is the people that actually talk to the customers, that when they call in or they write something on Facebook. And the first line. There are about, I think 40 persons, but everyone isn't working all the time because we are open from six to… six in the morning to 10 in the evening. So at the time. I guess daily perhaps 10 people are working. And then we have the second line support and the second line, the things that the first line console themselves they send to the second line and in the second line I guess that would be 15 to 20 people working and then we have someone in Hassleholm as well. So, I guess 30 perhaps 50-60 person is working the system daily. That's the almost… the second line support is using the CRM system all the time. And I would say that will be about 20 to 30 people have some main resource
Row 11	SS	And what are the CRM tools that are implemented in the organization?

Row 12	CM	the tools I think we use……the intention is to use it all but the campaign is not quite ready yet. But we use the customer part and we use the case part and we are also don't use the campaign part of the system.
Row 13	SRS	Are there any specific tools, will CRM tools.
Row 14	CM	I don't know what you mean by tools? Can you give me an example?
Row 15	SRS	Like maybe ACP Microsoft Dynamics….
Row 16	CM	Yes, it is a Microsoft Dynamics system. Yeah. Yes.
Row 17	SRS	okay. And what would you say that……. the usage, how the usage of CRM can be improved on it can always be improved
Row 18	SRS	So, there is a possibility?
Row 19	CM	oh yes….of course.
Row 20	SRS	And how well do you think the CRM helps you to understand the customers and…..
Row 21	CM	I don't think… if we again discuss the different types of people that work in it. So over here. It's not now, but the higher people that people that works in in selling……sales departments, they have useful what they're doing here. Yeah.
Row 22	SRS	And what what do you think could be improved in CRM to understand the customers better. Like what are the areas….or.
Row 23	CM	in what way?
Row 24	SRS	yeah and what are the areas or… or particular areas to be.
Row 25	SS	In whatever terms you feel comfortable explaining

Row 26	CM	I don't quite understand what you..
Row 27	SS	okay….so by CRM, you have customer information.
Row 28	CM	Yes
Row 29	SS	you understand the customer.
Row 30	CM	Yes
Row 31	SS	So, but there could be some gaps in understanding the customers.
Row 32	CM	Yes, of course.
Row 33	SS	Yes. So do you think that can be improved in some manner….
Row 34	CM	Yes, that's what we're working with all the time and we want customers closer to us. We want customers to give us more information about themselves and one way is of course all the cases we get, but also perhaps try to connect and see how do the customers travel by. If we're able to see how the customers traveling, we can give them campaigns that are that they really need now really want and don't perhaps give people that live in the northern part possibility to go to Copenhagen because they're not interested in that and that is what we always want to do. Yeah. So we're aiming for it. But of course, we're not there because all the customers doesn't want to give us so much information that's always a problem
Row 35	SRS	And generally what problems do you face while working on CRM?
Row 36	CM	what we problems we face….. I would say it's mainly technical problems.
Row 37	SRS	Okay.

Row 38	CM	we're with the CRM system. also we of course they're working on it all the time, but it's takes time. It takes a lot of time ….
Row 39	SRS	so these problems get resolved and how?
Row 40	CM	yes……they are going to be solved somehow sometime, but it takes a lot of time it takes a lot of time. That's the main problem
Row 41	SS	and how do they generally resolve the problems?
Row 42	CM	By doing specialties for us. Okay. Yeah, that's my reason……it's…. yeah but mainly I would say technical problems…. to solve our problems.
Row 43	SS	Do you think…do you feel that some other things can be improved in CRM? If it would have been there, it would be great, or something like that.
Row 44	CM	Sure, there is but I can't think of anything right now but yes of course there are lots of things that should be solved.
Row 45	SS	Hmm
Row 46	CM	Yes.
Row 47	SS	Okay. Whenever you…something good comes in your mind……please feel free to stop us. And you could talk…

Row 48	CM	I think about one problem that we have. I guess it's because we have so many people working on the same case it's not one people that creates the case worked with it all the time. And then finally solves it normally one person starts and then it goes to another one and perhaps the next time when the customer answers. This person is sick or something and then it's the third person and then perhaps I mean it's lots of people are involved in one case and we would like to see how much time every person works in a case and at the moment we can't see that.. it's not in in this system. So we have to do something of our own to……checking how much people are working in the system in every case……..that's just one example
Row 49	SS	anything related to… like you want to see some additional information in CRM, which are not displayed like maybe customer related information, see some customers coming again and now you think you need to ask him questions or you could….
Row 50	CM	we normally see when the people is coming again if they gave us the same information we have the possibility to see it if people are calling on the phone and the system we have that answers the answer service. We have a button that creates a case in the CRM system and when that is done, if the phone number, the person is calling with is known by the system then automatically the customer will arise in the case. So we have that kind of support from the system and as well, if we have a lot of these when people are late you know that you can create…received some compensation for that and as well if they put in their purse, the number birth date without for last digit that we have in Sweden. Yes. If you put in that you also will be known if you're in the system already and then we'll connect to that one. So, we can see if a person you have three cases or perhaps have 500 cases. Yeah, we have that already. And that is very good
Row 51	SS	And what are the other systems to which CRM is integrated or like you mentioned earlier also it is some other departments are using it?

