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Customer Profitability Analysis and Customer Life Time Value Models: Portfolio Analysis

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Abstract

The financial performance of a company is evaluated by two models in the marketing and sale phase of business cycle: tactically oriented customer profitability analysis model (CPA) and strategically oriented customer lifetime value model (CLTV). The article builds on the author's paper Analysis of customer lifetime value model: Literature review by analyzing real data provided by a company which belongs to market leaders in its segment: customers' profitability, creditworthiness and payment performance of customers were analyzed between 2010 and 2014.

Results of the portfolio analyzes will be used in the future research which should build modified marketing models focused on the customer relationship and expand them by the risk factor of a customer's payment default and potential loss for a company driven by a customer's bankruptcy. Such a model will be tested on the provided data set.

We proved that the risk profile of customers was above the average (most of customers were classified as "high risk" customers). Furthermore, we confirmed that "one-off" customers were more reliable payers and were also more profitable for the company. Last but not least, we analyzed the "Kanthal effect" by Kaplan on the data set. We concluded that the profitability of customers varied significantly, but the most profitable group of customers (20 %) generated 104 % of the profits only.

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Keywords: Customer Profitability Analysis (CPA); Customer Life Time Value (CLTV); Management Accounting; Portfolio analysis

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1. Introduction

The customer profitability and a business relationship between companies and their customers have been analyzed by companies and academics for decades. Comprehensive knowledge of customers or customer groups has the greatest impact on the financial performance of any company. It is important not only for marketing specialists, but most importantly for the top management of the company. In today's highly competitive world, a loss of a key customer might have a significant impact on the cash inflows of a company which might lead to a short-term cash flow issues, or even to a bankruptcy of the company. Fight for individual customers, either to attract new ones, or to keep the current customer base satisfied, has become a survival fight of each company.

This paper builds on the author's paper written in 2013 which summarized the already written literature related to the tactically oriented marketing model, Customer Profitability Analysis, and on the strategically oriented model, Customer Life Time Value.

The goal of this paper is to provide a detailed portfolio analysis of a customer base provided by a company active on the Czech market. We will provide answers to following questions:

- Is the risk profile of customers equally spread?
- Are "one-off" customers more profitable than "regular" customers?
- Are "one-off" customers better payers than "regular" customers?
- Is the "Kanthal effect" as described by Kaplan applicable on the data set?

The long-term goal of the research is to modify both marketing models focused on the customer relationship and expand them by the risk factor of a customer's paym ent default and potential loss for a company driven by a customer's bankruptcy. Such a model will be tested on the provided data set.

2. Literature review[1]

The so far written literature analyzed both marketing models focused on the customer relationship separately. The strategically oriented customer life time value (CLTV)[2] framework[3] was already introduced to the market in 1930s and thanks to the recent world financial crisis it became one of the top models in prediction of long-term customer relationship. The tactically oriented customer profitability analysis model (CPA)[4] analyzed customers profitability based on the historical data, especially, in the short-run.

CLTV framework

In the CLTV framework, the business relationship between a customer and a company can be divided into three phases: customer acquisition, retention and expansion.[5] There are two theoretical differentiable approaches for

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[1] The aim of this section was not to provide a detailed overview of literature written on Customer Profitability Analysis and Customer Life Time Value models as it would go beyond the purpose of this paper. The goal has been to summarize some key papers written on customer relationship management. It is up to a reader to broaden its knowledge by reading the related papers. More detailed overview of literature is mentioned e.g. in Čermák (2013).

2 It is generally defined as "*the present value of all future profits obtained from a customer over his or her life relationship with a firm*".(Gupta et al., 2006, p. 140). Berger and Nasr (1998, p. 18) mentioned another definition of CLTV which was defined by Kotler and Armstrong. They defined CLTV as an access of "*a person, household, or company whose revenues over time exceed, by an acceptable amount, the company costs of attracting, selling, and servicing that customer*".

[3] The strategic CLTV concept is based on the life cycle costing. A review summarizing published case studies of life cycle costing was written by Korpi and Ala-Risku (2008).

[4] CPA can be defined as „*the difference between the revenues earned from and the costs associated with a customer relationship during a specified period*" (Holm , Kumar , Rohde, 2011, p. 391)

[5] This classification was used by Gupta et al. (2006). These phases were analysed by e.g. Thomas (2001). A different classification of a long-term relationship between a customer and a company was mentioned by e.g. Šoljaková (2009).

prospecting CLTV (Bohari et al, 2011 came up with it while studying Hypermarket business): CLTV from firm perspective[6] and CLTV from customer perspective[7].

