



TAMPEREEN TEKNILLINEN YLIOPISTO
TAMPERE UNIVERSITY OF TECHNOLOGY

ARSLAN NAWAZ
QUANTIFYING THE CUSTOMER PERCEIVED VALUE OF BUSI-
NESS INTELLIGENCE SOFTWARE PRODUCTS

Master of Science thesis

Examiner: Prof. Petri Suomala and
Dr. Jouni Lyly-Yrjänäinen
Examiner and topic approved by the
Faculty Council of the Faculty of
Business and Built Environment
on 3rd February 2016

ABSTRACT

ARSLAN NAWAZ: QUANTIFYING THE CUSTOMER PERCEIVED VALUE OF BUSINESS INTELLIGENCE SOFTWARE PRODUCTS

Tampere University of technology

Master of Science Thesis, 97 pages

March 2016

Master's Degree Programme in Business and Technology

Major: Managing Technology-Driven Businesses in Global Markets

Examiner: Professor Petri Suomala and Dr. Jouni Lyly-Yrjänäinen

Keywords: Customer Value, Customer Profitability, Product Profitability, Business Intelligence Software

The global market is focused on analyzing the product development and manufacturing costs. However, companies pay less attention on identifying what is important for the customers and how much it costs to attend to the needs of the customers. Identifying the costs fulfilling the needs of the customers results in understanding on customer profitability. Customer and product profitability information is crucial for the success of a company. Thus, companies need to perform customer profitability analysis on routinely basis which is facilitated by business intelligence software products.

The objective of this thesis is to discuss the benefits and importance of customer profitability information and to quantify the customer value of customer profitability information provided by business intelligence software products. This study is based on a startup company selling business intelligence services for small and medium-sized companies, typically out of reach for large business intelligence software solutions. The offering of the case company makes it possible for more and more companies to access business intelligence solutions needed to remain competitive and profitable in the market.

This study shows that the quantification of customer value of a business intelligence product can be achieved by three approaches: (1) increase in sales, (2) reduction in costs, and (3) both. In addition, the framework gives companies a tool to observe the changes in customer value achieved through increase in benefits and reduction in sacrifices a customer makes while buying a product or a service. This study is limited to above mentioned three approaches of increasing the value of a business intelligence software product aimed at small and medium-sized companies.

PREFACE

During my master studies, I realized my interest in the field of business intelligence and pursuing a career in the business intelligence industry. In my work place I learned a lot about business intelligence and how it helps companies delight their customers profitably. I was excited for this new and interesting opportunity so I decided to do my thesis in this field to increase my knowledge and understanding of business intelligence and how it helps companies do their business.

While working in the case company, I learned a lot about developing business intelligence solutions for customers. I had a chance to experience and feel all the phases a startup company goes through and how it strives to help its customers. I was able to work with a team who taught me a lot and guided me at each step in the thesis project. I am extremely happy that I am a part of a team who has built a business intelligence solution to help companies prosper.

I would like to thank Dr. Jouni Lyly-Yrjänäinen for his encouragement and guidance throughout the process of writing this thesis and the support he provided me during the period of job hunting in Finland. Naturally, Professor Suomala deserves my gratitude for his role as an examiner. I would like to express my sincere gratitude to the management of the case company. Finally, I would also like to thank my family for the support they have provided me through out all the phases of my life.

Tampere, 22.03.2016

Arslan Nawaz

CONTENTS

1.	INTRODUCTION	1
1.1	Background	1
1.2	Objective	2
1.3	Research Process	2
1.4	Data Gathering Methods	3
1.5	Structure of Thesis	4
2.	CUSTOMER PROFITABILITY	6
2.1	Introduction	6
2.2	Product Profitability	7
2.3	Customer profitability	13
2.4	Customer Segmentation based on Profitability	15
2.5	Costs of serving customers are different	18
2.6	Factors Affecting Customer Profitability Information.....	21
2.7	Challenges in Knowing Customer Profitability	27
3.	CUSTOMER VALUE	30
3.1	Definitions.....	30
3.2	Frameworks for analyzing customer value	31
3.3	Cost saving or increased sales.....	38
3.4	Making Customer Value Explicit.....	41
4.	QUANTIFYING VALUE OF BI PRODUCTS WITH CUSTOMER PROFITABILITY	47
4.1	Business Intelligence (BI) Systems and BI Market	47
4.2	Multi-dimensional Profitability.....	52
4.3	Importance of Customer Profitability Information	54
4.4	Value Based Selling	56
5.	THE CASE COMPANY.....	59
5.1	The Case Company	59
5.2	Competitor Analysis.....	60
5.3	How is case company's product different	64
6.	QUANTIFYING VALUE OF CORE BUSINESS MANAGEMENT	67
6.1	Initial Research and Case Customers	67
6.2	Case 1: Quantifying Value by Reduction in Costs.....	70
6.3	Case 2: Quantifying Value by Increase in Sales	73
6.4	Case 3: Quantifying Value by Increase in Sales and Reduction in Costs	76
7.	DISCUSSION AND LESSONS LEARNED	81
7.1	Overview of the Problem and Framework	81
7.2	Analysis of the Cases based on Framework.....	83
7.3	Analysis of the Results.....	87
8.	CONCLUSION.....	90

LIST OF FIGURES

Figure 1.	<i>General overview of the research process.</i>	3
Figure 2.	<i>Costing information systems. (Adapted from Turney 2005)</i>	8
Figure 3.	<i>Basic idea of Contribution Costing. (Adapted from Lyly-Yrjänäinen et al. 2010)</i>	9
Figure 4.	<i>Basic idea of Full Costing. (Adapted from Lyly-Yrjänäinen et al. 2010)</i>	10
Figure 5.	<i>Contribution Costing vs. Full Costing. (Adapted from Lyly-Yrjänäinen et al. 2010)</i>	10
Figure 6.	<i>Activity based costing vs. traditional costing methods</i>	11
Figure 7.	<i>Product costs generated by different activities.</i>	12
Figure 8.	<i>Customer profitability analysis: cumulative contribution vs cumulative customers (Adapted and modified from Hill 1988)</i>	14
Figure 9.	<i>Segmentation of customers based on profitability (Adapted and modified from Zeithaml et al. 2001)</i>	16
Figure 10.	<i>Whale curve of cumulative profitability (Adapted and modified from Kaplan 1989).</i>	18
Figure 11.	<i>Mapping customer Profitability (Adapted and modified from Kaplan and Atkinson 1998)</i>	20
Figure 12.	<i>Product and customer driven costs in an activity based system.</i>	21
Figure 13.	<i>Profitability vs Cumulative contribution vs Sales.</i>	29
Figure 14.	<i>Key drivers of customer value (Adapted from Lapierre 2000)</i>	32
Figure 15.	<i>Value exchange model (Adapted from Khalifa 2004).</i>	34
Figure 16.	<i>Perceived customer value (Adapted and modified from Lyly-Yrjänäinen et al. 2010)</i>	35
Figure 17.	<i>Customer value in terms of increased sales or reduced costs</i>	38
Figure 18.	<i>Customer value model.</i>	39
Figure 19.	<i>Increase in customer value by increasing sales revenue</i>	40
Figure 20.	<i>Increase in customer value by reducing costs</i>	41
Figure 21.	<i>Value Delivery system. (Adapted and Modified from Lanning and Michels 1988; cited in Ballantyne et al. 2011)</i>	42
Figure 22.	<i>Value Proposition Builder. (Adapted from Barnes et al. 2009)</i>	43
Figure 23.	<i>Value proposition of Finn-Power. (Adapted from Lyly-Yrjänäinen 2010)</i>	44
Figure 24.	<i>Value offerings</i>	45
Figure 25.	<i>Value proposition of Finn Power.</i>	46
Figure 26.	<i>Value can only be experienced.</i>	46
Figure 27.	<i>Inputs of a business intelligence system. (Adapted and modified from Negash 2004)</i>	48
Figure 28.	<i>Business intelligence systems relation with other information Systems. (Adapted and modified from Negash 2004)</i>	49

Figure 29.	<i>The Purpose of Business Intelligence systems. (Adapted and modified from Jones 2009)</i>	50
Figure 30.	<i>Multi-Dimensional views of profitability (Adapted and modified from Elias and Hill 2010)</i>	52
Figure 31.	<i>Profitability by customers and products</i>	53
Figure 32.	<i>Migrating customers to higher profitability (Cokins 2004)</i>	55
Figure 33.	<i>Migrating customers to higher profitability by analyzing multi-dimensional profitability</i>	56
Figure 34.	<i>Quantifying value with Customer Profitability Information</i>	58
Figure 35.	<i>Case Company Structure</i>	59
Figure 36.	<i>Sales process of the case company</i>	60
Figure 37.	<i>How case company's product is different</i>	65
Figure 38.	<i>Idea generation and discussions phase of quantifying value of business intelligence products</i>	67
Figure 39.	<i>Glimpse of benefits provided by business intelligence software</i>	68
Figure 40.	<i>Position of case company in the competition</i>	69
Figure 41.	<i>Data gathering, analyzing and documenting the analysis of case customers' data</i>	70
Figure 42.	<i>Initial Situation of Financial Reporting in Case Customer 1</i>	71
Figure 43.	<i>Case Customer 1 after using Core Business Management</i>	72
Figure 44.	<i>Initial situation/process of delivering analytics information to end user of Case Customer 2</i>	74
Figure 45.	<i>Case Customer 2 after using core business management solution</i>	75
Figure 46.	<i>Sales per advertisement placement</i>	76
Figure 47.	<i>Customer portfolio of case customer 3</i>	77
Figure 48.	<i>Profitability of products per customer group of case customer 3</i>	78
Figure 49.	<i>Profitability of customer groups per product of case customer 3</i>	79
Figure 50.	<i>Framework of thesis</i>	82
Figure 51.	<i>Case 1 analysis: Reduction in costs</i>	84
Figure 52.	<i>Case 2 analysis: Increase in sales</i>	85
Figure 53.	<i>Case 3 analysis: Increase in sales and reduction in costs</i>	87
Figure 54.	<i>Quantification of customer value of customer profitability information achieved by increase in sales and reduction in costs</i>	91

LIST OF SYMBOLS AND ABBREVIATIONS

ABC	Activity Based Costing
B2B	Business to Business
B2C	Business to Consumer
BI	Business Intelligence
CBM	Core Business Management
CP	Customer Profitability
CPM	Customer Profitability Management
CRM	Customer Relationship Management
DM	Data Mining
DW	Data Warehousing
DSS	Decision Support System
EIS	Executive Information System
ERP	Enterprise Resource Planning
GIS	Geographic Information Systems
OLAP	Online Analytic Processing
PP	Product Profitability

1. INTRODUCTION

1.1 Background

In today's business world, companies operate in complex and competitive markets. This has resulted in decrease in the margins of the products they buy and sell. The innovations and developments made in the recent decades in the area of management accounting have focused mainly on the measurement of a product's manufacturing costs, and little has been done to measure and obtain how much it costs to identify and fulfil customer needs. According to Braithwaite and Samakh (1998), companies regularly obtain the detailed information of the manufacturing costs of their products, but usually they have less information on how much it costs to serve their customers.

A company's profit generation is usually as reliant on costs of serving its customers as it is on costs of manufacturing its products. In service based companies in specific, the customer profitability is more important than product profitability; the costs rely mostly on customer behavior instead of the service provider (Kaplan and Narayanan 2001). With this situation in mind, it seems that many companies have reported that they are in need of a reliable tool which can help determine the effects of customer's costs on the overall profitability of the company (Norek and Pohlen 2001).

According to Smith and Morrow (1999), companies' long term prosperity is heavily reliant on successful product development. Companies developing attractive products for their customers are likely to prosper (Brown and Eisenhardt 1995). However, a product is perceived attractive only when a customer considers the perceived benefits from the product surpass the sacrifices made in order to acquire the product (Khalifa 2004). It requires in-depth knowledge about customers' and their key value drivers in order to quantify the perceived benefits. Companies have been utilizing customer value assessment methods to identify the key value drivers and assess the perceived customer value (Anderson et al. 2006).

According to Harris and Mongiello (2012), the shift of the focus towards customer orientation has created a huge demand for companies to comprehend customer and market segments. In order to achieve that, companies are required to perform customer profitability analyses. Companies can get customer profitability information by using business intelligence systems. These business intelligence systems provide important information to identify and group customers based on their profitability position. This information can guide the management regarding which type of customers should be focused more and which types of customers should be focused less, and improving profitability.

1.2 Objective

In order to profitably delight their customers, companies need to obtain customer profitability information provided by business intelligence software products. Companies should analyze their customer profitability reports on routinely basis which is rarely the case due to complexity of creation and obtaining the customer profitability information. Therefore the objective of this paper is...

... to discuss the benefits and importance of customer profitability information and to quantify the customer value of customer profitability information provided by business intelligence software products.

To achieve this objective, this thesis reviews customer profitability, product profitability, and customer value and business intelligence systems literature, resulting in a framework for quantifying the value of business intelligence products providing customer profitability information for small and medium sized companies. Finally, this framework is tested with three different cases encountered by the case company, a small business intelligence services vendor.

1.3 Research Process

The research process started in the beginning of 2015 with a rough idea and scope of the thesis. During the initial steps, several meetings were conducted in order to discuss the scope and the main area of the thesis. The main objective of first meeting was to discuss the problems being faced by the users and how to solve them. The second meeting was more focused on customer profitability and how can the customer value of business intelligence products be increased. The third meeting was regarding the main competitors in the market and how they provide and quantify value for their customers.

The theoretical study and analysis was done from the April 2015 to December 2015 and important insights related to theoretical study were highlighted in the third meeting. The author also performed competitor analysis in two iterations in order to understand the uniqueness of case company's product. Finally, three cases which the case company encountered was analyzed with respect to the framework of this thesis in order to quantify the value of business intelligence products. The project timeline is demonstrated in Figure 1.

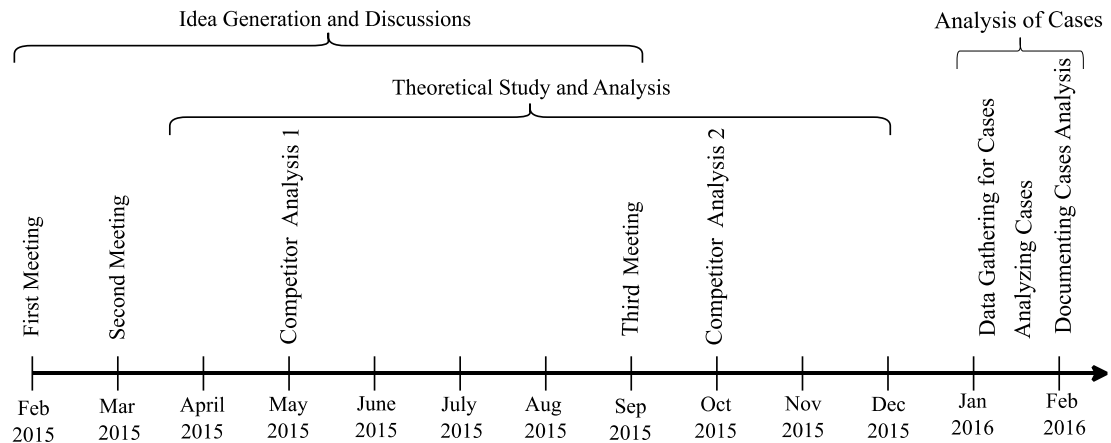


Figure 1. General overview of the research process.

The research was divided in three main phases which included: idea generation and discussion, theoretical study and analysis and analysis of the three of case company's customers. During the research process the author was actively involved in the planning of next event regarding the research process.

1.4 Data Gathering Methods

Finding new and useful information regarding specific topics and tasks in a systematic and logical ways is referred to as research (Rajasekar et al. 2006). Brinberg and McGrath (1985) define the research process as:

“the identification, selection, combination and use of the elements and relations from the substantive, conceptual and methodological domains.”

Rajasekar et al. (2006) characterize research as quest to increase knowledge. It can be termed as the discovery to new truths. Rajasekar et al. (2006) state following main objectives of a research:

- Verifying and testing the reliability of facts
- Identifying facts
- Solve problems
- Analyzing processes to determine relation between consequences and cause
- Developing new tools, theories or concepts to solve problems

Case study research is implemented to get a better understanding about a complex phenomenon or to explore a hidden phenomenon. In case studies, both qualitative and quantitative data generation methods can be used. However, it seems that utilizing qualitative methods are much more common. Gummesson (1993) categorized data gathering methods that can be used in a case study on management subjects into five groups. Table 1 shows these methods and a short description about each method.

Table 1. Data gathering methods (Gummesson 1993).

Method	Description
Existing Materials	Everything that is carried by other media (e.g. Books, articles, mass media reports, brochures) than human. It is often referred as secondary data.
Questionnaire Surveys	Data gathered by different forms of surveys and feedbacks.
Questionnaire Interviews	They are most common method to generate data in case of academic research. It includes open ended questions which are asked according to interview flow.
Observation	Data achieved by observing the subject of study.
Action Research	It requires total involvement of the researcher in the process and it can contain all other data gathering methods.

In this study, the main data gathering methods used are action science and existing material as the author has been involved in the process developing the quantification of value of business intelligence products. Moreover, observation has also played a key role in the data gathering process since, by observing carefully the process under study, it has been possible to extract valuable information. Informal interviews were also done with the case company management.

1.5 Structure of Thesis

This thesis is divided into eight chapters. Chapters 2, 3, 4 construct the theoretical framework of the thesis whereas Chapters 6 and 7 document and analyze the research part of the thesis. The content and objectives of the chapters are as follows:

1. Chapter 1 introduces the background and main objectives of the study. It also explains the research process and data gathering methods used and applied in this thesis.

2. Chapter 2 discusses product profitability and customer profitability. It provides different ways to analyze customer profitability and segmentation based on customer profitability. It also provides discussion on costs of serving customers. It also presents the factors affecting customer profitability and challenges in knowing customer profitability information.
3. Chapter 3 discusses customer value and definitions of customer value provided by various authors. It extracts main customer value drivers by analyzing several customer value models and a new model based on these drivers is created. At the end, value proposition is discussed in order to make the customer value explicit in terms of money.
4. Chapter 4 discusses the business intelligence (BI) systems and the market situation of the BI systems. Afterwards the analysis of multi-dimensional profitability is discussed and the importance of customer profitability information and thereby companies the theoretical concepts presented in the previous chapters to design a framework to quantify the value of business intelligence products with the help of customer profitability information.
5. Chapter 5 provides information about the case companies, its structure and operations. It discusses about main competitors of the case company in the market and how the products developed by the case company are different.
6. Chapter 6 demonstrates the quantification of the value of business intelligence products with customer profitability information. It also presents the value proposition of the BI products.
7. Chapter 7 reviews the research problems and theoretical framework of the thesis. Then it applies the framework on the case study and analyzes the results. Finally, it states the findings of the research and points out the possible limitation of the study.
8. Chapter 8 provides a conclusion of this thesis.

2. CUSTOMER PROFITABILITY

2.1 Introduction

Companies regularly retrieve and review detailed cost information related to their products, but very often they have little or no idea about how much it costs to serve a customer (Brauthwaite and Samakh 1998). However, it is always said that a company's success is often dependent on customer and product profitability. In service companies, customer profitability is considered to be more important than product profitability; however the customer profitability is often dependent on the behavior of the customers instead of the service provider (Kaplan and Narayanan 2001). Given this situation, there are a lot of companies which claim that they are in a need of a reliable tool which helps to determine the effects of customers' costs on the overall profitability of the company (Norek and Pohlen 2001).

If a company wants to remain profitable in today's competitive world, it has to find out what is important to its customers. Secondly, the company has to identify how each part of it is engaged in contributing to what is important to the customers (Turney 2005). Finally, it is the customer's satisfaction for company's products and services which matters the most and can help in measuring a company's success. Therefore it is necessary for companies to measure customer profitability in order to delight its customers profitably. In order to be able to achieve this, they are often following two measures which are discussed and analyzed in the management-accounting literature.

- Product profitability
- Customer profitability

Product profitability is the relation of product's selling price and its costs. Product profitability is higher if the price of the product is high or costs incurred to produce the products are low. Direct product profitability is defined by Pinnock (1989) as "the direct contribution made by a product to the distributor's unallocated fixed costs and pre-tax profits, after considering all direct revenues and costs associated with the product as it moves through the distributive system". In other words it can also be said that product profitability refers to difference between revenues and costs of a product or service in a particular time period. It can be deduced from the above discussion that the product profitability depicts how much money a product brings in a business as compared to other products in the product line of a company.

Customer profitability, as defined by Gordon (1988), is an important aspect for any company as a source to measure the contribution to profits generated by each customer or customer segment. According to Kotler (2009), a profitable customer can be a person, a

house or a company which generates enough revenues to surpass the company's costs incurred in servicing, selling and attracting customers over a specified period of time.

It has been said by various authors that it is important to measure and record customer service costs. According to Blattberg and Deighton (1996), in this customer-centric era, companies should focus more and more on managing and building their relationships with customers, rather than concentrating solely on their own products. Harris and Mongiello (2012) observed that, in this customer-oriented and service-oriented age, companies should include customer profitability analysis reports in their routine management reports. Riley (1999) recommends that the customer profitability analysis should be done as it assists companies to evade losses and improve profitability. In many industries customer profitability analysis has become increasingly important in combat for sales margin and sales volume (Bellis-Jones 1989).

According to Harris and Mongiello (2012), companies will not be able to assess which of their investments on customers proved to be profitable if they do not estimate how much labor and capital has been used on each customer. There is usually very little or no information about whether the investments made on customers were right or the customer segments chosen for investments were wrong and turned out to be unprofitable segments (Harris and Mongiello 2012). Therefore, it is essential to record and estimate the customer profitability information on routinely basis in order to remain profitable and competitive and take informed investment decision on correct customer segments profitable for the company.

Harris and Mongiello (2012) have stated that the importance of customer profitability analysis can be determined by this simple claim that revenues do not contribute equally to the profits of a company. Profitability of a company also depends on special value added services required by a customer in addition to unit costs of products or services delivered. According to Kaplan and Narayanan (2001), although service based industries benefit most from customer profitability analysis, companies belonging to other industry segments can also easily identify and estimate the profitability achieved from each customer group and in turn make better sales and marketing.

2.2 Product Profitability

The value of information about a company's performance has increased dramatically in today's competitive world. It has become more important than before to have the information about a company's performance towards its goals due to the increased pace and changes in the competitive environment (Turney 2005). The latest advancement and changes in the technology and wide availability of information systems have also enabled companies to get this information without any difficulty. It is now increasingly easier to acquire useful information from the information systems. Product profitability is one

piece of that information which helps companies analyze the performance of their products.

Product profitability as discussed in above section refers to the performance, in terms of contribution towards profit, of a product among the product line of a company. Product profitability provides information about which products are contributing more and which are contributing less and also how these products are helping the organization to achieve its goals. Product profitability can be increased if companies set appropriate prices or lower the costs of their products and to be able to achieve desired profitability, companies need to understand the correct cost information.

Product cost information can be acquired from the costing systems used by companies which are not more than an information systems processing raw data supplied to them according to predefined methodology. These information systems require basic information such as labor hours and units produced to calculate the product costs and other costing information based on predefined costing methodology. (Turney 2005) The idea is illustrated in Figure 2.

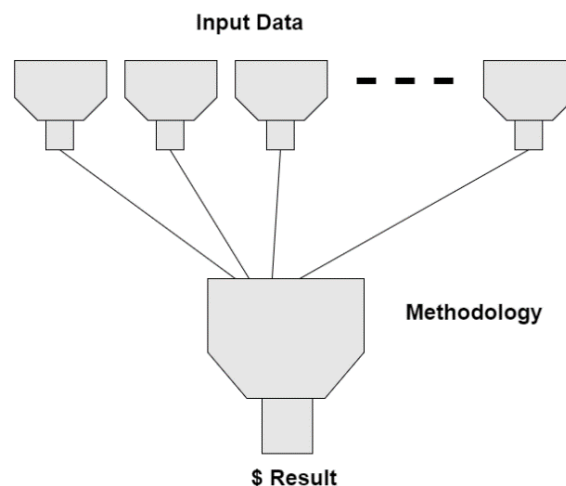


Figure 2. Costing information systems. (Adapted from Turney 2005)

As it can be seen in the figure above, the raw data such as units produced and direct labor hours are supplied in the costing system. These information systems calculate the product cost and other product related information in a traditional way with the help of predefined methodology. These traditional costing systems have become obsolete in today's world where capturing operational data on real-time basis have become increasingly easy and cheap.

To clearly understand and analyze the product profitability, information on product costing is necessary. Effective management can be done only when the cost information required for the product profitability is easily available. Cost information can be acquired from several costing methods used by companies to allocate costs in order to make cost

analysis at different levels. This thesis will mainly focus on following three costing methods.

- Contribution costing
- Full costing
- Activity based costing (ABC)

Contribution costing, according to Lyly-Yrjänäinen et al. (2010), is used to calculate how each product contributes towards fixed costs and profit of the company. They also assert that contribution costing is based upon the claim that all the products of a company contribute equally towards profitability of the company. Although contribution costing is considered to be most widely used method to allocate costs and price products, there is one disadvantage of using contribution costing; it does not include all the costs of the company when calculating costs of the products. In other words, contribution costing considers that all the administrative costs are consumed equally by each product which is not always true (Lyly-Yrjänäinen et al. 2010). The illustration in Figure 3 summarizes the idea of contribution costing.

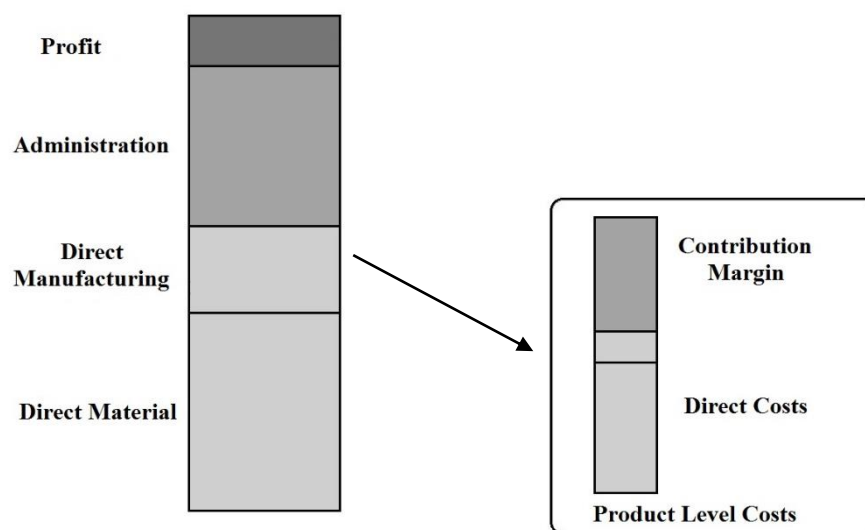


Figure 3. Basic idea of Contribution Costing. (Adapted from Lyly-Yrjänäinen et al. 2010)

As illustrated in the figure above, the company level cost structure is replicated at the product level. It can be seen in the figure above that product costs are calculated by adding the contribution margin on top of the direct costs and all the administrative costs are allocated based on direct costs. The allocation of administrative costs based on direct costs results in inaccurate allocation of overhead burden rates.

Full costing on the other hand, according to Lyly-Yrjänäinen et al. (2010), covers the downside of contribution costing by separating the administrative costs and assigning different overhead burden rates to achieve more accurate results. Manufacturing and material overhead burden rates, in full costing, are calculated by separating them from general administrative costs, then linked to direct manufacturing and direct material costs (Lyly-Yrjänäinen et al. 2010). The idea of full costing is summarized in Figure 4.

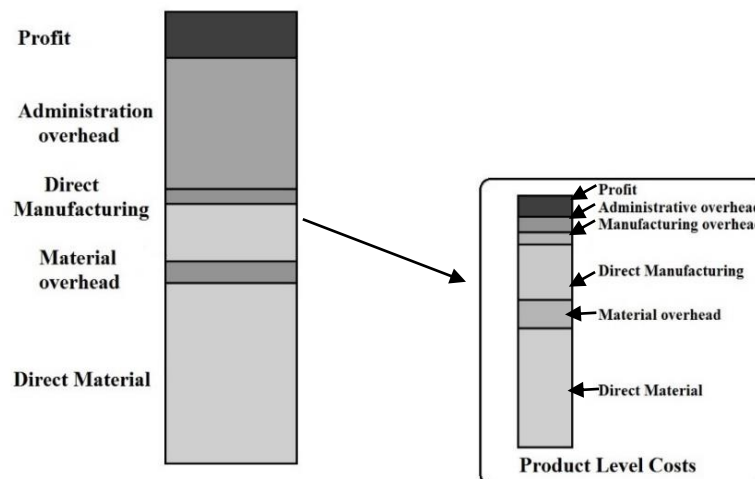


Figure 4. Basic idea of Full Costing. (Adapted from Lyly-Yrjänäinen et al. 2010)

As illustrated in the figure above, in full costing overhead burden rates are assigned separately based on the cost sources of each product or product line. This allows a company to easily calculate the overhead burden rates resulting in improved costing information. When comparing contribution and full costing, results will differ if the ratio between direct material and direct manufacturing at the product level does not equal the one in contribution level as illustrated in Figure 5.

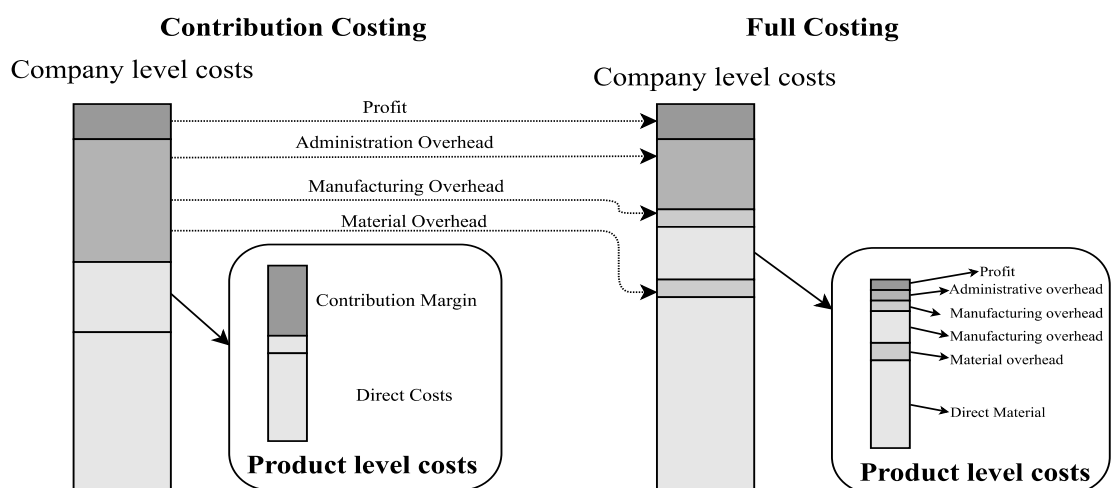


Figure 5. Contribution Costing vs. Full Costing. (Adapted from Lyly-Yrjänäinen et al. 2010)

Activity based costing (ABC), according to Kaplan and Atkinson (1998), is similar to traditional costing system (contribution costing and full costing) but in a more general way. In traditional costing systems, departments or cost centers are used as cost pools to assign and calculate costs in a company, whereas, in activity based costing systems, activities are used instead of cost centers to accumulate costs in a company. In activity based costing systems, first activities are identified and then the resource expenses are assigned to these activities based on the resource usage by each activity. (Kaplan & Atkinson 1998) Turney (2005) add that activity based costing assign resource costs to activities first and then to product units as compared to traditional costing methods where resource costs are directly assigned to product units. This idea of difference between activity based costing methods and traditional costing methods (contribution and full costing) is illustrated in Figure 6.