Row 52	CM	and the when the system were created and bought… we bought a system. It was that we wanted a system that all the people here just should work in one system. So, we have lots of other systems, but they're connected so… through our CRM system, we can see for instance travels, how late where the trains, do this customer have other orders that have bought something on our website or they have put money on their travels carts and that type of systems are all included within our CRM system. So, we have like Windows where we look into the other systems in the CRM system. So yes, we have a lot of systems. I think we have about 100 different systems in the company but not always used by for the people that have gone closest to the customer. But we have already that in the system. We're working now we would like to have also the new ticket system in the CRM system that is something we're aiming for. So we're not there at..
Row 53	SRS	these different systems are owned by different vendors.
Row 54	CM	Yes, they are. Well, they are created by different vendors. I think there are systems. We have bought the license to use them. So, yes, there are lots of different vendors sold system stuff.
Row 55	SRS	Yes.
Row 56	SS	What is your view on quality of data that is collected from CRM?
Row 57	CM	It is much better now than it was before. If we go further back the system we have now is much, much better than the previous system, but always the data could be improved. People sometimes they put in their personal numbers sometime, sometimes they don't. And then sometimes we have problems to connect those together and see is this the same person or isn't it. I mean, that's is always a problem. So it could be improved. But I'm… I think we're much more a we have a much more …we have a much better system now than we had three years ago when we started. Yeah, because then we had the email address as the key and now it's then personal number.

		Instead, and that is much much safer.
Row 58	SS	Do you follow any guidelines or processes or any kind of tools to maintain the data quality.
Row 59	CM	Yes, we do. We don't have the possibility to put in whatever there are rules, how to put the data in the CRM system. So yes, I must say there are some rules for instance, you have to put a phone number in a certain way though it's known to the system, the number our personal number or if you're Danish and don't have a personal number, you have to tell that you are from somewhere else. Not Sweden and yes there are guidelines, how to create data to get it in a way that we can use it later on.
Row 60	SS	What do you think....there are three options to this. Okay. Is there sufficient data available and there is some issue with the data quality or do you think some more data if made available could be helpful or both of these?
Row 61	CM	for us. I don't think we need more data, but I can guess that other parts of the company, maybe would like some more data, but for working with the system like they do here in case I don't think we need more information. So we put the last one out, but the other two is I don't sure which one
Row 62	SS	so you're maybe….so data quality is also okay and sufficient data is also available?
Row 63	CM	Yeah. Yes, I would say, so. Yes.

Row 64	SRS	Okay. And do you think if there is any need of further analyzing the data just coming from or collected from crm?
Row 65	CM	Once more please.
Row 66	SRS	Do you think that if they in need of for the analyzing data coming from CRM?
Row 67	CM	yes we do have analyze systems. We don't do report some sorts like that in the CRM system we use data warehouse and we use QlikView to make reports.
Row 68	SRS	so it is integrated with BI.
Row 69	CM	yeah it is
Row 70	SRS	and how will you say, how is it is integrated?
Row 71	CM	how…we take out every day all the data every night. So once a day it's exported to the…yes and at the moment we're not quite there yet, but we're working on it and will hopefully get the people will not be using the CRM system like there are now but the ones that do all the work of course they're on the CRM system, but all people that just take reports, like…. should work elsewhere, not in the system that is connected to the new rules in Sweden that are supposed to be ready at the 25th of May this year. These 20 days we go away..21 and in the BI system we are taking all the personal data away. Okay, so that's why we would like people to work there and not in the CRM system.
Row 72	SRS	And what do you think ….what is…. according to you what is the purpose of using the BI and CRM?

Row 73	CM	There are different opportunities to get what data you would like to have it's much easier in the BI system, in our case, the Qlikview. And then in the CRM system that is much more fixed. You're not free to if you get an idea. You can check out in the BI system and do some selection some…you can find what you want in the CRM system. It's more static, you can't do fine with such like that in the CRM system. So that's why mainly the BI system is very good for reports, things like that.
Row 74	SRS	And what type of CRM data is analyzed using integrated BI…upto what extent.
Row 75	CM	It's the cases mainly…. all that is connected to the cases is exported to the BI system and customer is at the moment also exported back that will be taken away, there will be some…. So we can see for instance, how old the person is or if it's a male or female, but we can't see the person with name and address, so that information will disappear from the BI system.
Row 76	SRS	Yeah. And how is the CRM data is accessed by BI systems
Row 77	CM	they… it's exported every night yeah we export it from the CRM. So we can't go the other way, but nothing is exported from the BI to CRM… its always from CRM to BI.. yeah…so that's a copy of what is in the CRM system.
Row 78	SS	How do you communicate…. how often do you communicate with bi professionals?
Row 79	CM	Not very often…. when we're building it..we have a lot of communication. But at the moment we are not doing so much on the case part or the customer part in the BI system. So, at the moment we don't have very much… once month, perhaps,..or a couple of times a month.
Row 80	SS	Do you think there is a need of communicating with them more?

