

Timo Haataja

Sales Forecasting in Small and Medium-Sized Enterprises

Helsinki Metropolia University of Applied Sciences

Master of Business Administration

Business Informatics

11.03.2016

Author(s) Title	Timo Haataja Sales Forecasting in Small and Medium-Sized Enterprises
Number of Pages Date	43 pages 11 Mar 2016
Degree	Master of Business Administration
Degree Programme	Master's Degree Programme in Business Informatics
Specialisation option	
Instructor(s)	Antti Hovi, Senior Lecturer
<p>This thesis examined the use of sales forecasting in the small and medium-sized enterprises (SME), which provide software services and applications to their business customers. Sales forecasting is important, because it directs planning and decision making in the companies. However, SMEs may not have proper tools and resources assigned to sales forecasting.</p> <p>The theoretical framework of the thesis focused on two essential components; sales forecasting processes in SMEs and forecasting tools. Qualitative methods were used in collecting and analysing the use of sales forecasting in SMEs. The number of forecasting tools were reviewed in order to analyse the suitability of the tools for the SME needs. A total of 13 tools were selected for a detailed examination because the use of the selected tools does not require high investments, and therefore they were considered suitable for the SMEs. In addition, four sales directors were interviewed in order to a) examine how sales forecasting is applied in their company and b) what kind of challenges the sales directors were facing in sales forecasting. Semi-structured questionnaire was used in the interviews.</p> <p>The findings of the study are related to the sales forecasting tool assessment itself and the themes observed in the interviews. Accordingly, the sales forecasting tools can be divided into three groups: business intelligence tools, visualization tools and customer relationship management (CRM) tools. Each group of the tools has a unique forecasting feature that is largely missing from the other tool groups. According to the sales directors, the main challenges were related to sales process data collection, the use of CRM in the field and subjective probability estimates of the deals. Recommendations are provided to SMEs to analyse the need of sales forecasting and how they could develop their sales forecasting capabilities.</p>	
Keywords	Sales forecasting, SME, sales forecasting tools, sales process, sales forecasting process

Contents

1	Introduction	1
2	Theoretical Background	2
2.1	Definition	3
2.2	Concepts	3
2.3	Forecasting in Business Management	5
2.4	Sales Process	6
2.5	Forecasting Process	8
2.6	Biases in Forecasts	11
2.7	Predictive Analytics	11
2.8	Small and Medium-Sized Enterprises	13
3	Research Design	15
3.1	Participants and Methods	16
3.2	SME Selection	16
3.3	Questionnaire	17
3.4	Selection Criteria of Tools	19
3.5	Tool Evaluation	20
4	Results	21
4.1	Findings of Forecasting Tools	21
4.2	BI-Tools	22
4.2.1	R and RStudio	22
4.2.2	RapidMiner	23
4.2.3	Microsoft Power BI	24
4.3	Visualization Tools	25
4.3.1	Tableau	25
4.3.2	QlikView and QlikSense	26
4.3.3	Intuitics	26
4.3.4	SAP Lumira	27
4.3.5	ClicData	28
4.4	CRM Tools	28
4.4.1	Pipedrive	29
4.4.2	CRM Base	29
4.4.3	Insightly CRM	30
4.4.4	Zoho CRM	31

4.4.5	Visma Severa	31
4.5	The Content of the Interviews Evaluated	32
4.5.1	Business Tools	32
4.5.2	Sales Processes	33
4.5.3	Sales Forecasting	33
4.5.4	Challenges	34
4.5.5	Improvements	34
5	Discussion	35
5.1	Recommendations to SMEs	35
5.1.1	The Need of Sales Forecasting	36
5.1.2	Assess Current Situation	36
5.1.3	Sales Funnel and Process	37
5.1.4	Sales Forecasting Model and Data	38
5.1.5	Sales Forecasting Tools	39
5.1.6	Visualisation	39
5.2	Conclusions	40
	References	41

1 Introduction

Sales forecasting is an integral part of business management in the companies. Publicly traded companies have to produce sales forecasts for the investors. Thus, sales forecasting will form the basis of internal planning and resourcing. This study focuses on sales forecasting within small and medium-sized enterprises (SMEs), which employs between 10 – 250 people. SMEs are seldom publicly traded, and they do not have the same obligations as big companies have. In addition, they do not have dedicated resources assigned to all activities in similar manner than in bigger companies. Despite the limited resources, however, SMEs have sales director who is responsible for planning and managing the current and future sales.

SMEs are using IT systems to operate their daily business. However, the systems used in the SMEs are relatively small. IT resources including budget and staff are often highly constrained. Sales forecasting is important to SMEs, but simultaneously it does not deserve dedicated resources or dedicated tools.

The purpose of this thesis is twofold. Firstly, to investigate how SMEs are applying and performing sales forecasting. Secondly, to investigate the sales forecasting tools available to SME needs. The thesis provides recommendations to SMEs about how they can develop sales forecasting. The use of accurate sales forecasts improves sales planning and helps to make better business decisions.

Conceptual framework describes the key concepts of used in this study. The essential components are sales and forecasting processes, forecasting tools and SMEs. Conceptual framework is displayed in Figure 1: Conceptual Framework

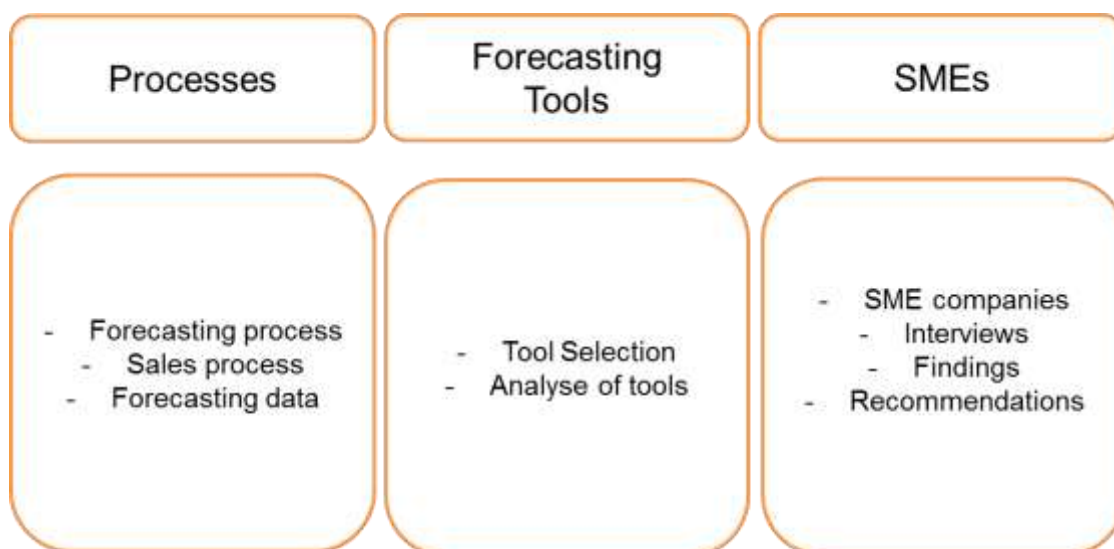


Figure 1: Conceptual Framework

The thesis is structured as follows. In the second section, the theoretical background of sales forecasting is introduced. In the third section, the research design is described. Section four displays the results of sales forecasting tool evaluation. Section five presents conceptual framework of sales forecasting and recommendations of how SMEs can develop their sales forecasting capabilities. Finally, the discussion is presented.

2 Theoretical Background

Sales forecasting is a process of predicting what the company's future sales are likely to be. This chapter gives an overview of the concepts used in sales forecasting as well as describes why sales forecasting is considered beneficial. Sales process is introduced, because it provides the essential data to be used to create in sales forecasts. The process of sales forecasting includes several steps. Although the aim of sale forecasting is to provide reliable information, it is not free from biases, which can occur in forecasting in many ways. The concept of predictive analytics is introduced as it is the key concept to predict future events.

2.1 Definition

The definition of sales forecasting can be found from many sources. Here are couple of definitions of what sales forecasting is. For instance, some definitions focus on predictions while the others on business challenges. Two definitions illustrate this distinction and they are provided below.

- Sales forecasts are estimates of your sales for the forecast period. The sales forecast establishes the level of activity used in all the other forecasts and budgets for the business. If your sales forecast varies wildly from your actual results, your cash flow and profitability forecasts will similarly be inaccurate.

(Small Business Development Corporation, 2015)

- The prediction of the number of sales of a product or service in the future. Often-times this prediction is based upon past sales performance or the product or service.

(InvestorWords, 2015)

Taken together, forecasting is a process where information about past experiences is transformed into the estimates for the future. In this way the sales forecasting can support the decision making of the managers regarding what to do next. Moreover, forecasting is used to make plans for the future. Evidently, it should reduce uncertainty in management regarding strategic decisions and allocating resources. Forecasting is continuous process of learning and adaptation. (Lakhani and Kleiner, 2014; Saffo, 2007)

2.2 Concepts

In one of the forecasting approach the interest is on the past. It is assumed that whatever happened in the past will happen in the future. This type of forecasting is using only historical data. However, this approach does not take into account the changes that are likely to take place in the marketplace, customers, technologies, or even within a company. Increased understanding and an access to the higher levels of data will improve forecast accuracy. Companies are continuously developing new products and solutions to the markets. A good approach is to move forecasting to the marketing departments. Knowing the demand on what drives sales is crucial to sales forecasts.(Florance and Sawicz, 1993)

Sales forecasting requires that sales leaders pay attention to four principles. First, good forecasting requires a good sales strategy. The good sales strategy take into account the outcomes that need to occur in order to move closer to deal. Second, good forecasting requires an understanding of buyer's behaviour. The sales process will move forward only when the buyer takes action. Third, good forecasting requires a milestone driven pipeline process. The pipeline process must address the key milestones in the selling organisations. Fourth, good forecasting requires continual improvement. The changes in the business or in the marketplace must be included in the process. (Edinger, 2013)

According to Saffo (2007) forecasting is a systematic and disciplined application of a common sense. He has described that the goal of forecasting is to identify the full range of possibilities, not only a limited set. The most important development follows typically a shape of S-curve. The change starts slowly, then curve grows incrementally until it has reached an inflection point. Strong opinions should be hold weakly because of lots of weak information may be more trustworthy. Similar patterns may occur but they are rarely repeated directly. A forecaster must be sceptical about the apparent changes. (Saffo, 2007).