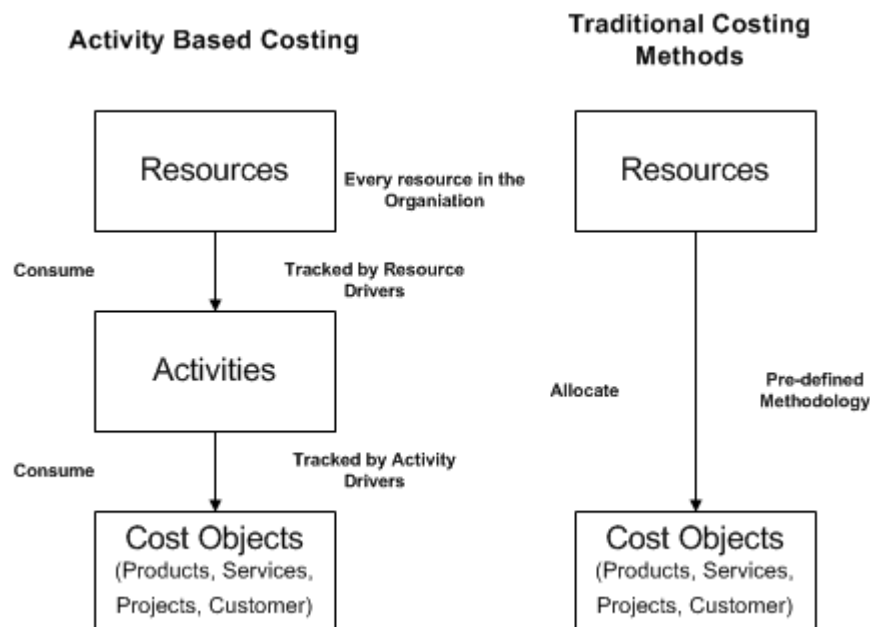


Figure 6. Activity based costing vs. traditional costing methods.

Figure above shows that, in activity based costing, the costs of resources are tracked with resource drivers to activities and costs of activities are tracked to cost objects with activity drivers. In traditional costing methods the costs of resources are assigned directly to the cost objects based on a pre-defined methodology as discussed in earlier sections.

The problem with traditional or conventional costing system is that they have become obsolete in today's competitive world. Conventional costing systems are not according to the external and internal conditions of industry which affect today's business environment. Global competition, advancements in technology and access to low cost information systems have changed external conditions and it has become increasingly important to increase or at least maintain product profitability and remain competitive in the market which is full of hungry competitors. (Turney 2005)

Activity based costing provide more accurate cost information related to products and customers. According to Turney (2005), the activity-based costing approach is able to provide better information than conventional costing systems because activity-based costing uses more and more types of activity drivers to allocate costs to customers and products. In addition to manufacturing costs, non-manufacturing costs are also taken into account when assigning costs to customers and products (Turney 2005).

According to Kaplan and Cooper (1998), product costs are generated by different activities which occur at different levels such as unit, batch, product sustaining, order and facility levels. The idea is illustrated in Figure 7.

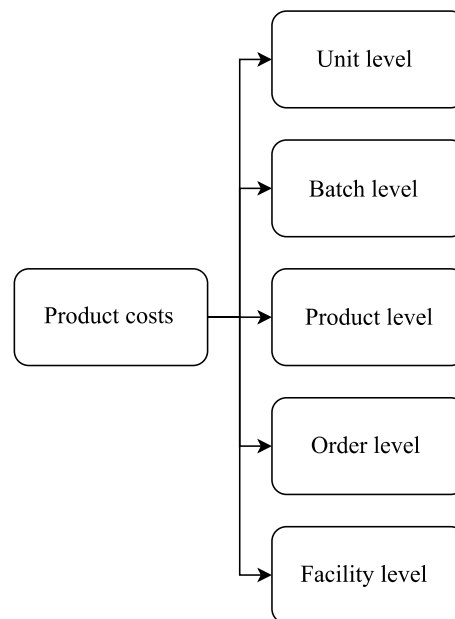


Figure 7. *Product costs generated by different activities.*

Unit level activities refer to activities performed according to the volume produced. Batch level activities refer to activities which are performed on a batch of a product. Product-sustaining activities refer to the activities related to production of individual products and product specification updates and maintenance. Order related activities refer to activities related to a specific order but independent of the total volume. Facility sustaining activities refer to activities which are independent of a specific product or customer, but they provide general production and sales capabilities. (Kaplan and Cooper 1998)

In conclusion, it can be said that activity-based costing provides accurate and important information related to problems and opportunities. By using activity based costing, a company can achieve accurate cost information which leads to a better understating of customer and product profitability. Furthermore, unlike the conventional costing systems, activity based costing approach gives companies an opportunity to delight its customers profitably by fulfilling the information requirement of an aspiring world class company (Turney 2005).

2.3 Customer profitability

As it was discussed in the previous sections, if a company want to remain profitable in the market, it has to first find out what matters to its customers. Secondly, the company has to identify how it is engaged in contributing towards what is important to its customers. According to Turney (2005), unfortunately, conventional costing systems provide very little or no information on what matters to customers and prominent themes of quality and service are out of their fields. Conventional costing system only reports financial information and non-financial information, for example information related to defects and throughput rates, is usually outside the scope of the conventional costing methods (Turney 2005).

A company must know its sources of expenditure, cost structure and profits to remain competitive in the market. There are certain actions which can be taken to maximize the profits. For example, for unprofitable customer, a company can acquire a passive approach to gradually increase the prices and surcharge for extra work, hoping that customer will pay more or go elsewhere. To address profitable customer, extra work related to customer may be reduced (e.g. unneeded extra product packaging), streamline delivery process, and provide pricing incentives to the customer so customer places less work load on the company. A company can use activity based costing method to accurately and economically trace costs of products, types and kinds of channels and customer segments that place varying degrees of workload. Use of non-rational systems of assigning costs should no longer be acceptable to trace and allocate the so-called non-traceable costs to their sources of origin. Activity based costing provides this facility yet many companies do not use it. (Cokins 2015)

Most of the academics have suggested that activity based costing is an appropriate system for measuring costs related to customer service. Kaplan and Cooper (1998) have claimed that, in theoretical way, activity based costing is the most appropriate method for evaluating customer service costs in such companies where complexity is high in product, customer and service requirements. Despite of this is claim, activity based costing has been applied in a very limited number of industrial activities to measure costs and very little empirical studies have applied this system to evaluate customer service costs. (Cokins 2004)

A number of discriminating approaches to business analysis have been discovered by recognition of the fact that potentially substantial profit improvements can be realized from differentiating the costs of the products and the cost of the services associated with its supply to the customer. One of these approaches is evaluation of customer profitability. Customer profitability analysis provides suppliers with a means of identifying the attractiveness of each customer based on the profitability position. A food company ranked its customers based on the amount of contribution they brought to the organization, segmented into three groups as shown in Figure 8. (Hill 1988)

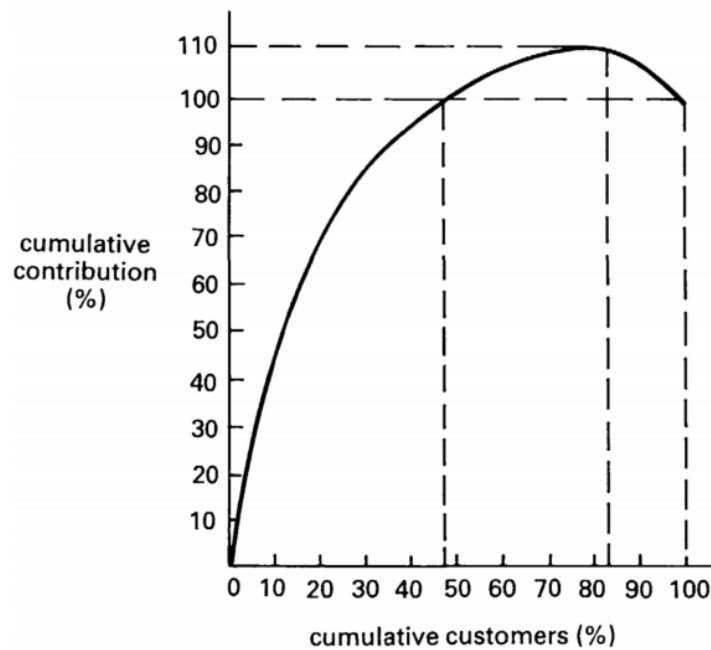


Figure 8. *Customer profitability analysis: cumulative contribution vs cumulative customers (Adapted and modified from Hill 1988).*

Group A, which consists of 48% of the customers, is the most contributing group. The companies in that group generated as much contribution as all 100% of the customers did. The remaining positively contributing customers lie in Group B which consists of 35% of the customers and they added further 12% of the contribution. Group C consists of all negatively contributing customers. In other words, the cost of serving these customers exceeded the gross margin obtained from sales to them. It seems that the profit generated by Group B has been cancelled by the loss generated by Group C. The significance of the analysis presented above is evident when sales revenue generated by each customer segments is related to the contribution generated by each customer group. The notion of this analysis is illustrated in Table 2. (Hill 1988)

Table 2. Revenue and contribution by customer groups (Adapted from Hill 1988).

Group	A	B	C
Revenue	93%	5%	2%
Contribution	100%	12%	(12)%
Customers	48%	35%	17%

It can be seen in the table above, customers in Group A is the most vulnerable to competition and these customers should be given best standard of services which ensures that the ‘contribution stream’ is protected. The customers in Group C need close attention in order to avoid the erosion which they cause to the contribution being brought by other two customer segments. The greater the number of customers served by the organization, the greater the difficulty in managing and monitoring costs and profits generated by each customer. Therefore it is necessary to perform customer profitability analysis on a routinely basis to remain competitive in the market. (Hill 1988)

Companies can achieve higher profitability by identifying different customer groups which have responded differently to marketing activities. Zeithaml et al. (2001) stated in the case of Federal Express Corporation, which has revolutionized its marketing plot and activities by ranking its customers as ‘good’, ‘bad’ and ‘ugly’ based on customer profitability information. The company focuses and spends most of its efforts on ‘good’ customers and simultaneously working on transferring its ‘bad’ customers into ‘good’ category and discouraging the ‘ugly’ ones, instead of exercising all of its marketing efforts equally on all of the customer base. Companies have, therefore, now acknowledged that they do not have to spend all of their marketing efforts on all customers in a uniform manner.

The reason behind this is that costs of customers are different, many customers cost significantly more to be served, and provide less profit to the supplier firm than the customers who provide very high profitability to the suppliers and require less costs to serve them. Therefore it is increasingly important for companies to perform customer profitability analysis on a routinely basis to identify the profitable, less profitable and non-profitable customers.

2.4 Customer Segmentation based on Profitability

Zeithaml et al. (2001) has proposed a profitability-based customer segmentation model, also known as customer pyramid model. In this model, Zeithaml et al. (2001) have segmented customers into four levels based on their customer profitability information. This kind of segmentation helps companies’ serve customers better and ensure that the most

profitable customers are getting appropriate treatment and work is being done on less profitable customers to bring them in the most profitable segment. The illustration of this idea can be seen in Figure 9.

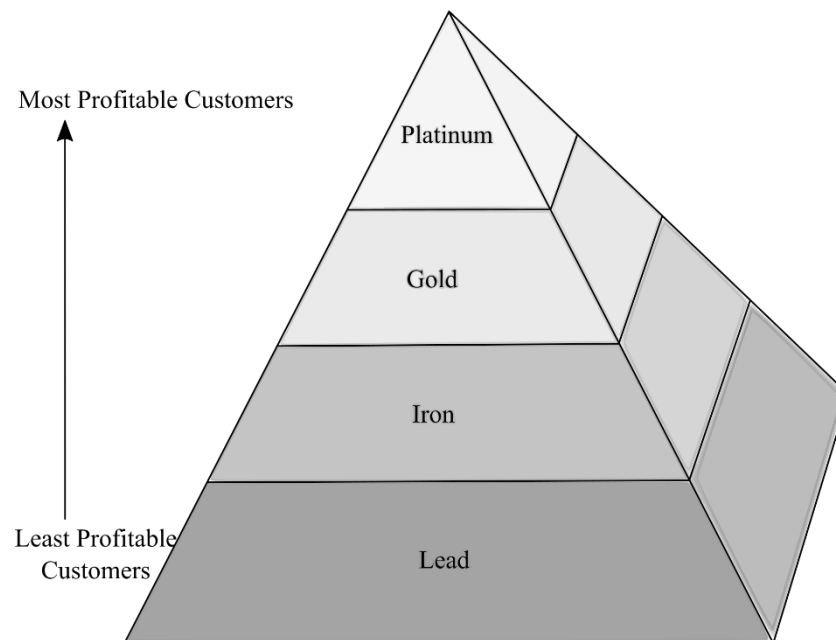


Figure 9. Segmentation of customers based on profitability (Adapted and modified from Zeithaml et al. 2001).

In the model of Zeithmal et al. (2001), the customers are categorized into 4 different levels based on the profitability they bring into the company. First, Platinum level consists of the customers, very little in number, who are most profitable for the supplier. Typically they are heavy users of the products, less price sensitive and keen to invest more and try new product and service offerings and are committed to the supplier firm.

Second, Gold level consists of the customers whose profitability level is not that high, probably because customers are keen in price discounts which affects profitability levels. They might not be as loyal to the firm as the platinum users but are heavy users of the product or service category. They are also usually working with multiple companies to minimize risks from their side and not just focusing on one firm.

Third, Iron level consists of the customers which provide the sales volume needed for utilizing the company's capacity but the revenues, loyalty and profitability from these customers are not enough to treat this customer segment in a special way.

Fourth, Lead level consists of the customers who are responsible for most of the company's expenses. They are always demanding and require more attention than they are due with respect to the revenues from these customers. Sometimes they are problem customers for the firm and are complaining about the company performance to others and occupying the resources of the firm.

The basis of this Customer Pyramid model is that a firm can easily identify which customers to retain and which customers should be paid more attention based on the different levels of profitability information provided by this model. This model also allows companies to enhance profitability from individual customers by delivering appropriate levels of quality and optimal allocation of resources to that customer.

According to Kaplan and Atkinson (1998), the basis of segmentation is a ratio of the benefits a customer receives and the financial results for the supplier firm. A significant rise in segmentation based on customer profitability information has been noticed (Kaplan and Atkinson 1998). When segmenting customers the financial potential of the customer segments and the profitability prospects should be studied. Fredericks (2001) stated that it is important to relate the customer loyalty with financial outcomes from that customer. Fredericks recommends that the segmentation is essential to do based on the factors which affect the customer loyalty. Purchasing same products, having similar application or requirements of same services repeatedly does not make them homogenous; customers do not always require the same intensity of services, relationship and attention from the supplier firm. The key is to determine the main drivers which affect customer loyalty (Fredericks 2001).

Segmentation based on customer profitability can sometimes create undesired environment for the supplier firm. It can allow a company to treat its customers as a “deficient customer”, even though it is possible that this customer might become valuable in the future. According to Johnson (1992), in relation to application of ABC in customer profitability analysis, stated that activity-based concepts are over rated and what actually is of importance is the customer’s level of satisfaction. Johnson also says, that if a customer requires frequent deliveries in small batches and some other supplier firm can fulfil those needs, then the activity-based analysis of customer profitability can confuse the supplier.

Smith and Dikolli (1995) said that Johnson’s (1992) claim presumes that the supplier is willing to give up the customer and allow other parties to serve his requirements. These authors suggest, referring to Kaplan’s (1992) study, which suggest the type of potentially non-profitable customers who should be retained: (1) those customers who are new, growing and are potentially profitable in future, (2) those customers who provide qualitative learning benefits instead of just the financial benefits, and (3) those customer which are recognized as leaders in their market or area of specialty. Kaplan (1992) suggests that the fact that a customer is non-profitable does not mean that he should be discontinued or forced to accept terms which reduces the satisfaction level of the customer.

2.5 Costs of serving customers are different

It can be that the biggest customers of a firm are non-profitable for the company. It is not extraordinary that 30% of the customers of a firm are non-profitable but the figure can be a lot bigger in a real situation. It is claimed by various authors (O' Guin and Rebischke 1999; Kaplan and Atkinson 1998; Kaplan and Cooper 1998) that Pareto's 20/80 rule is true when talking about sales volume being brought by customers. This rule states that 80% of the company sales are due to the 20% of its customers. However, usually the fact is that the profitability distribution is even more drastic. According to Kaplan and Cooper (1991), 40% of the customer bring about 250% of the total profits to the firm. The idea is illustrated in Figure 10.

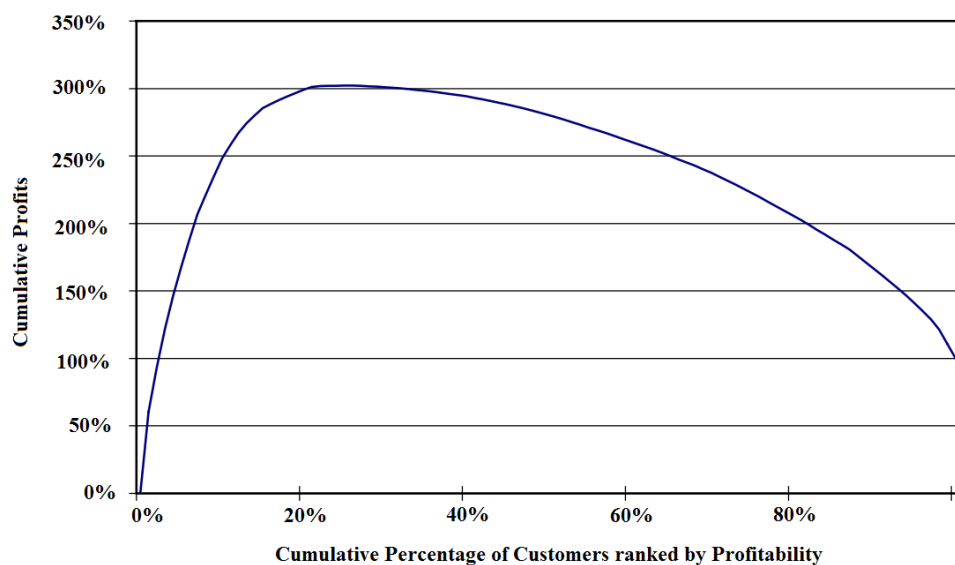


Figure 10. *Whale curve of cumulative profitability (Adapted and modified from Kaplan 1989).*

The figure above describes the profitability and demonstrates the effect of plotting a company's cumulative profits as a function of customers ranked by their profitability. 20% of the customers are profitable and rest of the customers are fairly profitable or unprofitable. Existence of unprofitable customers is a notification that company is not performing profitable due to its defective strategy. If the large amount of customers are in non-profitable section, it means that the company is vulnerable.

Companies usually have both low and high cost-to-serve customers. According to Kaplan and Atkinson (1998), a company can identify the high and low cost-to-serve customer based on the certain characteristics. O' Guin and Rebischke (1999) have added advertising and geographic distance to the characteristics of the different costs to serve customers. These characteristics are presented in Table 3.

Table 3. *Characteristics of high- and low-cost-to-serve customers (Adapted from Kaplan and Atkinson 1998).*

High costs-to-serve customers	Low costs-to-serve customers
1. Order custom products	1. Order standard quantities
2. Small order quantities	2. High order quantities
3. Unpredictable order arrivals	3. Predictable order arrivals
4. Customized delivery	4. Standard delivery
5. Change delivery requirements	5. No change in delivery requirements
6. Manual processing	6. Electronic processing
7. Large amounts of pre-sales and post-sales support	7. Little to no pre-sales and post-sales support
8. Require company to hold inventory	8. Replenish as produced
9. Pay Slowly	9. Pay on time

Simth and Dikolli (1995) have also discussed customer profitability analysis based on the principles of activity based costing. They have provided four different categories of costs which affect the profitability of the customer. These cost categories include: purchasing pattern, accounting procedures, and inventory holding and delivery policy.

The customer profitability is proportional to the duration of the relationship between customer and supplier. Customer profitability increases with increase in trading relationship. According to Hope (1998), customer satisfaction increases their willingness to spend more, appeal other potential customers, are easier and less costly to deal with, and most importantly are less price sensitive, resulting in rise in customer profitability. Customer profitability should be maximized by combined efforts of accounting and marketing personnel. Customer satisfaction should also be considered essential in addition to profitability. Hope (1998) also says that a satisfied customer is six times more likely to repurchase than an ordinary customer or less satisfied customer.

Shapiro et al. (1987) have provided a model to classify the customers based on margin earned and cost-to-serve. This model provides an opportunity for companies to study and understand the net contribution earned from each customer and in result it enables companies to generate profits with customers in various ways (Kaplan and Atkinson 1998). This model is illustrated in Figure 11.

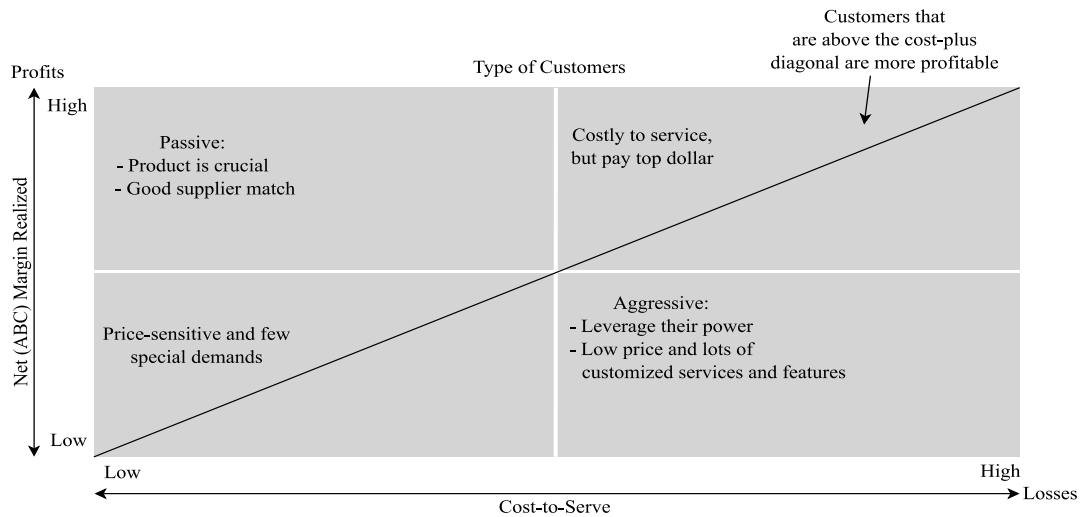


Figure 11. Mapping customer Profitability (Adapted and modified from Kaplan and Atkinson 1998).

A customer can be studied by this model with the help of two parameters. First, horizontal axis represents the cost of serving the customers. Second, vertical axis represents the net margin earned from the sales to the customer. Kaplan and Atkinson (1998) state that the customer in the upper right section of this model can be served with special care based on the revenues and gross margins achieved from the sales to these customers. These customers are always loved by the companies and are price insensitive and should be treated with special care to retain them. The customers in the lower left hand section are the most challenging ones. They usually demand high amount of service and with greater quality but always ask for discounts and are very price sensitive (Kaplan and Atkinson 1998).

Hornigrey (2000) suggests that the differences of customers in revenues and costs can give in-depth detail of why the difference in operating income from the customers exist among different customers. With this information managers can be more aware of which customer should be treated with special care matching the level of contribution these customers make towards operating income of the company.

Nielson et al. (2000) have also stated the importance of evaluating and targeting profitable customers. They say that the increase in the customer profitability should be complemented with customer satisfaction to achieve a world class success. It is also true that cost concerns should not be forgotten when it comes to achieving customer satisfaction (Nielson 2000). In support of Nielson's (2000) claim, Foster and Swenson (1997) and Gupta and Galloway (2003) have also argued that the profitability can be maximized if the customer satisfaction is given due importance and measure are taken to increase it.

According to O' Guin and Rebischke (1999), customer-driven and product-driven costs are different from each other with respect to resource consuming activities. A certain customer or a segment of customers are the basis of customer-driven costs. Activity-based costing can allow companies to have in-depth analysis of the cost structure of customer-

driven costs by carefully analyzing activities and different activity requirements presented by the customers to the company. (O' Guin and Rebeschke 1999)

Evaluating product-driven costs are no different than estimating customer-driven costs in an activity based costing system. Costs are attached to different types of cost objects at different levels. Product-related costs are mostly relevant to cost objects such as product components, subassemblies, assembled products and batches, whereas customer-driven costs are relevant to the cost objects such as market segments, distribution channels and customer groups. (O' Guin and Rebeschke 1999) The idea is illustrated in Figure 12.

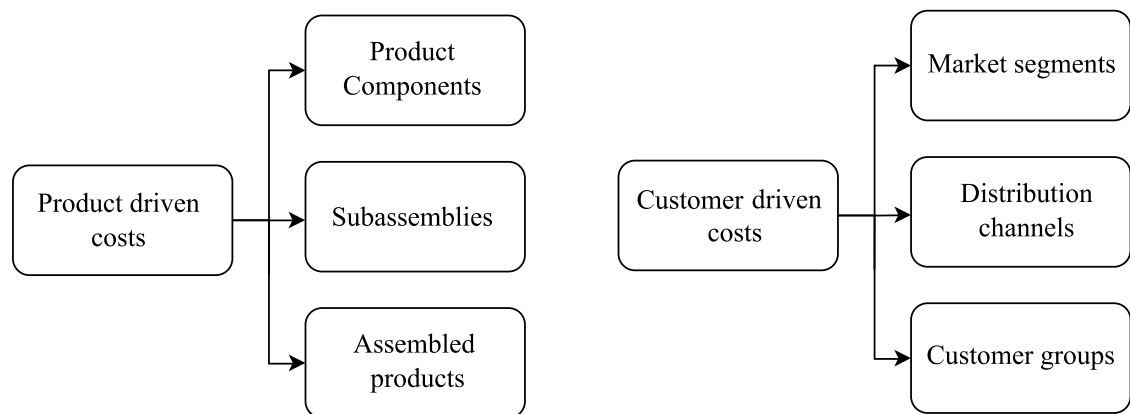


Figure 12. *Product and customer driven costs in an activity based system.*

There are three categories at which costs are attached with the help of costs drivers which include product components, subassemblies and assembled products costs. Customer-related activity costs are also three categories at which costs are attached with the help of costs drivers which include market segments, distribution channel and customer groups costs.

2.6 Factors Affecting Customer Profitability Information

Companies can transform their unprofitable customers into profitable ones when they have understood the drivers of individual customer's profitability (Kaplan and Narayanan 2001). There are several factors which impact customer profitability, some of them listed below. (Ju-fang Kun-yuan 2008)

- Customer behavior
- Way of ordering
- Logistics management behavior

First, some customers are in a long term relationship with the supplier and they buy all of the products and services they need from this company. This type of customers are usually bringing profits for the company. However, there are other kinds of customers who buy services and products from multiple suppliers in pursuit of lower prices and they are the

ones who are not loyal to any company and are not profitable. It will become easier for companies to serve their customers when they have understood this factor.

Second, customers ordering over the internet bring less costs to the companies as compared to the ones ordering by mail or phone. Using internet as means of ordering products or services improves company's profitability and these customers prove to be more profitable than others. Companies can pay more attention on the customers who order by phone or mail to bring them to profitable segment by encouraging them to order via internet.

Third, the size of the order can impact significantly on the profitability; if the customer orders in small quantities then they are not profitable for the company. Similarly, customers who order standardized products are more profitable form the ones who are ordering customized products, meaning products other than ones with listed specifications. There are several other factors which create an impact on the customer profitability. Various authors have analyzed these factors from customer profitability perspective. There studies are divided in statistical and non-statistical categories. Some of these factors which are in relation to customers' characteristics in B2C industry are presented in Table 4.

Table 4. Customer related factors affecting customer profitability information in B2C.

Statistical Studies:	Age	Size	Social Class	Relationship Duration	Cross-buying
Reinartz and Kumar (2000)	-	-	-	X	-
Niraj et al. (2001)	-	X+	-	-	-
Reinartz and Kumar (2003)	-	-	X+	-	X+
Cambell and Frei (2004)	X	-	X	X	X
Bowman and Narayandas (2004)	-	X+	-	-	-
Triest (2005)	-	X+	-	-	-
Keiningham et al. (2005)	-	X	-	-	-
Reinartz et al. (2005)	-	-	-	X+	X+
Kumar et al. (2006)	-	-	-	X+	X+
Haenlein et al. (2007)	X	-	-	-	-
Benoit et al. (2009)	X-	X+	X	X	-
Lee et al. (2010)	X	-	-	-	-
Frischmann and Gansler (2011)	X	X	X	X	X+
Mark et al. (2012)	-	X+	-	X	X
Shah et al. (2012)	-	-	-	-	X
Non-Statistical Studies:					
Storbacka et al. (1994)	-	-	-	X	-
Kumar (2006)	-	-	-	X	X
Blattberg et al. (2009)	-	-	-	-	X

In the table above, the ‘X’ represents that the author has discussed this factor in the study but did not state any positive or negative impact on the customer profitability. The studies market with ‘-’ represent that they did not discuss this particular factor. The ‘X+’ represents that the author has discussed about this factor and states that this factors has a positive and ‘X-’ represents that the factors has a negative impact impact on customer profitability. These factors are discussed in detail below.

Customer age can have a non-linear impact on customer profitability. For example, in banking industry customer’s age plays a significant role because most of the profitable customers are in their middle ages as compared younger people and senior citizens who are less profitable (Haenlein et al. 2007). According to Benoit et al. (2009), if the customers’ age is measured by calculating the ‘maximum age of a household member’ then it seems that the age has a negative impact on customer profitability.

Customer size, as it seems from the studies, has a positive impact on customer profitability. According to Triest (2005), customer size can have a positive impact on customer profitability due to the fact that there is some exchange of efficiencies and it offsets the adverse effect of lower product margins. Frischmann and Gensler (2011) are of the view that customer size has a positive impact on customer profitability but the intensity of impact is negligible. With these studies in mind, one can conclude that size is directly proportional to the customer profitability; bigger customers have bigger customer profitability. Although Kaplan and Narayanan (2005) stated that, if the bigger customers are not priced appropriately, then they might be the most unprofitable ones. Keiningham et al. (2005) compliments Kaplan and Narayanan (2005) by verifying that large customers tend to be the most unprofitable or the most profitable.

Relationship duration seems to have a vague effect on customer profitability. Only two out of eight studies found a positive effect of relationship duration on customer profitability. Reinartz and Kumar (2000) have found out that long-lasting customers are usually expensive to serve due to the fact that they always look for an advantage resulting from their longer relationship.

Despite of the fact the 10 – 35% of the customers who are engaged in cross-buying are unprofitable (Shah et al. 2013), it seems that the cross-buying has a positive impact on customer profitability. Shah et al. (2013) also claim that customers involved in higher levels of cross buying usually amount to the losses for the company. According to Benoit et al. (2009), with the help of quantile regression analysis, it can be said that the higher quantiles (sections of analysis) have greater effect on customer profitability as compared to lower and middle quantiles (sections of analysis) which have negligible effect. More factors related to customers' characteristics in B2B industry are presented in Table 5.

Table 5. Customer related factors affecting customer profitability information in B2B.