Row 81	CM	then I would have called them… I have the possibilities that… it's no it's not a problem for me. No.
Row 82	SRS	And they support other departments as well?
Row 83	CM	Yes, they support all the different departments of the company because in this big BI system that we have, it's not only our little parts they have all about traveling and how many people have you know when you walk in the door on some buses and some trends, there is a counter that count how many people can stay in and out and there are system that takes care of check how late the traffic is and all that is in the BI system, so you can use all that together in the system. So, it's really powerful.
Row 84	SS	Okay. What degrees of training is required or was required and provided to relevant stakeholders for maximizing the usage of BI over CRM. Was there any training to CRM users. Since bi would be involved now..was there any?
Row 85	CM	I would say it's not the same users that use the CRM system and use the BI system. It's different types of persons as well of course are some that uses the reports in the CRM system, but mainly they use the BI system.
	SS	So, and how long time does it take to learn how to use the BI system
	CM	Hmmm…Many people that are using it have used it before and then yes the quite used to using click View, so I don't feel that's a problem.
Row 86	SS	Actually, you mentioned earlier that CRM users are not having access to any reports or BI

Row 87	CM	They have access to reports. Yes, they do. But there are not many people that use the reports. Okay, now it, I would say different persons mainly, of course I was someone and doing everything but mainly I would say it's different puzzles and we have some reports within the CRM system because we didn't have the BI when we started, that's something that have got later on and at the beginning we all use the reports up in this the CRM system, but it's still everyone have access to it but they don't do it now it's different persons that use the reports.
Row 88	SS	So what would be….Is it like they are not required to use it or do you think there are ways in which they can use those reports?
Row 89	CM	I don't think they see the benefit. I know there is one report that they check and that is how many cases have I've done this month. And I know that some of the people that on the second line they check what they have actually done the last month. Yes. So someone uses it but it's just this small specific reports, it's not that the more overall reports. It's just this little picky was
Row 90	SS	so do you think the BI team which is working on… like what reports …..reports are to be displayed what in data, information needs to be displayed… do they understand like what would be of benefit to CRM users and the goals of them …so that…they have access to some reports or data which is more beneficial to them and BI could help possibly?
Row 91	CM	We have tried mainly the BI system is not created for the people that is working with the cases it's mainly for their bosses and for the other departments in the company. And I think if they want they have the possibility to open it and make reports themselves. Yes, they do. Because we have tried we have done one report and yes so everyone can do it, but I don't think they're so interested they don't see the benefit because they have this goal that they should complete so many cases every day and so on. So I don't think they feel the use but someone does obviously

Row 92	SS	okay so someone's who are looking at reports and those reports are generated based on CRM data.
Row 93	CM	Yes.
Row 94	SS	So BI users who are working on developing those reports, creating those reports. They are….. If you have any idea are they aware of, like, what is needed by those people who need to see reports, who are actually.. using it.
Row 95	CM	The BI system is created like that… there are some reports that are ready, you can go in and you get this report or something. But mainly it's a free part.. when you can do your own selections that part is the big part of the BI system, but there are some readymade reports that is perhaps a little bit more difficult to do just by some selections and so on. So, yes, there are both in the BI system and we are discussing now to make these ready reports, do some more and to take them from the CRM system over to the BI system and only to take them away on the CRM system. So it's all they have to do there. And the reason for that is of course the new good GDPR rule. We don't want people to log in to the CRM system because when you're in. You can check all the personal data. Yeah. And when the personal data is not in the BI system. It's where we would like people to look…because they don't have any use for personal data. To make a report you don't need the personal data.
Row 96	SS	So this ensures that only that data is visible, which should be visible and which is required?
Row 97	CM	Yes.,just for those who have need for it and other people want to see the personal data. Yeah.
Row 98	SS	Thank you. And what were the changes when BI came into picture and was in some way connected with CRM.
Row 99	CM	There are no..at the moment there are no changes in the CRM system