CLTV model from the customer perspective can be defined as "*the overall value of the current and future customer base*" (Bohari et al., 2001, p. 162) and can be divided into two major categories: Desired Customer Value and Perceived Customer Value. (such defined CLTV model was examined by Flint, Woodruff and Gardial, 1997.)

From firm perspective, the main objective is to evaluate how attractive customers are from the company perspective. Companies study the life cycle of customers with respect to revenues, costs, expenses and R & D investments and cost of capital in order to determine the present value of cash flows.

The "more advanced" CLTV models can be divided into several categories:[8] RFM and other scoring models[9], probability models[10], econometric models[11], persistence models, computer science models and growth models.

CPA framework

The tactically oriented CPA model analyzes customer profitability based on the historical data, especially, in the short-run. Most of the studies focusing on CPA are based on Activity Based Costing (ABC) approach[12]. The main goal of CPA is to provide information about the profitability of customers on individual level. The model should clearly determine which customers are profitable for the company and which customers have a negative impact on company's profitability.[13] Another goal of CPA is to provide information to the company's management, why some customers are more profitable than others. This knowledge allows any company to take necessary steps to ensure that business relationship with profitable customers is further developed and customers are satisfied in the future. Moreover, these steps should ensure that less profitable or even not profitable customers will become attractive for the company in the future, or the business relationship might be terminated if the company evaluates it as undesired.

3. Research Methodology

In this paper, Descriptive-Quantitative methodology applied on a case study was used to provide answers to above defined questions and goals of this paper. The main focus was on analyzing the structure of production costs, the profitability development of customers and products, payment performance and creditworthiness of customers.

On top, simple statistical methods were used; we generalized the profit distribution as described in the case study "Kanthal" written by Professor Kaplan, (Král, 2010, p. 175) tested it on a customer base provided by the "*company"* [14] and compared it with the Kaplan's results.

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[6] Authors analysing the CLTV model from a firm perspective were e.g. Berger and Nasr (1998). More detailed overview can be found e.g. in Bohari et al. (2011).

[7] Gilbert (2007) analysed the CLTV model from this perspective. More detailed overview can be found e.g. in Bohari et al. (2011).

[8] In this paper, we mentioned the classification used by Gupta et al. (2006). Another classification was mentioned e.g. in the paper by Jain - Singh (2002).

[9] RFM models were analyzed e.g. by Bonacchi – Perego (2012).

[10] Reinartz – Kumar (2003) used the core NBD/Pareto model in order to calculate CLTV.

[11] Kumar – Venkatesan – Bohling – Beckmann (2002) used econometric models to analyse the IBM customer portfolio.

[12] The methodology of ABC is well described e.g. in Král (2000, pp. 167 – 180). ABC is an approach which assigns resources to activities, and activities to cost objects based on consumption estimates. It is also possible to use Direct Costing, or Full Costing instead of ABC approach in the CPA framework. The Full Costing approach was used e.g. by van Raaij et al. (2005).

[13] Van Raaij et al. (2005) divided the customer base into three groups: the first group consists of highly profitable customers; to the second group belong customers whose revenues just cover the production costs and supplemental customization; in the third group are customers which are not profitable for the company. Van Raaij also believed that the results of CPA analysis based on ABC approach could be used in strategic decision making process in a company due to the fact that CPA is able to clearly determine which customers are profitable and which are not.

[14] Data related to customer base, customers' payment performance and costing system were provided by an anonymous company which is active on the Czech market and belongs to market leaders. Due to an agreement between the author and the company, the name of the company will not be mentioned in this paper. We will use a "company" quotation if we speak about the company.

4. Portfolio Analysis

The forth chapter of the paper focuses on the portfolio analysis. The dataset was provided by a "company" which is the Czech market leader in its industry and rapidly growing business focusing on European markets with a market share between 5%-35%.

The portfolio analysis should introduce the current costing system in the company including its strengths and limitations; furthermore, the sales development and risk profile of customers will be analyzed; moreover, profitability analysis will be performed; and the portfolio analysis should be a cornerstone for the future research, development of modified Customer Profitability Analysis and Customer Life Time Value models which will be tested on the provided dataset.