Statistical Studies:	Satisfaction	Loyalty	Share of Wallet	Word of mouth	Multichannel shopping
Bowman and Narayandas (2004)	X	X+	X+	-	-
Keiningham et al. (2005)	X	-	X	-	-
Reinartz et. al (2005)	-	-	X	-	-
Kumar and Venkatesan (2005)	-	-	-	-	X+
Kumar et al. (2006)	-	X	-	-	X+
Venkatesan et al. (2007)	-	-	-	-	X+
Niraj et al. (2008)	X	-	-	-	-
Homburg et al. (2008)	X+	X+	X+	-	-
Larivire (2008)	-	-	X+	-	-
Villanueva et al. (2008)	-	-	-	X+	-
Smith and Chnag (2009)	X+	X	-	-	-
Furinto et al. (2009)	-	X+	-	-	-
Lee et al. (2010)	X+	-	-	-	-
Li (2010)	X+	X+	-	-	-
Zhang et al. (2010)	-	X+	-	-	-
Frischmann and Gensler (2011)	X+	-	X+	X+	-
Qi et al. (2012)	X	X+	-	-	-
Kumar et al. (2013)	-	-	-	X+	-
Non-Statistical Studies:					
Storbacka et al. (1994)	X	-	-	-	-
Jacobset et al. (2001)	X	X	-	-	-
Kumar and Shah (2004)	-	X	-	-	-
Hogan et al. (2004)	-	-	-	X	-
Liu and Wu (2005)	-	-	-	X	-
Ho et al. (2006)	X	-	-	-	-
Algesheimer and Wangenheim (2006)	-	-	-	X	-
Kumar et al. (2007)	-	-	-	X	-
Blattberg et al. (2009)	X	-	-	-	X
Kumar et al. (2010a)	-	-	-	X	-
Kumar et al. (2010b)	-	-	-	X	-
Weinberg and Berger (2011)	-	-	-	X	-
Damm and Monroy (2011)	-	-	-	X	-
Walsh and Elsner (2012)	-	-	-	X+	-

It seems, as presented in the table above, that customer satisfaction has a positive impact on customer profitability. Almost half of the studies have come to the conclusion that customers' satisfaction is vital and creates an impact on customer profitability. According to Bowman and Narayandas (2004), customers' satisfaction to company's competitor negatively affect the profitability. Customer loyalty is also another factor which is very crucial and has a significant impact on profitability. Studies presented above have concluded that higher multichannel shopping, purchase frequency, share of wallet and referrals also had a substantial positive impact on profitability. There are some more factors which affect customer profitability in B2B industry presented in Table 6. These factors are studied by the authors from a company's perspective.

Table 6. *Factors affecting customer profitability from a company's perspective.*

Statistical Studies:	Service Channel	Marketing Channel	Target Marketing	Brand Equity	Value Equity	Relationship Equity
Hitt and Frei (2002)	X+	-	-	-	-	-
Venkatesan and Kumar (2004)	-	-	X+	-	-	-
Reinartz et al. (2005)	-	X	-	-	-	-
Singh et al. (2009)	-	X	-	-	-	-
Shen and Chuang (2009)	-	-	X+	-	-	-
Triest et al. (2009)	-	-	X+	-	-	-
Hyun (2009)	-	-	-	X+	X+	X+
Campbell and Frei (2010)	X-	-	-	-	-	-
Kumar et al. (2010)	-	-	X+	-	-	-
Xue et al. (2011)	X	-	-	-	-	-
Chan et al. (2011)	-	X	-	-	-	-
Steffes et al. (2011)	-	X	-	-	-	-
Gensler et al. (2012)	X+	-	-	-	-	-
Kim and Ko (2012)	-	X	-	X-	X	X
Kim (2012)	-	-	-	X+	X+	X+
Kim et al. (2012)	-	-	-	X+	X+	X+
Zhang et al. (2013)	-	-	-	X+	X	X+
Stahl et al. (2012)	-	-	-	X+	X	X+
Non-Statistical Studies:						
Keone et al. (2001)	-	-	-	X	-	-
Kumar and George (2007)	-	-	-	X	X	X
Severt and Palakurthi (2008)	-	-	-	X	X	X
Jones et al. (2009)	-	-	-	X	X	X

As presented in the table above, that the findings are not steady for online service channel as we can see that the studies of Campbell and Frei (2010) propose that online service channel has a negative effect on customer profitability. However Campbell and Frei (2010) found that customer retention rates are higher among those who are using online service channels. According to Gensler et al. (2012), online service channels reduce the costs-to-serve for different customers and it also increases revenues for the firm.

Marketing channel is also an important factor to consider when analyzing customer profitability. Most of the studies have discussed this aspect but none has provided a clear conclusion of how this factor affects customer profitability in general. Steffes et al. (2011) concludes that face to face selling or telemarketing generates less profitable customer than direct and indirect mailing in credit card industry. Email marketing is the least and face-to-face selling is most promising channel than telemarketing in high-tech B2B industries (Reinartz et al. 2005).

The studies above also propose that target marketing creates a positive impact on customer profitability. Triest et al. (2009) analyzed how customer profitability is affected by customer specific marketing expenditures, such as, complementary goods for customers. They found that giving away complementary products prove to be profitable for larger customer and unprofitable for smaller customers.

Most of the studies who analyzed brand equity, value equity and relationship equity found positive impact on customer profitability. However Kim and Ko (2012) studied social media marketing from customer equity perspective and found that social media marketing impacts positively on customer equity drivers but brand equity has a negative effect on profitability. According to Kim and Ko (2012), value equity and relationship equity do significantly impact profitability.

2.7 Challenges in Knowing Customer Profitability

Extracting customer profitability information can be challenging especially if the underlying business processes and structure of business entities of a company are complex. According to Elias and Hill (2010), there are some challenges that management in companies encounter while acquiring customer profitability information or in other word while analyzing customer profitability. These challenges include:

- Lack of motivation towards customer profitability
- Lack of availability of data
- Available data hard to interpret and understand

First, it is obvious that many companies in today's world are functionally organized and managed in a way that they are more product focused than customer focused. This situation usually exists in companies which are reliant on "supply push" rather than "demand

pull” schemes. It becomes difficult for management in companies to realize the actual benefits of utilizing customer profitability information. In some cases, in companies which even use the “demand pull” strategies, potential benefits of customer profitability are not appreciated. The reason behind this could be the lack of clear motivation towards customer profitability and no clear idea of what to do with identified profitable and non-profitable customer. (Elias and Hill 2010)

Second, acquiring customer profitability information is challenging in companies using driver-based costing application systems which are costly and time consuming. In some cases it becomes more challenging to gather and implement the customer profitability information due to lack of availability of data which might be because the company has outsourced Information Technology systems or they are not collecting cost driver data from their costing systems. (Elias and Hill 2010)

Third, it is challenging to understand and interpret material available for customer profitability (Cokins 2008) as cited in (Elias and Hill 2010). Utilizing information on customer profitability requires investment of resources by management in companies. It is difficult to calculate resource use for implementing and extracting customer profitability information and complement it with the possible benefits of customer profitability analysis. However, it becomes easier when a company’s successful implementation and analysis of customer profitability in addition to cumulative investments, hard work and costs incurred are complemented by increased profitability and enhanced customer value. (Elias and Hill 2010)

According to Turney (2005), 20% of what a company does accounts for 80% of what they care about. In other words, 20% of the products and customers account for 80% of the sales revenue of a company. The remaining 80% of the products and customer are either less revenue generating or they generate negative revenue. Hill (1988) is of the view that more than 50% of the customers are moderately profitable which includes profitable and unprofitable customers. The remaining customers are the most important and the most prone to competitors. These customers should be dealt with great care in order keep them profitable. Turney (2005) also claims that the 20% profitable customers amount for the most profits (80%) a company makes and the bottom 20% unprofitable customers amount for the most losses (80%) a company bears. The idea is illustrated in Figure 13.

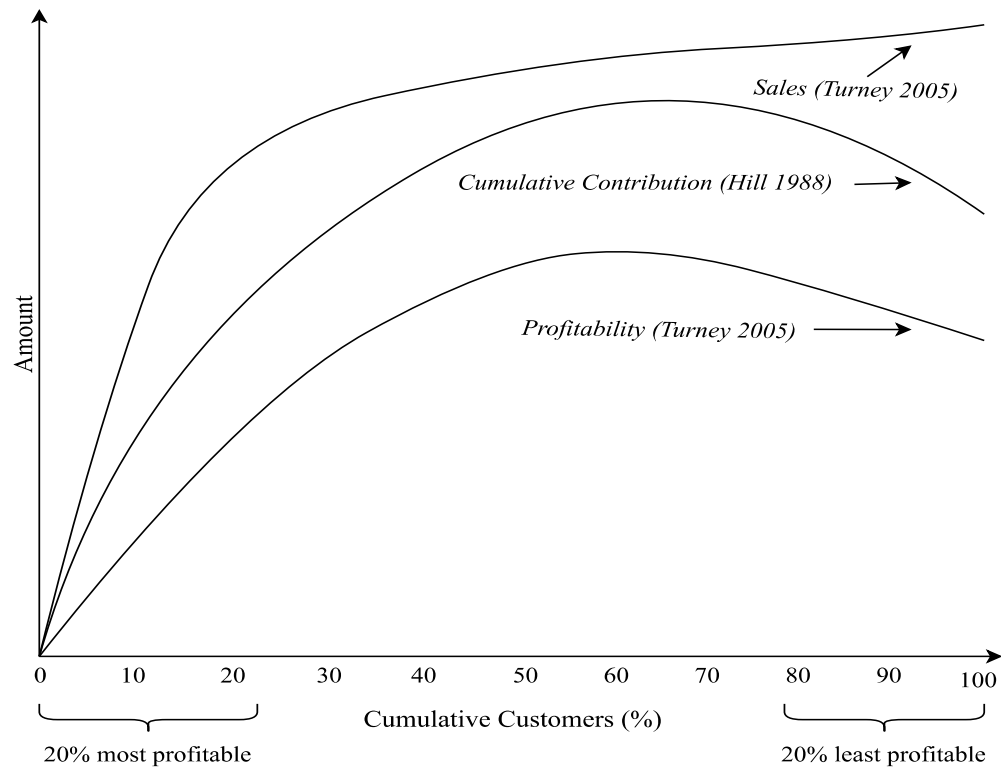


Figure 13. Profitability vs Cumulative contribution vs Sales.

As illustrated in the figure above, the most important customer groups are the initial 20% and last 20% which generate most of the revenue and losses. The rest of the customers are moderately profitable and those customers can be brought to profitable section if a company knows about their profitability position and the contribution which they make. The 20% most profitable customers should be provided with excellent service in order to maintain a profitable relation with them whereas a company should not spend much resources on the bottom 20% unprofitable customers.

In this chapter profitability, product profitability and customer profitability were explained. Some models and frameworks which are used for analysis and evaluation of customer profitability were introduced to have a better understanding about this concept. In the previous sections, the ways of customer segmentation based on customer profitability were analyzed and studied. It was also discussed what characteristics are there which distinguish high cost-to-serve customers from low cost-to-serve customers including factors and challenges related to customer profitability. In the next chapter, customer value and some models to analyze and evaluate customer value will be discussed.

3. CUSTOMER VALUE

3.1 Definitions

In today's world companies are trying hard to attain maximum customer value. Companies need to produce products which provide value to the customers furthermore customers are to be willing to pay for it (Lyly-Yrjänäinen et al. 2010). The term customer value has many meanings and due to the fact customer value is a dynamic concept which evolves over time (Jaworski & Kohli 1993; Naumann 1995; cited in Khalifa 2004) difficult to define (Piercy & Morgan 1997, Woodruff 1997; cited in Khalifa 2004).

According to Christopher (1982) as cited in Anderson (1991), customer value is defined by the difference between total customer value and total customer cost. He also says that customer value is formed when the perceived benefits in a transaction surpasses the cost of ownership (Christopher 1982). According to Lyly-Yrjänäinen et al. (2010), the customer perceived value is the difference between total customer value (economic benefits, functional benefits, psychological benefits) and total customer costs (purchase costs, usage costs, disposal costs).

As it can be seen in Table 7, there are different concepts for customer value by different authors. Different authors have acquired different approaches in defining customer value. Therefore, it is important to get a broader idea of the definition of customer value. It provides clear understanding to the concept of customer value from different perspectives by different authors.

Table 7. Definitions of customer value by different authors.

References	Definitions of customer value
Nagle & Holden (2002); cited in Anderson et al. (2007)	Customer value refers to the total savings or satisfaction that the customer receives from the product.
Dolan & Simon (1996); cited in Anderson et al. (2007)	Perceived value is the maximum amount of money that customer is willing to pay for acquiring a product.
Butz & Goodstein (1996); cited in Woodruff (1997)	Customer value mean the emotional bond established between customer and producer after the customer has used a salient product produced by that supplier and found the product to provide an added value.
Monroe (1990); cited in Woodruff (1997)	Buyers perceptions of value represent a tradeoff between the quality and benefits they perceive in the product relative to the sacrifice they perceive by paying the price.

According to the table above, customer value is the perception of benefits, which a product provides, by the customer. The perception of benefits is the difference between value which a customer gained by purchasing the product and the money paid for that product which will lead to the emotional attachment between customer and producer. Following section presents and discusses frameworks for measuring customer value provided by different authors.

3.2 Frameworks for analyzing customer value

Just as there is not a commonly accepted definition of customer value, there is no perfect framework or methodology to measure customer value. The definitions presented above just provided the basic understanding of customer value but did not clarify what are the benefits and sacrifices being made by the customer. There are four approaches considered for measuring and analyzing customer value in this thesis. The first approach is proposed by Anderson and Narus (1998). In this model Anderson and Narus (1998) state that customer value comprises of monetary worth of technical, economic, service and social benefits a customer receives in return for the price being paid.

The second model which is considered in this thesis is proposed by Lapierre (2000). In this model Lapierre (2000) states that perceived customer values comprises of the difference between the sacrifices a customer makes and the benefits received in return. In his paper he discussed key drivers of perceived customer value based on literature review and interviews. The key drivers of perceived customer value are presented in Figure 14.

Scope			
Domain	Product	Service	Relationship
Benefits	Alternative Solution Product Quality Product Customization	Responsiveness Flexibility Reliability Technical Competences	Image Trust Solidarity
Sacrifices	Price		Time/Effort/ Energy/ Conflict

Figure 14. Key drivers of customer value (Adapted from Lapierre 2000).

It can be seen in the figure above that there are benefit drivers which are further divided into product, service and relationship drivers. First, product benefits are alternative solution, product quality and product customization. Alternative solutions refer to alternate product offers or suppliers' abilities to accomplish customers' need and solution to the problems. Reliability, durability and performance are related to product quality. Customization refers to ability of suppliers to offer products customized according to customer needs. Second, service benefits are responsiveness, flexibility, reliability and technical competences. Responsiveness refers to suppliers' ability to provide attention to customer claims and solutions to the problems being faced by the customer. Flexibility refers to the ability of supplier to cope with changes and adjustments in the product when required. Reliability refers to accuracy in business operations and maintaining promises, technical competences refers to creativity and expertise of skills required to understand customers' product requirements and offer solutions to their problems. Last, relationship benefits are image, trust and solidarity. Image refers to status and trustworthiness of the supplier. Trust refers to confidence of customers about accuracy of information shared by the supplier and fulfilment of promises. Solidarity is the help being provided by the suppliers to the customers when required, especially in cases when it is not stated in the contract terms.

There are sacrifice drivers which are also further divided into product, service and relationship drivers. Price is the only sacrifice according to Lapierre (2000) which a customer makes when buying a product or service which refers to the amount of money being paid by the customer to acquire the product/service. After product/service there are relationship related sacrifices which include time, effort, energy and conflict. These refer to the time, energy, and effort spent in meeting with suppliers and training employees to use the product/service. Conflict refers to disagreements a customer might face with the supplier related to the achieving of goal.

The third model presented in this thesis is proposed by Smith and Colgate (2007). According to this model, companies can create four kinds of value: functional value, experiential value, symbolic value and cost/sacrifice value. This model also identified five sources of value: information, products, interactions, environment and ownership. The result of this model is a 4x5 table illustrate in Table 8.

Table 8. Customer Value creation framework (Adapted from Smith and Colgate 2007).

	Type of Value			
	Functional	Experiential	Symbolic	Sacrifice
	Accurate attribute, appropriate performance and appropriate outcomes	Sensory, emotional, social and epistemic	Self-identify, personal meaning, self-expression, social meaning and conditional meaning	Economic costs, psychological costs, personal investments and risk
Information	Educate and inform customers realize performance	Copy and creativity can provide or enhance sensory, emotional, rational and epistemic experiences	Can position a product, help customers identify with the product, help them make associations and interpret meaning	Help customers evaluate alternatives, help lower prices by greater competition
Products	Products directly provide features, functions and characteristics that allow performances	They provide sensory, emotional, relational and epistemic experience	products enhance consumer self-concept, provide personal meaning, offer self-expression and provide social meaning	Product price and augmented product considerations such as operating costs, help to reduce sacrifices
Interactions	Sales call frequency and duration, service interactions and interactions with system enhance performance	Service attributes such as staff politeness create sensory. Emotional, social and epistemic experiences for customers as do service recovery, customer support	Staff and system interactions can make customers feel better and provide personal meaning to customers, privileged interactions support status and prestige. Equity policies can enhance socio-cultural meaning	Interactions with people and systems add to or reduce the economic and psychological cost of a product and increase or reduce the personal investment required to acquire and consume product
Environment	Decorative features of the purchasing or consumption environment such as furniture contribution to functional value by enhancing from product performance	Attributes of the purchasing or consumption environment such as music can create sensory, emotional, epistemic experiences for customers	Where a product is consumed or purchased can provide personal, social or socio-cultural meaning can enhance self-worth and expression	Contributions of the economic cost of a product, psychological cost, personal investment and personal risk
Ownership	Correct, accurate and timely fulfillment processes provide functional value	Fulfilling delivery promises and how product is delivered can enhance the customer experience	How a product is delivered and by whom can create symbolic value	Can be enhanced with payment terms, delivery options, return policies, billing accuracy, etc.

In the table above, functional value refers to the magnitude that a product has required characteristics or functionalities. Accurate attribute, appropriate performance and appropriate outcomes are three important aspects of functional value (Woodruff 1997; cited in Smith and Colgate 2007). Experiential value is related to the extent that a product form emotions and feelings for the customer. Sensory, emotional, social and epistemic are four key aspects of experiential value (Sheth et al. 1991; cited in Smith and Colagte 2007). Symbolic value refers to the extent to which a customer can attach psychological meaning

to the product. Self-identity, personal meaning, self-expression, social meaning, and conditional meaning are five aspects of symbolic value (Holbrook 2006, Woodall 2003, Holbrook 1999, Sheth et al. 1991; cited in Smith and Colgate 2007). Finally sacrifice or cost refers to the costs incurred in the transactions. Economic, psychological, personal investment and risk are four aspects of sacrifice/costs value (Woodall 2003, Walter et al. 2003, Sweeny 1999, Grönroos 1997; cited in Smith and Colgate 2007).

The fourth model which is considered in this thesis is proposed by Khalifa (2004). This model focuses on defining customer value by value exchange model which is basically a benefits-costs model or give-and-take model. In this model, Khalifa (2004) says that the customer is prepared to pay certain amount of time, effort, money and take certain risks and in exchange, customer expects some benefits that compensate the total sacrifices. Khalifa (2004) proposes that the net customer value is the difference between total customer sacrifices and total benefits provided by the product. Khalifa (2004) asserts that the customer will only purchase the product of this difference is above or equal to zero. The total benefits, offered by the product, are composed of utility value and psychic value and the total customer sacrifices consist of financial and non-financial costs (Khalifa 2004). Figure 15 depicts the idea of value exchange model.

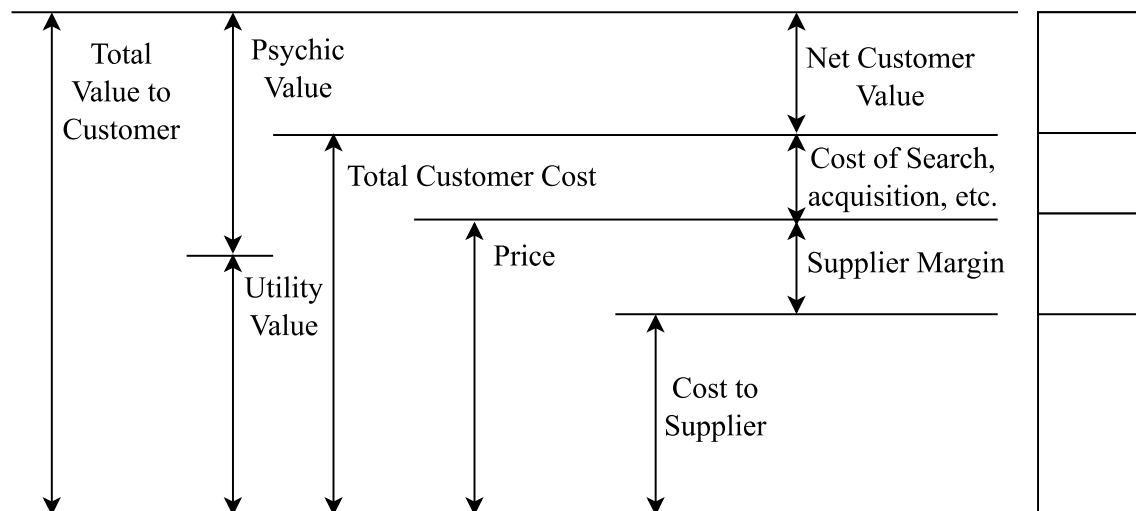


Figure 15. Value exchange model (Adapted from Khalifa 2004).

As illustrated in the figure above, the supplier has some costs to produce or manufacture the product. The supplier sets up some price for that product which is in accordance with some profit margin. When a customer purchases the product, he pays some amount for searching and acquisition. Therefore, in return the customer expects some benefits which are higher than his sacrifices. As described above the net customer value is composed of difference between the total customer costs and the total customer value.

The fifth model is proposed by Lyly-Yrjänäinen et al. (2010). This approach focuses on the customer perceived value, which is measured by the difference between total customer

value and the total customer cost. Lyly-Yrjänäinen et al. (2010) says, that total customer value is the monetary value provided by the certain economic, functional, psychological benefits. However, in order to gain these benefits, a customer has to pay some price. When a customer purchases certain product, he has to pay certain price for it. This price includes purchase price, usage costs and when the product is disposed, customer has to pay the disposal costs. The sum of these costs contributes to the total customer cost. It implies that the perceived customer value is the difference between total customer costs and total customer value, as it can be seen in Figure 16. (Lyly-Yrjänäinen et al. 2010)

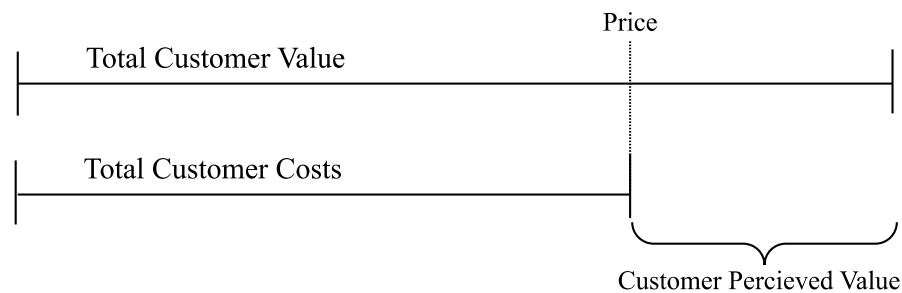


Figure 16. *Perceived customer value (Adapted and modified from Lyly-Yrjänäinen et al. 2010).*

As illustrated in the figure above that a company should set the price of a product in a way that the total customer cost of purchasing, using and disposing the product does not exceed the total customer value. In B2B markets particularly, this model is a useful tool to have a better understanding of the perceived customer value. Therefore, a product should be priced in a way that the sacrifice customer makes should not exceed the perceived value.

In this section, customer value was discussed from different author's perspectives. It can be noted that all of the authors described customer value from benefits/sacrifices perspective but they seem to have differences in identification of key drivers of benefits and sacrifices. Table 9 creates a summarized view of benefits and sacrifices discussed by different authors in this section.

Table 9. Key drivers of benefits and sacrifices.

Author	Benefits	Sacrifices
Anderson and Narus (1998)	<ul style="list-style-type: none"> • Technical • Economic • Service • Social 	<ul style="list-style-type: none"> • Price
Lapierre (2000)	<ul style="list-style-type: none"> • Product-related (alternative solutions, customization, quality) • Service-related (responsiveness, flexibility, technical competences) • Relationship-related (image, trust, solidarity) 	<ul style="list-style-type: none"> • Time, effort, energy • Price • Conflict
Smith and Colgate (2007)	<ul style="list-style-type: none"> • Functional • Experiential • Symbolic 	<ul style="list-style-type: none"> • Economic • Personal investment • Psychological • Risk
Khalifa (2004)	<ul style="list-style-type: none"> • Utility value • Psychic Value 	<ul style="list-style-type: none"> • Cost of search and acquisition • Price
Lyly-Yrjänäinen et al. (2010)	<ul style="list-style-type: none"> • Economic • Functional • Psychological 	<ul style="list-style-type: none"> • Price • Usage Costs • Disposal Costs

As shown in the table above, there are many similarities even though many authors have used different terminologies for the same aspects. For example, four out of five authors stated that price is one of the main sacrifice made by the customers. Lyly-Yrjänäinen et al. (2010) mentioned economic sacrifices rather than stating price directly. By combining these ideas a new framework can be formed with commonalities. Table 10 presents the new framework of key drivers of customer value.

Table 10. *Customer value drivers framework.*

		Anderson and Narus (1998)	Lapierre (2000)	Smith and Col- gate (2007)	Khalifa (2004)	Lyly- Yrjänäinen et al. (2010)
Benefits	Functional	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Economic	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>
	Service	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
	Psychological		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Social	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Sacrifices	Purchase price	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Acquisition costs		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Operation costs			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	Disposal costs					<input checked="" type="checkbox"/>
	Psychological cost		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

As illustrated in the table above that the benefits and sacrifices are divided into five sub-groups. The benefits which as customer may attain are functional, economic, service, psychological and social benefits. Functional benefits refer to the seeming utility of a product resulting from its use of features (Sheth et al. 1991; cited in Smith and Colgate 2007). Economic benefits refer to advantages such as price and value-in-use benefits acquired from the product by the customers. Psychological benefits refer to the benefits achieved by simplicity, availability, accessibility and ease of use of a product (Smith and Colgate 2007). Finally, Social benefits refer to the benefits achieved by product's image and representation (Sheth at al. 1991; cited in Smith and Colgate 2007).

A customer also have to makes some sacrifices which are divided in to purchase price, acquisition costs, operation cost, disposal costs and psychological costs. Purchase price refers to the sacrifice made by paying the money charged by the supplier of the product. Acquisition costs refer to the sacrifice made at paying the costs related to ordering, delivering and/or storing of the product. Operation costs refer to the costs incurred by the daily operations in the business such as internal coordination, manufacturing, research and development plus the costs of downtime of the product (Menon et al. 2005). Disposal costs are related to the costs incurred while disposing the product such as transporting the product to the disposal authority (Lyly-Yrjänäinen et al. 2010). Finally, psychological costs refer to the costs related to stress, conflict, search costs, learning costs, psychological switching costs and psychological relationship costs (Smith and Colgate 2007).

3.3 Cost saving or increased sales

In the previous section a new model for categorizing the drivers of customer value was presented. According to this model, these drivers are divided into benefits and sacrifices a customer makes in order to earn value of a product. Both benefits and sacrifices can also be divided into five sub-groups illustrated in Table 11.

Table 11. Model for categorizing customer value drivers.

Customer Value	Benefits	<ul style="list-style-type: none"> • Functional • Economic • Service • Psychological • Social
	Sacrifices	<ul style="list-style-type: none"> • Price • Acquisition Cost • Operation Cost • Disposal Cost • Psychological

By observing the models presented in the previous section above it can be seen that the companies need to offer products that provide more value than the costs a customer has paid while being profitable. In order to do that, companies need to understand certain factors that are important for the customer. In the next section, methods for analyzing customer value in terms of cost savings and increased sales are presented and for this purpose customer value model, proposed by Lyly-Yrjänäinen et al. (2010) is chosen to be used for building the customer value model. The main reason for this selection is the simplicity of the model and the ease of understanding of customer value concept. The idea is illustrated in Figure 17.

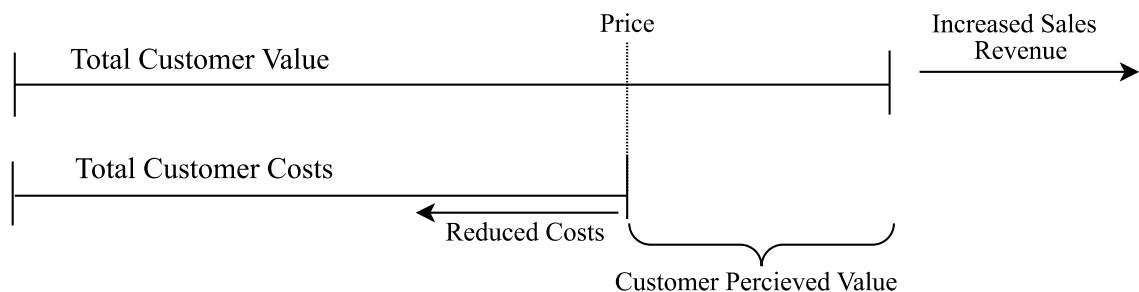


Figure 17. Customer value in terms of increased sales or reduced costs.

The figure above shows that a company can increase the perceived customer value by increasing sales or by reducing costs. In most situations, customers are willing to buy the product if the value perceived from the product is positive, in other words, the benefits perceived surpass the sacrifices being made by the customer (Lyly-Yrjänäinen et al. 2010). Applying the new model of categorization of drivers of customer value to the customer value framework provides better understanding of the concept. Figure 18 illustrates the idea.

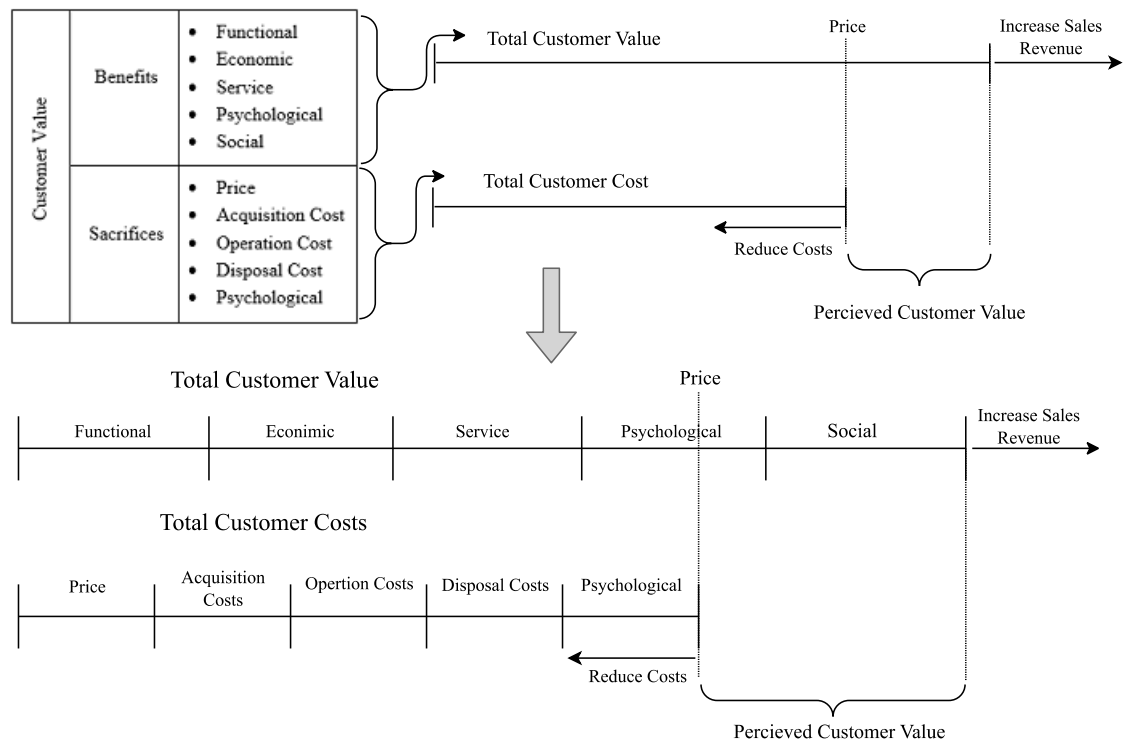


Figure 18. Customer value model.