Row 100	SS	And in the processes…any processes…like one would be the exporting of data which you just mentioned.
Row 101	CM	Yes.
Row 102	SS	And any other processes which have changed, maybe not in the system though maybe business processes or other processes.
Row 103	CM	Yes, of course. We have must have been but it's not that obvious, but of course there are some changes but I don't feel we haven't….. I was in the project to take it from the CRM system to BI system. But which I… mainly discussing what we need in the BI system what type of data shall we export and what type would we not export. So, we export the case information that the profound, but we don't take the email conversations…..the email conversations with the customer is just in the CRM system, but I don't changes… I'm not sure what type of changes.
Row 104	SS	For example, what one I see is since now there is an additional activity of exporting the data here, one might have been given the responsibility, who sees that exporting these have all been…
Row 105	CM	Yes, we have a project leader that just takes care of the BI system and all that should go into the BI system from all different parts of the company. First of all, they started with the traffic and then we take the customer and case data and now they're working on the new ticket you know the the new ticket…?
Row 106	SRS	new app?
Row 107	CM	Yeah. The new app. Yes, that type of tickets. They're using now taking over to the system. So yes, we are working for that all the time.

Row 108	SS	And do you think the overall this process of BI coming into picture integrating with CRM. CRM, giving data to BI….this has improved the value which CRM could give alone to the organization as a whole?
Row 109	CM	Yes, I think so. Absolutely. Because it's much easier to work with CRM data within the BI and also you have the connection to the other parts that are in the BI system, you could connect those together. If we have those late customers and then you can check all that have wanted money back for the tickets and check that against the traffic. If that traffic is late then they can take use of, how many people were late on this bus or train. For instance, so yes does much more useful the data when now when it is in the BI system. You've done before. Well, they had to go to share it with a CRM and make some ready fixed reports there and then go to another system and make some readymade reports that was much more difficult to use that data. Now when they have it all together. It's much easier to get a good solution from the BI system. So yes, it's a big improvement.
Row 110	SS	Okay, thank you so much for your time.
Row 111	SRS	Would you like to add someone to this.
Row 112	CM	I don't know what
Row 113	SS	your inputs are very valuable and are definitely going to help.
Row 114	CM	I hope so…. I hope you get some use words.
Row 115	SS	Thank you so much.
Row 116	CM	Thank you.

Interview 5

SS= Sunjita Sunjita
SRS= Supriya Rajendra Shinde
CB= Respondent

INTERVIEW- Skånetrafiken. 4 May 2018. 01:02:52

Row 1	SS	What is your view on quality of data collected from CRM?
Row 2	CB	You know Qlikview? Application Qlikview?
Row 3	SS	Yes
Row 4	CB	We have Qlikview for full customer data, full buses data… everything I was writing on the picture when the train or buses delayed or we can see the customer, where the customer is rather customers paid… not taken so we use these very large, we have 80 different QlikView application for all this. It's very good because our transport company who are our travel the customer, they get money. You bet today they can see the timetable. They get less pay when the passes is the length. So they have in cement to really go as the time table and that is very good, we have very good contract with our transport.
Row 5	SS	But as far as quality is concerned, do you think data is good enough in good enough condition or data should be more better, like is data same from everywhere, or its different, say name is something in one database and its a bit different in other database, for same person you have different names, for ex. Do you face issues.

Row 6	CB	A few years ago, we have many data for many for databases. Now we have a lot of less of….. we would like to go with a masterbord..which is the most data we have to take in the in…. in the traffic. Yes, now we are working very hard when we have stuck in the in the traffic when he had queue, we are working very hard to our passenger, or in the best you could change about or you can jump out this bus to take the other bus. So you can take the other way. Nice. The delight time for the customer. That is very big for us/
Row 7	SS	So, are there any guidelines which are there in the company to handle data. So the data quality is good. There is no wrong data or bad data?
Row 8	CB	Yes, we have quality assurance, every day we take tests, we check it and say, is it okay. For example, and we use this system to contact with in the bus when you check that with your cubic system ticket system, So we have two or three different system to compare if we have the same value the person going up the bus, or leaving the bus.
Row 9	SS	so there's comparison. And when you compare…. when the system compares…. Is there any mismatch or it's always correct?
Row 10	CB	Yes, that's a good question. Very good question. Now for a month ago we were seen, we have a big difference with two with two system and we have to go . So we have to maintain the a procedure system more often for, be sure of this is
Row 11	SS	ok, ok so what do you think…data which is there in CRM… the customer Do you think It is enough or do you think you need more data from some sources