4.1. Overview

The dataset covers period between 2010 and 2014; it consists of 48 362 observations which summarize the customer base of the "*company"* in the particular segment; it covers general information about customers, products, related revenues and costs divided as per the costing system used in the "*company*".

The current costing system, costing with gradual stratification of fixed costs (for more details see Král, 2006, p. 138), was implemented in 1999 and replaced the full costing (absorption costing) which had been used in the *"company"* since 1986. The old costing system did not have well diversified production costs and cost of goods sold. The current costing system can be divided into several "parts": variable costs of a product (material costs); total costs of production (variable costs, fixed costs of stock and fixed costs of production center); total own costs (total production costs and overheads of a factory) and the full own costs. The direct selling costs and selling overhead are monitored on the intercompany accounting classes (8^{th} and 9^{th} class) and are part of the full costs.

Strengths and limitations of the current costing system

The current costing system has several disadvantages driven by the determination matrix. Costs determination is based on average production costs. Furthermore the determination is static as it does not take into consideration specific needs of each customer, such as transport costs[15], packaging costs[16] and the "size" of delivery. This "simplification" might lead to a biased profitability determination due to the fact that the *"company"* has to personalize products for its customers.

On the other hand, as mentioned above, the current costing system provides a detailed decomposition of costs and their structure. Thanks to that, it is able to provide highly valuable information about products' contribution margin and contribution of a product to an average profit of the "*company"*. Hence, it is a valuable source for CPA determination not only on the current production capacity, but also on the future production capacity.

4.2. Credit risk of the portfolio[17] (country risk and creditworthiness of customers)

In this part of the paper, we focused on the risk profile of customers and country risk to which the *"company"* sold products[18]. (It exported products to 43 countries: 35 European, 5 Asian countries, United States, South Africa and Australia)

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[15] Transport costs are derived as average costs of transport. The costing system does not distinguish whether a product is delivered within a country, within a continent, or oversea. If average transport costs are taken, a consumer benefit for the company is biased.

[16] Packaging costs are not included into variable costs in the costing system of the "*company*".

[17] Most credit rating agencies use letters from AAA to D to indicate the creditworthiness of companies and their debt. Moody's uses a combination of letters and numbers (for more details see moodys.com). Standard and Poor's (www.standardandpoors.com) and Fitch (www.fitchratings.com) use letters and (+), (-) sings to illustrate the relative position within the category. They also divide categories into two subcategories regarding the grade of rating. Ratings from AAA to BBB are investment grades (Standard and Poor's and Fitch) and from BB to D are indicated as speculative grades. In this paper the methodology and country ratings of Standard and Poor's have been used to indicate the creditworthiness of customers and to determine the country credit risk.

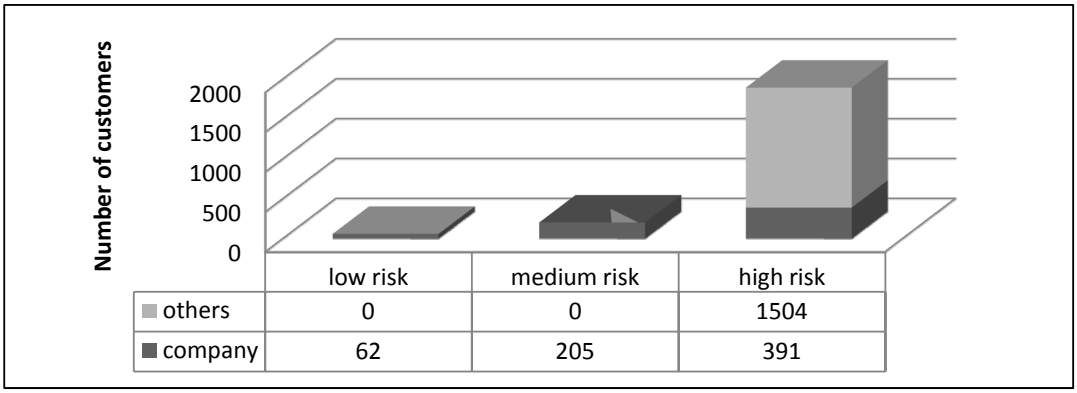
[18] As the dataset has been provided for one particular segment of "*company*'s" products, all the below mentioned figures are related to this segment and its products only.