As illustrated in the figure above that the total customer value and total customer cost are equally divided among the customer value drivers due to the simplicity of the illustration. It can also be seen in the figure above that the perceived customer value can be increased either by reducing the sacrifices or by increasing the benefits a customer gains from a product.

First, to maximize perceived customer value a company can increase the benefits (functional, economic, service, psychological and social) which a customer receives while purchasing a product or service. This increase in benefits can be achieved by adding more features, providing better quality, better marketing campaigns and providing better service. Furthermore, increased sales can be achieved by increasing the price of the product. In B2B world a company can generate more sales by selling product at higher price, which supplier's customer's customer consider valuable, or simply by selling more products on same listed price. In other words, in order to maximize perceived customer value, a company should sell those products which our customer's customer wants to buy more or pay more for. The idea is illustrated in Figure 19.

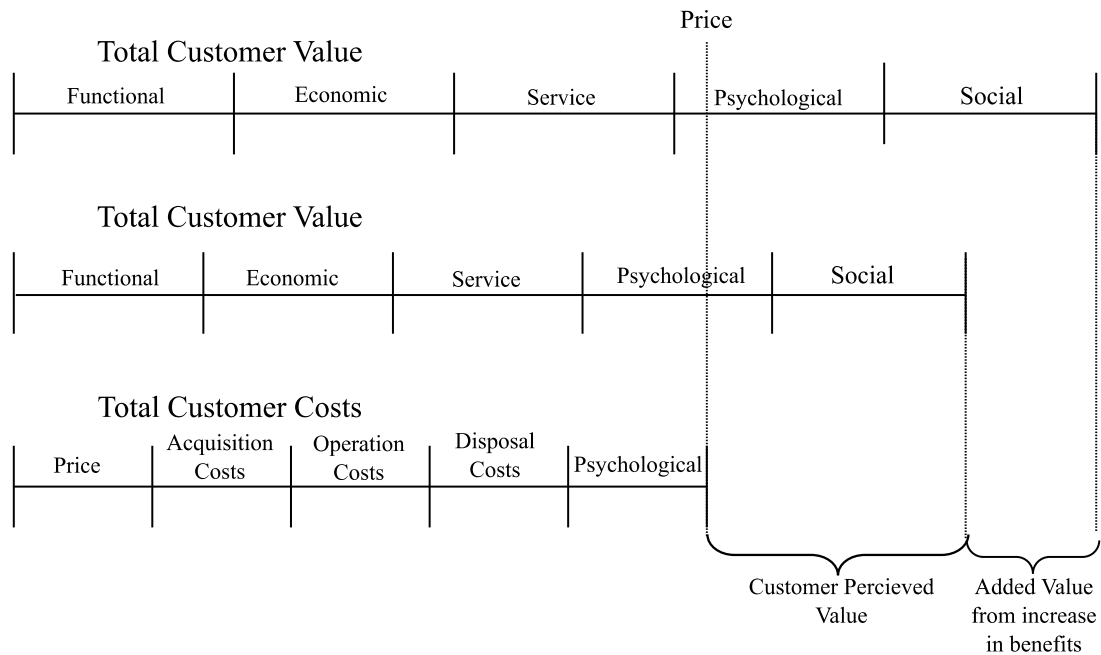


Figure 19. Increase in customer value by increasing sales revenue.

It can be seen in the figure above that by increasing benefits (functional, economic, service, psychological and social) total customer value is increased. This in turn creates added value for the customer which is added on top of the existing customer perceived value. It can also be seen in the figure above that some added value is also created by increasing the price of the product to enable increased sales revenue for the company.

Second, to maximize perceived customer value a company can reduce the sacrifice (price, acquisition costs, operation costs, psychological and disposal cost) which a customer makes when buying a product or service. The reduction in sacrifices can be achieved by providing better product with improved quality while remaining profitable. Lyly-Yrjänäinen et al. (2010) suggests that reduction in costs could be achieved by reducing the purchase costs, increase quality, less wastage of resources and by reducing usage costs of a product. The idea is illustrated in Figure 20.

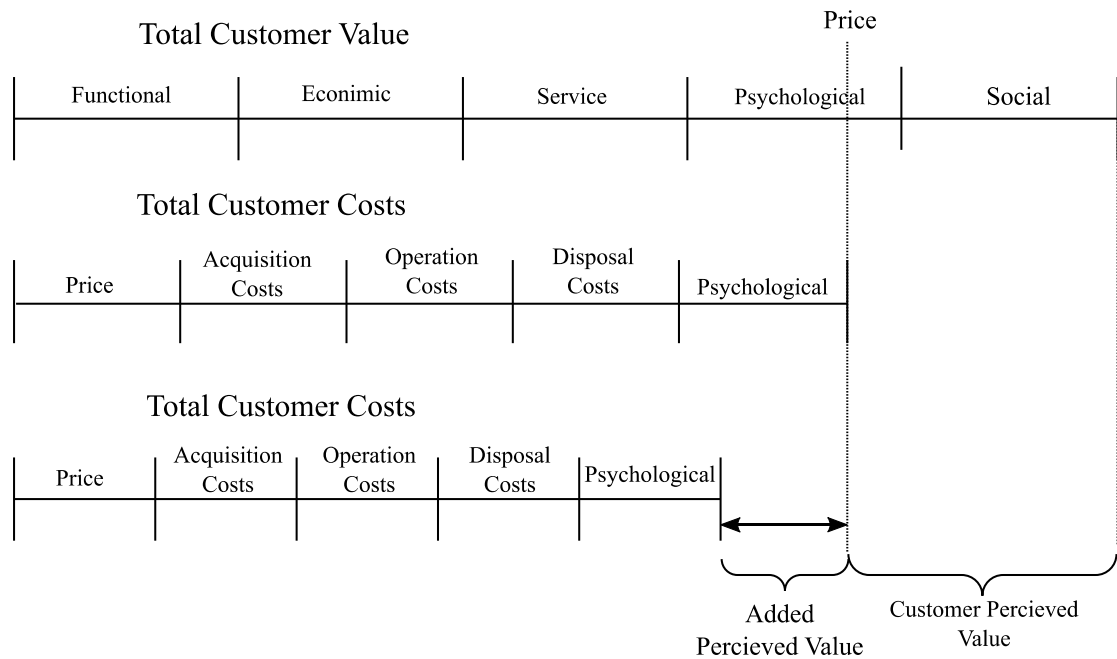


Figure 20. Increase in customer value by reducing costs.

As illustrated in the figure above that decreasing sacrifices (price, acquisition cost, operation cost, disposal cost and psychological cost) decreases total customer costs. This in turn creates added perceived value for the customer which can be experienced by using the product. In order to experience and appraise the product attributes, performance and consequences, a customer needs to use the product (Woodruff 1997). Companies offering cost-reducing innovations should identify whether their offerings are providing added perceived value to their customer or not.

3.4 Making Customer Value Explicit

Duchessi (2004) defines value proposition as formulating customer value according to company's expectations to deliver value to the customers and remain profitable by understanding customer expectations and requirements. In recent years the term customer value proposition has become one of the most widely used in business markets (Frow and Payne 2011; Carter and Ejara 2008; Anderson et al. 2006). Webster (1994) cited in Rintamaki et al. (2007) defines value proposition as follows:

"... the verbal statement that matches up the firms distinctive competencies with the needs and preferences of a carefully defined set of potential customers. It's a communication device that links the people in an organization with its customers, concentrating employee efforts and customer expectations on things that the company does best in a system for delivering superior value. The value proposition creates a shared understanding needed to form a long-term relationship that meets the goals of both company and its customers."

According to this definition, value proposition refers to a communication tool which is used to depict the core competences and distinctive characteristics of a company and its product offerings to its pre-defined customer segments. The increased benefits or decreased sacrifices which value proposition provides and customer perceives should be superior to what competitors are offering. (Rintamaki et al. 2007) Many authors propose that the value proposition is better realized when it is specific, precise and easy to measure (Barnes et al. 2009; Anderson et al. 2006; Lanning 2000). While formulating value proposition, customer's perspective should be considered and kept in mind (Lindi and Sa Liva 2011; Barnes et al. 2009; Rintamaki et al. 2007). In the end, a value proposition should be viable which leads companies to develop a sustainable competitive advantage (Lindi and Sa Liva 2011; Anderson et al. 2006).

The term value proposition originated during a project which was carried by McKinsey & Co in 1980s. During that time only a momentary discussion was made on this terminology (Bower and Grada 1985; cited in Ballantyne et al. 2011). Later after some time Lanning and Michels (1988) defined the term of value proposition as declaration of benefits which are offered to a customer and customer pays a price in return. They came up with a framework to explain the concept of value proposition called value delivery system (Ballantyne et al. 2011). The idea of this framework is illustrated in Figure 21.

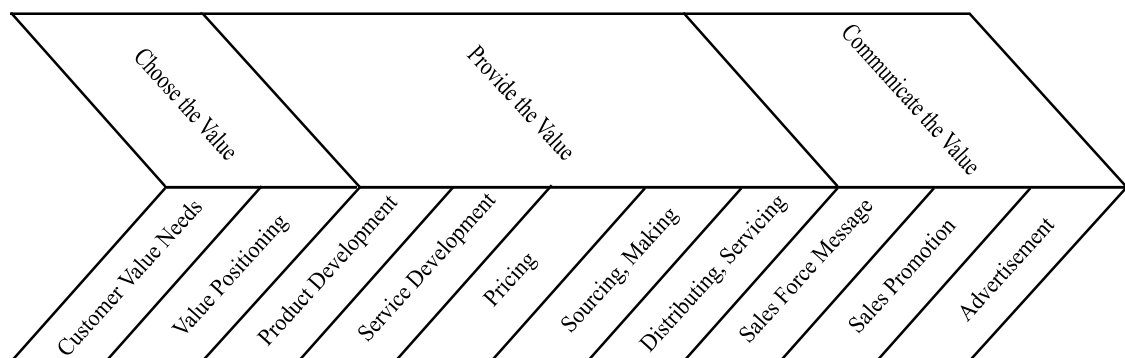


Figure 21. Value Delivery system. (Adapted and Modified from Lanning and Michels 1988; cited in Ballantyne et al. 2011)

As illustrated in the figure above that the first step in formulation a clear and specific statement of value proposition is to analyze the market and pinpoint the customer needs. The second step refers to providing value to the chosen customer with the help of product and service development and pricing depending on what is suitable for specific customer and/or market configuration. The last step is to make the value easy to deliver to the customers or in other words it is easy to communicate the value to chosen customers via various media such as promotions, advertisement and sales campaigns in order to ensure that the customer comprehends and appreciates the notion behind value being offered by the products of company. (Lanning 2000)

Barnes et al. (2009), proposed an iterative model which can be used to construct value proposition. They claim that this model has been applied to various real-life situation and is not only a theoretical framework. The idea of this model is illustrated in Figure 22.

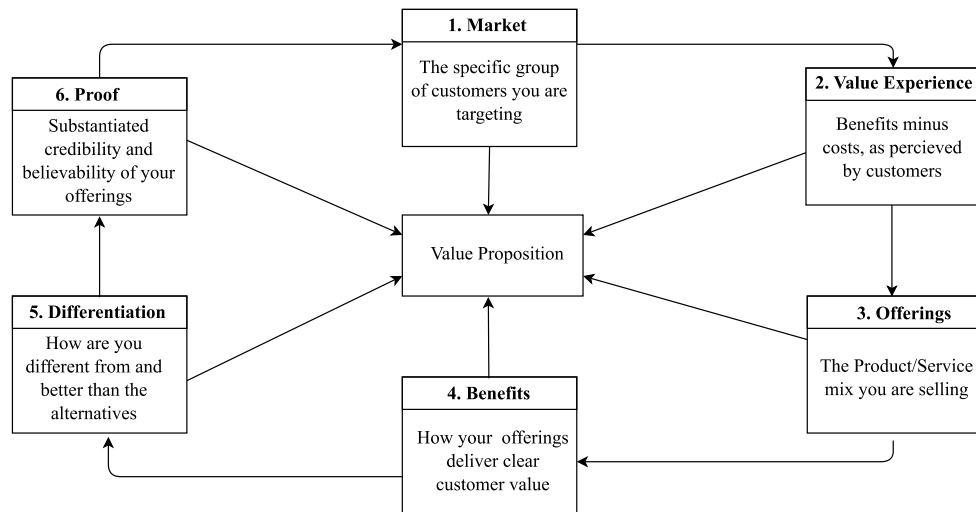


Figure 22. *Value Proposition Builder.* (Adapted from Barnes et al. 2009)

According to the model presented above, the initial step of a value proposition is to identify appropriate market segments or segment to which the company is capable of offering value profitably. The second step is to find out what things are valuable for customers by online surveys, focus groups or interviews. The third step is to classify the company's products and offerings which can be used to exploit power of value experienced by customers. The Fourth step in this model refers to analyze the company's offerings and measure benefits and costs from customers' perspective. The fifth step is to examine the substitute offerings by competitors and then formulating value proposition which is far greater than the competitors' product offerings. The sixth and final step of this model refers to depict the value being delivered to customers with the help of solid proof. (Barnes et al. 2009)

Value proposition can be classified into three categories based on how suppliers construct value proposition: all benefits, favorable points of difference and resonating focus. First, all benefits, refers to the way of constructing value proposition in which a list is made which containing all the benefits being provided by the product or service regardless of the specific market or customer requirements. This can result in a situation where some benefits are useful for some customers or markets at all and may provide superiority to competitors' products. (Anderson et al. 2006)

Second, favorable points of difference, refers to way of formulating value proposition in which companies prepare a list of benefits by comparing the next best alternative products or services in the market and present it to the customer without knowing customer or market specific needs. The major problem in this method is that it might lead companies

into a situation where customers do not see benefits offered by company's solution aligned with what they are looking for. (Anderson et al. 2014; Anderson et al. 2006)

Third, resonating focus, there are two main differences in this approach from the previous categories. First, when resonating focus, more points in difference does not mean it is positive. An offering may deliver numerous points of difference but focus mainly resonated around few elements which are considered important by the customer. Second difference is that using this approach a company might also get points of parity of competitors' products because existence of those elements is important for the customers to consider purchasing company's products or services. Constructing value proposition with the approach of resonating focus is not easy and it requires in-depth understanding of competitors and customers. (Anderson et al. 2006)

To get better understanding of resonating focus, an example value proposition constructed by Finn-power for their crimping machines is explained (Lyly-Yrjänäinen 2010). Finn-power is mainly operating in B2B markets; they need to construct value proposition so that customers consider investing in their products. They have created value proposition using resonating focus approach by focusing on productivity improvement. The notion is illustrated in Figure 23.

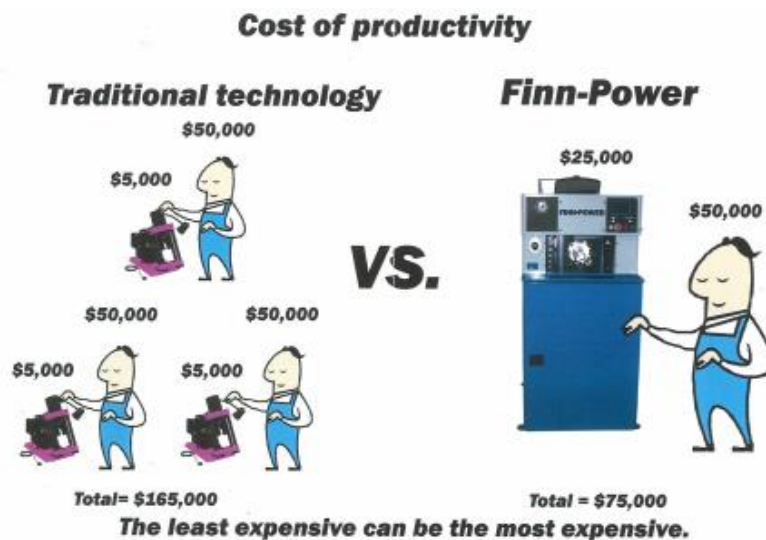


Figure 23. Value proposition of Finn-Power. (Adapted from Lyly-Yrjänäinen 2010)

As illustrated in the figure above that manufacturing of a specific amount of hose assemblies with the help of three small crimpers, 15000 dollars, requires three operators, 50000 annual salary of operators. It is claimed by Finn-power that replacing these crimpers with single better crimper will reduce operation costs. Even though the investment is a bit higher in buying the new machine (25000 dollars compared to 15000 dollars) the labor costs will decrease significantly from 150000 to 50000 annually, hence reduce the operation costs by 90000 dollars in first year. It can be seen in the above discussion that Finn-power is focusing mainly on productivity improvement to formulate the value offerings

which is enough to depict the benefits of crimpers and make it different and appealing as compared to other competitor's products. Figure 24 illustrates customer perceived value and how these value offerings can possibly result in improved return on investments, accuracies in performance, reduced labor costs, improved accuracy and efficiency and increased sales.

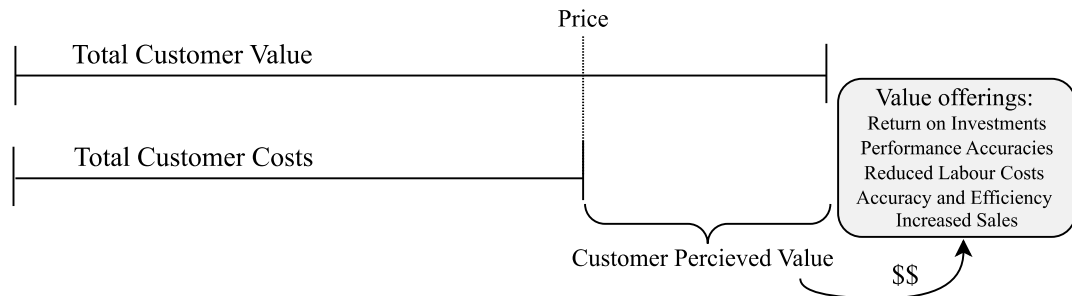


Figure 24. Value offerings.

First, return on investments it refers to the monetary benefits a customer receives by investing in a product or process. According to Lyly-Yrjänäinen et al. (2010), it can be achieved by selling cheaper products or by selling products at a higher price with better productivity. Second, performance accuracies refers to helping customer optimize process outputs in customer's processes (Lyly-Yrjänäinen et al. 2010). Third, reducing need for labor is definite resource of adding value (Lyly-Yrjänäinen et al. 2010); Every company is interested in solutions which result in reduced labor cost. Fourth, as Lyly-Yrjänäinen et al. (2010) say, accuracy and efficiency imply that products and process are effective and efficient. Finally, an important source of adding value is increased sales, which refers to solutions of suppliers which enables customers to sell more.

Companies should try to make value proposition explicit in terms of money and benefits in order for customers to clearly understand and comprehend the core benefits a product offers. In today's fierce business markets very few companies are able to show the actual value offered by a product in terms of dollars. It can be clearly seen in the example presented above that a few important aspects of value proposition can lead to a very convincing tool for promoting a company's product. In this example, Finn-power focused on reducing operating costs and improvement in productivity to create the value proposition. The notion is illustrated in Figure 25.

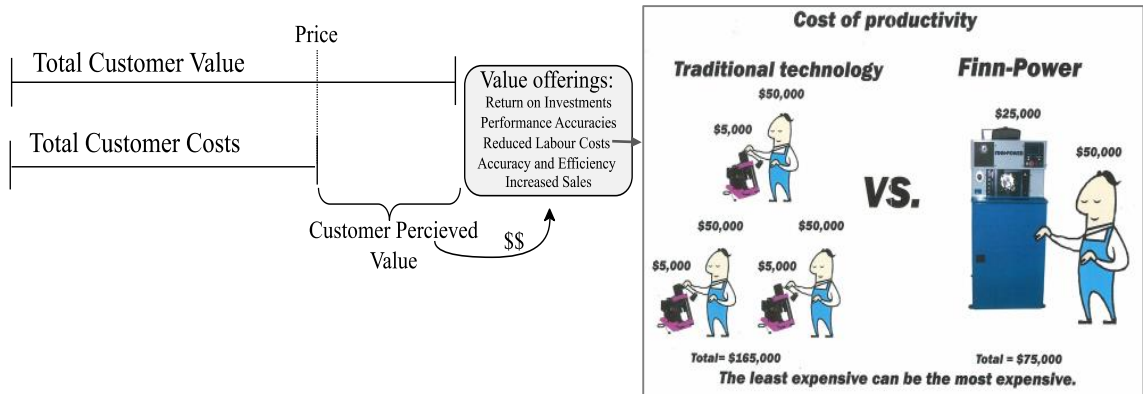


Figure 25. Value proposition of Finn Power.

In the figure above, Finn-Power, has made is explicit for its customer that how much money they can save by investing in this machine instead of investing in traditional technology. Building value proposition does not require to know all the details of total customer costs or total customer value drivers. A company just needs to find one or two important aspects which customers find valuable.

Perceived customer value can be increased either by increase in sales or by reduction in costs or by both. According to Woodruff (1997), to experience and evaluate the product attributes, attribute performances and consequences a customer needs to use the product. This is the main reason for customers to consider this investment worthy if the benefits gained against price paid are greater. Therefore, if a customer considers this investment brings additional value, then the product or service is considered a worthy venture. The idea is illustrated in Figure 26.

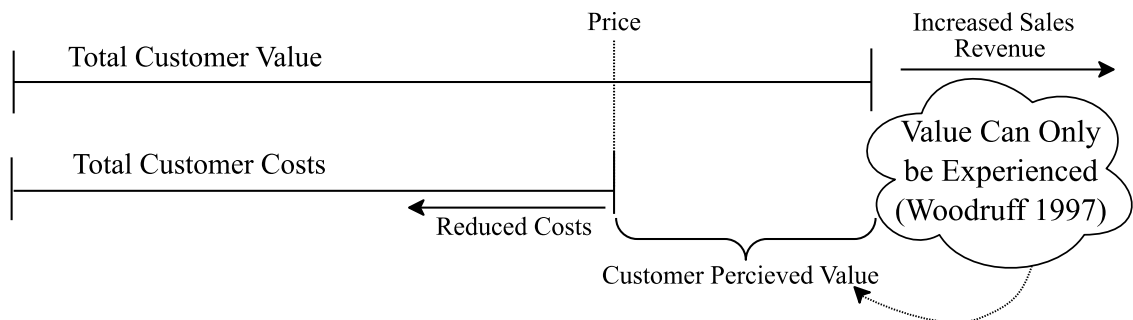


Figure 26. Value can only be experienced.

In this chapter customer value was explained and two models used for analysis of customer value were introduced to have a better understanding about this concept. In the previous sections, the ways of delivering customer value were analyzed in terms of reduced costs or generating more sales. It was also discussed how a company can make value proposition explicit in terms of dollars and benefits a customer receives. In the next chapter, the use of customer value information is explained and discussion is based on quantifying value based on customer profitability information.

4. QUANTIFYING VALUE OF BI PRODUCTS WITH CUSTOMER PROFITABILITY

4.1 Business Intelligence (BI) Systems and BI Market

Business intelligence systems provide important information to companies in order to aid them to take informed decisions when needed. Business intelligence systems provide information on where the company stands in terms of profitability position, progress and achievement of targets set earlier. Elbashir et al. (2008) defines business intelligence systems as:

“Business intelligence (BI) systems provide the ability to analyze business information in order to support and improve management decision making across a broad range of business activities.”

Negash (2004) defines business intelligence systems as:

“BI systems combine data gathering, data storage, and knowledge management with analytical tools to present complex internal and competitive information to planners and decision makers.”

From the definitions above, business intelligence systems are used to get necessary information at the right time, in the right form and in the right location to help make decision making easier for management. The goal of business intelligence systems is to reduce the time required to take actions and improve quality of the inputs for the decision making process, thereby assisting managerial work. Business intelligence in some cases also refers to “online decision making”, which means getting instant response back from the system and in most of the cases it is referred to as the tool used to reduce the time frame so that the intelligence extracted from the business intelligence systems is still useful for the decision maker at the time of decision. Conclusively in all the cases, using business intelligence systems is termed being proactive. The idea of how a business intelligence system works and inputs of a business intelligence systems are illustrated in Figure 27. (Negash 2004)

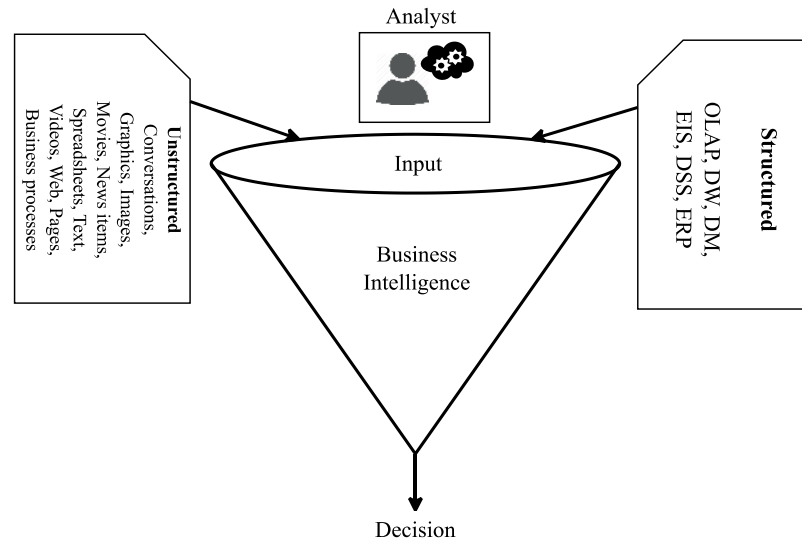


Figure 27. *Inputs of a business intelligence system. (Adapted and modified from Negash 2004)*

It can be seen in the figure above that a business intelligence system accepts a variety of information inputs, either structured or unstructured data. The term unstructured data refers to the data which cannot fit nicely into relational or flat files. Business intelligence system then processes these inputs to provide the intelligence required in the decision making process. This intelligence information can then be transformed into useful knowledge by adding some human analysis. In the figure above the OLAP stands for Online Analytic Processing, DW stands for Data Warehousing, DM stands for Data Mining, EIS stands for Executive Information System, DSS stands for Decision Support System and ERP stands for Enterprise Resource Planning.

Willen (2002) stated that traditional business intelligence systems, as according to a Gartner survey, provide corporate performance management, optimize customer relations, monitoring business activity, traditional decision support, and management reporting and business process intelligence. Business intelligence systems have been formed by the natural outgrowth of the traditional systems developed to support decision making process in a company. (Negash 2004)

The boom of technology and surge in capabilities of computer hardware and software has allowed companies to develop a richer business intelligence environment than the older available systems. Business intelligence systems extract data and information from many other systems and present with the formatted and understandable business intelligence, as shown in Figure 28.

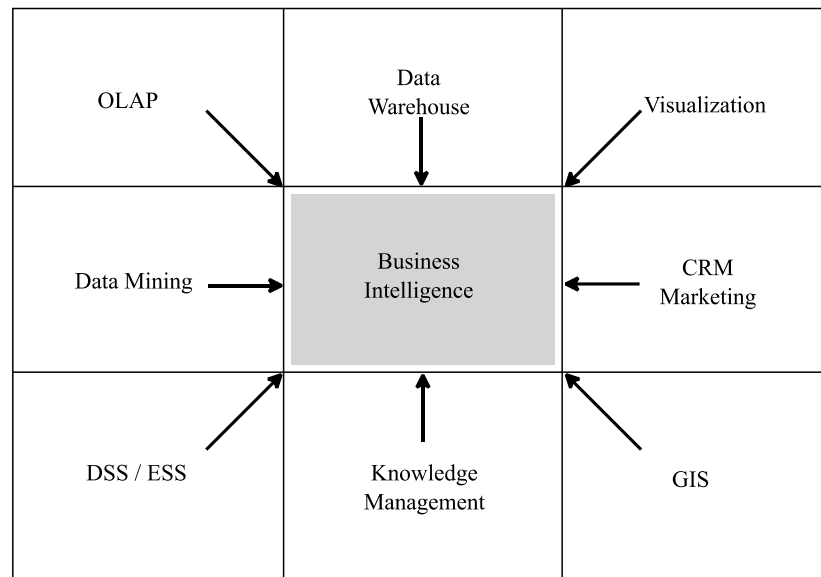


Figure 28. *Business intelligence systems relation with other information Systems. (Adapted and modified from Negash 2004)*

As illustrated in the figure above that the business intelligence systems are evolved from other information systems which were previously available in the market, mainly used for information processing and support in the decision making process. Business intelligence system, as it can be seen in the figure above, pull data and information from all these information systems and provides with the necessary intelligence. In the figure above GIS stands for Geographic information systems and CRM stands for customer relationship management.

Business intelligence systems can be used to extract important information and then transmute it into useful knowledge with the help of some human analysis. Some of the features and tasks performed by a business intelligence system are forecasts based on historical data, past and present performance with estimations of future direction, “What if” analysis of the effects of changes with alternate solutions, instant access to data to retrieve answers to non-routine and specific questions and strategic insights into your business. (Negash 2004)

The goal of business intelligence system is to excerpt information from the business of the company and make it useful for the manager to take it into account while making decisions. Those decisions taken by managers then influence the performance of the business in order to change it for betterment in some fashion. In most of the cases managers’ decisions have some repercussions such as costs and manpower that must be accounted for. Therefore, the decision cannot be taken into effect immediately but instead they affect planning processes of the company. The idea is illustrated in Figure 29. (Jones 2009)

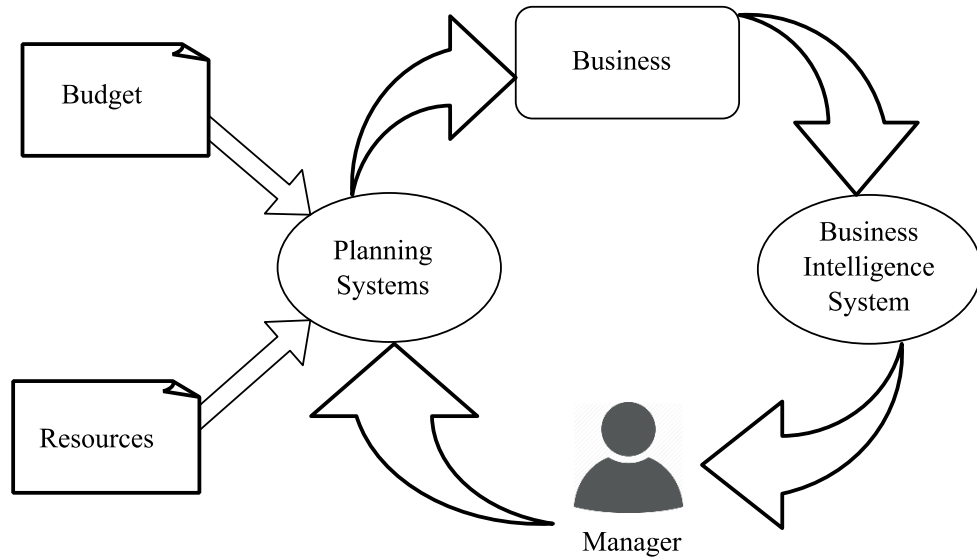


Figure 29. *The Purpose of Business Intelligence systems. (Adapted and modified from Jones 2009)*

As illustrated in the figure above, a traditional business intelligence system does a lot more than a simple data warehouse which delivers simple facts and figures about what has happened. A good business analysis and intelligence system can also inform about what is going to happen after you provide it with estimates, forecasts and “what-if” scenarios. (Jones 2009)

Business intelligence systems face some hurdles in making their way into the companies. These problems are the same for all size of companies and in most of the cases big companies accept these downsides while midsize companies have opportunity to avoid them. Some of these hurdles and problems identified by (Jones 2009) which are faced in most cases are listed below:

- Complex
- Expensive
- Disruptive

First, business intelligence systems are perceived as exceptionally complex systems. The reason behind this claim is that the business processes and systems which are modeled are in business intelligence systems are also complex. In other word, it can also be said that business intelligence system is most likely going to be complex if the respective company is huge and complex. For midsize companies, the business processes are less complex and easier to be modeled by business intelligence systems, therefore complexity in that case is low as compared to big companies.