The ability to anticipate and satisfy customer demand is a necessary for any profitable business. Companies invest time, money and effort for having the goods and services available in the right place and at the right time. The companies must invest in planning and forecasting processes, technology systems, methods and metrics, inventories and business analytics. These types of efforts are necessary for improving their ability to satisfy demand. (Lawless, 2014).

The time horizon of sales forecasting defines a time, for how long range forecasts need to be made. The need for time horizon varies between the business units of the company. Sales managers are interested in short-term sales forecasts. Their visibility to sales is shorter and they need to close deals continuously. The board of company, in turn, is interested on long-term sales planning. Board makes recruiting and investment decision and longer visibility is important to them. However, an extended time horizon increases the complexity and the cost of forecasts. (Florance and Sawicz, 1993; Georgoff and Murdick, 1986)

2.3 Forecasting in Business Management

A sales forecast is an essential tool to manage business. It is also a prerequisite for an effective planning process in the company. Companies make financial decisions based on the forecasts. Sales forecasting is a business discipline, which can be found in marketing, operations, strategic planning, and finance. Sales forecasting predicts sales, and does not predict production or inventory. (Florance and Sawicz, 1993).

Sales managers, members in the company board and business leaders are making the decisions about future plans in a company. If they do not have forecasts, then they may have to make decisions based on their own gut feeling or through group consensus. Decisions might be based on the events occurred last year, last month or any other time frame. (Chase, 2014; Georgoff and Murdick, 1986; Rotenberg and Baker, 2014)

Sales forecasting is a critical aspect in sales and operations planning. In the top-down planning sales forecasts drives the planning process. The key assumption in the top-down planning is that managers will make plans based on the forecasts. Forecasts are used for planning, decision making and resource allocation. The short term forecasts are used for sales planning, production planning, material purchase, personnel recruiting, scheduling and transportation planning. Long term forecasts, in turn, are used for location, capacity and technology investments. (Bozarth, 2008; Wallace, 2006)

In operations planning, there are other common forecasting types: demand, supply and price forecasts. Demand forecasts covers both firm-level and market demand. Firm-level demand is specific to the firm and its own operations. Market demand defines the whole market. Supply forecasts provides information of the current producers and suppliers. Price forecasts are the forecasts of prices for the key materials and services they purchase. Forecasts gives a possibility to see the potential imbalances in demand and supply in advance. If forecasts are too low, it can cause stock outs. However, if forecasts are too high, inventories are built and the costs will rise. The accuracy of forecasts is dependent on the variability in the demand data. It means that the more there is variability in the demand data the larger error will take place. (Bozarth, 2008; Wallace, 2006)

2.4 Sales Process

Sales process is the most important process to provide data for sales forecasting. Sales process provides data on what is happening in sales pipeline. Sales pipeline describes the individual steps sales people take from the initial contact to a potential customer or a prospect. The process of qualifying means that the prospects, who appear to have a need for a product, are identified. Sales process classifies the prospects based on the stages where they are in the sales process. Prospects are moving in the stages towards the actual sales. (Manning, 2010)

Sales pipeline represents company's sales process. Sales force is the most effective when they use formalised sales process. The formal sales process includes the defined stages and milestones that are understood by all the salespeople in a given company. (Jordan and Kelly, 2015)

All prospects are stored in the sales pipeline. Sales pipeline provides the data on how the prospects are moving forward. When the prospect has moved to the qualified opportunity, it has certain a probability to sales in the future. Sales process provides the most relevant data, which is needed for creating sales forecasts.

The business-to-business (b-to-b) sales process consists of a number of stages. Traditional seven steps of selling is an old paradigm of sales process. Seven steps includes the following activities.

- Prospecting
- Pre-approach
- Approach
- Presentation
- Overcoming objections
- Close
- Follow-up

Prospecting is the method for searching new and potential customers. It is used to expand customer base. Pre-approach step includes all activities prior visiting a customer. Approach takes first minutes of a sale and includes opening and first impression made by customer about the sales person. The can be only one presentation or multiple

presentations over a period of time. Customer questions and hesitations about the product or company are considered as overcoming objections. The second last step is a close, meaning a successful completion of sales. The final phase, that is follow-up, starts after the sale in order to make sure that customer is satisfied. (Dubinsky, 1980; Moncrief and Marshall, 2005)

Business to business sales requires the qualified prospects of customers. Qualifying prospects is the process of identifying prospects, who have a need for the product and needs to be contacted. Finding and identifying qualified prospects, who can make the purchase is not easy. Potential customer is someone, who meets the qualification criteria of the company. There are multiple sources of prospects. Some of the sources are such as referrals, directories, publications, special events, telemarketing, e-mails, advertising, web sites, cold calling and networking. Customer Relationship Management (CRM) tools are used to collect and organize prospect information. Sales data information is stored in the CRM system. (Manning, 2010)

Sales process composes sales funnel for the company. Sales funnel includes all prospects in the stages. (Manning, 2010) Companies are using sales funnel to structure and to monitor the sales process. The stages of typical sales funnel are presented in Figure 2. Sales Funnel.

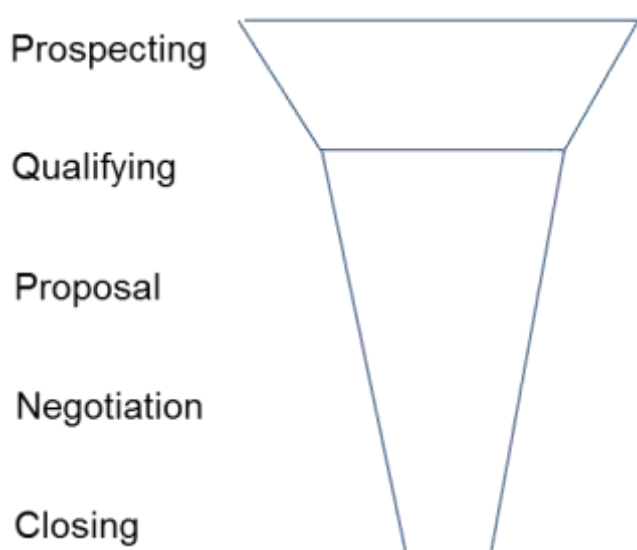


Figure 2. Sales Funnel

Prospects will go through the sales funnel stages. Number of prospects will decrease stage-by-stage when they move forward. The number of stages and the type of stage may be dependent on the company. Nevertheless, understanding the structure of the stages enable sales managers to plan, control and measure sales process. Furthermore, the sales stages show the level of engagement within a sales team. It is suggested that the stages are cornerstone of the reliable sales process. (Fong, 2015)

Companies use CRM tools and applications for managing customer interface, sales funnel and sales pipeline. In addition, the CRM tools enables companies to deliver offers, generate orders, and respond to customer enquiries. The CRM applications are used for sales, marketing and customer service functions. (Kumar, 2012)

Sales managers uses often sales pipelines to sales forecasts. Sales forecasting is typically focusing on the later stages in the deals. When the deal is far enough, the likelihood of success is high in the current quarter. Pipeline consists of all opportunities. All future leads starts from some source. Some leads do not proceed and some lead may stay in pipeline for a long time. A sensible way to manage pipeline is to monitor the opportunity progress in a sales cycle. Opportunity should be assigned to a forecast, only after the certain key objectives have been met. (Rogers, 2013)

Pipeline analytics is an ability to conduct data analysis of the movements of prospects. Pipeline dashboards will show the value of sales prospects in the process. Dashboards provides insights, whether there is need to find the new prospects or to move the prospects through the stages of the sales process. (Manning, 2010)

Sales management function consist of information about contacts, sales process activities, assignments and sales pipeline analysis. The CRM integrates these functions within a company. Sales process is managed across the business units. Sales personnel are the source of information in the sales process and they must have the tools to access up-to-date information and to provide information to business units. Sales personnel turns prospects into the customers. (Kumar, 2012)

2.5 Forecasting Process

Sales process and sales data do not automatically provide sales forecasts. Forecasting process needs to be used to create sales forecasts. Forecasting process includes steps

from the problem definition, model selection to forecasting evaluation. The tracking of forecasting results is an essential part in forecasting.

SAP defines the process for sales planning and forecasting in the following way. Process flow is below.