The risk profile of customers was determined based on the following criteria: customers were divided into two groups: company and others. A customer was classified as a company if the legal structure was e.g. Limited Liability Company, Joint Stock Company, or Corporation; a customer belonged to others if it was a sole proprietorship, or a private person. All customers who belonged to others were classified as "high risk". A company could be rated as "low risk", "medium risk", or "high risk" depending on its creditworthiness.[19] If no financial data were found (newer than 2011), a company was classified as "high risk". If financial data were found, depending on creditworthiness (liquidity, solvency and profitability), the customer was classified as mentioned above.[20]Customer could not obtain better rating than country's credit rating.

This logic was implemented due to the recent development on the world market. Even creditworthy companies with stable financial risk profile located in Argentina and in Ukraine could not pay their bills due to: most international deals are denominated in USD or EUR and not in the local currency; the devaluation of the local currency had a negative impact on the value of closed deals und put an unacceptable pressure on customers' cash flow; national banks limited the purchase of foreign currency, e.g. in Argentina, due to low reserves and limited access to foreign exchange market; trades in other than local currency were controlled and had to be approved by national banks which led to late payments if executed at all. All in all, customers suffer from the payment default of a country; hence, the risk profile of the country was set as a "ceiling".

Creditworthiness of customers

Since 2010, 2 162 customers bought products from the "*company"*: 88 % of customers were classified as "high risk", 9 % as "medium risk" and 3 % of "low risk". The high percentage of high risk customers was driven by two factors: 1 504 customers classified as "other" and no financial information was found for 209 customers. The risk profile of customers was summarized in the Fig. 1 below: [21]



	low risk	medium risk	high risk
others	0	0	1504
company	62	205	391

Source: Own computation

Fig. 1: Risk profile of customers in the portfolio22

Country risk and related sales

The "*company*" exported its products to various countries around the world. Thanks to its location in the heart of Europe and its orientation on European market, most of the trading partners were located in low risk countries (20),

[19] The risk profile of a customer could not be better than the country credit rating.

[20] The author of this paper gained working experience in credit departments of multinational companies which helped him to perform the risk review of customers.

[21] In order to simplify the review, it was assumed that the risk profile of customers did not change between 2010 and 2014.

[22] The company mitigated risk of payment default by putting customers on cash in advance or closing credit insurance.

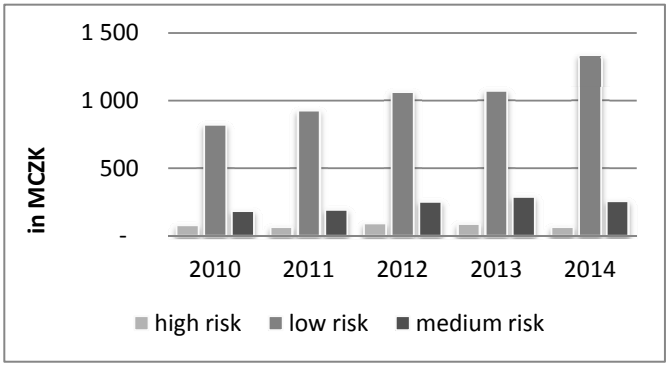
such as Great Britain, Germany and France (the top 3 markets). Medium risk markets (16) were represented by e.g. Russian, Italian and Hungarian. Products were exported to 7 high risk countries, e.g. Ukraine, Belarus and Greece.

The recent development on the global market, e.g. conflict in Ukraine, debt crisis in Greece etc., made the "*company*" to reduce its activities in countries with high risk country rating, or to completely exit these markets which led to a fall of sales by CZK 11million (15% vs. 2010). Whereby sales to high risk countries represented 7.3% in 2010, it was only 4% in 2014. Contracts of CZK 394 million were closed since 2010; they represented only 5.8% of generated sales.

On the other hand, the company was able to boost its sales activities in low risk countries where they grew by 63 % to CZK 1.34 billion in 2014 representing more than 80 % of sales in 2014. During the focused period, the "*company*" generated sales of CZK 5.2 billion with customers located in low risk countries.

The remaining CZK 1.2 billion of sales (17.41 %) was reached in countries with a medium risk profile. Even though the sales grew since 2010, the percentage of their total decreased from 17.17 % in 2010 to 15.46 % in 2014.

The development of sales and its distribution per country risk is summarized in the Fig. 2 below.