Second, business intelligence systems are also typically seen as complicated solutions and most likely expensive because it requires huge amounts of resources and investments in order match the level of service which is required by big companies. There in most of

the cases midsize companies do not proceed with the idea of having a business intelligence system for their firm. The fact is that midsize companies usually required standard procedures and components of a business intelligence systems instead of tailor made as in cases of big companies.

Third, traditional business intelligence systems are seen as time taking solutions to implement and finalize. In big companies it can take up to several months or even years, if the company is complex and huge, before it can start to reap the benefits of this system. For smaller companies the realization of benefits is significantly earlier than in big companies because most of the work for standard business intelligence solution required by most midsize companies is already done by the vendor which comes prepacked with the solution.

At a time when the demand for most of the information technology solutions is low, it has been observed that demand for business intelligence products have grown even at this time (Soejarto 2003 and Whiting 2003). Thomsen (2003) cited in Negash (2004) is of the view that business intelligence system is relatively new and has replaced decision support systems, executive information systems and management information systems in a very short period of time.

The size of the business intelligence market can be noticed from the published studies. Gartner, Inc has published a study which states that the business intelligence market grew worldwide by 8 percent in 2013. The study also states that business intelligence and analytics software comprising of business intelligence platforms, corporate performance management, analytic application and advanced analytics equaled to \$14.4 billion in 2013 which is 8 percent more from 2012 of \$13.3 billion (Gartner 2014).

Large enterprises are different from one another, no two large companies are exactly alike. The handling and structure of various business units and processes is totally different; for example, they handle payroll differently, have different manufacturing models and attitudes. Usually large companies are divided into multiple business units each operating as an independent entity. Implementing a business intelligence system in this type of company will be complicated because the business intelligence product will be dealing with several data sources to be harmonized into one system which will then be served to hundreds of different audiences who require different reports, dashboards based on their needs and work requirements. A business intelligence solution for this kind of enterprise will be expensive and big companies have the resources to invest couple million dollars which will lead them to save tens of millions from the effective use of this product. (Jones 2009)

The midsize companies are totally different; they are more likely to go for standard and lightly customized business intelligence solutions which does not require any outside expert analysis and advice to get the results out of this system. The business intelligence

vendors can provide prepackaged business intelligence solutions designed to fit the needs of midsize companies. (Jones 2009)

4.2 Multi-dimensional Profitability

As it was discussed in Section 2.3, various approaches of business analysis have been extracted by identifying the product costs and their costs incurred in serving them to the customers. Profitability is one of the important business analysis with greater yields for the company. Profitability, if analysed from multiple dimensions or perspectives, can result in greater yields and performance improvements for the organization. It can enable managers to take informed decision in order to make companies more competitive in the market and profitably delight its customers.

According to Elias and Hill (2010), every customer account (a cost object), in the financial services industry, can be identified by not just the customer itself but with the product (service line), sales channel, organizational unit assigned, geographic location, age of the account holder or other data points which are tied to that particular customer. Profitability can be measured and analyzed from any dimension tied to the customer, such as product profitability, customer profitability, branch profitability, profitability by region, and profitability by age. Figure 30 illustrates the idea of multi-dimensional profitability. (Elias and Hill 2010)

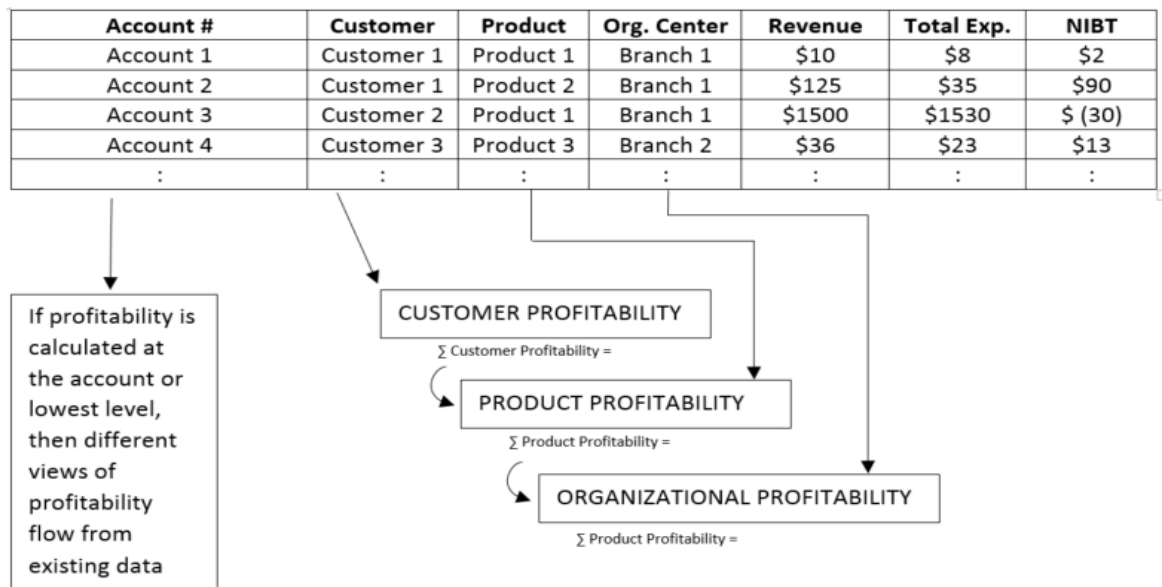


Figure 30. Multi-Dimensional views of profitability (Adapted and modified from Elias and Hill 2010).

As illustrated in the figure above profitability can be analyzed from multiple dimensions if it is calculated at the account or lower level. For example, data summed by customer, product or organization will yield customer, product or organizational profitability. Even though not all the industries have customer account as a cost object, but those who do have it can benefit from the multi-dimensional view of profitability. For example, product

profitability which is calculated from average general ledger entries is less reliable than product profitability that includes customer costs. (Elias and Hill 2010)

There are multiple levels and dimensions from where profitability can be analyzed. In most of the cases multiple customers purchase multiple products and it is difficult for companies to identify and analyze the profitability by each individual customer or by individual product. By analyzing profit information on multiple levels companies can make it easier to assess individual customer and product profitability. To better understand the concept, usability and importance of multi-dimensional profitability analysis is presented in the illustration of gross profit by customers and products in Figure 31.

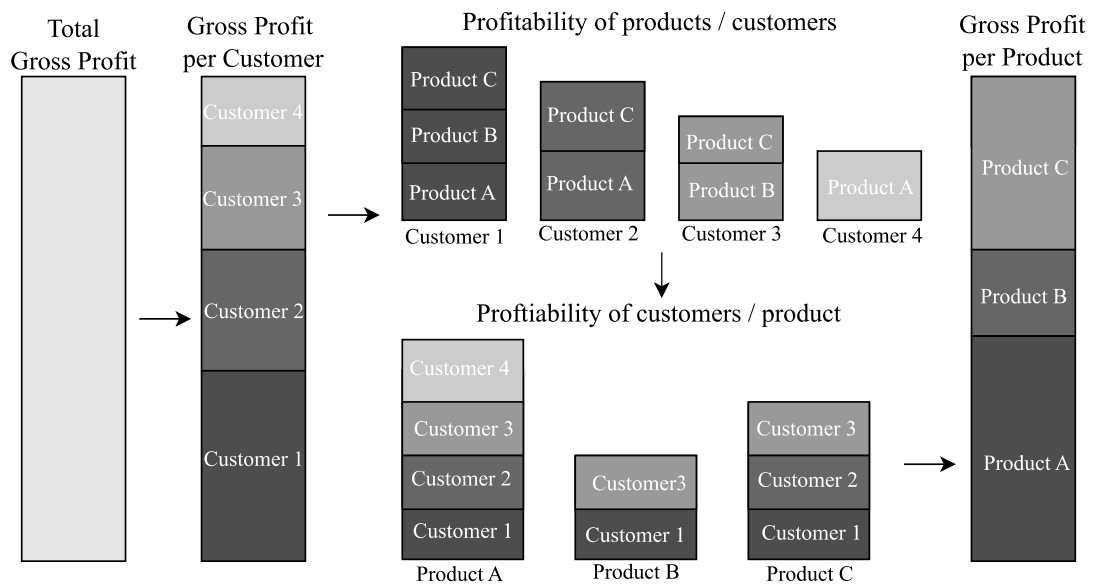


Figure 31. Profitability by customers and products.

It can be seen in the figure above, total gross profit is divided based on how much different customers are contributing. Total gross profit classified in customers does not tell the full story it merely gives an overview of the current situation of the profitability of the organization. To get the detailed understanding of how much different customers contribute by purchasing different products can be achieved by dissecting profitability of individual customer based on products purchased. This in result gives various types of information to the managers to act upon in order to improve the performance and profitability. Customer profitability information of products can then be refactored into product profitability per customer to understand the performance of different products and their buyers. This information can be vital for manager in decision making process.

With this information managers can identify the underperforming customers and buying patterns of certain customers. This is just one case of analyzing profitability from multiple dimensions. Companies can identify high cost-to-serve, low-cost-serve customers and which products are being sold frequently or which products are not contributing enough towards the overall profitability of the company. This information can allow companies

to easily access information of vital importance, which can enable them to take decision to remain competitive in the market and improve performance.

4.3 Importance of Customer Profitability Information

Recent developments in the field of customer profitability management has enabled companies to focus more on customer segments, a system of analysis in which individual customers form a separate unit of analysis. Customer profitability analysis provides companies with a major benefit of taking informed decision with the help of customer-related information, which enables managers in managing companies from profit perspective. This also allows companies to focus more and consider revenues, costs and profits from customers' perspectives. The information received from the customer profitability analysis can be applied in decision making process to support a variety of long and short term customer related decisions. Advancement of businesses and shift of focus towards customer orientation has created a demand for companies to understand customer and market segments. (Harris and Mongiello 2012)

Customer profitability analysis provides important information which is required in evaluating which type of customers should be focused more and which types of customers should be focused less and enables companies to determine the costs to serve each customer. Customer profitability information provides companies an opportunity to identify which customer segments are causing more cost of sales which are beneficial. This helps companies avoid losses and improve customer profitability.

The main objective of extracting customer profitability information is to maximize profits for the company and make all customers more profitable for the company. There are several actions which a company can take to improve its profitability position with the help of customer profitability information. A partial list of action, provided by Cokins (2004), can help companies make customers more profitable:

- Managing customers' 'cost-to-serve' to a lower level
- Establishing a surcharge for or re-pricing expensive 'cost-to-serve' actions
- Services which are valued minimum by customers should be reduced
- Introduction of new products and standard service lines
- Discontinue unprofitable customer, profits or services
- Business process which have higher productivity should be improved
- Costs of activities, which are valued by customer most, should be increased
- Provide discounts to attain more sales volume with less 'cost-to-serve'

According to Cokins (2004), customer profitability information can help companies to analyze customer base by plotting a company's customers in a matrix of customer strate-

gic significance and customer profitability. This helps companies identify where its customers are located in the profitability matrix and how to move them into the most profitable section. This idea is illustrated in Figure 32.

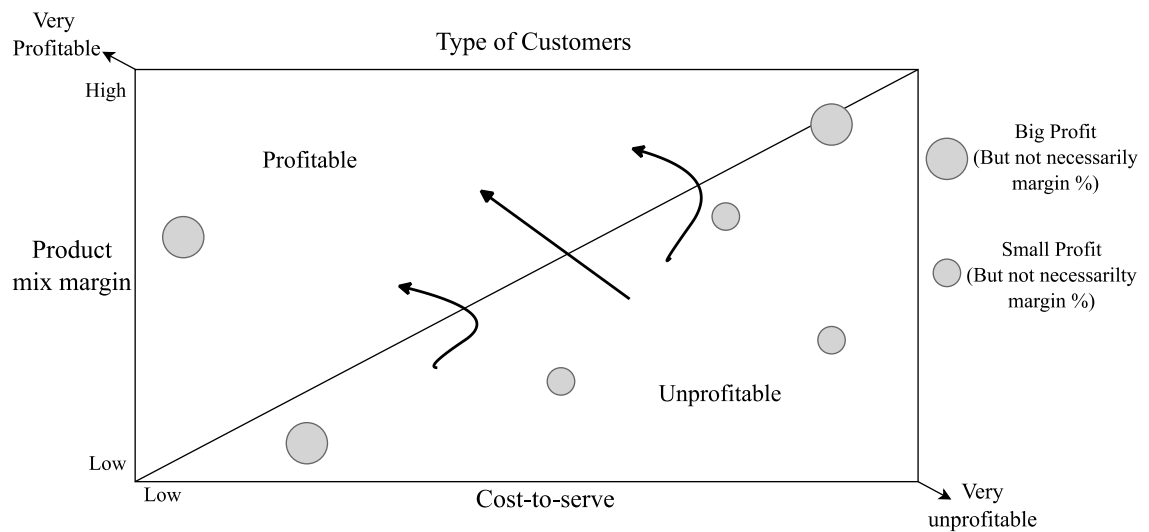


Figure 32. *Migrating customers to higher profitability (Cokins 2004).*

It can be seen in the figure above that the customers with higher 'cost-to-serve' and low product mix margin are placed in unprofitable section and respectively customers with higher product mix margin and lower 'cost-to-serve' are placed in profitable section. This figure also exposes the myth that highest sales volume generating customers are also generating highest profits (Cokins 2004).

It should be noted that moving customers to the profitable section of the profitability matrix is equivalent to moving individual data points in the profit profile from right to left and from bottom to top. To identify where customers are located in the profitability matrix requires Activity-based costing data. (Harris and Mongiello 2012)

Some customers might also be present in the deepest lower right corner of the customer profitability matrix that the company may decide to discontinue those customers as it is unprofitable to invest on customers who are less likely to migrate into the profitable section. Ultimately, the goal of the company is not to improve satisfaction of customers rather it is to manage customer relationships and improve long-term corporate profitability. (Harris and Mongiello 2012)

Another reason to know the customer profitability information from the profitability matrix is to protect the customers from falling into competitors hands. If in a company very few customers are contributing huge section of the company's profits, then the possible impact of this risk can be devastating. The distant to the left hand side of the profitability matrix a customer is located, the higher is the risk of competitors' attacks on the customers. (Harris and Mongiello 2012)

Additionally, customer profitability information is also important for account managers to convert an unprofitable customer account into profitable one by many possible ways. For example, the revenues can be increased or cost can be reduced by reducing the activities which make the account unprofitable. Examples of activity reduction are changing delivery methods or schedules to cheaper and more affordable ones, decreasing sales support services to customers, managing product price and product service price (Harris and Mongiello 2012)

Therefore, in order to take the right decision of which customer to proceed with and which not companies can utilize the power provided by customer profitability information and migrate their customers from lower profitability area into higher profitability and ultimately maximizing profits for the company itself. The reason behind this is to secure and maintain customer relationships and ultimately the main goal is to improve and increase the profitability position of the company in the market. The idea of moving customers from unprofitable section to profitable with the help of customer profitability information is illustrated in Figure 33.

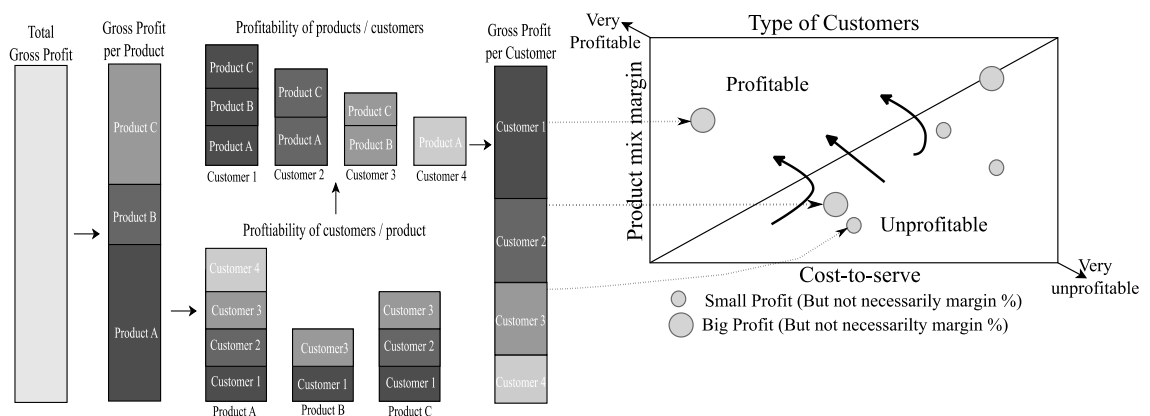


Figure 33. *Migrating customers to higher profitability by analyzing multi-dimensional profitability.*

It can be seen in the figure above that the effective use of profitability information provided by various business intelligence products enables a company to migrate their customers from unprofitable quadrant into the profitable one. By utilizing the benefits provided by multi-level profitability information companies can extract important information required to comprehend the status and position of each customer and act based on this information in order to maintain and improve customer relations and long-term corporate profitability.

4.4 Value Based Selling

Value based selling can be described as understanding and enhancing customer's business in a proactive way (Pekka et al. 2011). According to Kaario et al. (2003), selling of value

is about selling, not only products or services but, business solutions which allow a customer to increase profits. They also says that customer's attractiveness towards value based selling can be characterized in two dimensions, i.e. importance of relationship and customer's motivation to partner (Kaario et al. 2003). To find reliable value adding partners, the businesses adopt value based selling (Lyly-Yrjänäinen et al. 2010).

Value based selling refers to discovering customer's hidden desires and then addressing those desires by communicating the benefits of a higher-priced product or service, so that customers can make an informed decision. Value based selling is different from value added selling in multiple ways. In value added selling, two very similar products are compared and when one of these two products provides a clear benefit with an additional feature. Whereas, value based selling refers to selling product in a manner where measurable benefits or value offerings are highlighted for retailers or customers by improving gross sales and earnings, reducing costs, market share improvement and enhancing customer satisfaction through various means. (Harper 2010)

Customer value offerings can be generated and increased for customers or retailers by increasing gross sales revenues or by reducing costs resulting in increased customer satisfaction (Harper 2010). According to Pekka et al. (2011), value based selling is the understanding of customer and what they consider valuable. They also say that value-based selling allows a customer to react to important changes in the environment and demonstrating to customers that how they can adopt to these offering resulting in added customer value.

It has been discussed in earlier sections that companies can benefit from customer profitability information with effective use and action on demand. There are various business intelligence tools in the market which allow companies to extract useful customer profitability information. This information helps in analyzing individual customers and products to identify high costs-to-serve, low cost- to-serve customer and underperforming and high performing products based on the contribution they bring to the profitability or the company. Based on this information, companies can make decision to either reduce costs or increase sales or both through various means which results in increased profits and value offerings. This creates an added value for the customers and increases the benefits a customer perceives. Figure 34 illustrates the notion of increased value created by efficient use of customer profitability information provided by business intelligence products.

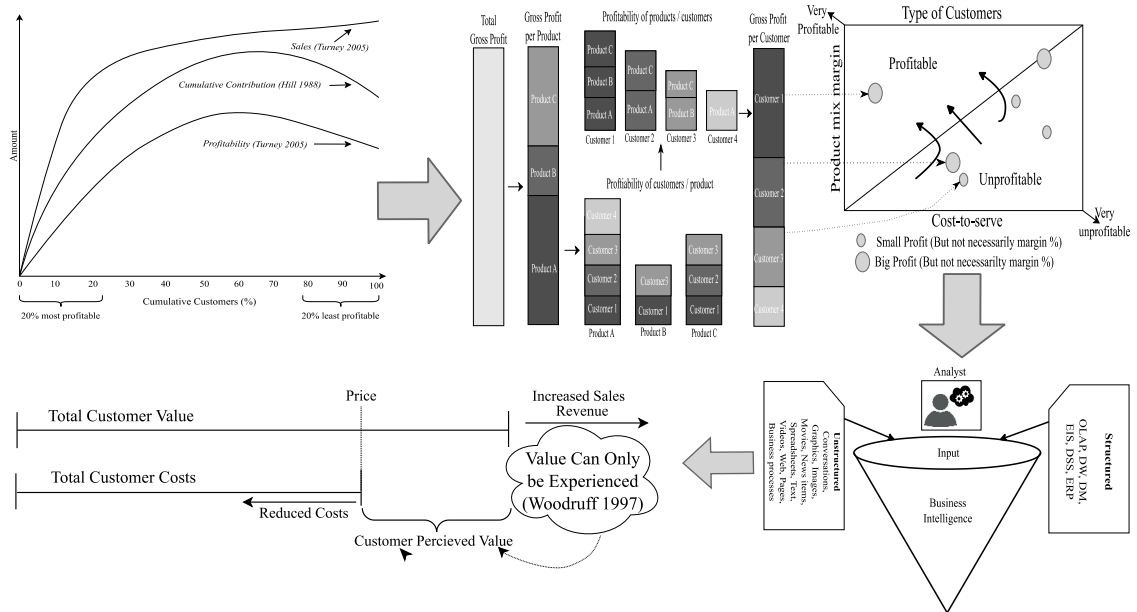


Figure 34. *Quantifying value with Customer Profitability Information.*

In conclusion this chapter discusses and explains the importance of customer profitability information and how it can be used by companies to improve their customer profitability and maximize profits. It was also discussed that effective use of customer profitability information enables companies to take needed actions, at the right time, based on the customer profitability information provided by business intelligence products. This in turn increases the value perceived by the customer. The notion of quantifying the value of business intelligence products with the help of customer profitability information is applied in the case company. Research process and results of this study are demonstrated in detail in upcoming chapters.

5. THE CASE COMPANY

5.1 The Case Company

This study is conducted on a small startup company which is providing IT consulting and IT services based in Helsinki, Finland. This company was established in 2014 by two young entrepreneurs. The case company's main business comes from IT services through a Core Business Management (CBM) product which is built on SaaS (Software as a Service) architecture in addition to some consultancy provided to customer companies.

The case company comprises of a small but a multi-functional team who participates in various tasks based on their skill capability. The CEO of the company also acts as a product development officer/supervisor. He is also responsible for assigning different tasks to team members, develop product offerings and strategy development and formulation. The co-founder also acts as a sales director/sales executive; also responsible for leading sales department, manage and maintain existing customer and acquiring new customers. Both CEO and Co-founder give part of their time to product development and the rest to sales and business development. The structure of company is illustrated in Figure 35.

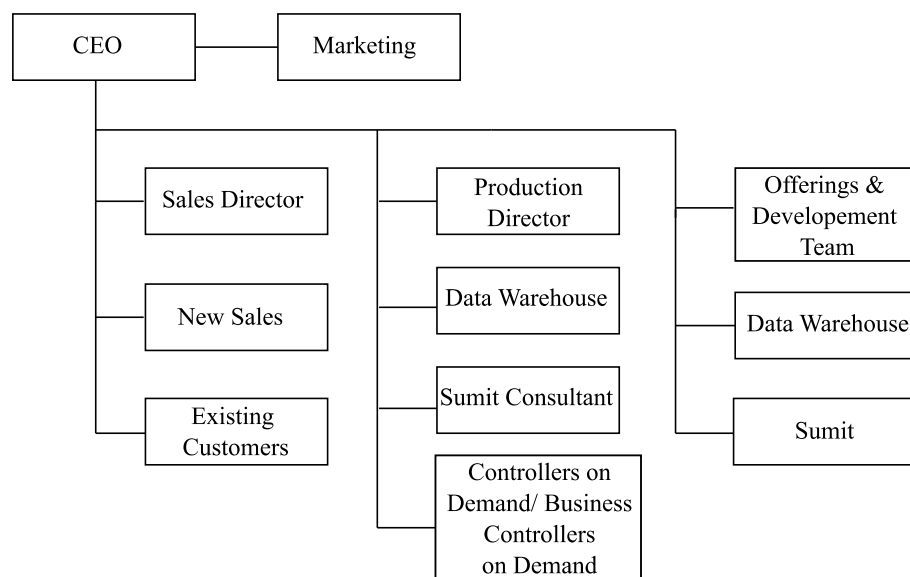


Figure 35. Case Company Structure.

As illustrated in the figure above the CEO is involved in almost all the different activities in this case company. CEO heads the marketing, sales, production and offerings development sectors of the company in addition to partly being involved in the product development and deployment process. The case company's core business management solution required some technical understanding which can be achieved by getting training from sumit consultant.

Small and medium size companies cannot afford business controllers as they can be extremely expensive, therefore the CEO and sales Director of the case company also provide business consultancy services to their customers based on the service package being bought by the customer. This idea is termed as “business controllers on demand” as depicted in figure above.

The sales process of the case company is simple and straight forward. It includes four phases until the final deal is made and the customer starts using the product. The process is illustrated in Figure 36.

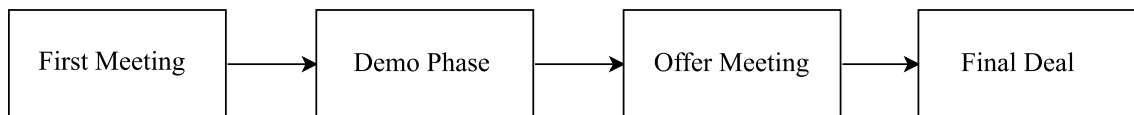


Figure 36. Sales process of the case company.

The simplicity and straight forwardness of the sales process can be seen in the figure above. In the initial phase of cold calling, customers are approached to have a “first meeting” to discuss and elaborate the problems being faced by the customer and how the core business management solution developed by the case company can help solve the problem. After the phase of “first meeting” a demo is prepared for the customer to test and have an experience of how powerful and useful this product is. In the third phase the case company makes an offer to the customer based on the requirements of the customer. The final deal is made in the fourth phase of the sales process where all the terms and conditions and service level are agreed upon.

5.2 Competitor Analysis

There are various vendors in the market which provide business intelligence services with different packages and features but the case company focuses on three main competitors in the market.

- Microsoft
- Tableau
- Qlik

First, Microsoft’s business intelligence product portfolio provides diverse range of products for data analytics and visualization. Microsoft’s Power BI is a self-service data preparation and analysis tool built through Excel 2013 and Office 365. Power BI is relatively a new product which provides services from a cloud based service architecture. It offers two different pricing packages; first package is a free service which is free with very limited features and second package is \$10 a month per user with more features. Gartner

(2015) has described some strengths and weaknesses of the each of the business intelligence products discussed above. Below are the strengths and cautions for Microsoft's Power BI product.

Strengths:

- Less cost of ownership and license costs.
- Packaged solution which includes various features such as power pivot, power view, power map, power query.
- Freemium license with limited features up to 1 GB space for data.
- Built on foundations of Microsoft's excel services.
- Strong platform scalability.

Cautions:

- Complex product portfolio causing confusion in evaluating purchase prices
- Highest percentage of customers references stating missing or less efficient features such as no drill-down capability in power views
- Complex sales model which creates difficulty in engaging directly in sales cycle
- Less skills and experience available in implementation partner and support network in newer Power BI product stack
- Data warehouse utilities can be bought separately which results in more costs and adds more complexity
- No true data warehouse support

Second, Tableau provides vast variety of data discovery options which has transformed business users' expectations of what they can discover with very less effort and training. Tableau's business intelligence platform provides intuitive visual based data discovery, business intelligence and analysis. Tableau offers its business intelligence products via a perpetual license which costs from USD 1000 to 2000 per user and a cloud based version which is USD 500 per user per annum. Following are the strengths and cautions of Tableau's Tableau 9.x business intelligence product as discussed in Gartner's (2015) magic quadrant report.

Strengths:

- Perceived market leader
- Strong platform architecture which provides good scalability options
- R&D driven organization, 29% of revenues were invested in R&D in 2014 which is more than any other BI vendor in the market
- Strong customer collaboration
- Well managed balance between growth and execution

Cautions:

- Limited product line focused on data discovery
- Expensive
- Customer turn to third-party products and partner for advanced data preparation and report production, advanced analytics which results in more costs
- Large number of competitors target tableau which affects momentum
- Less scalable
- No true data warehouse support

Third, Qlik provides self-service data visualization and guided analytics applications with its two main products; QlikView and QlikSense. QlikView is mature and a tightly integrated business intelligence development platform mostly suitable for IT and more technical users for developing dashboards and reports QlikView is offered free for personal use and paid for enterprise use and the price is based on the customer requirements. QlikSense is newly released platform which is more suitable for business users to build their own dashboards with easy to use interface in addition to advanced reporting and governance for IT and technical users. QlikSense is also offered free with very limited feature for personal use and USD 1500 per user for unlimited use. Following are the strengths and cautions of Qlik's QlikSense business intelligence product as discussed in Gartner's (2015) magic quadrant report.

Strengths:

- More self-governed data discovery
- Customers report ease of use, less time and effort main reasons for buying
- Increased enterprise penetration
- Strong customer and online documentation support
- Strong partner network

Cautions:

- Different pricing models for different products results in confusion for buyer
- QlikSense is a new therefore the rate of adoption is limited
- Data-discovery and reporting in separate platforms which means extra costs for data warehouse utilities
- Inconsistent sales performance in past few years
- Low scalability

By comparing and analyzing the above mentioned business intelligence vendors, it can be seen that different vendors provide services in various ways with multiple products. Table 12 summarizes the key differences and similarities in the above mentioned vendors and their business intelligence products.

Table 12. Key differences and similarities in main competitors.

Value Adding Features	Power BI	Tableau	QlikSense
Low cost of ownership / license costs	☑		
Ease of use	☑	☑	☑
Strong customer and online support		☑	☑
Simplicity in sales model			
Strong partner network		☑	☑
True data warehouse support			
No or less technical skills required to use the product		☑	

As described in the table above that all three business intelligence products provided by the main competitors in the market are easy to use with a user friendly interface. All the three BI products provides multiple ways to import customer's data into the system. All the product are accessible an easy to use also on a mobile device and/or a tablet.

Microsoft's Power BI is the only business intelligence product among the above mentioned competitors which offers business intelligence services at a very cheap rate but at the cost of the limited and less efficient features. Tableau is the most expensive and QlikSense more expensive than Microsoft's Power BI but less expensive than Tableau.

As far as strong customer and online support is concerned, QlikSense is at a leading position. QlikSense provides various option to obtain online and offline support for the customers such as online training, documentation, user communities, conferences and tutorials. Power BI also provide customer and online support for product use but their support services are less rich than what QlikSense has to offer. While Tableau provides very informative and easy to understand video tutorials and online support.

When the simplicity of sales model is concerned, none of the above mentioned vendors have an easy to understand sales model due to various reasons. Microsoft's Power BI offers basic business intelligence services in their standard package which is rarely sufficient even for smaller companies and if some additional features are required by companies then it becomes difficult to identify and select the desired component or feature from

several available options. Tableau and QlikSense also have similar issue. In case of Tableau, if companies need advanced reporting or data preparation, it is required to buy third-party support services and, in the case of QlikSense, there are different pricing models for different products which creates confusion for customers regarding which product to buy.