- Analyze sales with plan/actual comparisons and rolling forecast. Situation analysis of current and previous sales situation is performed.
- Create sales plan for the next sales period.
- Plan target quantities, revenues, discounts and costs
- Sales team reviews the plan
- Targets are distributed to sales team
- Sales teams plans by opportunity
- Sales team works on opportunities and sales deals
- Sales targets are reviewed

Figure 3: SAP Forecasting Process

(SAP Library, 2015)

Forecasting techniques involve the assumption that the conditions of generated data in the past data are indistinguishable from the conditions of the future. The formal forecasting uses always the data generated by historical events. If this assumption holds the following steps are identified for the forecasting process

- Problem definition and data collection
- Data manipulation and cleaning
- Model selection and evaluation
- Model implementation
- Forecast evaluation
- Forecast presentation
- Tracking results

Figure 4: Forecasting Process

(Lakhani and Kleiner, 2014)

The sales forecasting process starts from a problem definition. The problem must be identified first. Why company would need sales forecasting? What are the economic benefits? Who will use the forecasts? What is the time horizon? What kind of data is available? Management should always be involved in the forecasting process, meaning that the forecaster is an adviser to management. (Lakhani and Kleiner, 2014)

Forecasting requires the data of sales activities in the past. Sales data as well as sales process related data must be identified. If a company has the accounting, the ERP or the CRM systems, the data can be evaluated to verify, whether it can be used. The data needs to be transformed into the suitable format for the chosen forecasting tool. The selection of a forecasting tool is based on multiple criteria. Accordingly, tool selection can be based on company's existing tools. The costs of a tool needs to be identified. The following questions need to be answered at this point. How and where to get new data in the tool. What kind of presentation and visualisation needs there are in the company? (Randall and Gilles, 2015) Are there mobility requirements for the tool? How many users are using the tool?

Armstrong (2001) has defined six criteria to select forecasting method which are convenience, market popularity, structured judgment, statistical criteria, relative track records and principles from published research. Quantitative methods can be used, if there is enough data. Quantitative methods are more accurate than the judgemental methods. If no data exists, then the use of judgemental methods is sufficient. Use of causal methods are expected to be more accurate than naïve methods. Simple methods can be used unless evidence exists that complexity helps. (Armstrong, 2001)

A forecasting prototype can be implemented. The results can be evaluated. Sales forecasting dashboard can be planned. The dashboard provides managers an easy way to view business performance in real time. Benefits to use dashboards are visibility, ongoing improvements, time savings, follow plans and to improve employee performance. (Lavinsky, 2013)

There are many barriers to accurate sales forecasts. Relying on intuition does not bring reliable forecasts. The use of CRM is a good start. The problem is that the CRM requires that everyone are inserting activities in the CRM system. When the CRM is in use, is the CRM data accurate? How an opportunity contract value and a sales closing date is decided? Relying on spreadsheets brings many problems. Spreadsheet may become complex and may be difficult to update, especially when the team size grows. A lack of real-time data can produce errors. For example the last year's win rate may not be valid any longer. (Rotenberg and Baker, 2014)

2.6 Biases in Forecasts

Bias is a difference between actual outcome and previously generated forecast. Forecasts include always biases. Bias could be unintentional or intentional. The intentional bias is an unforeseen and uncontrollable error. For instance, there can be a deviation between actual sales and the expected sales. The reason for this deviation might be lack of information. The intentional bias, in turn, is introduced purposely. Sometimes because of personal motivations, incentives or targets. For example, if a sales person gets bonus when he hits 120%, the bias will give the salesperson lower forecast for maximize his bonus. Thus a marketing manager get higher budget, if the expected sales is higher. (Lakhani and Kleiner, 2014)

Measuring bias increases the accuracy of forecasts. Forecast error can be measured in order to find out if there is a bias. Most commonly used measures for forecast errors are the following; mean forecast error (MFE), which should be close to zero to minimize bias, mean absolute deviation (MAD), which measures absolute error and it should be as small as possible, mean absolute percentage error (MAPE), which measures deviation and it can be used to compare forecasts. (Lakhani and Kleiner, 2014)

2.7 Predictive Analytics

Predictive analytics is a method to make forecasts for the future. It is impossible to capture the data from future. However, there is a way to predict the future using the data from the past. Customer lifetime value (CLTV) is a measure of how much customer is going to buy over time. It is using the predictive analysis for estimating how much a customer is going to buy over time. The next best offer or product recommendation is also analytical prediction. Sales forecast for the next quarter uses also predictive analytics. (Davenport, 2014)

The popular metrics of recency, frequency and monetary value can be used to quantify customer buying history as RFM analysis. Recency indicates how recently customer has bought previously, frequency indicates how often the customer has brought and a monetary value is the total value of all purchases. A probability to buy grows, when the RFM values increase. The RFM variables can be used in predictive analysis. (Blattberg et al., 2008)

A lack of good data is the most common barrier for not to use predictive analytics. For making good predictions about what customers are buying, good data is needed on what they have bought in the past. (Davenport, 2014)

King (2014) defines predictive analytics as analytics that takes past experience such as buying trends and leverages the trends to predict future buying behavior. Predictive analytics relies on past results to predict future behavior. Adaptive analytics learns when transactions occur. The concept is that the system will learn and improve the results. Adaptive analytics see an emerging trend in real time and can make the adjustments immediately. Adaptive analytics may pull a third-party data in real-time. The use of adaptive analytics should be started with a smaller project. Small project should focus only on a business area or problem. Positive results should be received quickly. Project can be expanded after results are achieved. (King, 2014)

Regression analysis is a primary statistical tool that is used for predictive analytics in the organizations. In this way of modeling: an analyst makes first a hypothesis. He selects a set of independent variables. Variables could be such as gender, income, and an amount of the visits to a website. It is assumed that variables are statistically correlated with the purchase of a product. A sample of the customers is chosen. An analyst performs regression analysis and during the process he finds the best variables for the model to explain product purchase. The variation of the sales is explained by the all variables together. Regression coefficients are used for creating a score that predicts the likelihood of the purchase. This predictive model can be used for those customers that are not in a sample, and is used in the following way: A score is calculated for each customer. If the score exceeds at the certain level, it is quite likely that high scoring customers want to buy a product. (Davenport, 2014)

Every predictive model has its' assumptions. Commonly used assumption is that the future will continue like the past. Most common reason that the assumptions will become invalid is time. Customer behavior may change during the time elapses. The model may not predict current behavior any more. Another reason why predictive model will become invalid is that the key variable is not included in the model. Faulty or obsolete assumptions break the model. (Davenport, 2014)

There are some few good questions that can be asked to verify the model. What is the source of data used in analysis? Is the sample data representative of the population?

Are there outliers in the distribution of the data? How did the outliers affect the results? What are the assumptions behind the analysis? Which conditions would make your assumptions invalid? (Davenport, 2014)

2.8 Small and Medium-Sized Enterprises

Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361. The main factors to determine whether the company is an SME are the staff headcount and turnover or balance sheet total. SME has staff headcount in between 10 and 250 persons. Turnover is between 2 M€ and 50 M€. Balance sheet is between 2M€ and 43 M€. (EU, 2015).

SMEs selection was started using first Statistics Finland information services. It gave overview of companies in Finland. The amount of companies is more than 350 000 companies. Amount of information and communication services companies is 9500. Information and communication services was selected as target group of companies. Inside that group, the Business-to-Business SMEs in project based business were selected as target companies. An average personnel size is 79 persons in a company. An average turnover is 16.548 M€.

Industry (TOL 2008)	Enterprises		Personnel		Turnover	
		%	1 000	%	€ mil.	%
Agriculture, forestry and fishing	70 791	20,0	59	4,0	1 656	0,4
Manufacturing	21 473	6,1	315	21,4	135 093	34,3
Construction	42 484	12,0	157	10,7	28 460	7,2
Wholesale and retail trade, repair of motor vehicles and motorcycles	45 011	12,7	255	17,4	123 201	31,3
Transportation and storage	22 053	6,2	130	8,9	22 946	5,8
Accommodation and food service activities	11 675	3,3	58	3,9	5 991	1,5
Information and communication	9 456	2,7	79	5,4	16 548	4,2
Financial and insurance activities	6 898	1,9	44	3,0	-	-

Real estate activities	23 847	6,7	20	1,3	7 624	1,9
Professional, scientific and technical activities	35 005	9,9	99	6,7	13 290	3,4
Administrative and support service activities	14 011	4,0	118	8,0	9 929	2,5
Human health and social work activities	18 795	5,3	63	4,3	5 332	1,4
Other industries	32 582	9,2	74	5,0	24 086	6,1
All industries	354 081	100	1 471	100	394 157	100
Size of personnel						
0–9	334 839	94,6	409	27,8	63 802	16,2
10–49	16 041	4,5	307	20,9	68 709	17,4
50–249	2 611	0,7	254	17,2	84 149	21,3
250–499	315	0,1	110	7,5	32 010	8,1
500–	275	0,1	391	26,6	145 487	36,9

Figure 5: Enterprises, Finland

(Statistics Finland, 2013)

Tietoviikko has published 250 biggest IT-companies in Finland. There exists 78 companies, which have revenue between 5.5 M€ and 10 M€. In addition to those companies, there exists tens of IT-companies that have revenue over 2 M€. The estimate is that there exists more than one hundred IT-companies that has revenue in between 2 M€ and 10 M€. (Tietoviikko, 2013)

Turnover growth of service industries are shown in Figure 6: SME Revenue Growth. Information and communication services growth has been high.