Row 12	CB	No., we we think we have enough with data. Now we now we have this type of data. We wish and we have the right volume of it. So we're, we're very good at this. Now, which we know compliance with this data we have now and we have also to our traffic transport company, we want to do with transparent, we will share the data as we see it as travel transport, we always see the same…. same data because the traffic company they get money from the same and that's also good for we have agree and we have to shake our hands, we are agreeing
Row 13	SS	So, what do think? enough data is available and should there be more analysis of this that, so that it can benefit creating more reports or so that it can help decision makers to make decisions, say, the one
Row 14	CB	yes, we have we have majorly put the quality of the data. Yes, we have. We do with every every day. You can see in the clip here every day. You can see every, every hour. You can see how many people of us are going, our timetable. I mean in in the train, you can say the day. Yes, very much…We have.
Row 15	SRS	And do you think is the if there's any need of whatever data is collected from CRM is there any need of further analysing that data. So, we can make use of it more or we can get more information?
Row 16	CB	Ok, Yes, now we are we are good enough, the data that we have now. Okay, we'll always wish more data, but now we think we have good enough, our problem is now we have to identify the data, which is the most important data with the business to the transport company every month. So we have to do a little more smarter and where it is today. That is so many factors well depending on it but we want to do is in a way compliance with a company who do the transport for us.
Row 17	SRS	And you mentioned about QlikView. So there are some BI systems. So how is CR integrated with BI systems.
Row 18	CB	. I think I should show you, this okay.

Row 19	SRS	yes
Row 20	CB	That's strange….its taking a little time…sorry. We have many applications, we have everything for selling, when you're selling tickets or we have delay, passes or we have a lot of, so we can presentation it. As QlikView with diagrams also and we can do this every day, every hour, and you can also demand say I would like to see this every minutes and I can go to a brick and I can go see, we are depending on which system more delivered the data, some of the data from selling center when it's take longer time till we have get it in the system, the database, same gave this for the buses and also take a little time. We have many of these QlikView application. And now we have one level down, we can see here is a delay time for the buses and we can see here,
Row 21	CB	I hope this is what you want to see?
Row 22	SS	Yes. from this we think, these are detailed reports, even real time as you said, in the same time or for one hour
Row 23	CB	Yes
Row 24	SS	Are these reports used by CRM users also or by decision making, any access control who can see what?

Row 25	CB	We can see days months, previous years, 2,3, 4 years ago, so we can take it back and we have time, are we can also see what contract we have. Type of buses in whole place and you can see here the green color, in this we have one bass line, we can see 68% of all this again in my time and we have 20% from 3 to 20 minutes delayed and we have here 12% was less than 30 seconds. So, we have 80%, which is okay and you can do the same. This is fast and the strength and we can do so in every line work home with a stronger and we can compare it with, we can see the speed, range more very much and here is the mass buses in Malmo in a square, in malmo, 83% of overseas is in time here in Helsingborg you have little frozen though near we are in time and we can make in every, we can fall in every line, every bus stop, we can see, unless it's very good. We have a contract with a transport company, you have to follow the timetable if you can't do this you get less salary.
Row 26	SS	so this this show that there are very detailed reports visualization, dashboards available now, using business intelligence,QlikView. when business intelligence was not there, QlikView was not there was a they're such reports or something similar.
Row 27	CB	We have it for traffic company. So we have buses and trains. We have I can show you here.
Row 28	SS	This wasn't there in the old system? In the old system there were any reports or something.

Row 29	CB	This is the second version of QlikView. The first version was five, six years old, but we have some problem with the quality of the data, this we have a better quality, its was not there, we had two more work. We have really quality data in many pieces we have a we have staff development process and we have quality process and take a dramatic process. These two men and a dramatic process we have come in contact with each other and then now we have a better. It's much, much better now we can trust on this. We could have did a 4,5,6 years ago, now we we can.Here, we could see the red one is train, the blue green is buses, we just say how many customers have got on the bus over this time between six to seven o'clock we have stopped here, so many have get on here seven o'clock in the most when the school finish the work we have nailed the same talk, and you have a scale up and scale down, we can see this every day, every hour we can follow it, we can see from November to 16 to October 27 and we can see in which number time for the last number 388 to four which an eye on the same for the bus stop. You can see everything. This is very good.
Row 30	SRS	This is what Microsoft Dynamics? Or QlikView and Microsoft dynamics.
Row 31	CB	You can do everything. You have also use power BI. Yes, which tool you're working with you say business intelligence, QlikView. QlikView for five years ago, we couldn't do this in Excel. But when you get Microsoft Excel 2016 power business intelligence, I call it a Microsoft, you can do analysis and what is the difference. The difference is, if you do the circle diagram you couldn't do that in Excel earlier, but you can do it now. You can do this if the same in both excel in this but it's so, it's so much data. So, we want to keep, so we get ready for this application, we want to have one application for a PC, for bus and one application for train. Also, all you can't handle it, You have to share it. You can put it into Windows beside each other and you have to compare. So now you can always compare this…we have we have now ….so we like, we have worked with in in some of 10 years when it was new, we like this would like this tools to get further

		with it.
Row 32	SS	when old CRM was used when there was no such reporting data analysis was not there, then this came into picture. The QlikView and reports everything, so the users got the training, CRM users and the BI users, they have the training, how to look at this, how to use how to use QlikView, how to look at the results we use it, understand how you use it. But the users. They were employees who are working. Now they need to learn how to use it any training to them.
Row 33	CB	Yeah, we have inherent in with will other, we can see the same thing. We are there. We have educated them. This is the same. They also can see the same data as we can. We have shaking hand when we're off the grid the data and the research good because we will not say to transport company you have to do this or this. This we have quality the data we and the transport company together, whole time we have working together when we have and develop this application is QlikView is very important. Because if the bus driver not have put on the GPS,we couldn't get any keep GPS data.
Row 34	SS	Yes.