It can be noticed that none of the above mentioned business intelligence products have true data warehouse support. They are more focused on self-service business intelligence services which is to enable business users to access and interact with the business intelligence tools without any technical knowledge and without setting up any data warehouse for historical analysis.

There are numerous business intelligence products in the market that address the increasing analytics needs of companies of all sizes and industries. However, it is always difficult for companies to identify which analytics tool to buy for their business. By analyzing above mentioned business intelligence products it can be seen that Tableau is the most expensive with more features than any other competitor discussed above and is suitable for large or medium sized companies, whereas Microsoft's Power BI is the cheapest least features and QlikSense lies in the middle with not so expensive price and most needed features. But all of these business intelligence products lack true data warehouse support and sales model is quite complex. The next section describes the case company's product and how it is different from the competition.

5.3 How is case company's product different

The case company's product is a core business management system which is developed in-house to help small and mid-sized companies analyze their business and improve their profitability positions. The case company provides core business management services to its customers with the help of a business intelligence product developed in a SaaS (Software as a Service) fashion.

Based on the previous section, there are numerous business intelligence products in the market which vary in pricing models and value adding features. Many of the business intelligence solutions available in the market are complex and SMBs (small and mid-sized businesses) find it difficult to make their way through to get business intelligence services for their businesses. The main reason behind this is the complexity and expensive nature of the business intelligence solutions.

The CEO of the case company also points out some similar problems and hurdles being faced by traditional business intelligence systems in case of midsized companies.

“Traditional business intelligence projects are too complex and expensive and only big companies are willing to make these huge investments. Small and midsize companies need some solutions which is affordable and less complex for them. Therefore, we have developed an agile business intelligence service which does not require heavy investments and is also suitable for small and midsize companies. “

CEO case company

The case company’s product solves these problems by offering wide variety of business intelligence services with the ease of use in the product. The case company’s product is developed as a web application which is also optimized for mobile display so it is easier for users to access it from anywhere they want. It provides full data warehouse support to enable companies analyze their business and creates forecasts based on historical data. The case company’s product is not just another business intelligence product, rather a total core business management system. The idea is illustrated in Figure 37.

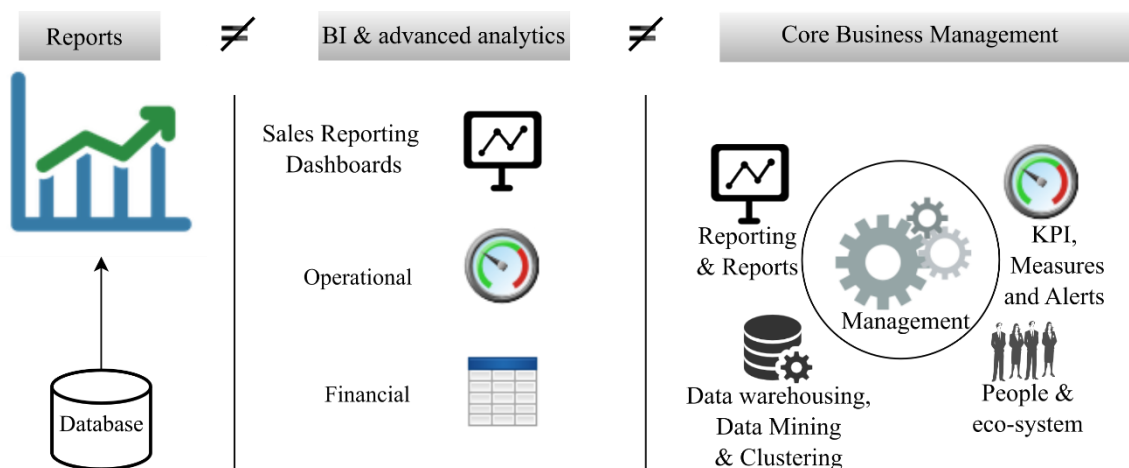


Figure 37. *How case company’s product is different.*

As illustrated in the figure above that traditional reports and reporting systems are different than business analytics and advanced operational systems. The BI and advanced analytics provides companies with advanced business analytics and intelligence which help organizations obtain the status and position of their business. Traditional reporting systems provide users with just a graphical representation of their data whereas BI and advanced analytics systems provide users with complex and competitive information to planners and decision makers in a more simple and easy-to-understand form.

The core business management, on the other hand, is much more powerful tool than traditional business intelligence solutions. The core business management solution, developed by case company, offers a complete eco-system for users in addition to what a traditional business intelligence tool has to offer. A complete eco-system which allows its users to share information, observations and knowledge with the help of interactive dashboards and reports. It allows users to see the historical data, analyze the current data and

predict the trend changes with the help of automatic data versioning into the data warehouse.

The CEO of case company commented about the business intelligence market situation and target market of the company as follows:

“Business intelligence market is in a good position and have grown in recent years, more and more companies are going into using analytics, and companies are realizing the potential of business intelligence products. Our current target market is small and medium size companies operating in or near Helsinki area regardless of area of business. Target companies should have at least 20 employees and over 5 million annual turnover. “

CEO case company

The CEO continued and also talked about expanding the market reach in near future by saying:

“Our next target would be to expand our market access by steering towards wider Uusimaa area in the next year and going for the European market in the year after with new product offering suitable for diverse market segments. “

CEO case company

This chapter discussed about the case company; how it operates. It was also discussed that the structure of the company and how responsibilities are divided in a small team. The product and product development of the case company was also analyzed by discussing about the other business intelligence competitors available in the market and how is case company's product different and unique from them. This chapter also discussed about the market and target market of the case company and some words from the CEO of the case company about current situation of the business intelligence market and future goals.

6. QUANTIFYING VALUE OF CORE BUSINESS MANAGEMENT

6.1 Initial Research and Case Customers

This thesis aims to quantify value of business intelligence products for the case company and it starts with analyzing different customer cases which were encountered by the case company. The initial step for quantifying value of business intelligence products with the case company was generating and discussing ideas of how to quantify the value for customers. This process started in February 2015 and continued until September 2015 when finally a result was achieved to proceed with. Figure 38 demonstrates the idea generation and discussion phase of quantifying value of business intelligence products in the project timeline.

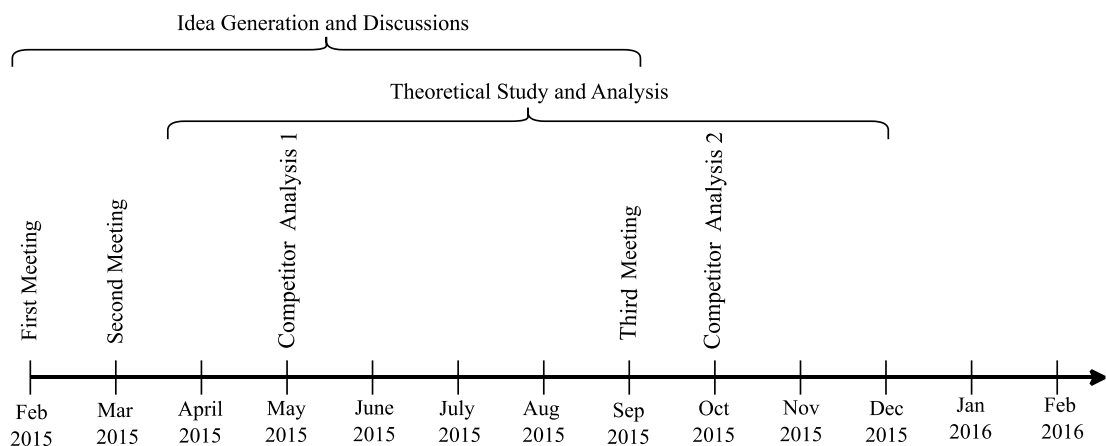


Figure 38. *Idea generation and discussions phase of quantifying value of business intelligence products.*

As illustrated in the figure above that four meetings were held during the idea generation and discussions phase. In the first meeting scope and area of this research was discussed. The main questions which were encountered in that meeting were mostly related to the value generation and how to make value of business intelligence product explicit for customers of the case company. It was also discussed, how to enable customers to start using business intelligence tools and what is hindering them from doing so. The scope was decided in that meeting which is to target the small and mid-sized companies and analyze them in terms of how to quantify value of business intelligence products for small and mid-sized companies and what benefits they are missing when not using a business intelligence tool for their business. Other competitors of the case company and how do they create and quantify value for their customers was also discussed in the first meeting.

The second meeting was more focused on the relevant topics of the research area. The main areas of discussion in this meeting were customer profitability and business intelligence products and how customer profitability helps increase the value of business intelligence products for the customer of the case company. The benefits which a business intelligence system provides by demonstrating the customer profitability of the case company's customers were also highlighted and pondered upon during this meeting. Figure 39 shows some of the benefits delivered by the use of business intelligence tools.

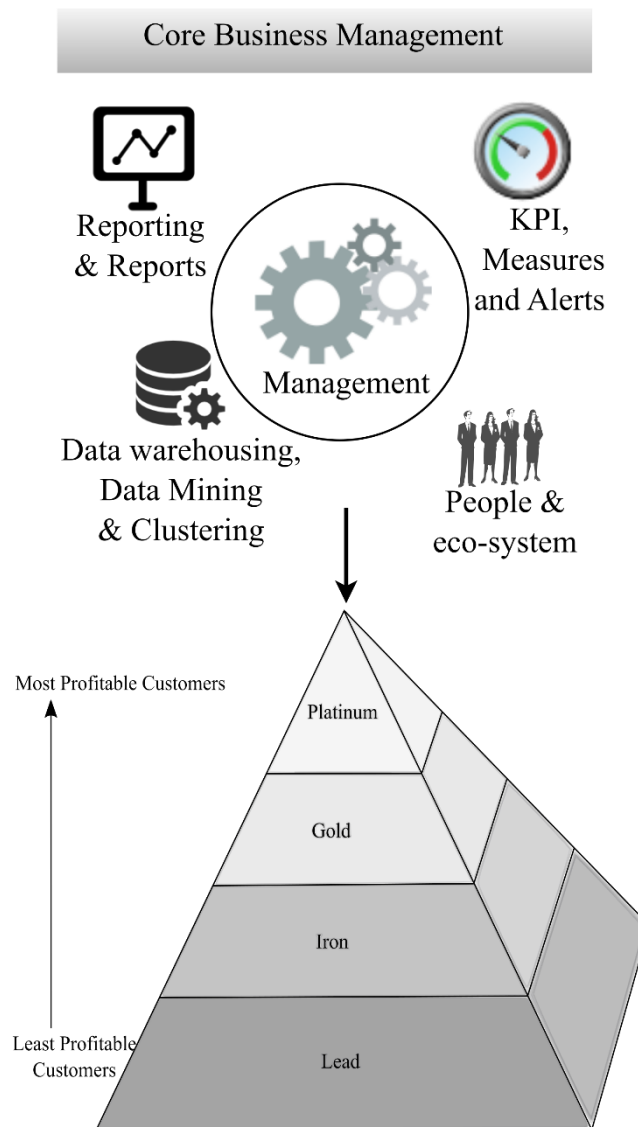


Figure 39. *Glimpse of benefits provided by business intelligence software.*

Case company's customers can easily classify their customer base into most profitable, profitable, less profitable and unprofitable segments by using the information provided by the CBM (Core Business Management) solution developed by the case company. Based on this information, decisions can be made by the case company's customers to plan the investments on the different customer groups according to their contribution towards profitability. Numerous other benefits of using core business management were

also pointed out in this meeting in addition to this example presented in the figure above. It was discussed that the value generated by core business management tool can be made explicit for the customer by demonstrating this kinds of examples. After the second meeting the author of this thesis started to perform the theoretical study and analysis of the research area including study of other solutions available in the market.

The third meeting was more focused on the major competitors in the market, current market situation and how they create value for their customers and where does the case company lie among the competition. It was discussed that the most of the customers who prefer the competitor's products were big companies due to the fact that big companies can afford expensive solutions and small companies are being passively targeted by these competitors. Case company provides agile core business management service which is suitable for small and mid-sized companies due to the fact that it does not require heavy investments in the initial stage as it is in case of other competitors. Figure 40 demonstrates the position of case company in the competition.

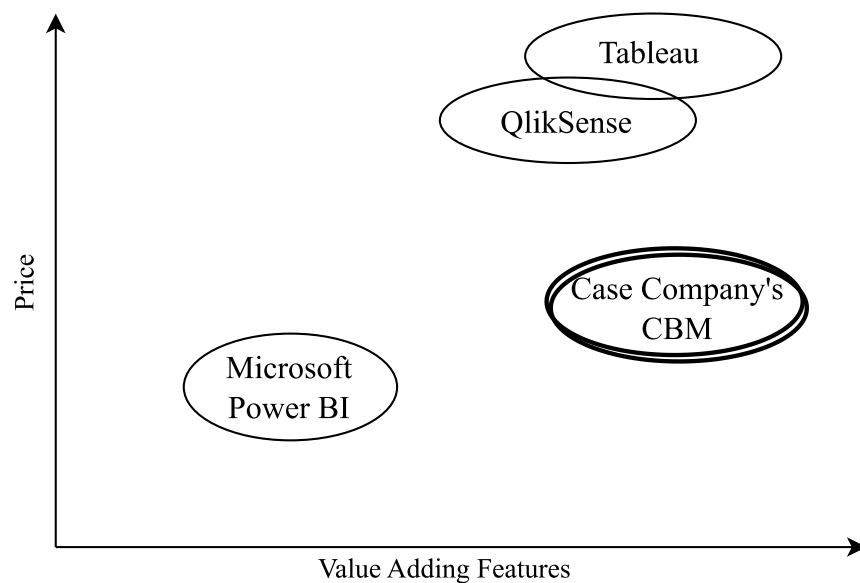


Figure 40. Position of case company in the competition.

As illustrated in the figure above that the core business management provides more value adding features with a lower price tag. There are other alternatives in the market which are cheaper than the case company's product but at the expense of less value adding features. Low price creates a good amount of value for the customers and plays a key role in decision making process of customers in procuring the product. After the third meeting it was decided that the author of this thesis will further investigate and analyze the facts and information about the main competitors in the market and what offerings do they provide and how is the case company's product unique from the competition.

The theoretical study and analysis done in the initial phases was then applied on the three different customer cases encountered by the case company. In those customer cases the

author of this thesis applied the theoretical concepts analyzed in this thesis in order to quantify the value generated by core business management solution developed by the case company. The customer cases were analyzed from three perspectives, i.e. quantify value by reduction in costs, and increase in sales revenue and by both. More details of the customer cases and how the quantification of value was done is presented in the following sections.

6.2 Case 1: Quantifying Value by Reduction in Costs

The next phase for quantifying value of business intelligence products was gathering, analyzing and documenting the analysis of the case customers' data. This process started in mid-January 2016 and continued until the end of February 2016. During this phase important data was gathered about the case customers and the actual cases which were encountered by the case company. During the analysis of the data gathered the concepts and theoretical research was applied to extract the information needed to quantify the value of core business management solution. Figure 41 demonstrates the data gathering, analysis and documentation stages in the project timeline.

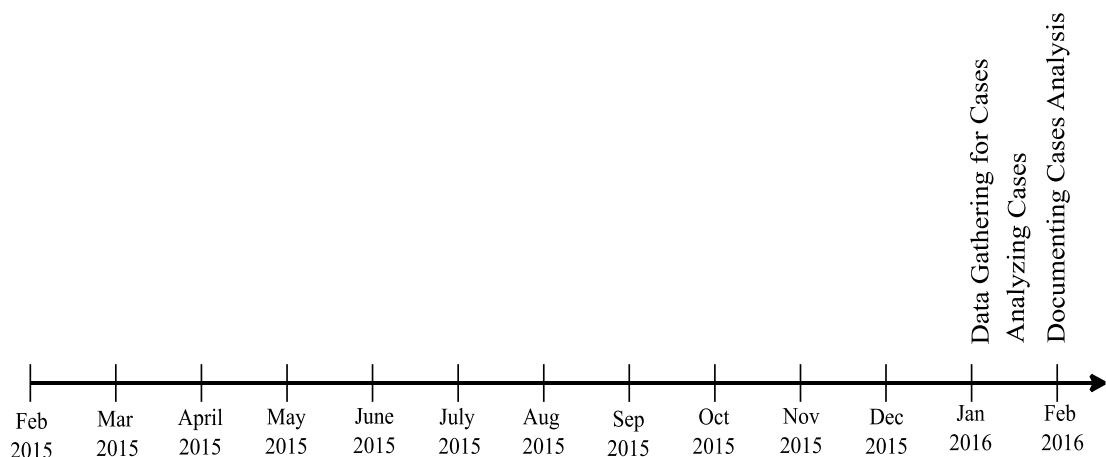


Figure 41. *Data gathering, analyzing and documenting the analysis of case customers' data.*

The first case customer analyzed during this process is a public listed company who provides wealth management and financial services to investors, companies and individuals in Finland. Their problem which this case customer was facing was slow financial reporting of figures, which hindered the management of the company to take the decisions at the right time. The process of financial reporting was initially done manually by using several excel workbooks. To generate the figures and reports required for the management to act upon they had to first extract the information from 20 different entities separately and then transfer that information manually into excel workbooks. After the transfer process they had to apply several allocation rules and consolidate the figures in order

to get the appropriate result. All this process was done manually in excel workbooks. The problem is further illustrated in Figure 42.

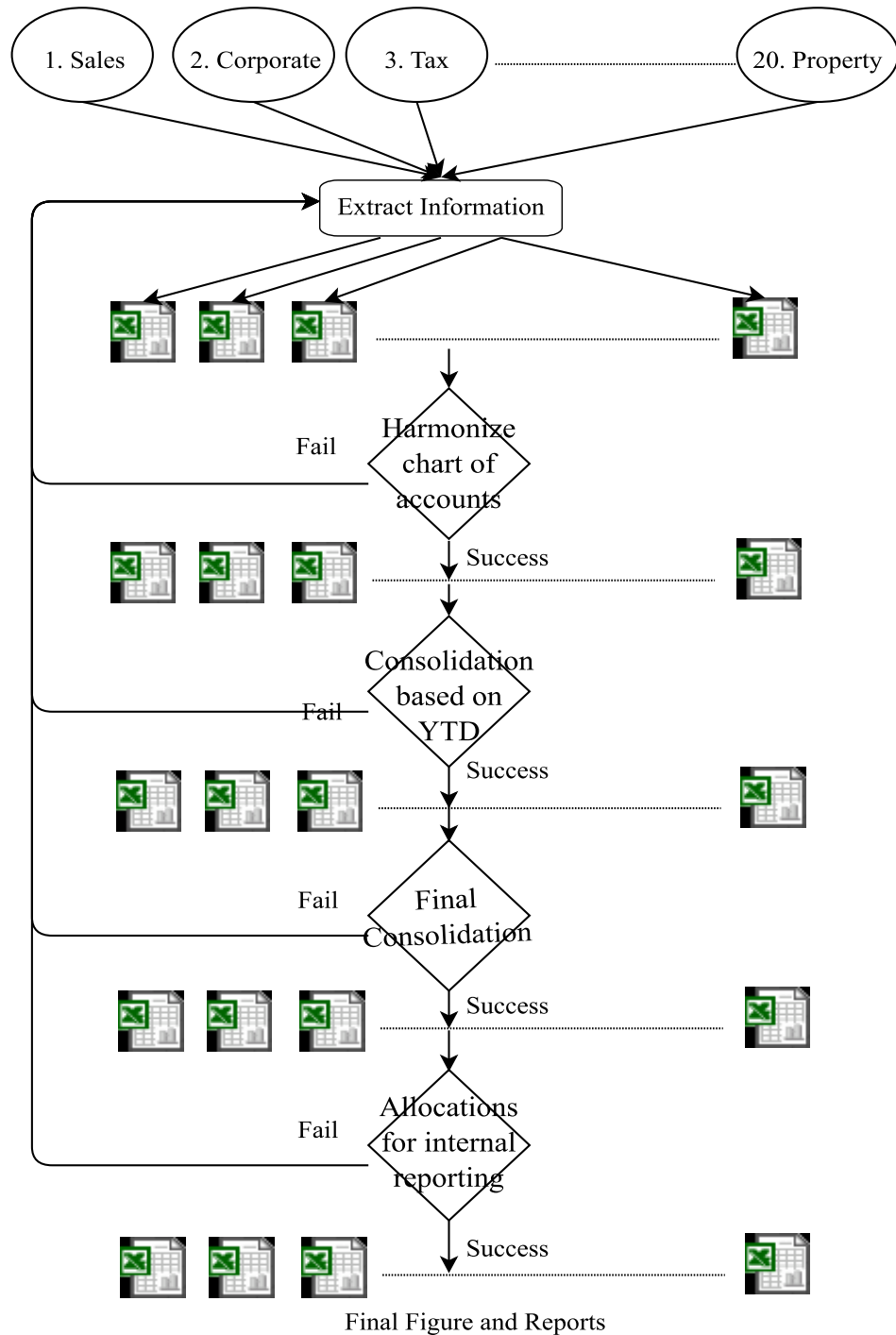


Figure 42. Initial Situation of Financial Reporting in Case Customer 1.

As figure above shows that the process of extracting results is complicated and time taking for case customer 1 which seems to be a costly process. As the case company 1 is a public listed company they need to build the figures and reports so that at the end of the month they can show the progress to stakeholders and this process took several days to complete. Management wanted to have a faster reporting alternative so that at the end of the month so they can demonstrate how well did they perform. They were using many

days to extract and build the reports in excel workbooks, and if somethings changed during the process, then they had to start process all over again increasing time to get the reports and increasing costs of the financial reporting.

This problem was recognized by the management of Case Customer 1 before the case company contacted them. The management of case customer 1 was already searching for any alternative solution to enable faster reporting systems. They also considered going for the main competitors but decided to continue with case company's core business management system due the lower prices and simple sales process. With case company's solution the process of financial reporting was recreated illustrated in Figure 43.

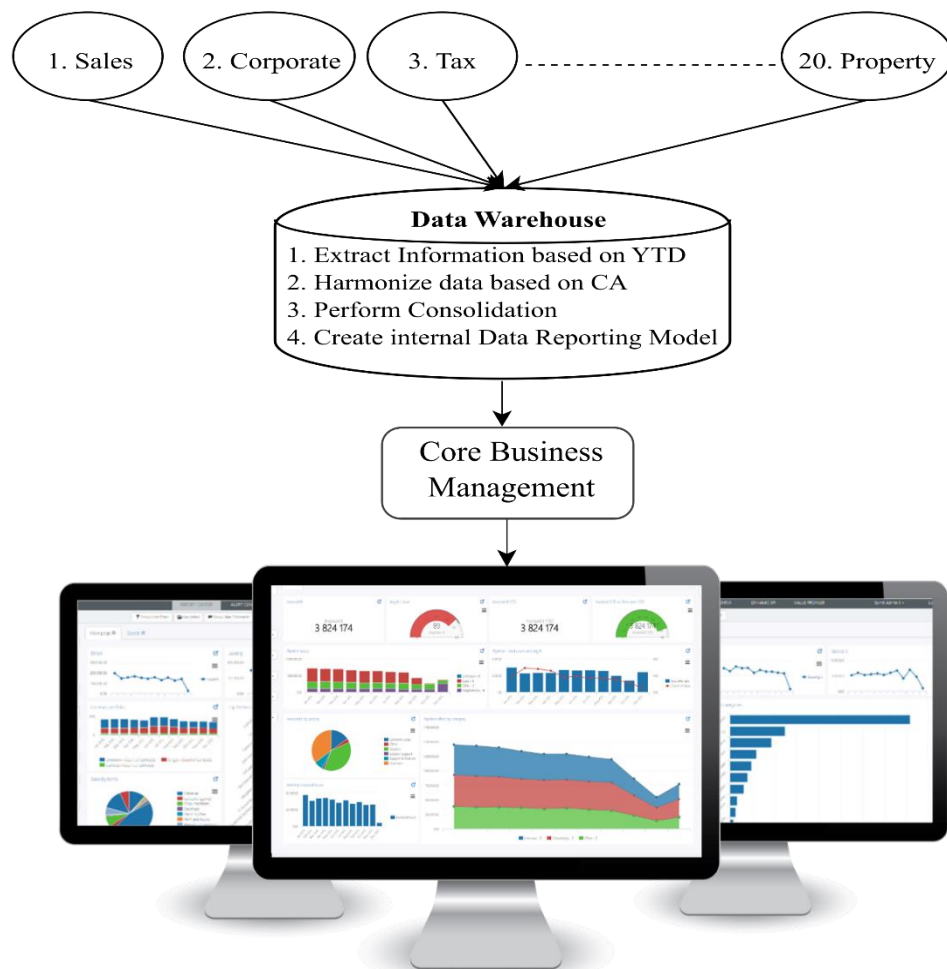


Figure 43. Case Customer 1 after using Core Business Management.

After the case customer 1 started to use core business management solution the timing of generating reports and figure reduced from several days to approximately 15 minutes. Data is refreshed every 15 minutes; therefore if any of the steps fail in data warehouse it will be replaced by fresh data after 15 minutes automatically. Usage of core business management solution resulted in enormous reduction in overall costs of financial reporting. Now the management of case customer 1 can make decisions earlier and at the time

because the information arrives rapidly and there is very less chance of human error due automation of the whole process.

The reduction in costs affected reduction in operational costs due to faster financial reporting system. It also affected the psychological costs because now the management can take decision without any stress of getting inaccurate or late results. The fact that the core business management is a cheaper solution than the competition and does not require heavy investments results in less psychological relationship costs. This in result enabled case customer 1 to achieve added perceived value generated by the use of core business management solution.

6.3 Case 2: Quantifying Value by Increase in Sales

The second case customer analyzed for this thesis is a marketing and advertising consultancy organization which specializes in business development, web and digital marketing automation and marketing communications in Finland. The Case Customer 2 provides online and digital marketing services to its numerous customers. The end customers of Case Customer 2 were provided with important analytics information about their marketing campaign progress and results of the marketing activities so that the end customer can see the benefits of using services of Case Customer 2.

To deliver this crucial information Case Customer 2 acquires information from its several source systems and then combines them into a single system which generates the excel workbooks containing analytics information for each end customer of case customer 2 separately. After these excel workbooks are generated, they are sent to individual customer organizations one by one manually which is a hectic process of any organization. The major problem with this process is that the old system is only capable of providing still or fixed reports which cannot be interacted with. In other words, end user cannot perform interactive analysis and discover more information from the report and analytics information provided. The idea is illustrated in Figure 44.

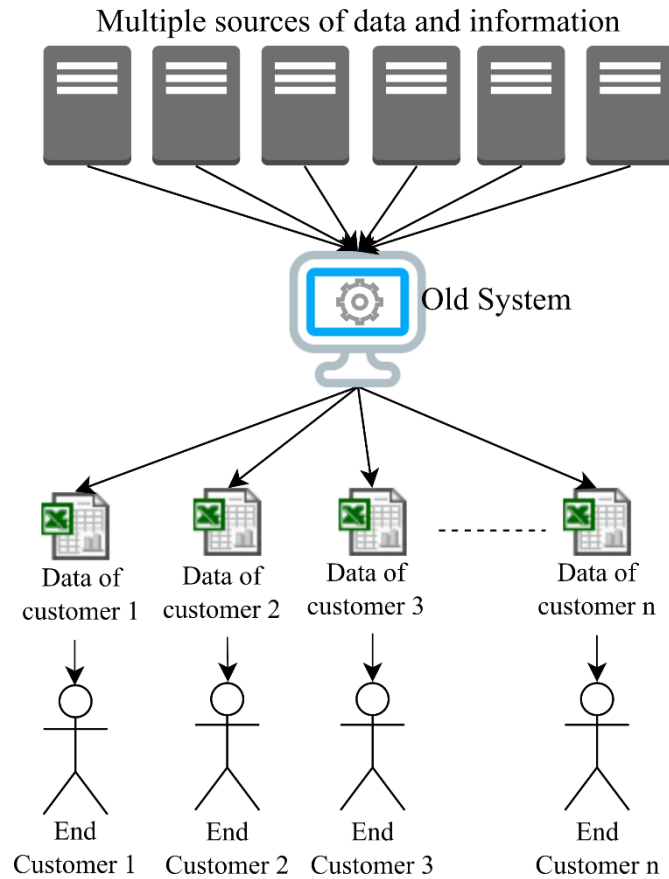


Figure 44. *Initial situation/process of delivering analytics information to end user of Case Customer 2.*

As shown in the figure above, the analytics information about the marketing activities and campaigns done by the Case Customer 2 was sent to each end customer organization separately. This process is a costly process and creates a risk of losing end customers to the competition with better service mechanism and tools to service the end customers. The problem was recognized by the management of Case Customer 2 and they were searching for a solution with which they can perform this process faster and enrich the customer with better and improved service.

The case customer 2, before being contacted by the case company, was investigating Microsoft's Power BI and QlikSense products to solve their problem. But the case customer 2 was not satisfied on how to provide access of these products to its end customer in order to deliver the analytics information about their marketing activities and campaigns. With easy to use core business management solution it is possible to securely provide access to the end customer of the Case Customer 2 and enrich their delivery of service. With core business management the end customer of Case Customer 2 can easily access the analytics information about what kinds of advertisement campaigns are being run by the Case Customer 2 for them and how they are adding value to their business. The notion is demonstrated in Figure 45.

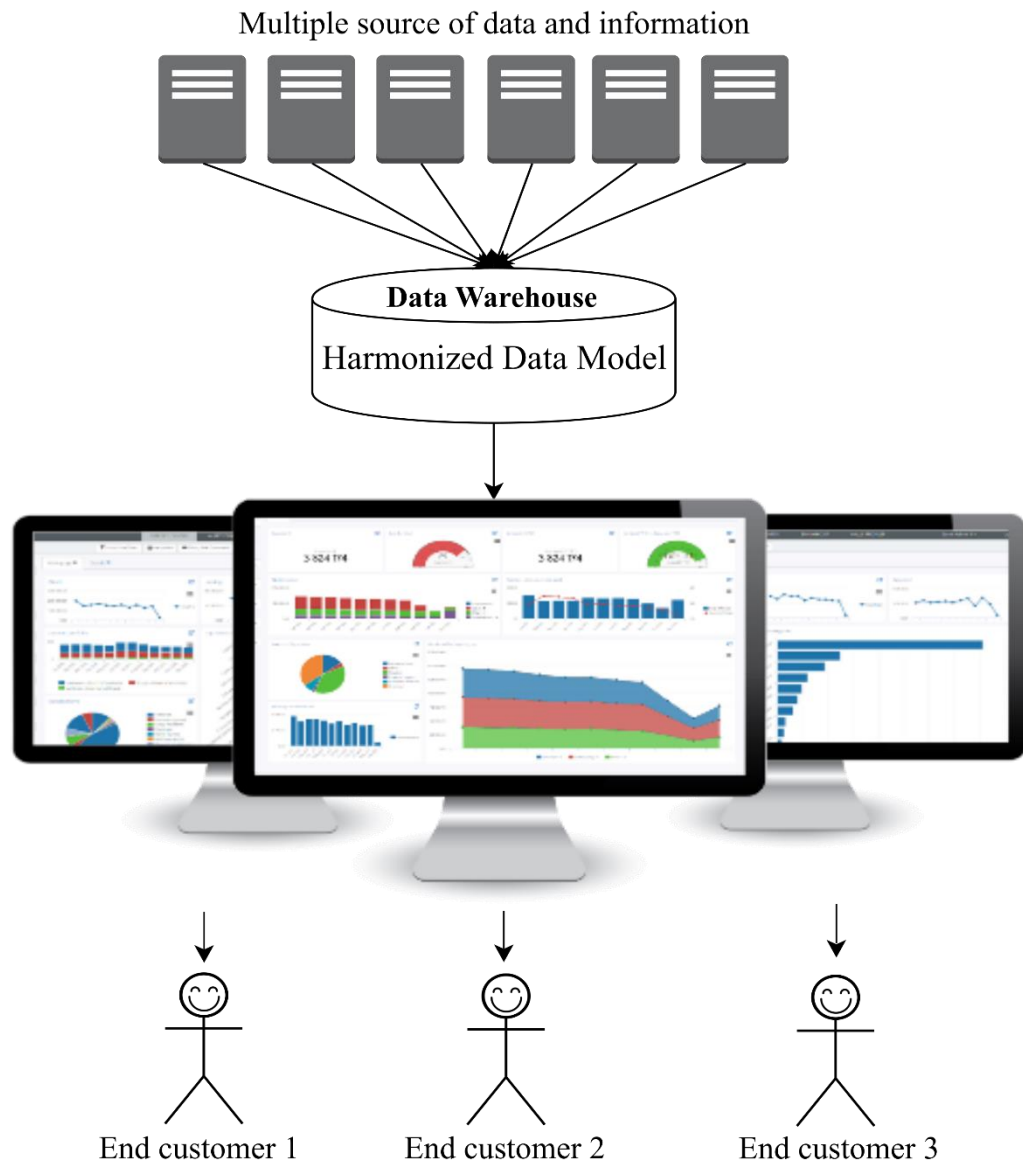


Figure 45. Case Customer 2 after using core business management solution.