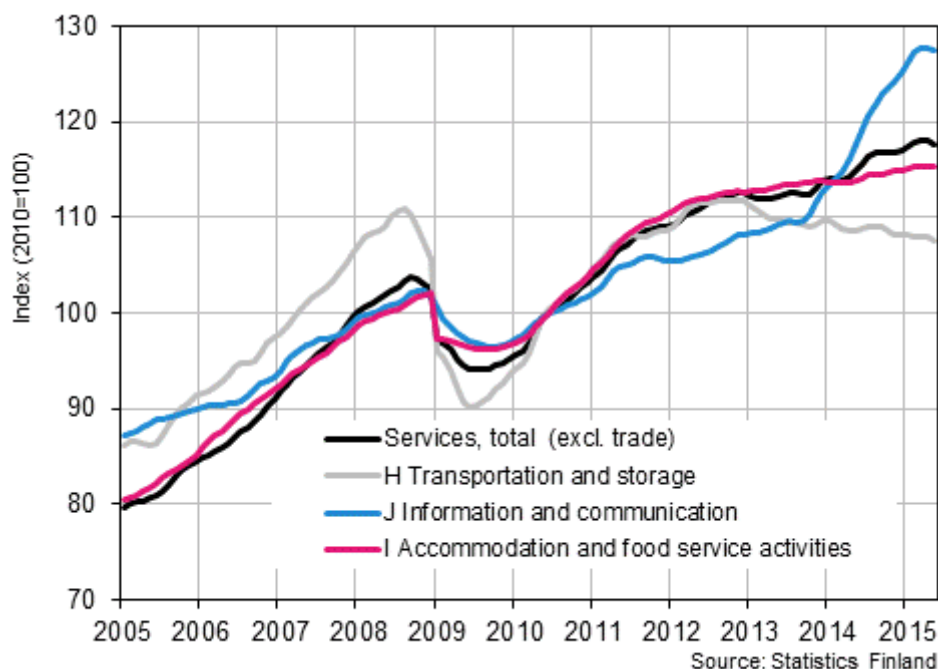


Figure 6: SME Revenue Growth

(Statistics Finland, 2015)

3 Research Design

The research design presents the research methods used in the thesis. Research questions are focusing on two parts. The first part describes how SMEs are applying and using sales forecasting. The second part describes what kind of sales forecasting tools are available and suitable to the needs of the SMEs. Research questions help to understand the field of sales forecasting, and to focusing on the SME market. The SME interviews and the study of sales forecasting tool composes the analytical part of the thesis.

The selected SMEs provide software services to their business-to-business customers. In a typical SME there are not dedicated people who has sales forecasting as their main job. A sales director has responsibility to do sales forecasting among other activities. The SME questionnaire is used to identify, how SMEs do sales forecasting in their business and how it is done. Given the limited amount of resources available, capabilities and interests to perform sales forecasting is evaluated in the SMEs. In order to meet thesis aims four interviews with the sales directors in the SMEs were conducted. Answers were analysed to find out the current state analysis of sales forecasting in SME companies.

Sales forecasting tools were searched from Internet. Forecasting tools were examined to find out how the tools are used in sales forecasting and what kind of tools are available. The tool alone is not enough because forecasting requires the data also. Forecasting data, however, has not used or analysed in this thesis.

3.1 Participants and Methods

Research data on sales forecasting tools in the market and how SMEs are doing sales forecasting, were collected from two separate sources. First, forecasting tools were examined by using the information found from the tool vendor webpages and by using and trying the tools. Second, the use of sales forecasting and the tools were examined by interviewing the sales directors. In this way the content of the interviews were qualitatively analysed.

3.2 SME Selection

SMEs were searched based on information found from Internet. The selection of SMEs started with using Statistics Finland information services first. It gave an overview of the companies in Finland. The product and service offering of SMEs and their revenue were checked for ensuring that the companies belonged to the target group. The webpage of the Finnish journal called Taloussanomat was used as a source of information regarding SMEs' revenue and personnel size amount (Taloussanomat, 2015). In total of 15 companies were identified to match for the study. The sales director of these companies were called and asked for the interview. Altogether, 4 out of 15 sales managers agreed.

The research interviews were based on the semi-structured method in which the content was organized in advance. The interview questionnaire was used to gain an insight and understanding of how the SMEs were performing sales forecasting. Flexibility and freedom was provided to the respondents so that the sequence and wording of the open-ended questions did not restricted the respondents to express their experiences and views on sales forecasting and information systems they had in use. In other words, the topics of the interview were developed to guide the conversations. While the open-ended questions were carefully planned beforehand, the respondents' were minimally directed regarding the length and duration of their answers.

Altogether, four sales directors of four different companies were interviewed in-person. Three of the interviews were carried out as phone interviews. One interview was carried out in the company's premises. Notes were taken during the interviews. They were re-written in details and summarised in the interview document directly after each of the interviews. The results are presented in this study as a summary of the interviews in a manner that the names of the companies nor the identity of the respondents are exposed.

The chosen SMEs provides IT-services and projects to their customers. The services are such as delivery projects, development projects or cloud services. Three of the interviewed companies provide their own cloud-based services and solutions to the customers. The fourth company provides partner solutions with integration projects to the customers. The SMEs receive the sales revenue of the project or in cloud service as a monthly fee. The personnel size within these companies range from 40 to 80 persons. The revenue of the companies is from 3 M€ to 7 M€ per annum. Revenue of cloud services is continuous.

As stated earlier, sales forecasting tools were searched from Internet, and most of were tried out in order to get a user-experience of the tools. Most of these tools are available for free trials for a limited period of time or tools are free tools. An overview of the sales forecasting tools, including description of forecasting features, reporting and pricing information, is provided in the thesis. The SME interviews and the overview of sales forecasting tool compose the findings of the study.

3.3 Questionnaire

The questions are grouped into five topics. First topic is business systems and it is used to identify what kind of information systems exist in the companies. Second topic is a sales process and it provides information about what kind of sales process exists. Third topic reveals the used sales forecasting process. Fourth topic exposes the challenges in current sales forecasting process. Fifth topic aims to uncover possible improvements during the existing forecasting process.

There was a set of assumptions developed which were used for constructing the questionnaire. The assumptions were based on theoretical findings, and are the following:

1. Each SME has a sales forecasting process. This is due to the reason that companies need to plan personnel resourcing, machinery, offices and investments.
2. The use of IT tools within the companies is not optimal. The reason for this is that there are neither easy to use low and cost IT-solutions nor personnel who can use and benefit from them.
3. SMEs do not want to have extra complexity in the company. If some new tools are introduced, then they should provide immediate benefits for the company.
4. Company data is not available or it is not used in an effective way.

Interview Questionnaire:

1. Business systems

- Do you have internal or external accounting in use? Are you using accounting data in forecasting?
- Are you using Customer Relationship Management (CRM) in forecasting?
- Are you using Enterprise Resource Planning (ERP) in forecasting?
- Are you using sales tools data in forecasting?
- Are you using Business Intelligence (BI) tools in forecasting?

2. Sales process and systems

- Do you follow sales revenue and profitability per customer? Do you calculate Customer Lifetime Value (CLV) of customers?
- Do you follow sales revenue and profitability per service or per product?
- What kind of sales process, do you have in use?
- How is market demand estimated? Which are the sources you are using?

3. Sales Forecasting

- Are you doing sales forecasting? Who is doing forecasts? Are the current forecasts reliable?
- Which or what forecasting tools you are using?
- What kind of data are used in forecasting?
- Who needs and uses forecasts?
- Are there forecasts for the different time horizons, such as for less than a week, 1-3 months, 3-12 months, longer than 12 months. Who needs forecasts in a different time frame?

4. Business Challenges

- What are the current problems during the sales process?
- What are the current problems of sales forecasting?

5. Follow-up Questions

- What are the benefits of the improved sales forecasting?
- What kind of improvements in sales forecasting would you like to have?

3.4 Selection Criteria of Tools

A number of web sites were sorted out for appraising whether the tool could be good candidate to be chosen for the more detailed review. Many tools contained a ready-made sales forecasting functionality. In addition, there were many tools, which included comprehensive forecasting methods for building sales forecasting in a company.

The main criteria for the selection of the tools were linked with the price and functionality. Thus, the tools should be considered as easy to use. Total cost of ownership (TCO) of tool should be low because SMEs are not interested to make high investments to forecasting tools. The tool should provide economic benefits, and can include, for instance, more sales, savings, better planning of resources and improved visibility of sales for the company. The tool should provide sales forecasting capabilities, such as statistical methods or forecasting features. Presented information should be useful and usable and it should help decision makers. There should not be complex and pricy integration projects. It should be possible to use the relevant company sales process data. Visualisation of the results should be available in the tool. Dashboards or charts should be provided. Mobility might be required, if the tool is used on the field. Most of the chosen tools are available for free for a limited time period. Free usage enables to try the tool without costs.

Criteria excluded certain type of tools, such as expensive tools or complex large tools. Many famous and popular BI, CRM or ERP tools include sales forecasting capabilities. Many of the well-known tools, such as IBM Cognos, SAP CRM and Microsoft Dynamics CRM were not studied at all. There are also other advanced sales forecasting tools available in the market. Those tools are in general expensive and those were left out from this study. The reasons for exclusion of the tools were that the prices were not publicly available, or the function of forecasting was only a small part of larger and expensive

tool. The selection as described above helped to choose the tools that supported the needs of SMEs.

3.5 Tool Evaluation

The forecasting tools selected for the research can be divided into three main category groups: Business Intelligence (BI) tools, visualisation tools and CRM tools. The chosen set of tools gives an overview of what kind of tools there is available. The tools, which have similar kind of functionalities, are placed in the same group.

First group of the selected forecasting tools are classified as generic Business Intelligence tools (BI) which can also be used for creating sales forecasts. BI tools provide flexibility and extensive functionality in statistics. However, the use of the BI-tools requires advanced knowledge for creating and conducting statistical analysis in forecasting. In addition, BI-tools require sufficient data management for getting relevant data into the tool.

