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OVERALL EFFICIENCY ANALYSIS OF VISA INC. 2008–2019

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I hereby declare that I have compiled the thesis independently
and all works, important standpoints and data by other authors
have been properly referenced and the same paper
has not been previously presented for grading.
The document length is 11,519 words from the introduction to the end of conclusion.

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ABSTRACT

The global card network industry has experienced many different changes over the past decade. Since the global financial crisis technology has improved, new innovations have risen and competition has surged even when regulation is limiting the business. Still, the total transactions of Visa and other card network companies have increased and the net profit for Visa has quintupled.

The aim of the research is to ascertain the usage of overall efficiency matrix for a longer period of time by analysing Visa Inc. The methods included in the research are overall efficiency matrix, growth analysis of a company using the overall efficiency matrix and variance analysis.

Based on the results of the empirical part of this research, the most efficient year during 2008–2019 was 2014, due to the increase in all of the main business activities. Consequently 2009 was the most inefficient year due to many significant events impacted the company in a short period of time. It was suggested for Visa Inc. to maintain risk mitigation from legal matters and markets, maintain the current structure and growth of employee expenses, maintain client incentives at 21% of gross revenue, launching new innovation initiatives at universities, pursue emerging markets and to find strategic alliances, support good customer relationship, maintain the current structure of capital, increase profitability of processed transactions, continue acquisitions and to invest in to the card processing network.

Keywords: financial statement analysis, efficiency analysis, global card network industry

INTRODUCTION

There have been changes within the card payment and processing industry due to improvements in technology and innovations springing ever more clever ways to make payments with multiple solutions. One of the oldest companies and the titan of the industry, Visa, is affected by these changes. After the 2009 global financial crisis where unemployed professionals combined knowledge about the financial markets and information technology, the rise of fintech companies began. Thus, starting a decade of increased competition in the global card payments and network companies.

Efficiency in itself is a concept of finding out how different field of activities are used to create desired amount of results. From the many ways to conduct efficiency analysis, the use of a more holistic tool is yet to be utilised fully in a broad scale. The use of overall efficiency matrix as a tool is flexible and meets the needs of various users instead of a single ratio or a more complicated statistical tool with the need to have a higher business education.

Visa Inc. is one of the largest card network companies in the world and one of the most well recognised brands in the world. Moreover, the company's net income has been growing year-over-year for the past decade and has effectively quintupled. The author of the thesis believes that there is a need to understand the dynamics of the efficiency in a such company.

The **actuality** of this study is supported by stable growth of the global payments industry due to card payments becoming more popular way of conducting transactions, growth of the industry to the emerging markets and the lack of wholesome overall efficiency analysis of the company making this study relevant.

The **aim** of the study is to learn how well does the use of overall efficiency matrix capture the efficiency of a global card network company, from the various ways of analysing efficiency, in a longer period of time and to make proposals for the future.

The **object** of this thesis is Visa Inc., a global card network company. The objective is to exhibit changes in the overall efficiency of Visa during the period of 2008–2019, before and after the occurrence of global financial crisis (2009), using the efficiency matrix concept. Also, to demonstrate strengths and weaknesses of the company by an overall efficiency analysis and to discover new aspects on how to improve the overall efficiency for Visa from the analysis of its main efficiency elements chosen by the author of the thesis. The research questions are:

1. Which year for Visa, was the overall efficiency the highest during the analysed period (2008–2019) and why?
2. What are the main changes in the efficiency during the analysed time period and what were the significant positive and negative causes to them?
3. Which improvements could be made to Visa according to the analysis?

The **methodology** conducted to achieve the results are based on the overall efficiency matrix analysis during the time period of 2008–2019 (11 years) using only the company's annual reports, analysis of the growth index of company's overall efficiency using the first year of the analysis as the base year.

The first chapter of the thesis introduces the financial analysis of a company and few methods that can be used to unravel and simplify financial information published by the company. A brief look to previous studies of efficiency analysis and the definitions of efficiency. The first chapter also gives a short introduction and overview of the company's overall efficiency matrix and new tools of financial analysis such as growth index of a company's overall efficiency matrix to analyse dynamic ranking of a company.

The seconds chapter gives an overview of the industry and to the company itself. The company overview includes the significant events of the company throughout the analysed period.

The third chapter will present the empirical analysis using the overall efficiency matrix analysis and the growth index of a company's overall efficiency for the analysis of the company's past performance to its own historical data accumulating a trend of its overall efficiency. Finally recommendations for improvements of the company based on the overall efficiency matrix results.