Source: Own computation

Fig. 2: Breakdown of sales by country risk

4.3. Profitability analysis

In this subchapter, we performed the profitability analysis of the provided dataset. We analyzed the portfolio profitability, the product profitability and the customer profitability based on the two profitability ratios: weighted average contribution margin ratio and "profitability" ratio.[23]

The weighted average contribution margin ratio in year t was calculated:

$$WACMR_t = \frac{Total\ Contribution\ Margin\ of\ All\ Products\ in\ year\ t}{Total\ Sales\ Revenue\ of\ All\ Products\ in\ year\ t} = \sum_{t=0}^{T}\sum_{n=1}^{N}\sum_{j=1}^{J}\frac{(p_{tnj}*x_{tnj}-VC_{tnj})}{(p_{tnj}*x_{tnj})}, \quad (1)$$

where
$WACMR_t$ = weighted average contribution margin ratio in year t,
x_{tnj} = volume of a product n bought by a customer j in time t,
VC_{ntj} = variable costs of a product n for a customer j in time i,
N = number of products bought by a customer j,
J = number of customers,
p_{tnj} = price of a product n for a customer j in time t,
T = time horizon for estimating profitability.

For the profitability ratio following formula was used:

[23] Below are mentioned the general formulas which were modified as per needs in order to determine related profitability ratios.

$$Profitability\ ratio = \frac{revenues - full\ costs}{revenues} \quad (2)$$

Customer Profitability

In order to analyze customer's profitability, we divided the customer base into two sub-groups: "regular" customers and "one-off "customers. In both sub-groups, we were able to classify customers who showed the characteristics described by Van Raaij: 631 customers (29.5 %) had a negative profitability ratio (out of which 296 were "one-off" customers); 431 customers (20%) had negative contribution margin (187 "one-off" customers); the top 5 % of the most profitable customers had profitability ratio above 59 % and contribution margin ratio above 68 % (79 % of those customers bought only once and had no impact on the turnover of the "company").

On average, slightly higher profitability was reached with "one-off" customers than with "regular" businesses: WACMR of "one-off" customers was 33.84 % (profitability ratio 16 %), whereby WACMR of "regular" customers was 32.5 % (profitability ratio 15.83 %). The results confirmed our expectations that higher margin is generated with irregular customers. However, it was surprising to find out that the difference between regular and irregular business was small. This might have been triggered by high number of irregular customers, especially "other businesses" whose profitability was negative or extremely low.

In most of the companies, the biggest customers are usually not the most profitable for a company. In fact, most of them might generate lower contribution margin than smaller customers, or even their contribution might be below average of the company. This "paradox" is driven by the business relationship with such a group of customers; a company offers rebates if certain volume is bought by customers; target prices are lower than with other customers etc.

In case of the "company", the top 10 customers bought products for almost CZK 2.5 billion which represented 36.7 % of total sales. WACMR of 5 customers was higher than the WACMR of the entire portfolio; and, in case of 7 customers, profitability ratio was above the portfolio's average. On the other hand, 3 customers had profitability ratio below 3 % and 2 of them below 1 %.

The results are summarized in the table below:

Table 1: The 10 largest customers and their profitability (in CZK)

Customer	Turnover	CM rate	Profitability	% of total sales
1	421 463 525	37.82 %	22.35 %	6.20%
2	283 011 151	34.79 %	20.48 %	4.16%
3	273 648 063	53.83 %	42.49 %	4.03 %
4	263 813 446	22.28 %	0.74 %	3.88 %
5	255 938 804	31.87 %	16.34 %	3.76 %
6	213 516 601	33.29 %	17.45 %	3.14 %
7	212 001 789	41.16 %	27.65 %	3.12 %
8	204 504 604	35 %	19.86 %	3.01 %
9	202 866 913	27.24 %	12.93 %	2.98 %
10	166 318 955	23.28 %	2.43 %	2.45 %

Source: Own computation

"*Kanthal effect*"

In the last part of the subchapter, we focused on the customers' profit distribution as described by the professor Kaplan in his "Kanthal" case study and tried to apply it on our data set.[24] We divided our customer base into 3 groups. The first group (20 % of customers) generated profit of 104 %; the results of the second group (70 % of

[24] We split our data set based on conditions mentioned by Král (2010, p. 175).

customers) were in line with the expectation as the profit was minimal (0.11 % of total profit); the last group of customers caused a loss of 4 % of company's profit.