Second group of the forecasting tools is related to data visualisation. The strengths in the visualisation tools are linked with the excellent capabilities of creating and presenting the data, for example, in charts and figures. Thus, the tools are easy to be shared with the other users, even in social media. Prior to visualization, however, the forecasting data model must be created by some other tool, for example, by Excel, BI-tool or CRM-tool.

Third group of forecasting tools are CRM tools. The selected tools produce sales forecasts which are based on the progress of sales deals in the CRM system. Sales forecasting is inbuilt in the tool and it is relatively easy to take in use.

ERP and Accounting tools include typically forecasting functionalities. Sales budgets include prediction of sales. The information in the sales budget comes from a variety of sources, for instance, from sales managers. However, the accounting tools do not follow sales process data, which is used in forecasts. ERP-tools, in turn, might have sales process included, but SMEs do not necessarily use ERP tools.

The displayed prices of the tools in three groups were available in the web pages of tool vendor. Price information was taken from the webpage and prices are presented per

person. If a free version is available, then it is mentioned in the text. Free versions are available typically for a limited use, such as for a personal use only, or it provides limited functions. Sales forecasting tools were analyzed by using the tools and reading a tool vendor webpages.

4 Results

The aim of this research was twofold. Firstly, the research aimed to assess 13 sales forecasting tools to identify what kind of tools there are available and how the tools can be applied to the sales forecasting. The findings regarding the tools are presented in this result section. Secondly, the research aimed to explore the sales forecasting practises in SMEs. The findings of the SMEs current use of sales forecasting is also presented in this section

4.1 Findings of Forecasting Tools

The sales forecasting capabilities of 13 tools were evaluated. The results of the tool evaluation, meaning the description of forecasting and reporting capabilities as well as the pricing of the tools are provided next. As described earlier, three different types of tools were chosen for a detailed evaluation, that is, BI-tools, Visualisation tools and CRM tools. Figure 7 Sales Forecasting Tools

BI-tools are generic, and provide advanced features to connect with data sources. They also have features that allow to manipulate and analyse the data; to visualize and to create interactive and shareable dashboards to end-users. Visualisation tools have good and easy-to-use sharing feature too. CRM tools provide features that support company sales and to market activities. The chosen CRM tools include sales forecasting features directly.

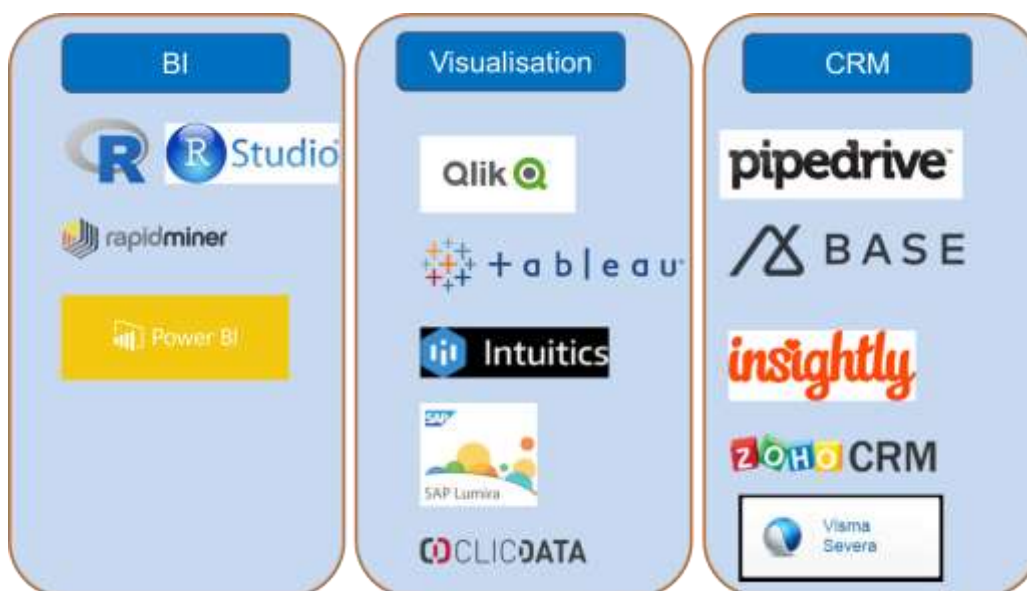


Figure 7 Sales Forecasting Tools

4.2 BI-Tools

Business Intelligence (BI) tools provide capabilities to analyse, transform and report company's data. The market of BI tools is large and there exists a plenitude of advanced BI tools. The selected BI tools are either **open** source or low cost BI tools. The use of selected BI tools does not require big investment in the company.

BI-tools include strong analytical functionalities. BI tools can be used to implement different kind of use cases. The drawback of complex analytical capabilities is the difficulty in using the tool. The data model must be created for forecasting.

4.2.1 R and RStudio

R is a free, open-source and powerful software for statistical computing and graphics. R is highly extensible tool. R programming skills are needed for creating sales forecasting programs. R programs can be stored and re-used on similar data. RStudio provides powerful integrated development environment (IDE) for R development. It includes console and tools to create, to run and to manage R development.



Figure 8: R and RStudio

Forecasting: Sales forecasting is not available directly. Forecasting requires forecasting data source and data model, which could be for example in other data system, SQL-database, Excel or CSV-file. R forecasting methods and examples are available in Internet.

Reporting: R provides statistical programming environment. R provides a large set of packages that can be used to visualisation and reporting. The Shiny package, for example, provides a web framework for building web applications in using R.

Pricing: R is open source software. It is free of charge. RStudio desktop price is \$995 per user annually. For SMEs RStudio has a special pricing policy, which is available based in qualification criteria.

(Foundation for Open Access Statistics, 2015; Hyndman and Athanasopoulos, 2015; The R Foundation, 2015)

4.2.2 RapidMiner

RapidMiner provides a powerful and easy to use graphical user interface for the analytic processes. The platform is open source and provides a graphical, drag-and-drop analytics platform to create predictive models. RapidMiner provides strong visualization capabilities and multiple interfaces to data.



Figure 9: RapidMiner

Forecasting: Forecasting data must be prepared beforehand. The forecasting data can be retrieved in the RapidMiner tool from many sources. The developer can create sales forecasting model using Graphical User Interface (GUI). The use of tool requires data

mining and statistical knowledge to create suitable data package and data analysis. Analytics workflows are created to produce forecasting to the used data set.

Reporting: RapidMiner can be used for generating web based reports in which tables and visualizations of the data can be included.

Pricing: RapidMiner Studio Basic is free. The professional edition price is \$1999 annually. Professional edition can be connected to commercial databases.

(RapidMiner, 2015)

4.2.3 Microsoft Power BI

Microsoft Power BI is a visualisation and analysis tool for creating dashboards and reports. Microsoft Power BI is an add-on of Business Intelligence and it includes the following products; PowerPivot, PowerView and Excel. Power BI features are available on Office 365 and Excel 2013.



Figure 10: Power BI

Forecasting: Forecasting requires the data model. Forecasting data model and data source could be an Excel file, a CSV file or other data system such as SQL-database. Forecasting data model can be imported into power BI.

Reporting: Excel is a flexible, powerful and complete business analysis solution. Advanced visualisation and dashboards can be created in the Power BI.

Pricing: Office professional 2013 price is €279 per user. Free version of Power BI has limited functionality and capacity. Power BI professional price is \$9.99/month.

(Microsoft, 2015)

4.3 Visualization Tools

Visualization tools provide an excellent visual representation of the business data. Discovery of data and sharing of data are both made easy in the tools. Discovery of data makes it easy to see and understand the data. Visualization tools are excellent tools to deliver dashboards within the company.

When the tools are used in sales forecasting, the source of sales forecasting data is needed. The creation of source data model requires that forecasting model is created in the other system, and transferred into the visualization tool.

4.3.1 Tableau

Tableau includes products of data analysis for creating visualisations and dashboards. Tableau desktop is a tool to create dashboard and Tableau server is used to share them across the organisation. Tableau online is hosted SaaS version of Tableau Server. Combining R with Tableau makes it possible to bring statistical analysis into a drag-and-drop visual analytics environment.



Figure 11: Tableau

Forecasting: Sales forecasting requires forecasting data source and data model. Tableau can be connected with the sales data. Forecasting data model and data source could be an excel file, CSV file or other data system such as SQL-database. Tableau partners could be used to develop sales forecasting service. Partners resell Tableau licenses and they offer implementation and business intelligence services.

Reporting: Tableau provides powerful visualisation capabilities. Tableau allows non-technical users to create interactive and real-time dashboards.

Pricing: Tableau Desktop Personal Edition price is \$999 per user. Tableau Desktop Professional Edition price is \$1999 per user.

(Tableau Software, 2015)

4.3.2 QlikView and QlikSense

Qlik product family provide products to self-service data visualisation and discovery. QlikView is a tool to create dashboards and reports of the data. QlikSense is self-service tool to create self-service visualization and discovery.



Figure 12: Qlik

Forecasting: Forecasting requires forecasting data source and data model. Data source could be excel file, CSV file, other data system such as SQL-database or CRM system. Analysis of CRM data can be used in the sales forecasts. Qlik partners can be used to create forecasting model with the company's data.

Reporting: QlikView and QlikSense provides good visualisation and reporting capabilities. Qlik provides self-service capabilities and partners can be used to visualisation.

Pricing: QlikView Personal Edition is free. Qlik Sense Cloud is free up to five users. Enterprise edition prices must be asked from Qlik or Qlik partners.

(Qlik, 2015)

4.3.3 Intuitics

Intuitics turns analytics model into the interactive web application, dashboard or report easily. Intuitics is available both on premise and in the cloud. Intuitics provides environment for R, SAS and Python code.