Row 35	CB	The the bus driver have to do some ordinary things, he have to sell tickets. We have to do as usual as before, if you didn't we cannot sell tickets in in the bus and we cannot see what the buses. So this is good for the bus company they get a premium if they could show that they are 90% or 95% for the timetable. There goes money and that's very important for them and for us …for the company and for us. We can share a customer… look here the bus is in the chime. We have report. You can see here and our customer, they can see it when they're staying with a with a bus stop. Oh my bus is to three minutes late, this is what we offer the customer, but it will not offer the customer this offer we. what is the price of the ticket and whenever I ride to my new place that they are interested.
Row 36	SS	So, the ones who are using CRM systems they use these reports they see these reports the CRM users were those handling cases .
Row 37	CB	Can't understand
Row 38	SS	There's a system, there's a user with using that system CRM system and this is QlikView ,so the person using the CRM system they see this report?
Row 39	CB	We're using this but the transport companies, I can hardly see they have not right to write.
Row 40	SS	So, this Skånetrafiken users who are using the system they see customer details on the screen
Row 41	CB	no, customer will have a complaint. we take all the capital complaints and we answered always the customer and we take a release to the travel company if someone has complained. Why did the bus dry, special set of why, what happened. And then the transport company they reported to us, our service this and or services, contact the customer, we can take every contact with the customer no contact between customers and traffic company
Row 42	SS	So, if customer service person whom the customer contact customer service person is using CRM system.

Row 43	CB	Yes
Row 44	SS	and to do that person see such report some QlikView. So you've seen improvements or something good which you have noticed
Row 45	CB	Yes, I can say that the lead time when a customer complaint. My buss is 20 minutes late or services. They agree and said, Yes bus was 25 minutes. Thank you again we have different way to compare the customer, we have we call, not automatic decision. The kept going with a website and therefore, in all the candidates and then it's your best chain in the database in sekund, it is the name of our CRM and then they picked the data from bus rides the bus was 25 minutes late. You should have sent me. You should have some less money. So Yes, and he gets back
Row 46	SS	Skånetrafiken users who are in Skånetrafiken and using CRM system they talk to the technical team or IT team who create the dashboard, these reports, do they talk to them. What do they want to see , or?
Row 47	CB	yes. All this system you can see here we have developed with the with a customer, with IT and our own. That's amazing. They know are responsible for the traffic at Skånetrafiken we have developed this and we have done it together and our CRM system, We call it sekund they couldn't can come, they can call us in mobile. They can go to the website, write in a formula and we have in our services and we have a we should also the customer in three days, we hope we can do that. But when its this time, when it's very bad weather we have snowstorm, So everything is stop, take few days and we could answer the customer, but we don't we don't forget focus on the customer, write in the formula, we handle itCRM system.
Row 48	SS	So, what do you think, what is your view on business intelligence and CRM has combined in Skånetrafiken, so has this been good, are there some improvements that you have seen. If you use CRM, but not with business intelligence, in older times when previously. And now you use CRM plus business intelligence.

Row 49	CB	In Microsoft dynamics, in this crm, you have likely the same tools as QlikView as in business intelligence. It's made of the same today. And now we have a discussion if we are going to take CRM to share, even in QlikView or we're going to build with own tools in CRM Microsoft Dynamics. We think we're using the tools in Microsoft Dynamics to share the same for the customer. What have we done for the customer what they could see and what we one them to see. This is for the transport company and for us to show against the contract. So we are on the same level and discuss so we are agreeing. How many, many money they should have. Yeah, that's okay. i don't i don't know if we're all going to take our CRM system or have good business intelligence in Microsoft dynamics or we are going to use QlikView. I don't know. I think we're going to use Microsoft Dynamics.
Row 50	SS	What do you think, CRM system Microsoft Dynamics, as you mentioned that there are so many databases. And so, which leads to, which slows the time of communication sometimes.
Row 51	CB	Yes
Row 52	SS	So is there a data warehouse or something like that where all data can be stored to overcome this problem. I mean business intelligence could help to reduce the time gap?