The results are summarized in the table below:

Table 2: Portfolio distribution as per "Kanthal's" case study (in CZK)

	Profit (revenues – full costs)	Turnover
20 % of customers (n = 428)	1 115 692 950	6 402 182 038
70 % of customers (n = 1496)	1 172 647	13 083 048
10 % of customers (n = 214)	-40 705 516	382 974 503
Total	1 076 160 080	6 798 239 589

Source: Own computation

Based on the above mentioned results, we concluded that the results of "Kanthal" case study did not correspond with our data set.

4.4. Payment Terms, payment performance and doubtful receivables[25]

The *"company"* operates in a highly competitive environment facing a world-wide competition where offering open payment terms might have a positive impact on customer's decision, whether to buy a particular product from the company or from competitors.

On the other hand, granting customer's open payment terms increases the risk that the *"company"* will not receive money for its products having a negative impact on "*company's*" profit, cash flow and financing of working capital. Furthermore, if the "*company*" is willing to grant its customers long payment terms in order to keep them, it might face liquidity issues if the "*company*" is not able to pay its bills towards its suppliers. Finding equilibrium (to be able to pay bills and finance working capital and to have satisfied customers) is not an easy task for a top management of any company. In this part of the paper, we analyzed the "*company's*" portfolio in regard to customers' payment performance, payment terms and doubtful receivables.

Since January 2010 till November 2014[26], the company sold its products to 2 162 customers generating a turnover of more than CZK 6 billion (refer to another part of this paper). 48% of all customers (1 044 customers) had to accept unattractive payment terms "cash-in-advance" or "immediately due" out of which 954 was private person, or sole proprietors. Most of the customers from this group (59 %) bought only once and has never returned to buy again.

The "*company*" generated turnover of CZK €34.3 million with average profitability of 11 % with "cash in advance" customers. As such, this segment of customers is not considered as strategic for the "*company*".

Payment terms

Various payment terms were granted to the remaining 1 090 customers. They varied across the portfolio: the longest average payment terms (186 days) were granted to a customer in Estonia; the shortest to a customer located in Poland (7 days). The average payment terms in the portfolio were 41 days. The median was determined at 30 days

[25] Invoices (sales and related costs) with a maturity date after December 2014 were excluded from the overview. Bad debts were also excluded to avoid biased results.

[26] In order to analyse the payment behaviour of customers, the portfolio was adjusted. Bad debts and related sales were excluded. On top, sales on open terms whose due date was after December 1st, 2014, were also excluded from the database. Hence, the database reduced to 46 513 observations.

which was in line with expectations due to the fact that the Czech customers had average payment terms of 31 days and there were 761 customers (69 %) on open payment terms.[27]

Table 3: Top countries with the longest and the shortest payment terms (PT)

Top 10 countries with the longest average payment terms		Top 10 countries with the shortest average payment terms	
Country	Avg. PT	Country	Avg. PT
Estonia	186	Latvia	27
Kazakhstan	104	Czech Rep.	31
Italy	98	Switzerland	39
South Africa	96	Serbia	41
Greece	91	Germany	45
Moldova	90	Netherlands	46
Portugal	90	United States	47
Ukraine	89	Austria	52
Turkey	86	Belgium	53
Spain	80	Sweden	55

Source: Own computation

Payment performance[28]

The payment performance of customers varied across countries and industries. It did not depend only on the creditworthiness (financial strength of customers), but also on local habits.[29] The payment performance was analyzed in respect to the type of the business of customers as well as it was divided on "regular" customers and "one-off" customers.

In general, "one-off" customers had better payment performance than "regular" customers. They reached an average payment performance of -20 days. That was positively influenced by Czech customers (495) whose average payment performance was -22 days (average payment terms were "30 days net"), a Swedish customer who paid its invoice 38 days before due date (payment terms "60 days net") and customers from Netherland who paid on average 20 days before due date (average payment terms 55 days). On the other hand, the top three countries with the slowest average payment performance were Norway (42 days), Germany (36 days) and Portugal (34 days). The longest outstanding overdue was caused by a customer in Germany who paid its invoice 182 after due date.[30]

[27] For more details see the overview in the table below. "Cash-in-advance" customers were excluded from the overview. Due to the wide spread of payment terms, the median was seen as better indicator than average.

[28] Customers without open payment terms and customers whose outstanding receivables were recognized as doubtful were excluded from the overview. Such conditions were fulfilled by 1 088 out of 2 134 customers. Furthermore, outstanding receivables whose payment date was after December 1, 2014 were also excluded.