It can be seen in the figure above that the end customer of Case Customer 2 now received improved and interactive analytics reports instead of excel workbooks full of still reports. These interactive reports and dashboards are helpful in discovering data and analyze different possibilities of improvements. For example, user can analyze a certain report about the progress of a certain product marketing campaign and by drilling into the report, the user can discover what the situation was before the campaign started was and what is the situation during or after the campaign. The data for reports is fetched from multiple source systems of Case Customer 2 and harmonized in the data warehouse to generate reports and the important analytics information.

Previously the Case Customer 2 were using several hours to create the reports using excel workbooks and send it to their end customers at the end of each project. Now after the use of core business management solution the end customers do not have to wait until the

end of the project to see the result and value generated by the services of the Case Customer 2. Instead, the customers can easily access core business management via a web application and get that information within minutes from interactive dashboards and reports. One such example of the reports can be seen in Figure 46.

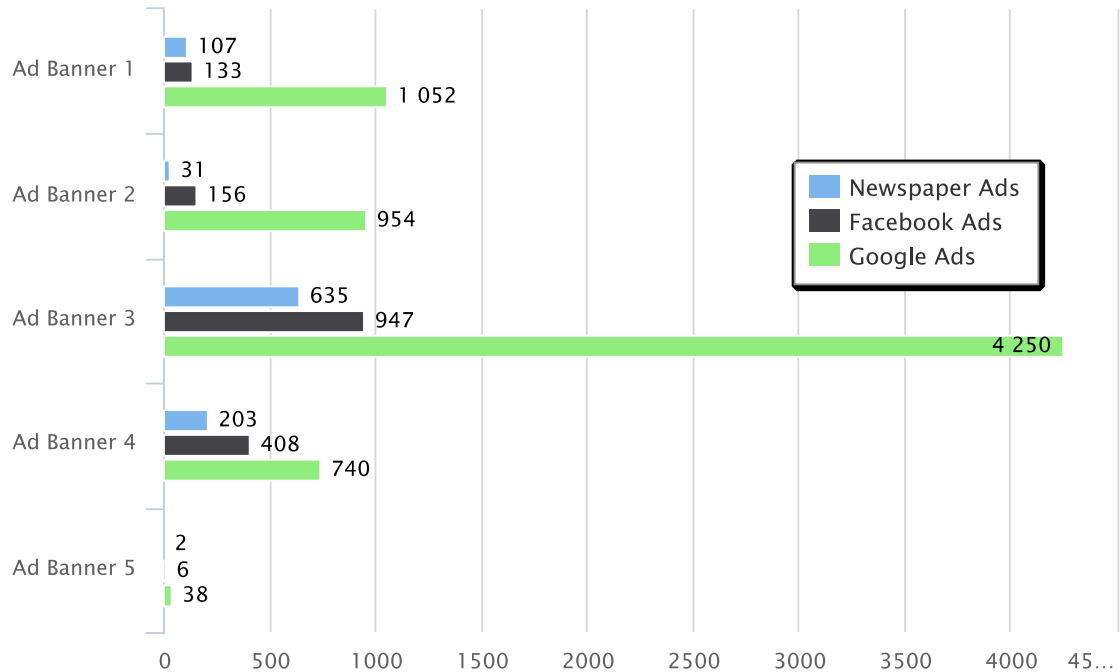


Figure 46. Sales per advertisement placement.

The figure above illustrates the sales generated from different advertisements done during a certain marketing campaign. With core business management solution, the end customer can see how much value is Case Customer 2 adding into their business. Case customer 2 gains several benefits by using core business management solution such as, competitive advantage over competitors by providing better analytics to its end customers and thereby increase sales and get better investments from their end customers. The services of the Case Customer 2 combined with the core business management solution can allow them to increase prices of their services which will result in increased sales revenue. The core business management solution saves significant time of the case customer 2 and this saved time can be used on other important value adding activities to further improve sales of the organizations.

6.4 Case 3: Quantifying Value by Increase in Sales and Reduction in Costs

The third case customer analyzed for this thesis is a home improvements and health care service provider in Finland. Their services include house hold cleaning, moving cleaning, window cleaning, home doctor, physiotherapy, rehabilitation, foot care, dental care and child care are among many other services provided to their end customers of all ages in

Finland. Based on the information acquired from old data analytics developed on excel workbooks and manual work, the case customer 3 decided to invest into ear infections campaign in which promotional offeres would given for the ear infection treatment which will be targeted at younger population of its customer.

The information which they acquired about investing into younger people was based on the manual data and analytics done on excel workbooks and some basic information system. This information was faulty and proven wrong after the implementation of core business management solution. With better analytics tools it was identified that the young people were a very small group and the average euros earned per customer was insignificant to make a difference in the sales or in improvement of service level. The magnitude of the sales per young customer was so small that, even, if the sales from that segment increased to double the amount, it would not effect significantly on the sales position of the organization. The case customer 3 did not have information about their customer portfolio due to bad and mismanaged information achieved and old analytics techniques. The most important customer group was the people of age more than 75 years old. The customer portfolio of case company 3 is illustrated in Figure 47.

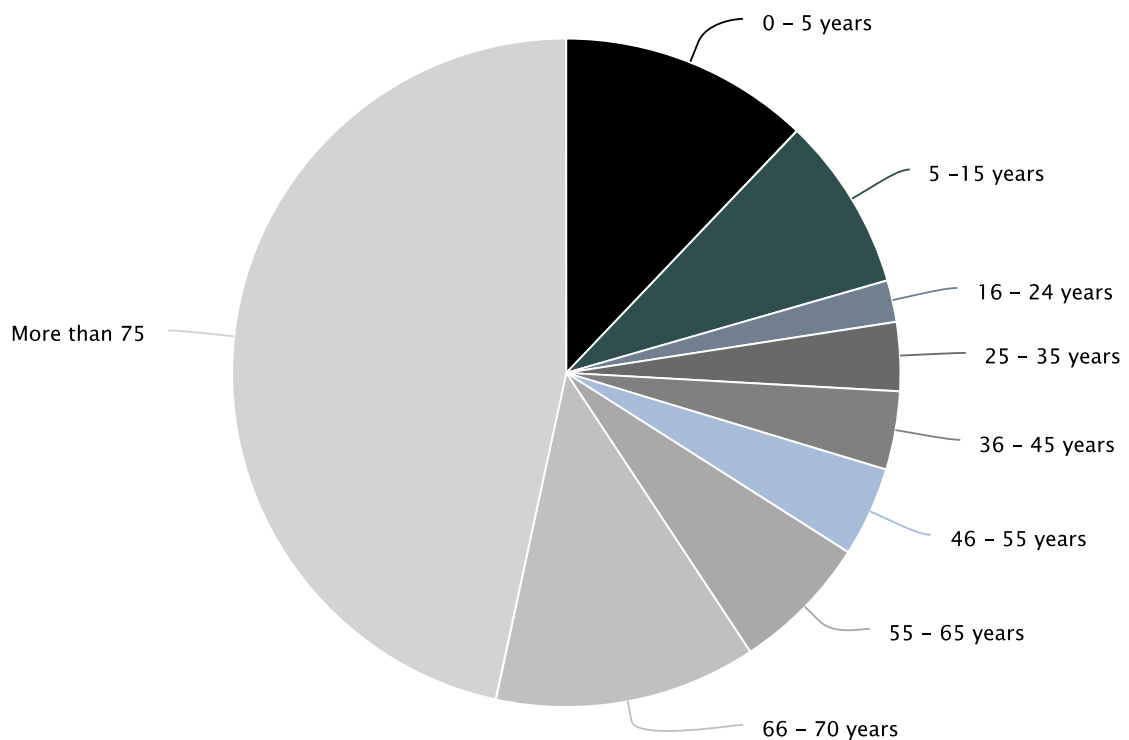


Figure 47. Customer portfolio of case customer 3.

As illustrated in the figure above the younger population in the customer base of case customer 3 is about 5.8% whereas the older people consists of whopping 55.2%. This enormous difference is evidence enough to direct the ear infections campaign to the profitable customer segment in order to increase sales revenue and improve the performance of the organization.

After the use of core business management solution, the top management of case customer 3 decided to shift the focus of this campaign to the older people in their customer base. The result was massive improvement in the sales revenue acquired from the health care services due to the investment made in correct target customers where in most cases old people can afford to spend on the home doctor and health care services more easily than the small child families. Small child families usually prefer public healthcare services over private hospitals which are costly and older people have already made their fortune.

The Case Customer 3 did not have any business intelligence solution implemented in their organization before they decided to start this campaign. The decision was made based on the information acquired from a basic information. They did not even know how a certain customer group is performing and how much is it contributing towards the profitability. Information such as customer's buying behavior, e.g. what kinds of products are being bought by which customer is important to invest into a certain customer group. In home care service, it is vital to identify which customers are purchasing more of these services. After the use of core business management solution the case customer 3 were able to identify the customer and product profitability which enabled them to further improve their business and increase sales revenue. The notion is illustrated in Figure 48.

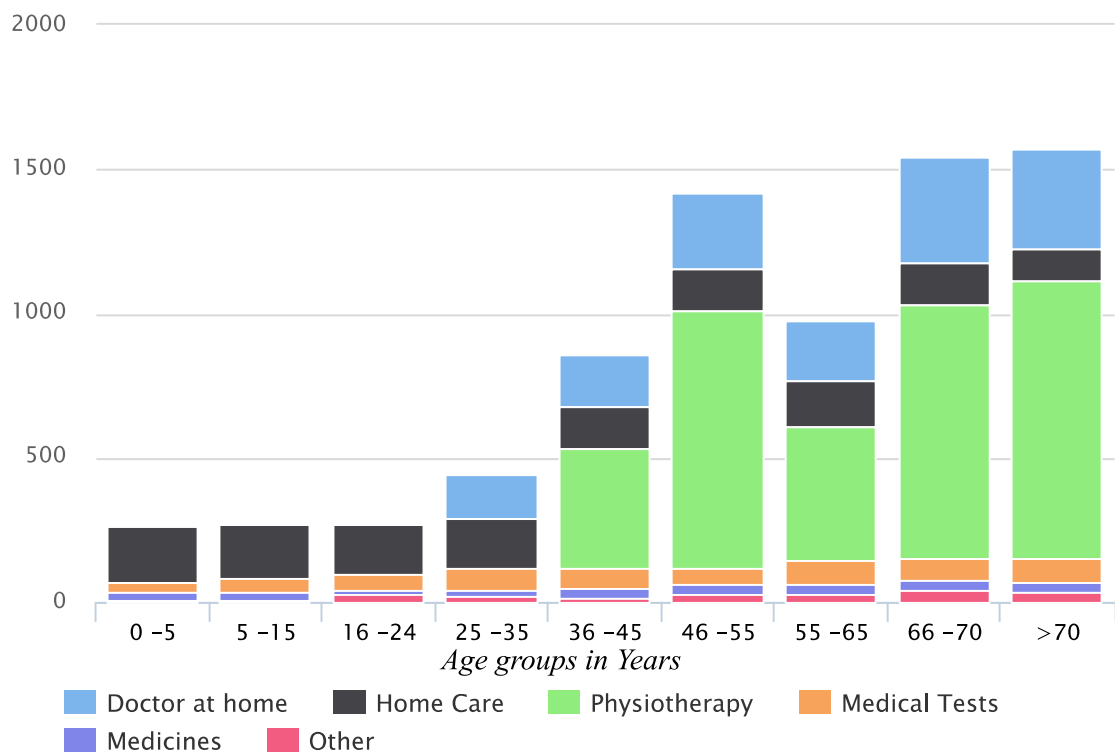


Figure 48. Profitability of products per customer group of case customer 3.

In the illustration above the most important customer group is the older people. They are also the ones whose contribution towards the profitability of the organization is higher than other customer groups. It can also be seen in the figure above that the home care and

physiotherapy service are generating significantly higher revenue in case of older customer groups than the younger customer groups. Therefore, it was decided by the top management to target the high revenue generating group in order to increase sales and performance of the organization. The second scenario of analyzing this information is to analyze it by profitability of customer groups per products in order to verify the results achieved. The illustration is presented in Figure 49.

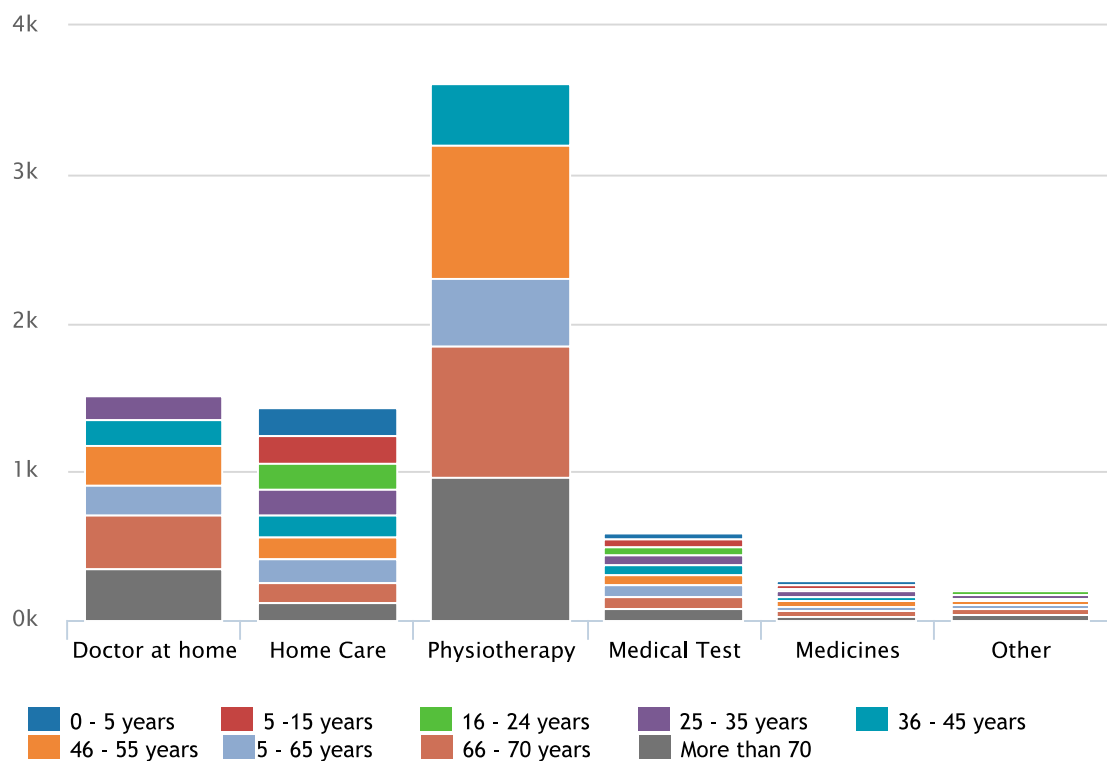


Figure 49. Profitability of customer groups per product of case customer 3.

It is evident in the illustration above that the biggest chunk of bar in case of “Doctor at home” service is comprised of older people and the younger customer of the case customer 3 are relatively very less in terms of contributing towards the profitability of the organization. It can also be seen in the figure above that the physiotherapy is the highest revenue generating service among the healthcare services of the case customer 3. This insight gives them another opportunity to optimize their sales and utilize this information in order to generate and increase sales of the organization by improving the level of service.

After the implementation and use of core business management solution the case customer 3 started to share the insights throughout the organization in order improve the management and create a culture of transparency. If a company knows its customer and how they purchase different products then that company can sell better and service them better according to their preferences. This in result enabled them to improve their performance and reduce costs in many areas of business.

Business owners, directors and all of the top management which now user core business management in case customer 3 organization as their information and analytics tool, can now get that information within minutes compared to hours in the previous situation using basic excel workbooks. Financial reporting was improved which previously required several man hour to extract information for single report which resulted in the enormous time saving and costs saving. The whole process helped case customer 3 to take decision based on accurate information and on the right time. The costs of financial reporting were reduced to one third and the significant surge in sales performance was observed.

In this section three cases were presented and it was shown that how in those cases the value of business intelligence product (in this case core business management solution) can be quantified. The quantification be done by increase in sales revenue, reduction in costs or by both. In the following chapter, the cases are discussed from the perspective of the theoretical framework build in this thesis. Furthermore, the results of the study are analyzed and practical limitation described.

7. DISCUSSION AND LESSONS LEARNED

7.1 Overview of the Problem and Framework

Value generated by the existing and new customers of an organization is the only value a company can create for its stakeholders and owners (Cokins 2015). Companies, in order to main their competitive advantage in today's business world, need to keep customers longer, grow them into larger customers, make them more profitable, serve them more efficiently, and acquire more profitable customers (Cokins 2015). A company needs to identify what is important to its customers and what activities in the organization are contributing towards it. Information required to analyze what is important to customers is poorly provided by the traditional accounting systems (Turney 2005). Activity based accounting is the only way to find out customer and product profitability efficiently and accurately (Turney 2005).

Companies regularly pursue to find out information related to costs of production but they have less information about how much it costs to serve their customers (Braithwaite and Samakh 1998). Costs of serving a customer and costs of manufacturing products are equally important for profitability of a company. According to Kaplan and Narayanan (2001), customer profitability is considered more vital than the product profitability in case of service-based organizations. Many companies have stated that they require an effective tool to identify costs of serving its customers and customer profitability in order to serve their customers better (Norek and Pohlen 2001).

Companies who focus on producing products which are attractive for its customer are highly likely to succeed (Brown and Eisenhardt 1995). According to Khalifa (2004), a product is considered attractive by the customers only if the benefits surpass the sacrifices made by the customer to purchase it. In order to decrease sacrifices and increase benefits a customer perceives from buying product a company need to have in depth knowledge about its customers and vital value drivers which help in quantifying the benefits. According to Anderson and Narus (1998), a customer, in most cases, already knows what to require but it does not mean that they know the value of fulfilling these requirements. Therefore companies should work in order to make the value of their products and services explicit in terms of dollars.

According to Harris and Mongiello (2012), with the development of business markets, customer-focused products and services development, it has become highly necessary to identify customer profitability information. Customer profitability information provides important insights to the organization which help in taking informed decisions at the right time. In today's competitive world companies use business intelligence tools to acquire the customer profitability information efficiently and accurately. Business intelligence

systems provide information of vital importance in the correct form, at the correct time and at the correct location in order to help organizations understand their business and take initiative to improve and optimize the performance. Business intelligence systems provide information which can help companies identify the most profitable and least profitable customer, helping in decisions related to investment in marketing.

The central objective of detecting customer profitability information is to move customer from low profitability to higher profitability section which in result makes the organization itself profitable. There are numerous business intelligence tools available in the market which enable organizations to acquire customer profitability information. This information can be used to identify most profitable, profitable and least profitable customers. Based on this information organization can make investment and marketing decision which can enable them to improve or increase their sales performance, reduce costs or both through various ways which in result creates an added value and increases the benefits a customer perceives. Figure 50 presents the final framework of this thesis.

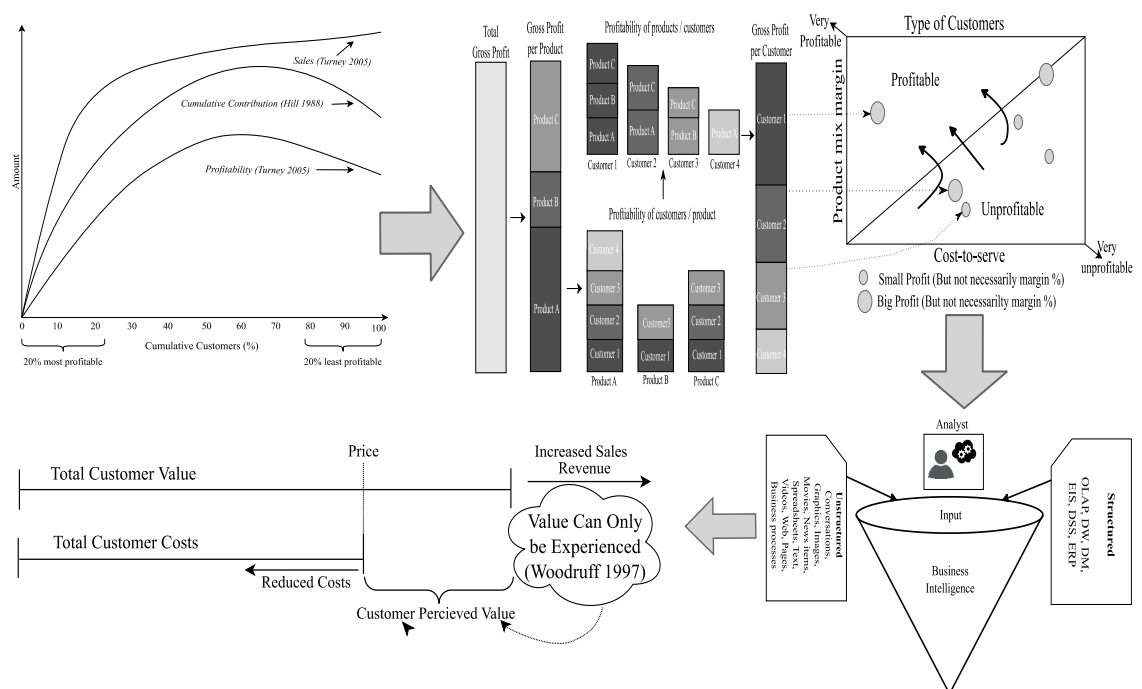


Figure 50. Framework of thesis.

To sum up, this thesis claims that business intelligence products provide vital customer profitability information required by the top management of a company to make decision based on correct information at the right time. This helps companies in improving their sales performance, reduction in costs or both. As a result, increase in sales or reduction in costs enable companies to provide added perceived value to their customers by increasing the benefits a customer perceives and/or reducing the sacrifices it makes when acquiring the product or service.

7.2 Analysis of the Cases based on Framework

Theoretical framework of this thesis was applied in the customer cases of the case company to evaluate the viability of the framework. The first case analyzed in this thesis is a public listed company who specializes in wealth management, financial services to investors, companies and private individuals. In this case the costs reduction was achieved by solving the problem of inefficient and slow financial reporting of figures for the management.

The complete process of generating reports and figures was done manually based on excel workbooks before the implementation and use of core business management solution. Being a publicly listed company, it is required to release the figure and reports to the people at the end of the month to show the progress and status of the business and this process previously took several days to generate the required information. This problem created hurdles for the top management of the organization to make decisions on the right time and with accurate information.

After the implementation and use of core business management solution the complete process of financial reporting was redesigned systematically in order to reduce the time of generating the vital information. All the data was gathered in the data warehouse and harmonized to be able to show it to the end user of core business management. This resulted in enormous reduction in time to generate the figures and other financial reports. Instead of several days now the management of this case customer can get their information within 15 minutes and vital data is just a few clicks away.

This automation of financial reporting in the case customer's organization resulted in huge reductions in operational costs by shifting all the manual work, previously done by people, into data warehouse and data engine of the core business management solution. The time previously spent on generating reports and maintaining huge excel workbook can be utilized on generating more value for the business and performance improvements in the case company. This automation also contributed towards reduction in psychological costs due to the fact that the management can trust the figures and reports generated by core business management because of less chances of human error than ever before in the financial reporting. Figure 51 shows the reduction in costs highlighted with respect to the framework of this thesis.

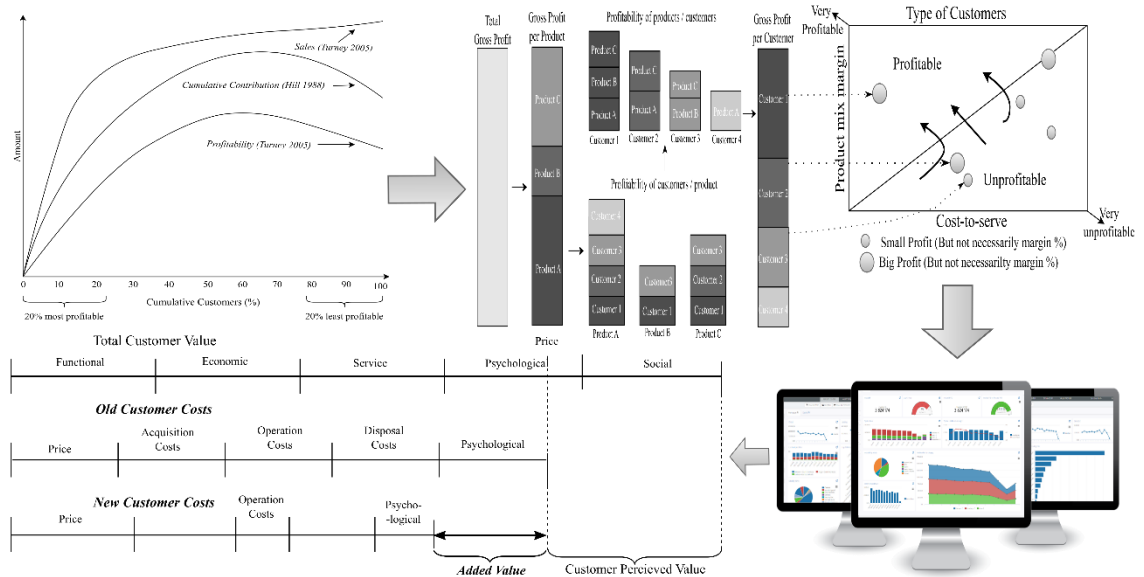


Figure 51. Case 1 analysis: Reduction in costs.

As illustrated in the figure above that the reduction in operational costs is significantly large. The implementation and use of core business management also impacted the psychological costs of the organization. The financial reporting is now faster and more reliable in terms of accuracy of the information. There is a slight increase in the price factor in 'New Customer Costs' section in the figure which can be seen as an investment to be paid back in a very short period of time. The quantification of value generated by the core business management can be clearly seen in the figure above. In addition to the perceived customer value now after the reduction in operational and psychological costs, there is an added value which can only be achieved by using a core business management solution.

The second case analyzed in this thesis is an organization who specializes in digital marketing, advertising consultancy, business development and automation of web marketing and marketing communications. In this case, sales revenue of the organization was increased by providing the end users of this case customer the opportunity to measure and analyze the marketing services provided by the case customer. This information was previously provided manually by generating, maintaining and sending excel workbooks to each end customer separately.

The main problem with this process was that the reports generated were not interactive for the end user and therefore the user did not have the possibility to discover and drill down into the information being presented. This process was costly for the case organization and there was a huge risk of losing the end customer to the competing organization due to better service.

After the implementation of the core business management solution, they packed their services with the core business management solution which created an added value for

the end customer. The end customers of the case organization can easily access the analytics information about their marketing campaigns and marketing activities performed by the case organization. The complete process of generating and delivering reports and vital analytics information to the end user was automated and it enabled the case organization to create better and increased value with their services. This allowed them to increase the prices of their product which helped them to increase the sales significantly.

Core business management provided the possibility to the end customer to perform interactive analysis and drill down into reports. This resulted in quantification of value generated by core business management. With core business management solution in place, the end customer of the case organization can see the value which they get from the services of the case organization. They can observe the results of a certain marketing campaign and see the improvements visually presented in form of interactive graphs. Figure 52 illustrates increase in sales highlighted with respect to the framework of this thesis.

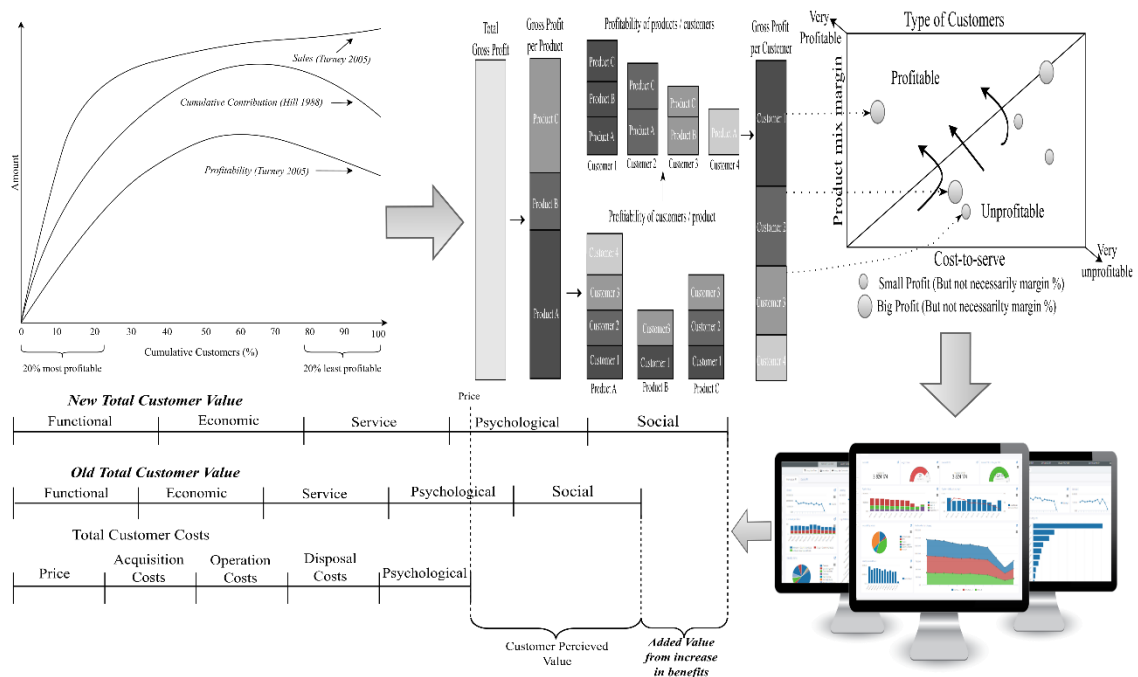


Figure 52. Case 2 analysis: Increase in sales.

As illustrated in the figure above that with the implementation and use of core business management enabled the case organization to make small improvements in all of the value drivers (functional, economic, service, psychological and social). The automation of the reporting process allowed case organization to increase prices of their services which will result in increased sales revenue and sales performance. The case organization packaged their services with the core business management solution and it resulted in better service for their end customer. This betterment in service performance and delivery generated and added value by increase in benefits an end customer gets which can be clearly seen in the figure above.

The third case analyzed in this case was of an organization who specialized in healthcare and home improvement services. This case was typical case of making decision based on wrong and inaccurate information. In this case the organization was planning to start a campaign and invest into ear infections of the younger people in their customer base. The decision was made based on the huge amount of excel work books and diversified information acquired from multiple source systems running in the case organization. The information was faulty and it would have resulted in a total disaster investment if the case organization would not have implemented the core business management solution in their organization.