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1. THEORETICAL BACKGROUND AND FRAMEWORK

The aim of this chapter is to give clarity about what is financial analysis and to familiarise the company's overall efficiency matrix concept.

1.1. Overview of financial analysis

Financial analysis is an examination of a company's performance and financial position using its financial data to reach reliable, comparable and understandable information in relation to the industry it is operating in. Information usually pertaining to how has the company used its resources to gain income and how well are they meeting their obligations while seeking new opportunities. Mainly showing association between the multitude of financial information to better understand the strengths and weaknesses of a company (Robinson *et al*. 2012; Ravinder, 2013; Johnston & Johnston, 2006, pp. 73–75).

Financial analysis is prepared to evaluate the past, current and also the company's future possibilities and outcomes by financial managers and financial analysts (Robinson *et al.* 2012; Sherman, 2015). The results of the financial analysis are more substantial when compared to the company's closest competitors and to the industry it is operating in (Gibson, 2008 pp. 192–194).

There are two types of analyses; internal and external. Neither of the analyses are regulated, but the financial accounting of the company is. From the financial statements, prepared by the company's management, the structure, content and timing are regulated. The financial statements are available for any party interested in the company. Internal analysis such as budgeting, taxation and investment calculations are made to improve management's decisions concerning the future of the company. The financial statements, which in essence are just summarized version of the company's bookkeeping, are mainly directed to the external users because they do not have access to the company's records directly (Ikäheimo *et al.* 2014; Sherman, 2015; Robinson *et al.* 2012).

Many different user groups are interested in the financial statements and the information they provide. The groups of users of financial information can be divided to internal: owners, management, employees and external: creditors, suppliers, customers and public authorities. All user groups have their own interests in the financial statements. Investors are interested in the return on their investment and possible dividend payments. The management uses the information in the financial statements when making decisions regarding the company. Employees of the company are interested in the economic development of the company in terms of job retention and possible bonus reward system. Creditors are interested in the company's solvency when making credit decisions as are suppliers. Customers, on the other hand, are interested in the financial performance of the company whereas authorities are interested in financial information for tax purposes (Griffen, 2015; Gibson, 2008, p. 1).

Corporate annual reports are the primary source of information about the financial position and financial performance. Financial analysis begins with a look at the company's financial statements. The purpose is to determine whether company metrics and statistics can be used to measure performance and benchmark against companies in the same industry. Familiarity with the company's accounting principles is important because accounting practices vary from country to country (Standard & Poor's, 2006, pp. 20–25). In the financial analysis, the accounting activities include: income and expenditure, assets and investments, inventory valuation methods and intangible assets. (Standard & Poors's, 2006, pp. 25–30).

The different techniques and tools to conduct financial analyses are meant to have multiple perspectives of the company and to create a narrative around the company's financial statements. The financial analyses are made to understand the relationships between the financial data and to create a clear representation of the company from its financial activities for evaluation and comparison purposes (Ravinder, 2013; Gibson, 2008 p. 177). The techniques and tools include:

- Comparative analysis
- Vertical analysis
- Horizontal analysis
- Trend analysis
- Financial ratio analysis
- Variance analysis

Comparative analysis, compares financial statements from different periods with each other, drawing conclusions or further analyses of its financial position for example. Comparative statement analysis works as a base platform for further financial analysis (Ravinder, 2013). The financial statements can be compared to a company's own historical data, to the industry's quantiles and the market leader or the biggest competition (Siimann, 2018, p. 97).

The vertical analysis, or structural analysis, measures the size of a single financial component to where it derives in percentages, stated as 100%, from different financial statements in a single period. It shows the structure of the company, reflecting the main financial items within the company and their impact to the financial entity. The analysis sets out to measure the structure of income statement, balance sheet (Drake & Fabozzi, 2012; Dobesova, 2011, p. 20; Ravinder, 2013; Shim & Siegel, 2008, pp. 574–575).

The horizontal analysis, or dynamic analysis, measures the absolute and relative changes within the company's financial statements to the previous year's statement. This analysis helps to interpret year to year changes within a company's financial statements. If the period under inspection is longer than two periods it is easy to spot whether there is a trend or not in various indicators of financial performance. This is what trend analysis is made for. The method is used to examine the temporal development of financial items. It compares the financial statements for a number of financial years item by item, setting the value for the earliest period to 100% and comparing the values for subsequent periods with the percentage to the earliest period. The trend analysis looks at how individual financial statements have evolved from year to year. It is suitable for comparing the financial statements of only one company in successive years (Griffen, 2015; Madegowga, 2006; Dobesova, 2011, p. 19; Robinson *et al.* 2012; Shim & Siegel, 2008, pp. 574–575).