Figure 13: Intuitics

Forecasting: Intuitics requires expert knowledge to create useful reports and visualisation. Forecasting is not available directly. Forecasting requires a data model. R, SAS or

Python languages can be used in the tool. Forecasting data model and data source could be the files in the other data system such as SQL-database or CSV-file. Developer skills are needed to create the forecasting application.

Reporting: The tool provides good visualisation and sharing capabilities. Analytics model can be turned into an interactive web application, dashboard or report.

Pricing: Private and public application price is \$49 per month per individual developer. (Intuitics, 2015)

4.3.4 SAP Lumira

SAP Lumira tool provides self-service data visualization to everyone. Edge edition is targeted to SMEs. When using the tool, it is possible to explore and build interactive visualizations and to share information with team members.



Figure 14: SAP Lumira

Forecasting: Forecasting requires several steps to acquire, prepare and visualize data. Forecasting data model and data source could be files in the other data system such as excel, CSV-file, SQL-database or SAP dataset. Business analyst can create forecasting data model to forecasting.

Reporting: SAP Lumira has advanced features to modify data set for visualisation. Visualization can be created, viewed and edited by using a web browser or mobile device. Visualization and reports are easy to share as reports or dashboard.

Pricing: Personal edition is free. Standard edition software price is €820 per person. Edge edition pricing is not available publicly. (SAP, 2015)

4.3.5 ClicData

ClicData is a software to generate reports, workspaces and dashboards. Dashboards can be connected to number of connectors to receive data from many sources into the system. Dashboards are easy to share within the organizations.



Figure 15: ClicData

Forecasting: ClicData is for visualization and requires data model and data source for forecasting. Forecasting is not available directly. Clicdata can connect to multiple data sources. It is possible to schedule data refresh to get data for the reports and dashboards.

Reporting: The tool has excellent live dashboard capabilities. The data can be turned quickly to live and interactive dashboards.

Pricing: Personal edition is free of charge. Professional edition price \$20 per month. Price includes 5 viewers.

(ClicData, 2015)

4.4 CRM Tools

The selected CRM tools provide sales CRM for small teams. The strength of these tools is that the tool supports sales process directly. Sales process data is collected and stored in the CRM. Selected tools are inexpensive and they are targeted to small businesses. Cloud-based tools are easy to take into use.

All of the selected tools include also sales forecasting functionality. Sales forecasting functionality is inbuilt in the tools. The data can be exported to BI tools, if some further analysis is performed. Alternatively, the data can be exported into a visualisation tool.

4.4.1 Pipedrive

Pipedrive is sales CRM for small teams. It includes sales process that can be customised according to the needs of company. Sales methodology includes sales pipeline and sales activities. In sales pipeline sales the activities are assigned to team members, specific products and timelines. Pipedrive is a cloud-based software.


 The logo for Pipedrive, featuring the word "pipedrive" in a lowercase, bold, sans-serif font. The letter "i" has a distinctive dot that is a small circle.

Figure 16: Pipedrive

Forecasting: Sales forecasting is based on sales pipeline, activities and sales stages. The following methods are used. Historical win-lost conversion ratio multiplied with deal values. Age of deals in the pipeline is the factor, which exposes whether the deal is moving in the pipeline. Rolling prediction indicates how many deals are close to be signed and how many are already signed.

Reporting: Pipedrive include readymade sales reporting including sales dashboard, pipeline metrics and capability to track goals in real time. In addition to ready-made reporting, it is possible to customize reports.

Pricing: The price is €9 per user per month.
(Pipedrive Inc, 2015)

4.4.2 CRM Base

CRM Base is a cloud-based platform for managing sales and customers. Sales leads and pipeline are organised and tracked effectively. Sales reporting and analytics gives managers visibility of the sales process.


 The logo for CRM Base, featuring a stylized 'X' symbol composed of two overlapping lines, followed by the word "BASE" in a bold, uppercase, sans-serif font.

Figure 17: CRM Base

Forecasting: Base uses real-time tracking tools and intelligent algorithms. Base collects all historical sales pipeline data. Pipeline data is tracked and stored. Sales forecasting reports tell how much of the revenue is expected from the active deals in the sales pipeline.

Reporting: No programming is required. Base provides a full suite of sales reports including sales pipeline and forecasts. Sales dashboard gives overview of sales pipeline.

Pricing: \$25 per user per month. Includes basic sales tracking and customer management for up to 5 users. Professional version price is \$75 per user per month. It includes a complete CRM and reporting.

(Base, 2015)

4.4.3 Insightly CRM

Insightly is a web-based CRM tool for small business. The tool is easy to be integrated with email and Google applications. Insightly integrates project management with CRM. Projects includes sales leads, contacts, organizations, partners, vendors and suppliers. CRM includes features to manage leads and contacts.


 The logo for Insightly, featuring the word "insightly" in a lowercase, orange, cursive-style font.

Figure 18: Insightly

Forecasting: Forecasting is not available directly. However, the readymade reports shows a value of the opportunities and a total incoming revenue per month, quarter or year. Reports can be exported to Excel.

Reporting: Insightly has a number of readymade reports including pipeline stage, funnel analysis and value of incoming opportunities.

Pricing: Free version is for up to two users. Prices of Basic version are starting from \$12 per user per month.

(Insightly, Inc, 2015)

4.4.4 Zoho CRM

Zoho is a web based CRM tool and it is designed for the small businesses. The tool includes features such as sales force automation, marketing automation and CRM analytics. Zoho gives views to a complete sales cycle and pipeline.



Figure 19: Zoho CRM

Forecasting: Zoho includes sales forecasting module. Zoho CRM provides a real-time insight to track the sales. It provides an overall picture of the company's sales pipeline, as well as individual performances of the sales team. It is possible to define the forecast periods and to get forecast for a quarter or a month.

Reporting: Zoho provides more than 40 different ready-made reports. Reports include sales forecasts, potential sales, lead reports, stage reports and many more. Forecast reports and dashboards can be customized.

Pricing: Free for 1-10 users. Standard price is \$12 per user per month and professional \$20 per user per month.

(Zoho Corporation, 2015)

4.4.5 Visma Severa

Visma Severa provides integrated CRM, project management, resourcing, time tracking and invoicing. The tool is optimized for professional services and project organizations. Project scheduling, resourcing and invoicing are planned and managed with the tool. CRM and sales tools are integrated in the tool.



Figure 20: Visma Severa

Sales Forecasting: Reporting includes sales forecasting. Sales forecast and pipeline is available in dashboard view. Visma Severa is a daily tool for the sales representatives. The data of sales and project management is used in forecasting.

Reporting: Sales and forecast reports are included. The reports can be saved as templates and unlimited amount of the reports can be created. All reports can be downloaded into excel for further analysis.

Pricing: Monthly fee for 1-10 users is 30€ + 290€ - 1450€ setup and training.
(Visma, 2015)

4.5 The Content of the Interviews Evaluated

In this section the answers of the sales managers during the interviews are summarized. The content of the interviews is presented by using five key topics, which are the following: business tools, sales process, sales forecasting, forecasting challenges and the benefits of forecasting.

4.5.1 Business Tools

All companies used either an internal or external accounting system. In one company the ERP tool was used whereas in the three companies the CRM tool was used. The sales director did not consider ERP tool as an optimal tool for sales management due to limited functionality regarding sales management. Other companies were using the CRM tool for the sales management.

The specific BI or analytics tools were not used in any of the four companies according to sales directors. For sales forecasting, CRM system was used in two companies. In all companies sales revenues per customers and sales revenue per product were followed. Product profitability, in turn, was not followed or calculated.

4.5.2 Sales Processes

Sales processes in all companies were well-defined and systematic. According to sales directors, sales processes followed the phases which started from the lead and continued to the stages such as contact, meeting, offer, offer handling, contract and transfer to project. The used sales processes are systematic and precise in all companies. The processes produce a lot of data and include indicators that can be tracked. The sales director of a company, which was selling cloud-based services, was interested only new customers because of recurring monthly fee is charged from the existing customers.

All sales directors felt that their personal skills in selling and making contacts were very important for getting customers to buy their services. Simply, customers will buy if they trust on the sales manager.

4.5.3 Sales Forecasting

Sales forecasting in all companies were based on the sales progress in a sales pipeline. All four sales directors followed closely the sales progress. They told that sales forecasting were performed and they used tools for it.

In two companies sales forecasting was conducted with Excel. Sales directors reported that they updated sales cases and probabilities to Excel once a week. They found Excel as easy to use, especially if there were only five sales managers within the company, and if the excel sheet was updated regularly. In both companies using Excel the managers were satisfied with the tool.

In two companies cloud-based CRM tools were used for producing sales forecasts. Sales forecasting functionality was inbuilt in the tools. However, according to the managers the reliability of the forecasts was not good. This unreliability was linked with the fact that the sales managers did not update all cases or actions in the tool. All customer actions should have been updated in the CRM tool, as they said. For instance, if sales manager makes 30 sales calls, he may not remember to add all actions in the CRM tool. It becomes more challenging when there are a lot of ongoing cases.

There are two different kinds of time horizons in sales forecasting which the sales managers followed. Their primary interest was in the short-term sales forecast, that is forecasting lasting for a couple of months at maximum. During this horizon they followed closely the sales targets and sales cases. The company board and leadership, in turn, were interested in forecasts over a longer time horizon, that is the quarter sales and the sales until the end of the year. Thus, the board was also interested in sales in the forthcoming year. The sales directors felt that they had little visibility to forecast over a horizon over few months.