After the implementation and the use of core business management solution, it was evident that the customer groups they wished to invest into were a very insignificant group in their customer base. The revenue earned from the selected customer group was less, even if the sales would have been doubled by this campaign, the effect would have been negligible. With the use of core business management, they top management of the case organization was able to recognize that the most important group is the older people in cases of home doctor services.

Core business management solution enabled the top management to make decision right and they changed their campaign and targeted the older people. As a result this campaign was successful and generated increased sales revenue for the case organization. This implementation also allowed the top management of the organization to create a culture of transparency; some major improvements were done including shifts in top management which resulted in significant sales performance improvements and increase in sales revenue.

Core business management solution enabled the organization to identify its most important and revenue generating customer segments. The company also identified which of its services is the most profitable and among which customers. This vital information enabled them to make important decisions in order to improve its service level among customer segments in which it was not popular and results were significant improvements in sales and reduction in costs of serving the customers. With identification of customer and product profitability information the case organization realized the value of core business management solution and shared a good word about core business management solution in their network. Figure 53 illustrates the increase in sales and reduction in costs highlighted in with respect to the framework of this thesis.

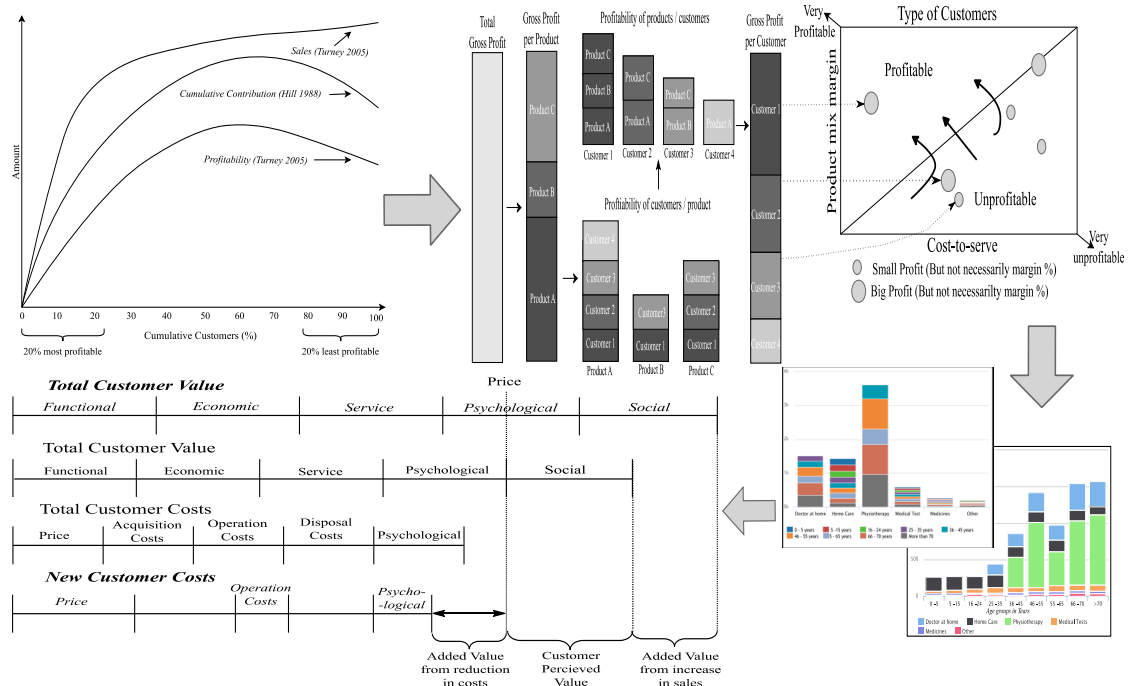


Figure 53. Case 3 analysis: Increase in sales and reduction in costs.

As illustrated in the figure above that the core business management solution enabled the case company to identify the products and customer profitability information. The increase in sales was achieved by improving the value drives which generate sales and this resulted in added value for the organization. The reduction in costs can also be seen in the figure above. This enabled the management to make the important decision to improve the sales performance and reduce costs of operating. One of the important decisions made was related to the investments done in the case of ear infections campaign. The core business management enabled the management to make a decision with the correct customer segment. As a result, the sales performance was boosted and the campaign was a success.

The major impact of the use of the core business management solution was on operational costs due to the fact that the financial reporting was improved significantly and information was readily available to the top management at the right time. Core business management also impacted the psychological costs of the organization by improving the quality of financial reporting and providing them with an opportunity to extract important information within minutes instead of several hours as in the previous situation. This resulted in enormous time savings and reduction in costs.

7.3 Analysis of the Results

Three different cases were analyzed in this thesis to demonstrate the quantification of value of customer profitability information provided by business intelligence products. One common characteristics can be noted in all the three cases; none of the case customers realized the benefits of implementing and using business intelligence tools and core business management solution in particular before using it. After using core business

management solution, case customers comprehended the benefits and gains which a business intelligence solution can offer.

In the first case analyzed in this thesis, the focus was on reduction of costs and operational costs in particular due to the fact that the complete process of financial reporting, previously done manually on excel workbook, was now automated by core business management solution. This helped the case customer 1 to reduce the time needed to produce the reports and figure. This reduction in time to generate financial reports enabled them to get the results faster and make decisions faster, with the right information. Management of the organization was made easier by providing rapid access to critical information. The result was significant reduction in operational costs and psychological costs which, at the end, reduced the sacrifices which a user perceives and creates added value.

In the second case analyzed in this thesis, the focus was on increase in sales revenue of the organization. In this case the delivery of important analytics information to the end users of case customer 2 was automated and enriched in terms of providing data discovery with the help of interactive reports and dashboards. The end users were provided with the opportunity to access the core business management solution directly and this created and added value for the end customers of the case customer 2. The automation of the process enabled the case customer 2 to increase the benefits a customer perceives while buying a product. This resulted in increase in overall benefits than the sacrifices a customer makes created an added value which allowed the case customer 2 to sell more.

In the third case analyzed in this thesis, the focus was on increase in sales revenue and reduction in costs. After the implementation of core business management solution the case customer 3 was able to obtain accurate customer and product profitability information. This enabled them to differentiate the well-performing customers and products from poorly performing ones. With this information the Case Customer 3 was able to make correct investment decisions, resulting in increase in the sales revenue. The information provided by the core business management allowed the Case Customer 3 to reduce the operational costs by automating the reporting process. The end result was the benefits which a customer perceives were increased and the sacrifices were reduced by a big margin to create added value. This added value was experienced by the Case Customer 3 by achieving both increase in sales and reduction in costs.

The added value achieved in all three customer cases was experienced by the customer by reduction in costs, increase in sales revenue or by both. Core business management solution provided important information related to customer and product profitability, which helped case customers to increase sales, reduce costs or both. This important information acted as an eye opener in all the cases because the case customers were not aware of the benefits which can be achieved by using core business management and the magnitude of errors which were being made before the implementation and usage of business intelligence tools. The value of core business management solution was quantified

for the case customers by providing them opportunity to increase sales, reduce costs or achieve both with the help of analyzing and utilizing the customer profitability information.

8. CONCLUSION

In today's competitive markets companies operate in a very complex environment. Companies are striving to maintain their competitive advantage over their competitors. This has brought a decrease in the profit margins generated from the products and services involved in the trade. The innovations and improvements in the management accounting done in the recent years has been directed towards achieving better management by measuring manufacturing costs, whereas very little attention has been paid on identifying what is important for customers and how much it cost to serve the customers. In other words, companies are more focusing on finding out what costs are incurred while producing the products or service then concentrating on identifying customer profitability and how it can help companies prosper and remain competitive in the market. Business intelligence solutions provide customer and product profitability information at the right time with greater accuracy and people do not recognize the benefits a BI system can provide.

The objective of this study was to discuss the benefits and importance of customer profitability and to quantify the value of customer profitability information provided by business intelligence tools. For this purpose, this thesis discussed and analyzed the customer value, customer and product profitability, and business intelligence solution and how business intelligence solution can quantify the customer value of customer profitability information. To address the objective of this thesis, a theoretical review was conducted and a framework was designed. This framework was applied on three different customer cases of a real life company to test the feasibility of the framework.

The important findings of this thesis were that the value of business intelligence products can be quantified either by increasing the sales revenue of a company, reducing the costs of a company or by achieving both. Major impact of reduction in costs was on operational and psychological costs and increase in sales was achieved by providing a small increase in all the segments of benefits which a customer gets while buying a product or a service. Figure 54 demonstrates the idea of how the value of a business intelligence systems was quantified by increase in sales and reduction in costs.

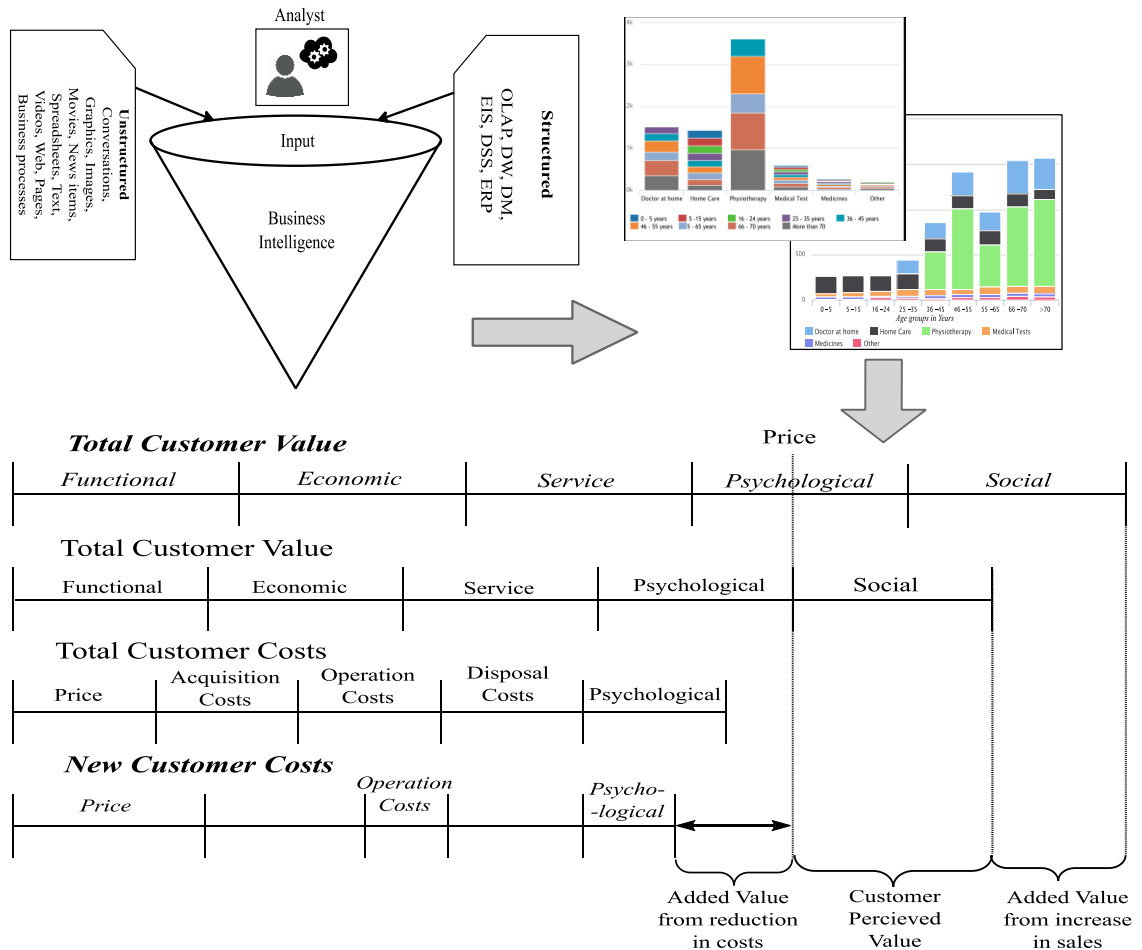


Figure 54. Quantification of customer value of customer profitability information achieved by increase in sales and reduction in costs.

Despite the interesting results achieved from the empirical study in this thesis, there are some limitations. Since this study was only implemented in limited type of companies, there is no more evidence to support the framework in other industries. Moreover, the framework of this thesis was only tested with the case where there actually was a problem and where there was need for business intelligence solutions. It may be more challenging to quantify the value of business intelligence products in other companies which do not have any identified problems. Hopefully, in future more research will be conducted in this area to test the increase of customer value of business intelligence products in various industries and by various means.

REFERENCES

- Algesheimer, R. & Wangenheim, F.V. 2006, "A network based approach to customer equity management", *Journal of Relationship Marketing*, Vol. 5, No. 1, pp. 39-57.
- Anderson, J. C., Narus, J. A. 1998. Business marketing: understand what customers value. *Harvard business review*, 76, 53-67.
- Anderson, J. C., Narus, J. A., & Van Rossum, W. 2006. Customer value propositions in business markets. *Harvard business review*, 84(3), 90.
- Anderson, J. C., Kumar, N., & Narus, J. A. 2007. *Value Merchants: Demonstrating And Documenting Superior Customer Value in Business Markets*. Boston, MA: Harvard Business School Press.
- Anderson, J. C., Narus, J. A., & Wouters, M. 2004. Tiebreaker selling. *Harvard business review*, 92(3), 90-96.
- Ballantyne, D., Frow, P., Varey, R. J. & Payne, A. 2011. Value Proposition as communication practice: Taking wider view. *Industrial Marketing Management*, 40(2), 202-210.
- Barnes, C., Blake, H., & Pinder, D. 2009. *Creating and delivering your value proposition: Managing customer experience for profit*. Kogan Page Publishers.
- Bellis-Jones, R. 1989. *Customer Profitability Analysis*. Management Accounting.
- Benoit, D.F. & Van den Poel, D. 2009, "Benefits of quantile regression for the analysis of customer lifetime value in a contractual setting: An application in financial services", *Expert Systems with Applications*, Vol. 36, No. 7, pp. 10475-10484.
- Blattberg, R. C., Deighton, J. 1996. Manage marketing by the customer equity test. *Harvard Business Review*.
- Blattberg, R.C., Malthouse, E.C. & Neslin, S.A. 2009, "Customer Lifetime Value: Empirical Generalizations and Some Conceptual Questions", *Journal of Interactive Marketing*, Vol. 23, No. 2, pp. 157-168.
- Bowman, D. & Narayandas, D. 2004, "Linking customer management effort to customer profitability in business markets", *Journal of Marketing Research*, Vol. 41, No. 4, pp. 433-447.
- Bower, M., & Grada, R. A. 1985. The Role of Marketing in Management. *McKinsey Quarterly*, 3, 34-46.
- Braithwaite, A. Samakh, E. 1998. The cost-to-serve Method. *International Journal of Logistics Management*. Vol. 9.
- Campbell, D. & Frei, F. 2004, "The persistence of customer profitability: Empirical evidence and implications from a financial services firm", *Journal of Service Research*, Vol. 7, No. 1, p.107-123.
- Christopher, M. 1982. Value-In-Use Pricing. *European Journal of Marketing*, 16(5), pp. 35 - 46.
- Carter, T., & Ejara, D. D. 2008. Value innovation management and discounted cash flow. *Management decision*, 46(1), 58-76
- Cokins, G. 2004. "Are all your customers profitable to you?". SAS White Paper.
- Cokins, G. 2015. "Measuring and Managing Customer Profitability". *Strategic Finance*, 96(8), pp. 23-29.
- Damm, R. & Monroy, C.R. 2011, "A review of the customer lifetime value as a customer profitability measure in the context of customer relationship management", *Intangible Capital*, Vol. 7, No. 2, pp. 261-279.
- Duchessi, P. 2004. *Crafting customer value: The Art and Science*. Perdue University press. pp. 22-25.

- Elbashir, M.Z., Collier, P.A. & Davern, M.J., 2008. Measuring the effects of business intelligence systems: The relationship between business process and organizational performance. *International Journal of Accounting Information Systems*, 9(3), pp.135-153.
- Elias, N., & Hill, Dan. 2010. "Customer Profitability Management". *Business Performance Management*. Institute of Management Accountants.
- Foster, G., Swenson, D. 1997. Measuring the Success of Activity Based Cost Management and its Determinants. *Journal of Management Accounting Research*. Vol. 9.
- Fredericks, J. 2001. Connecting Customer Loyalty Financial Results. *Marketing Management*. Vol. 10.
- Frischmann, T. & Gensler, S. 2011, "Influence of perceptual metrics on customer profitability: The mediating effect of behavioural metrics", *Journal of Financial Services Marketing*, Vol. 16, No. 1, pp. 14-26.
- Frow, P., & Payne, A. 2011. A stakeholder perspective of the value proposition concept. *European Journal of Marketing*, 45(1/2), 223-240.
- Furinto, A., Pawitra, T. & Balqiah, T.E. 2009, "Designing competitive loyalty programs: How types of program affect customer equity", *Journal of Targeting, Measurement and Analysis for Marketing*, Vol. 17, No. 4, pp. 307-319.
- Gartner. 2014. "Gartner Says Worldwide Business Intelligence and Analytics Software Market Grew 8 Percent in 2013". <http://www.gartner.com/newsroom/id/2769417>. (Accessed on 22.10.2015)
- Gartner. 2015. "Magic Quadrant for Business Intelligence and Analytics Platforms". <http://www.gartner.com/technology/reprints.do?id=1-2ACLP1P&ct=150220&st=sb>. (Accessed on 12.12.2015)
- Gordon, H. 1988. "Customer and Product Profitability", *Logistics World*, Vol. 1 Iss 2 pp. 74 – 78.
- Gronroos, C. 1997. Value-driven relational marketing: From products to resources and competencies. *Journal of marketing management*, 13(5), 407-419.
- Gummesson, E., (1993). Case study research in management: Method for generating qualitative data, Stockholm University, Department of Business Administration, pp. 61
- Gupta, M. Galloway, K. 2003. Activity Based Costing: Management and its Implications for Operations Management. Technocation. Vol. 23.
- Haenlein, M., Kaplan, A.M. & Beeser, A.J. 2007, "A Model to Determine Customer Lifetime Value in a Retail Banking Context", *European Management Journal*, Vol. 25, No. 3, pp. 221-234.
- Haris, P., Mongiello, M. 2012. *Accounting and Financial Management*. Routledge.
- Harper, B. 2010. "Boosting profits through value-based selling." *Casual Living*, 50, 5, p. 30.
- Hill, G. 1988. "Customer and Product profitability". *Logistics World*. Vol. 1 Iss: 2, pp.74 – 78.
- Ho, T., Park, Y. & Zhou, Y.-. 2006, "Incorporating satisfaction into customer value analysis: Optimal investment in lifetime value", *Marketing Science*, Vol. 25, No. 3, pp. 260-277.
- Hogan, J.E., Lemon, K.N. & Libai, B. 2004, "Quantifying the ripple: Word-of-mouth and advertising effectiveness", *Journal of Advertising Research*, Vol. 44, No. 3, pp. 271-280.
- Holbrook, M. B. (Ed.). 1999. *Customer value: a framework for analysis and research*. London: Routledge.

- Homburg, C., Droll, M. & Totzek, D. 2008, "Customer prioritization: Does it pay off, and how should it be implemented?", *Journal of Marketing*, Vol. 72, No. 5, pp. 110-130.
- Hope, J. 1998. *Customer: Strategic, Loyal and Profitable?* Magazine of Chartered Management Accountants. Vol. 76.
- Hornigren, C. T. 2000. *Management and Cost Accounting*. 11th Ed. Pearson Education Inc. Upper Saddle River.
- Jacobs, F.A., Johnston, W. & Kotchetova, N. 2001, "Customer Profitability: Prospective vs. Retrospective Approaches in a Business-to-Business Setting", *Industrial Marketing Management*, Vol. 30, No. 4, pp. 353-363.
- Jones, D. 2009. "The Shortcut Guide to Achieving Business Intelligence in Midsize Companies". *Realtimerepublishers.com*.
- Jhonson, T. H. 1992. It's Time to Stop Over-Selling Activity Based Concepts. *Management Accounting*. September.
- Ju-fang, C., Kun-yuan, Y. 2008. Application of activity-based costing in customer profitability analysis. In *Business and Information Management*, 2008. ISBIM'08. International Seminar on (Vol. 1, pp. 494-497). IEEE.
- Kaario, K., Pennanen, R., Storbacka, K. Ma'kinen, H.L. 2003. *Selling Value: Maximize Growth by Helping Customers Succeed*. WSOY. Juva.
- Kaplan, R. 1992. In *Defence of Activity Based Cost Management*. *Management Accounting*.
- Kaplan, R. (1989). Kanthal (A). *Harvard Business Review*. Case 9-190 007
- Kaplan, R. & Atkinson, A. 1998. 3rd ed. *Advanced Management Accounting*. Prentice Hall. Upper Saddle River.
- Kaplan, R. & Cooper, R. 1998. *Cost and Effect – Using integrated cost systems to drive profitability and performance*. Boston: Harvard Business School Press.
- Kaplan, R. & Narayanan, V. G. 2001. "Measuring and Managing Customer Profitability". *Cost Management*. Vol. 15.
- Keiningham, T.L., Perkins-Munn, T., Aksoy, L. & Estrin, D. 2005, "Does customer satisfaction lead to profitability? The mediating role of share-of-wallet", *Managing Service Quality*, Vol. 15, No. 2, pp. 172-181.
- Kotler, P. 2009. *Marketing Management*. Pearson Education.
- Khalifa, A. S. 2004. Customer value: a review of recent literature and an integrative configuration. *Management Decision* 42, 5, pp. 645-666.
- Kumar, V. 2006, "CLV: The databased approach", *Journal of Relationship Marketing*, Vol. 5, No. 2-3, pp. 7-35.
- Kumar, V., Aksoy, L., Donkers, B., Venkatesan, R., Wiesel, T. & Tillmanns, S. 2010b, "Undervalued or overvalued customers: Capturing total customer engagement value", *Journal of Service Research*, Vol. 13, No. 3, pp. 297-310.
- Kumar, V., Petersen, J.A. & Leone, R.P. 2007, "How valuable is word of mouth?", *Harvard business review*, Vol. 85, No. 10, pp. 139-146+166.
- Kumar, V., Petersen, J.A. & Leone, R.P. 2010a, "Driving profitability by encouraging customer referrals: Who, when, and how", *Journal of Marketing*, Vol. 74, No. 5, pp. 1-17.
- Kumar, V., Petersen, J.A. & Leone, R.P. 2013, "Defining, measuring, and managing business reference value", *Journal of Marketing*, Vol. 77, No. 1, pp. 68- 86.
- Kumar, V. & Shah, D. 2004, "Building and sustaining profitable customer loyalty for the 21st century", *Journal of Retailing*, Vol. 80, No. 4, pp. 317-330.
- Kumar, V., Shah, D. & Venkatesan, R. 2006, "Managing retailer profitability-one customer at a time!", *Journal of Retailing*, Vol. 82, No. 4, pp. 277-294.

- Lannings, M. J. 2000. *Delivering Profitable Value. A Revolutionary Framework to Accelerate Growth, Generate Wealth, and Rediscover the Heart of Business.* Perseus Book Group.
- Lannings, M. J., & Michaels, E. G. 1988. A business is a value delivery system. *McKinsey staff paper*, 41.
- Langseth, J. and Vivatrat, N. 2003. "Why Proactive Business Intelligence is a Hallmark of the Real-Time Enterprise: Outward Bound," *Intelligent Enterprise*, (5)18, pp. 34-41.
- Lapierre, J. 2000. Customer-percieved value in industrial contexts. *Journal of business and industrial marketing*, 15(2/3), 122-145.
- Larivire, B. 2008, "Linking perceptual and behavioural customer metrics to multi-period customer profitability: A comprehensive service-profit chain application", *Journal of Service Research*, Vol. 11, No. 1, pp. 3-21.
- Lee, C., Lin, T.T. & Chen, C. 2010, "The determinant of customer profitability on the financial institution", *Service Industries Journal*, Vol. 30, No. 14, pp. 2311-2328.
- Li, Q. 2010, "Exploring the relationship between customer-related measures and shareholder value", *Social Behaviour and Personality*, Vol. 38, No. 5, pp. 647-656.
- Lindic, J., & Silva, C. M. D. 2011. Value proposition as a catalyst for a customer focused development process. *Assembly Automation*, 33(1), 22-38.
- Lyly-Yrjänäinen, J., Velasquez, S., Suomala, P. & Uusitalo, O. (2010). *Introduction to industrial management.* Tampere University of Technology. Department of Industrial Management.
- Mark, T., Niraj, R. & Dawar, N. 2012, "Uncovering Customer Profitability Segments for Business Customers", *Journal of Business-to-Business Marketing*, Vol. 19, No. 1, pp. 1-32.
- Menon, A., Homburg, C., & Beutin, N. 2005. Understanding customer value in business-to-business relationships. *Journal of Business-to-Business marketing*, 12(2), 1-38.
- Negash, Solomon. 2004 "Business Intelligence," *Communications of the Association for Information Systems*: Vol. 13, Article 15.
- Nielson, J., Bukh, P. & Mols, N. 2000. Barriers to Customer-Oriented Management Accounting in Financial Services. *International Journal of Service Industry Management*. Vol. 11. MCB University Press.
- Niraj, R., Gupta, M. & Narasimhan, C. 2001, "Customer profitability in a supply chain", *Journal of Marketing*, Vol. 65, No. 3, pp. 1-16.
- Niraj, R., Foster, G., Gupta, M.R. & Narasimhan, C. 2008, "Understanding customer level profitability implications of satisfaction programs", *Journal of Business and Industrial Marketing*, Vol. 23, No. 7, pp. 454-463.
- Norek, C. D., Pohlen, L. 2001. Cost Knowledge: a Foundation for improving Supply Chain Relationships. *International Journal of Logistics Management*. Vol. 1.
- O' Guin, M. C., Rebischke, S. A. 1999. Customer-Driven Costs Using Activity-Based Costing. *Handbook of Cost Management*. J. B. Edwards. NY. Warren, Gorham & Lamont.
- Pekka, T., Thomas B. A., Petri P., Ilmari O., Nora R., (2011). Bridging the theory to Application Gap in Value-Based Selling, *Journal of Business & Industrial Marketing*, Vol. 26 Iss: 7, pp.493 - 502
- Pinnock, A. K. 1989. "Direct Product Profitability". I.T. in *Retailing: Application of Information Technology and Corporate Models in Retailing*. Kogan Page.

- Qi, J., Zhou, Y., Chen, W. & Qu, Q. 2012, "Are customer satisfaction and customer loyalty drivers of customer lifetime value in mobile data services: A comparative cross-country study", *Information Technology and Management*, Vol. 13, No. 4, pp. 281-296.
- Rajasekar., S. Philominathan., & P. Chinnathambi., V. (2006). Research metrology. Available at: <http://arxiv.org/pdf/physics/0601009.pdf>
- Rintamäki, T., Kuusela, H., & Mitronen, L. 2007. Identifying competitive value propositions in retailing. *Managing service quality*, 17(6), 621-634.
- Reinartz, W., Kumar, V. 2000, "On the profitability of long-life customers in a non-contractual setting: An empirical investigation and implications for marketing", *Journal of Marketing*, Vol. 64, No. 1, pp. 17-35.
- Reinartz, W., Kumar, V. 2003, "The Impact of Customer Relationship Characteristics on Profitable Lifetime Duration", *Journal of Marketing*, Vol. 67, No. 1, pp. 77-99.
- Reinartz, W., Thomas, J.S. & Kumar, V. 2005, "Balancing acquisition and retention resources to maximize customer profitability", *Journal of Marketing*, Vol. 69, No. 1, pp. 63-79.
- Riley, M. (1999). Know Your Customers. *Financial Executive*.
- Simth, M. Dikolli, S. 1995. Customer Profitability analysis: Activity Based Costing approach. *Management Auditing Journal*. Vol. 10.
- Smith, M. & Chang, C. 2009, "The impact of customer-related strategies on shareholder value: Evidence from Taiwan", *Asian Review of Accounting*, Vol. 17, No. 3, pp. 247-268.
- Smith, J. B., & Colagte, M. 2007. Customer value creation: a practical framework. *The journal of marketing theory and practice*, 15(1), 7-23.
- Smith, R. P., & Morrow, J.A. 1999. Product development process modelling. *Design studies*, 20(3), 237-261.
- Shapiro, B. P., Tangan, V. K., Moriarty Jr, R. T., Ross, E. B. (1987). Manage Customers for Profits (not just for sales). *Harvard Business Review*. Sept-Oct.
- Shah, D., Kumar, V., Qu, Y. & Chen, S. 2012, "Unprofitable cross-buying: Evidence from consumer and business markets", *Journal of Marketing*, Vol. 76, No. 3, pp. 78-95.
- Soejarto, A. 2003. "Tough Times Call for Business Intelligence Services, an Indisputable Area of Growth". <http://business.highbeam.com/4553/article-1G1-99383231/tough-times-call-business-intelligence-services-indisputable>. (Accessed on 22.10.2015).
- Storbacka, K., Strandvik, T. & Gronroos, C. 1994, "Managing Customer Relationships for Profit – the Dynamics of Relationship Quality", Vol. 5, No. 1, pp. 21-38.
- Tegarden, D.P. 1999 "Business Information Visualization". *Communications of the Association for Information Systems*. <http://dl.acm.org/citation.cfm?id=374113>. (Accessed on 22.20.2015).
- Thomsen, E. 2003 "BI's Promised Land", *Intelligent Enterprise*.
- Turney, P. 2005. *Common Cents*. MCGRAW HILL BOOK Company.
- Van Triest, S. 2005, "Customer size and customer profitability in non-contractual relationships", *Journal of Business and Industrial Marketing*, Vol. 20, No. 3, pp. 148-155.
- Venkatesan, R., Kumar, V. & Ravishanker, N. 2007, "Multichannel shopping: Causes and consequences", *Journal of Marketing*, Vol. 71, No. 2, pp. 114-132.

- Villanueva, J., Yoo, S. & Hanssens, D.M. 2008, "The impact of marketing induced versus word-of-mouth customer acquisition on customer equity growth", *Journal of Marketing Research*, Vol. 45, No. 1, pp. 48-59.
- Walsh, G. & Elsner, R. 2012, "Improving referral management by quantifying market mavens' word of mouth value", *European Management Journal*, Vol. 30, No. 1, pp. 74-81.
- Walter, A., Muller, T. A., Helfert, G., & Ritter, T. 2003. Functions of industrial supplier relationships and their impact on relationship equity. *Industrial marketing management*, 32(2), 159-169.
- Webster, F. E. 1994. Defining the newmarketing concept. *Marketing management*, 2(4), 22-31.
- Weinberg, B.D. & Berger, P.D. 2011, "Connected customer lifetime value: The impact of social media", *Journal of Direct, Data and Digital Marketing Practice*, Vol. 12, No. 4, pp. 328-344.
- Woodall, T. 2003. Conceptualising 'value for the customer': and attributional, structural and depositional analysis. *Academy of marketing science review*, 12(1), 1-42.
- Woodruff, R. (1997). Customer Value: The Next Source of Competitive Advantage, *Journal of the Academy of Marketing Science*, 25 (2), 139-153.
- Zhang, J., Dixit, A. & Friedmann, R. 2010, "Customer loyalty and lifetime value: An empirical investigation of consumer packaged goods", *Journal of Marketing Theory and Practice*, Vol. 18, No. 2, pp. 127-139.
- Zeithaml, V. A., Rust, R. T., Lemon, K. N. (2001). *The Customer Pyramid: Creating and Serving Profitable Customers*. *California Management Review*. Vol. 43.