Financial ratio analysis is simply to measure the relation between financial statement accounts and to compare them to the industry. The financial ratios can be divided into those measuring profitability, solvency and liquidity. Profitability refers to the ability of a business to generate more revenue from its business than it has had to sacrifice in order to generate it. Solvency refers to the share of debt and equity in total capital. Liquidity refers to the ability of a company to meet its short-term obligations. The benefits of using financial ratio analysis is to allow the elimination of size when comparing within the industry and to the past performance (Feldman, Libman, 2007; Griffen, 2015; Barnes, 1987; Gibson, 2008, pp. 177–178).

Financial statement analysis is a form of financial analysis in which the factors of the financial situation and their development are examined in greater depth. Financial statement analysis combines other methods of analysis, and seeks to determine the factors that have contributed to the figures and the underlying cause and effect relationships. An analysis of financial statements can be used to determine the financial development of a company. The reasons for the financial situation may not be verified from the financial statements alone. For more detailed background information, a more detailed business analysis may be needed. Financial statement analysis, like the ratio analysis included in it, may be included in an industry report (Paul, 2014; Robinson *et al.* 2012).

All the information needed for a financial statement analysis, furthermore for the financial analysis, can be found from the financial statements of the company. The financial statements are the end of the financial year and include the income statement and the balance sheet and lastly also the cash flow statement.

The income statement shows a summary of how net income is formed from revenue in a single period. The last line of the income statement shows the amount of profit or loss generated, which shows how the company's financial position has developed during the financial year. The balance sheet describes the amount and nature of the company's assets, equity and liabilities at the end of a fiscal year.

The financial statements also include the notes and the financial statement as well as the notes, which are attached to the financial statements. The notes are intended to complement the presentation of the financial position of the company in the income statement, balance sheet and cash flow statement.

The cash flow statement explains how funds were acquired and used during the financial year through operating activities, investing activities and financing activities. The annual report, on the other hand, provides information on the development of the company's operations and future prospects, a more holistic report (Johnston & Johnston, 2006, pp. 71–72; Gibson, 2008, pp. 46–48; Fridson & Alvarez, 2011, Griffen, 2015).

To conclude, financial analysis is carried out to interpret a company's financial position and performance to understand how they operate and to find strengths and weaknesses. The main tools and methods for the analysis are divided to five different types of analyses, each one of the techniques resulting with more insight to the company's operations and results.

1.2. Conceptual structure of efficiency

The large variation in the definition of efficiency used in literature has led in some degree to inconsistency in its explanation (Mykhailenko, 2018, p. 159). Nevertheless, it is associated in common literature to productivity, profitability, effectiveness and financial performance of an economic entity.

Efficiency has been defined within the common literature as getting something done with minimum requirements or getting the more results with the same requirements. According to Cambridge academic content dictionary in Business English the word efficiency is defined as the use of resources without wasting any. Where the input assets, such as time, employees or materials are used to attain the desired output (Sing, Goyal & Sharma, 2013).

From these descriptions, we can distinguish two main types of efficiency: allocative efficiency and technical efficiency. The first one is input-oriented, which focuses on reducing the amount of resources to generate same amount of output. Second one is output-oriented, which on the other hand focuses on maximising the outputs from the given amount of inputs to it. Consequently, allocative and technical efficiency are the products of economic efficiency (Brissimis, Delis & Tsionas, 2010).

The different definitions and meanings of revolving around efficiency have been studied throughout the years. Yet there has not been a clear interpretation of productivity, profitability, performance, effectiveness and efficiency. In the model of Triple-P: Productivity is in economic activities according to Tangen, the relation of output to input in quantities (physical). Wherein profitability is similarly defined, but instead of material quantities, it is a monetary relationship. Performance implies to operations that are of fast, high quality, precise, adaptive and of low-cost. In so, performance is synonymous to high quality. Effectiveness is the means of how the desired

results are obtained. Lastly efficiency indicates how well assets are applied through internal operations. As follows, effectiveness and efficiency are cross-functional (Tangen, 2005).