4.5.4 Challenges

Sales directors had identified several forecasting challenges. First, there were large deviations in the probability estimates made by the sales managers. For instance, the sales manager might have estimated that a sales case has a success rate of 80%. In the similar case another sales manager could have given a success rate of 20%. Furthermore, sales managers did not update every actions in the CRM while they were in the field. After a business meeting, they might have added the activity in their own calendar only but not in the CRM tool. After a business meeting, they might have updated agreed activities only in their own calendars. They might have not remembered all aspects what were agreed with the customer. Naturally, all sales leads are not equivalent. Sales leads should be qualified. Sometimes, however, a weak case can turn into a successful case during the customer meeting. For having success in sales, it is necessary to have customer meetings and to discuss with customers regularly.

Sales forecasting would be improved, if all relevant data would be available in the CRM tool. Sales manager's personal selling skills and contacts are absolutely important for getting customers to buy. Customers will buy, when they trust on sales manager. In addition, there should be company level rules regarding, how to assess sales opportunities.

4.5.5 Improvements

In general, sales directors were satisfied with the sales management process and the tools used in sales forecasting. However, the usage of the CRM tools was not good enough. Customer and sales pipeline data should be stored in the CRM tool. CRM tool

usage should be motivated so that all end-users would enter all relevant data in the system. The managers had noticed that the benefits of the system came after a delay. They also mentioned that the company leadership should monitor and demand that the CRM systems were used. All sales directors were satisfied in their current sales forecasting tools even though they had observed that sales forecasts were not reliable. One sales director, however, felt that that analytics and reporting could be improved. The use of historical data would enable a cause and effects analysis. As such, by analysing the past would enable the analytical decisions for the future. He said that in their company many current decisions were based on the probability estimates that originally were the intuitive judgements of sales manager.

5 Discussion

This chapter presents the recommendations and discussion of this study. Recommendations are given to SMEs for introducing or to improving sales forecasting. The recommendations are not targeted to interviewed companies directly. In turn, these general recommendations can be used in those SME, which aim to develop sales forecasting abilities of their own.

5.1 Recommendations to SMEs

SMEs may not have sufficient resources to do complex sales forecasting. Thus, sales forecasting can be a demanding task, for instance data collection and transformation can be troublesome. Ideally, sales forecasting is a process during which the activities of all sales managers are integrated. Sales forecasting requires engagement and long term plans in order to be able to produce sales forecasts in the companies. During the process, many actions must be introduced and performed regularly.

Recommendations are given to the following areas:

- The need of sales forecasting
- Assess current situation
- Sales funnel and sales process
- Sales forecasting model and data
- Sales forecasting tools
- Visualisation

5.1.1 The Need of Sales Forecasting

There are many reasons why companies need sales forecasting. Depending on a working role or organisations the need for forecasts varies. If there are no forecasts at the company level, then the organisation units create their own forecast. Sales directors have a need for sales forecasts to plan their daily work and to report future sales development to management. The company board and CEO want to have visibility to long-term forecast. Sales forecasts are needed for making investments and resourcing planning. Operations unit need forecasting for resourcing and long-term planning. Accounting unit need forecasting for planning and to alternative scenarios.

In order to get started with forecasting procedure the company should clarify the reasons behind the need for sales forecasts. For conducting a need analysis, the following questions could be asked:

- Who needs forecasts and why they are important?
- What is the benefit with better forecasts?
- What is the economic benefit of better forecasts?
- What kind of problems bad forecasts brings?
- Is the current forecast time horizon the right one?
- Is the data and the tools available for forecasting?
- Are the forecasts available to them, who need forecasts and are forecasts available at the time they are needed?

(Georgoff and Murdick, 1986; Lakhani and Kleiner, 2014; Wallace, 2006)

5.1.2 Assess Current Situation

If there is a need to sales forecasts, then the next step is to assess current situation. In current sales forecasting process, methods and tools are reviewed. A review is performed in order to assess whether company should improve the existing sales forecasting. The current forecasting assessment is used to verify whether current sales forecasting give good enough results. Company management and business unit leadership are interviewed so that current forecasting status is verified. Quality of forecasting data will be analysed. Quality of data includes the width and the correctness of sales data. Width

of data provides information about what kind of sales process is data is available. Correctness of data includes the sources and missing values of data. Improved model can be introduced using historical data. Data set of certain moment of time could be saved and frozen. Forecasts given at the certain time point could be compared with the new forecasting model.

Assessment could start with observing and interviewing sales directors and management. There might be also other organisations, such as operations and accounting, who has a benefit or will use sales forecasts. The following questions can be used.

- How is sales forecasting done today?
- Who is doing it?
- Are there problems in the current forecasting?
- Which tools are used?
- Which data is used in forecasting?
- Which timeframes are forecasted?
- Are the forecasts reliable?
- Are forecasts monitored and evaluated?

(Georgoff and Murdick, 1986; Lawless, 2014; Makridakis, 1986)

5.1.3 Sales Funnel and Process

Sales funnel is a basis for sales forecasting. In addition, a structured and systematic sales process is needed. The sales process needs to be managed, and the data on the sales process and sales funnel must be recorded because historical sales process data is valuable in forecasting.

The use of sales process is examined in order to verifying that information is used systematically, and it provides data, which, in turn, are used on sales forecasting. The following questions can be used for assessing sales process.

- Does a company use systematic sales process?
- Does a company have a CRM solution, which include sales pipeline?
- Are the sales process data recorded and stored in the system?
- Are the sales process and sales pipeline data available?
- Are historical sales process data stored and available?
- Are sales data per service and customers available?

(Base, 2015; Insightly, Inc, 2015; Pipedrive Inc, 2015; SAP Library, 2015; Visma, 2015; Zoho Corporation, 2015)

5.1.4 Sales Forecasting Model and Data

If the current sales forecasting does not give reliable results, then an own forecasting model should be considered within a company. Forecasting is an analytical process, and it is heavily dependent on data available on the past. In this manner, information systems such as CRM, accounting and Excel data files could be analyzed because they contain a lot of useful data. The data should be analyzed in order to see whether there is relevant data to be used in forecasting.

Using historical data of sales and sales process makes it possible to create analytical model of the future sales. Sales funnel at certain time point in the past can be frozen. Future sales after the chosen time point can be calculated then.

The historical and current sales data are important starting points for forecasting. Actual sales data include service based sales data per customer. However, actual sales data is not enough as such. The data on sales process is also needed. When statistical analysis are used with sales process data, it is possible to estimate the proportion of customers who will most probably buy a service and which actions need to be performed. Thus, statistical analysis can be used to identify which services will sell; which customers will probably buy and how long does it take to close the sales case. In addition, statistical analysis give information about deals such as how many prospects, customer meetings and offers are needed for the successful sales cases.

(Hyndman and Athanasopoulos, 2015; Microsoft, 2015; RapidMiner, 2015; The R Foundation, 2015)

5.1.5 Sales Forecasting Tools

Sales forecasting tools are needed for creating forecasts. There are plenty of tools in the market, which include sales forecasting functionality. In addition, SME may already have tools with forecasting functionality, such as CRM with a function for sales forecasting. In this case CRM forecasting functionality should be analyzed. Also the usage of CRM is important for analyzing. The goodness of sales forecasts can be assessed.

If a company does not have any CRM tool in use, there are many CRM tools available. Naturally, the acquisition of CRM is a strategic decision to be made at company level. SME should analyse the CRM tool acquisition according the benefits and drawbacks of the tool separately. Low cost cloud-based CRM tools might be a good option.

If a company has sales process data available, but has not used it for forecasting, then one option is to use a Business Intelligence (BI) tool. Data collection, data cleaning and data evaluation would be useful approaches to go further, that is for creating and testing a sales forecasting model. In order to use any BI tool, it requires expert knowledge for analyzing and modifying the data. Forecasting results can be assessed using historical data. The following questions can be used for sales forecasting tool evaluation.

- Is CRM tool actively used by all sales managers?
- Are all relevant sales and customer data stored in the CRM system?
- What kind of forecasting is included in the tool?
- Does the tool support forecasting needs of the company?
- Is it used for sales forecasting?
- Does the tool produce reliable forecasts?

(Base, 2015; Hyndman and Athanasopoulos, 2015)

5.1.6 Visualisation

Visualisation and sharing are made for seeing and sharing the dashboards and reports. Sharing is a useful feature when there are many people who need or use data regularly. Visualisation is important because it helps people easily to see the patterns and the changes.

Dashboards are valuable for seeing the current status of the sales progress. The dashboard shows visually the current sales funnel and sales forecasts. In addition, sales forecasts per salesperson or per product can be modelled and displayed. Sales managers and management can easily follow the sales progress in the sales funnel.

(ClicData, 2015; Intuitics, 2015; Qlik, 2015; Randall and Gilles, 2015; SAP, 2015; Tableau Software, 2015)

5.2 Conclusions

The aim of this study was twofold. Firstly, to assess the sales forecasting in SMEs and to propose recommendations. Secondly, to assess sales forecasting tools for identifying what kind of tools are available and how these tools can be applied for conducting sales forecasting. Several recommendations for starting with forecasting, or improving the current capabilities of sales forecasting within the SMEs have been provided in the thesis.

SME interviews indicate that they are performing sales forecasting. The importance and benefit of sales forecasting are understood well in the companies. Two forecasting methods and tools are commonly used. First method is based on CRM tool, and second method is based on Excel tool. Even though the sales forecasting is used, the companies have found the limitations and shortcomings of their forecasting capabilities. They do not have extra resources to do sales forecasting.