Row 53	CB	I mean, this is a data warehouse, to its many data in this four year ago, many years ago. And the interesting question is how, how long ago you want to spend that the data is it a week ago. It's interesting for two weeks or more. Now, big data. Now it's not interesting for us. We have a history statistics, you can use data thats with us but now you have a strong demand, you need to get answer one quickly for the data and you have also big demands. You have to share the data, then if you have to do this together. You should not have so much data, you have to decide. Oh, but I will show the data today. What is your interested, here I can share here, I can share here. Yeah, I can share data at this more important and now I can see for yes that day or in that table here 2016-17 all they say is you see all the weeks and you could say Monday tested everything ,now then you can get down one level and you can take from the time, hour, second minute, so u could see here. So we have all the data we need, to see what is interest for us to discuss why the more, why are the less passenger here in June, July , august as compared to may, one reason all the students they away in summer and not in school beforr 15 of August. So it's the same here in December and I'm sorry and November we have a holiday one way and it's going down this our best month ever again. We have some problem with a train, so we can follow up. How do we do forecasting thi,s it's not so easy to forecast was we have depending on the weather well depending of the infrastructure. So we have to as I tell you later take as a customer from A to B, your way. This way, this way or this way is a big challenge that together with give the customer information when we have disturbing in the traffic. Do you understand me
Row 54	SS	Hmm… So do you think business intelligence can help this is this ?
Row 55	CB	Does BI help in this

Row 56	SS	I understand, but I just want ask when you want to have that system in place where customer can you know from customer can travel the shorter distances and choose tickets accordingly so business intelligence, could CRM system alone can be sufficient or CRM system plus business intelligence both together will help in achieving that.
Row 57	CB	What do you mean with Business Intelligence
Row 58	SS	okay.. so either you use Power BI or you use QlikView, data warehouse or these things or you just use Microsoft Dynamics. So do you think if you just use Microsoft Dynamics, you will be able to achieve that or you think Microsoft Dynamics plus any BI technology, business intelligence tools or business intelligence technology will help you to achieve that.
Row 59	CB	QlikView is BI.
Row 60	SS	Yes,
Row 61	CB	yes. Microsoft Dynamics I would use, there is a Power BI only there are other tools and there are we could we could see all business, we can say all contracts, we can see all payments. So, we don't we don't need anymore. Yeah, because we see all things in this can do I can take I can take this I can transfer over to Excel, I can power BI, I can our is able to excel from way and I get the same value I can get the same diagram. I can do that. So it's it's not a different between power BI or Microsoft dynamics QlikView. Okay, so do the same.
Row 62	SS	Maybe there are other tools to Power BI using that is business intelligence, but CRM system if we talk about CRM system most events. We have just our CRM system and not BI

| Row 63 | CB | then it is it's not you can't use a CRM for itself. You can't you have to use the CRM. QlikView of business intelligence or third party tools you can use that to that we have taken decision for Skånetrafiken and region skane, this is the tools were about two years completely before this, I was always use a crystal report for many years ago I was using another app until against to, but I think this is easy way to show when you have the diagram, we have a serpentine it's more easy to understand when you have different and you can do this it's it's very important to visualize if you can't visualize this you don't get the understanding of what we are doing and that is very important. So when we are when we are up to discussion with our transport company. We have the same picture and we discuss about this picture why a line for a bus stop. The most we have we have done. How many, how many, how many services company managed to get from your customer. How many complains, then how many delays, mails also we have. So I think it's more important to take it discussion on what business intelligence tools you're going to use. You can you can take another we'll get into today the tools they are our is near the same strong isn't it isn't that we like the visualize the QlikView. |
| Row 64 | SS | Okay, thank you. |

Interview 6:

SS= Sunjita Sunjita
SRS= Supriya Rajendra Shinde
MS= Respondent

INTERVIEW- Skånetrafiken. 11 May 2018. 00:18:53

| Row 1 | SS | Could you please introduce yourselves and describe your role within the organization |

Row 2	MS	Yes. I started one year ago at Skånetrafiken as the product owner for a project called My Account. This role was supposed to only be developing sales organization order from me as a development team. It turned out to be a person that could place the order a segment at decision maker and product owner in one, so to speak, putting down the data what needs to be done and developing today.
Row 3	SS	what is the goal or purpose of using business intelligence and CRM in the organization?
Row 4	MS	Yeah, we are trying to we have a ton of information that we get in on that we can analyze and make decisions on that when it comes to the business section we have no skill whatsoever to play. So we are right now and we're trying to develop something for our data that we have not completed and satisfying in terms of making a decision making actual traveler.
Row 5	SS	Okay, so, so do you think that the use of CRM can be improved in the organization?
Row 6	MS	I think that we have a tool. Yes, good enough that I'm not sure if we handle the tool that we are determined on what exactly what we need in terms of information.
Row 7	SS	So, how would you say that BI is integrated with CRM, currently BI is being used over CRM. So how is it integrated with CRM?