[29] In some countries, e.g. Eastern and Southern countries, it is "normal" to pay late. Some companies pay once a month, or twice a month regardless of the payment terms. Especially, multinational companies, or small companies have certain payment "pattern" which they follow and it is up to a supplier to accept it. Under such circumstances, it is difficult to predict whether a company has liquidity issues or it is just its usual pattern.

[30] For more details see Table 4 in which the payment performance on individual level was analysed. Top 5 customers from both groups (companies, other) were pointed out.

Table 4: Payment performance of "one-off" customers – top 5 overdues

Type of the business – company			Type of the business – other		
Country of origin	Avg. PT (days)	Avg. overdues (days)	Country of origin	Avg. PT (days)	Avg. overdues (days)
Germany	90	182	Czech Rep.	30	22
Czech Rep.	31	60	Czech Rep.	29	18
Germany	90	42	Czech Rep.	0	5
Norway	60	42	Austria	31	1
Portugal	90	34	Czech Rep.	31	1

Source: Own computation

"Regular" customers reached an average payment performance of +1 day. Belgian (-22 days), American (-18 days) and Czech (-10 days) customers seemed to have respected the previously agreed payment terms with the "*company"*; unlike customers from Kazakhstan (86 days), Estonia (45 days) and Russia (34 days) who were the "slowest" payers. Customers with the slowest payment behavior were located in Russia and paid 158 days late.[31]

Table 5: Payment performance of "regular" customers – top 5 overdues

Type of the business – company			Type of the business – other		
Country of origin	Avg. PT (days)	Avg. overdues (days)	Country of origin	Avg. PT (days)	Avg. overdues (days)
Russian Federation	90	158	Slovakia	90	48
Russian Federation	177	158	Austria	64	28
Russian Federation	120	146	Czech Rep.	28	17
Belarus	90	140	Poland	60	13
Romania	91	121	Czech Rep.	17	8

Source: Own computation

Doubtful receivables[32]

The tough economic conditions driven by a world financial crisis, debt crisis in Europe and risk profile of customers might have led to an expectation that the sum of doubtful receivables would have been significant. However, there have been only 15 companies not being able to pay their outstanding liabilities since 2010 causing a recognized loss of CZK 11.9 million which represented 0.17 % of turnover. That is still an outstanding result.[33]

[31] For more details see Table 5 in which the payment performance on individual level was analysed. Top 5 customers from both groups (companies, other) were pointed out.

[32] A doubtful receivable is recognized when reserves are created (overdue of more than 365 days).

[33] Multinational companies which have own credit department set a target of approx. 0.2%.

Table 6: Doubtful receivables (overview in CZK)

Country	Country risk	Risk profile of the customer	Sum of doubtful receivables
Slovenia	Low risk	High risk	2 266 035
Germany	Low risk	High risk	1 744 215
Great Britain	Low risk	Medium risk	1 352 743
Ukraine	High risk	High risk	1 302 470
Other			4 007 176
Total			**11 867 013**

Source: Own computation

5. Conclusion

In this paper, we built on the author's previous paper and performed a detailed analysis of the provided customer base by the "*company"*. We questioned the current costing system in the "*company"* and concluded that despite its limitations (e.g. it does not take into consideration the specific needs of each customer) it provides detailed structure of variable and fixed costs, hence, it is a valuable source in verifying the contribution margin of each product, and/or the contribution margin of each customer in the "*company's"* portfolio.

While performing the portfolio analysis, we concluded that the risk profile of customers was not equally spread. Customers classified as "high risk" played a dominant role in the portfolio. This was influenced by a high percentage of private persons, spread of countries the company exports to and missing financial data.

We were able to conclude that "one-off" customers were just slightly more profitable than "regular customer". However, the gap was not significant. This might have been triggered by high number of irregular customers, especially "other businesses" whose profitability was negative or extremely low.

Even though the profitability of customers varied significantly, we were not able to confirm the "Kanthal" effect applied on our data set. The most profitable 20 % of customers generated 104 % of the profits and 94 % of the turnover. The least profitable 10 % of customers caused a loss of only 4 % of the profits and generated 6 % of the turnover.

Last but not least, we clearly showed that "one-off" customers respected the agreed payment terms more than "regular" customers. "One-off" customers reached an average payment performance of -20 days positively influenced by Czech customers, whereby "regular" customers paid on an average 1 day after due date.

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