The questions for the interviews were chosen in order to get an overview of how sales forecasting is applied and used in the companies nowadays. Accordingly, the topics were planned beforehand, and relevant information was gathered through the interviews. The responses of the sale director were considered to reflect the situation within a company. There was no other person interviewed from the same company. The interviews with other business units, such as company board, accounting and operations however, would have given wider and more reliable results in comparison to a single interview.

Another limitation is related with the use of CRM tools. It was not analyzed how the tools were used in sales forecasting, and how CRM tools collect data on sales process. If the data on company sales process and historical sales are available, it is possible to evaluate the accuracy of current sales forecasting in the company. In addition, it is possible to try out the different kind of forecasting methods, if current results are not satisfactory.

It is important to keep in mind that there are hundreds of different tools available which can be used in sales forecasting. Therefore, the list of the chosen set of tools included in the thesis presents only a handful of the software available. In total, 13 sales forecasting tools were chosen for the study. The smaller amount of tools might have enabled an evaluation of tools in more depth. General recommendations are given in this thesis, and they can be useful to any SME are operating in the similar kind of business.

Naturally, more detailed recommendations could have been given to all interviewed managers. Thus, sales forecasting model could have been developed for the companies whose sale managers were interviewed. Sales forecasting results with the new model could have been compared to existing sales forecasting results. This kind of study would reveal the difference of sales forecasting methods. However, for the development of the model, the sales process and sales data would have been needed. In addition, sales forecasting dashboard could be created for the company. Dashboard would show up to data sales process and sales data. Again, without any access to data this kind, such analysis could not be made.

The thesis gives a good insight into how sales forecasting is done in the SMEs and what kind of challenges they have met. The tool evaluation provides an overview of the forecasting tools which can be useful for SMEs to choose the sales forecasting tools they need. Recommendations offers practical tips how SMEs can develop their capabilities of sales forecasting.

References

- Armstrong, J.S., 2001. Selecting Forecasting Methods, in: Armstrong, J.S. (Ed.), *Principles of Forecasting*, International Series in Operations Research & Management Science. Springer US, pp. 365–386.
- Base, 2015. Base CRM [WWW Document]. URL <https://getbase.com> (accessed 12.12.15).
- Bozarth, C.C., 2008. *Introduction to operations and supply chain management*, 2nd ed. ed. Pearson Education.
- Chase, J., Charles W., 2014. Innovations in Business Forecasting: Predictive Analytics. *J. Bus. Forecast.* 33, 26–32.
- ClicData, 2015. ClicData [WWW Document]. URL <http://www.clicdata.com/> (accessed 12.12.15).
- Davenport, T., 2014. A Predictive Analytics Primer [WWW Document]. *Harv. Bus. Rev.* URL <https://hbr.org/2014/09/a-predictive-analytics-primer> (accessed 3.14.15).
- Dubinsky, A.J., 1980. A Factor Analytic Study of the Personal Selling Process. *J. Pers. Sell. Sales Manag.* 1, 26.

- Edinger, S., 2013. Four Principles For Great Sales Forecasts [WWW Document]. Forbes. URL <http://www.forbes.com/sites/scottedinger/2013/06/03/four-principles-for-great-sales-forecasts/> (accessed 10.30.15).
- EU, 2015. EU Business-friendly environment. What is an SME? [WWW Document]. URL http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/index_en.htm (accessed 11.12.15).
- Florance, M.M., Sawicz, M.S., 1993. Positioning sales forecasting for better results. *J. Bus. Forecast. Methods Syst.* 12, 27.
- Fong, C., 2015. Sales Funnel Stages: Choosing The Right Ones. InsightSquared.
- Foundation for Open Access Statistics, 2015. RStudio [WWW Document]. URL <https://www.rstudio.com/> (accessed 12.12.15).
- Georgoff, D.M., Murdick, R.G., 1986. Manager's guide to forecasting. *Harv. Bus. Rev.* 64, 110–120.
- Hyndman, R.J., Athanasopoulos, G., 2015. Forecasting: principles and practice [WWW Document]. *Forecast. Princ. Pract.* URL <https://www.otexts.org/fpp> (accessed 12.17.15).
- Insightly, Inc, 2015. Insightly [WWW Document]. URL <https://www.insightly.com/> (accessed 12.12.15).
- Intuitics, 2015. Intuitics [WWW Document]. URL <https://www.intuitics.com/> (accessed 12.12.15).
- InvestorWords, 2015. Sales forecast definition.
- Jordan, J., Kelly, R., 2015. Companies with a Formal Sales Process Generate More Revenue [WWW Document]. *Harv. Bus. Rev.* URL <https://hbr.org/2015/01/companies-with-a-formal-sales-process-generate-more-revenue> (accessed 12.19.15).
- King, T., 2014. A Guide to Analytics. *Bests Rev.* 65–67.
- Kumar, V., 2012. Customer relationship management : concept, strategy, and tools, 2nd ed. ed. Springer texts in business and economics. Springer.
- Lakhani, S., Kleiner, B.H., 2014. Improving business FORECASTING. *Ind. Manag.* 56, 26–30,5.
- Lavinsky, D., 2013. Executive Dashboards: What They Are And Why Every Business Needs One [WWW Document]. Forbes. URL <http://www.forbes.com/sites/davelavinsky/2013/09/06/executive-dashboards-what-they-are-why-every-business-needs-one/> (accessed 10.23.15).
- Lawless, M., 2014. Predictive Analytics: An Opportunity for Better Demand Planning and Forecasting. *J. Bus. Forecast.* 33, 44–46.
- Makridakis, S., 1986. The art and science of forecasting An assessment and future directions. *Int. J. Forecast.* 2, 15–39. doi:10.1016/0169-2070(86)90028-2
- Manning, G.L., 2010. Selling today : creating customer value, 11th ed. ed. Pearson Education.
- Microsoft, 2015. Power BI [WWW Document]. URL <https://powerbi.microsoft.com/en-us/> (accessed 12.12.15).
- Moncrief, W.C., Marshall, G.W., 2005. The evolution of the seven steps of selling. *Ind. Mark. Manag.* 34, 13–22. doi:10.1016/j.indmarman.2004.06.001
- Pipedrive Inc, 2015. Pipedrive [WWW Document]. URL www.pipedrive.com (accessed 12.12.15).
- Qlik, 2015. QlikView and QlikSense [WWW Document]. URL <http://www.qlik.com/> (accessed 12.12.15).
- Randall, E., Gilles, P., 2015. 6 Tips for Better Sales Performance Dashboards [WWW Document]. Tableau Softw. URL <http://www.tableau.com/learn/whitepapers/6-tips-for-better-sales-performance-dashboards> (accessed 12.29.15).
- RapidMiner, 2015. RapidMiner Studio [WWW Document]. URL www.rapidminer.com (accessed 12.12.15).
- Rogers, W., 2013. How to Manage the Forward Pipeline: The Difference Between Pipeline and Forecasting [WWW Document]. Salesforce Blog. URL <https://www.salesforce.com/blog/2013/05/how-to-manage-the-forward-pipeline-the-difference-between-pipeline-and-forecasting.html> (accessed 9.19.15).

- Rotenberg, Z., Baker, M., 2014. The Salesforce User's Guide to Data-Driven Forecasting, Free InsightSquared eBook [WWW Document]. URL <http://paperpicks.com/the-salesforce-users-guide-to-data-driven-forecasting/> (accessed 12.29.15).
- Saffo, P., 2007. Six Rules for Effective Forecasting. *Harv. Bus. Rev.* 85, 122–131.
- SAP, 2015. SAP Lumira, Edge edition [WWW Document]. URL <http://go.sap.com/product/analytics/lumira/edge-sme.html> (accessed 12.12.15).
- SAP Library, 2015. SAP, Sales Planning and Forecasting [WWW Document]. URL https://help.sap.com/saphelp_crm50/helpdata/en/6c/c7614179328147e10000000a1550b0/content.htm
- Small Business Development Corporation, 2015. What are Sales Forecasts [WWW Document]. URL <https://www.smallbusiness.wa.gov.au/business-topics/money-tax-and-legal/money-matters/financial-forecasts/sales-forecast/>
- Statistics Finland, 2015. Turnover of service industries [WWW Document]. URL http://www.stat.fi/til/plv/2015/05/plv_2015_05_2015-08-13_tie_001_en.html
- Statistics Finland, E., 2013. Finnish Enterprises [WWW Document]. URL http://www.stat.fi/tup/suoluk/suoluk_yritykset_en.html
- Tableau Software, 2015. Tableau [WWW Document]. URL <http://www.tableau.com/> (accessed 12.12.15).
- Taloussanomat, 2015. Taloussanomat company information [WWW Document]. URL <http://www.taloussanomat.fi/yritykset>
- The R Foundation, 2015. The R Project for Statistical Computing [WWW Document]. URL <https://www.r-project.org/> (accessed 12.12.15).
- Tietoviikko, 2013. Tietoviikko publishes 250 biggest IT companies in Finland [WWW Document]. URL <http://la-static.talentum.fi/pdf/tv/070620136-0fc64c429b37edc430fcbdf017f449a0.pdf> (accessed 6.11.15).
- Visma, 2015. Visma Severa [WWW Document]. URL <http://severa.visma.com/en/visma-severa/> (accessed 12.12.15).
- Wallace, T., 2006. Forecasting and Sales & Operations Planning: Synergy in Action. *J. Bus. Forecast.* 25, 16–21,36.
- Zoho Corporation, 2015. Zoho CRM [WWW Document]. URL <https://www.zoho.com/> (accessed 12.12.15).