Row 8	MS	I think use it in a better way to structure in a better way and collect more target oriented in what kind of information that we collect or how would put it together in what kind of think of it in the long term way.I will say that we have come. Well, 100%. Correct. We don't use it for the open then need using. CRM is lacking so that we can introduce some of the existing tools in a better way tool or that tool will be necessary. I think in a company like it's run by the government doesn't have a long tradition of underlying thing and maximizing profits or sale in the same way of the corporate completely different world court in the tradition of the life thing. And the nice thing and for for customers. It's not quite there. It's definitely not the tradition or new organization or different kind of people. I would say it's something that could do so no one of the big on your team is using CRM. The team is using currently tool that we did a couple years ago, five years ago, maybe I'm not in my role as a product owner for account. I don't use the data in CRM, especially much because we only have private people in there and we don't have a business and right now we're doing marketing business
Row 9	SRS	So what is your view on the quality of data is collected from CRM.
Row 10	MS	I think the quality, how we do, we have a lack of guidelines or processes to maintain the quality of data. I am not aware of this but there are somewhere I haven't been informed of or I haven't looked for but now there is certain projects ongoing we should get but with the basic information. No, there's no actual processes, go to know where we are, I think, I think we have fine.
Row 11	SS	And do you think that there is a need for the analyzing the data that is available in CRM ?
Row 12	MS	CRM has a lot..I think there's more need to put more time to it.
Row 13	SS	Do you think that there is sufficient data available and there is issue with the data quality or do you think sufficient data is not available and the data quality is good or both?

Row 14	MS	I think collecting data issues with divided into two parts. Oh, definitely not anymore. But I need more on travel patterns. Its difficult to measure compare because of me in the trenches in CRM way different.
Row 15	SS	Do you have any idea of like what type of CRM data is currently analyzed using BI?
Row 16	MS	yeah we are monitoring people move, if you change your local address, then we know their travel patterns or change work and there's an opportunity of them all to change and a way of traveling to work if we want to turn, but we don't want to start very much in our customers patterns so whatever data is analyzed our CRM users having access to that information.
Row 17	SS	I mean do CRM users access any kind of reports or information which is from bi systems?
Row 18	MS	How many have logged on to their account. There's not much traveling to individual….. No.
Row 19	SRS	So is there a communication between BI and CRM professionals? Do they communicate with each other, regarding how they can benefit from each other?
Row 20	MS	I don't think so. And that I would say we're aware of and people would like to do …but doesn't have ….there's no time at the moment because they're under pressure of changing all a computer system and we have to prioritize first so.
Row 21	SS	so do you think that BI and CRM users are aware of the goals of each other like what is the purpose and goal of CRM in CRM people know like what is the purpose of bi is awareness?
Row 22	MS	No, I don't think they're fully aware of.
		So do you think what, in your opinion, does it help to use bi or CRM in orders to understand customers better?

		Oh, work together
		I mean if BI is used to gather data from CRM is analyzed no better with using bi then do you help in understanding customers better.
Row 23	SRS	Are there any trainings or educational guidance provided to CRM and BI users to let them know how to use the system and any knowledge transfer?
Row 24	MS	No. If I had more time and talked about it. I feel bad conscience. Definitely. Everybody for where it needs to be done should be done, but the fully one.
Row 25	SS	So what do you think the processes has been the processes have been changed when BI has been introduced in the organization, along with CRM or there are any processes which needs to be changed to ensure better integration between CRM and BI?
Row 26	MS	I think for me down there. I'm not sure if we'd have me of the old index here or I think it's got more information and knowledge about?
Row 27	SS	How you rate the alignment bi and CRM goes with the enterprise wide strategy, the strategy of the organization?
Row 28	MS	I think that'll work to have overall connecting targets, of course, be aware of each other targets that one and then we need to make sure that we have aligned. I'm not even sure that we have don't even get information out of them and then lot of work needs to be done before we even get to.
Row 29	SS	So what do you think that using CRM will be I to whatever extent it has been used has it improved the value that one can it expect from CRM?
Row 30	SS	Okay, so you bi has been used to with CRM, to some extent already in the organization. So do you think that it has helped have been improving the value from CRM

Row 31	MS	In my role I haven't talked much sure or making small progress towards getting getting. I think it would help with more energy and would you like to add something, it will just be interesting to see what you're in this area and of course what you want. You will what kind of information you're gathering about with your your conclusion. It will be very short and would you like to add anything else. As far as using CRM and bi is considered only thing is, I think, but how to transform it in the proper way would be something that would I think this company and not many companies to actually say no to certain areas and streamline what kind of information you need.
Row 32	SS	I think yes we are done with the question and the interview. We would like to thank you for your time and your valuable input.