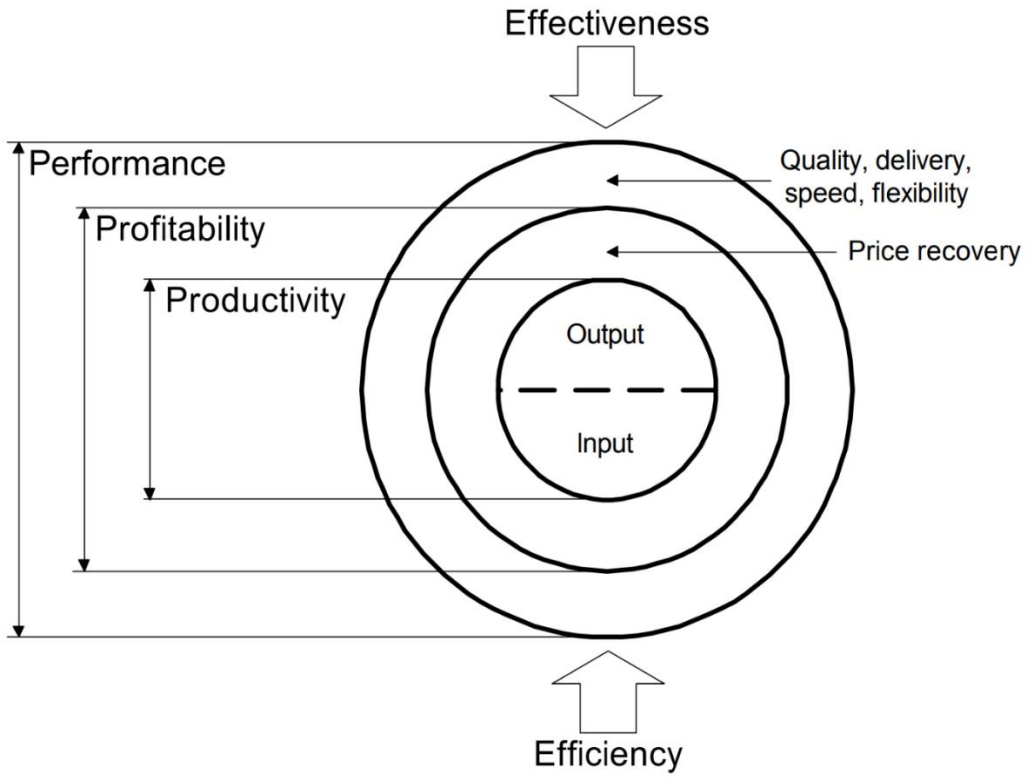

Figure 1: Triple P-Model (Tangen, 2002)

The goal of financial management is to maximise the value of a company. Thus, maximizing the shareholders' value while having optimal liquidity, solvency and high profitability of a company. Bringing about the goal of profitability which on the other hand is obtained by the efficient use of assets. The means of how profitability is acquired by the company requires financial analysis. Without it the management cannot make decisions. Productivity and profitability are measurements of efficiency and in so are not synonymous to each other. Financial efficiency is a company's capability to convert its assets to revenue and performance related activities (Zala, 2010, pp. 42–52).

Efficiency can be measured by multitude of methods such as data envelopment analysis (DEA method includes many variations to it), financial ratio analysis, stochastic frontier analysis (SFA) and many other tools of financial analysis. The DEA method is used to analyse efficiency frontiers of various activities. Financial ratios are used to analyse single number from two indicators and SFA is used to point out the technical inefficiency in generating a certain output of various activities (Korhonen & Syrjänen, 2004; Amirteimoori, 2007; Battese, Coelli, 1995; Avkiran, 2011).

To measure the success of the business activities efficiency results are usually linked to the expectations of the company and fulfilment of its objectives. Nevertheless, one of the objectives remains always the same, according to the first principle of financial management, value maximisation (Atkotiya, 2005, p. 2; Kulawik, 2010, pp. 58).

The author of the thesis is going to define efficiency for the use of this thesis as; Managements intelligent use of balance sheet items and other critical key indicators to achieve desired level of output (income, profit and cash flow) for the maximisation of value, while minimising wastefulness. Therefore, leading to a sustainable growth of a company.

To conclude, there are many definitions of the term efficiency and there are many similar terms to efficiency such as productivity and performance. The different terms have been explored by Stefan Tangen and he has concluded them some extent to figure 1. There are many ways to analyse the efficiency of a financial entity and most of them require extensive comprehension of statistics. Efficiency should be achieved in accordance to financial managements principles.

1.3. Concept of efficiency matrix and its developments

1.3.1. Compilation of efficiency matrix

The next part shows how efficiency matrix is formed as well to how to use it with Siimann's proposition of benchmark index and growth index of company's overall efficiency. Thus, it makes sense to portray efficiency within a matrix, where the bigger picture is easier to form of the company (or even of countries or industries) from its main economic - or business activities even if there have been external disruptions from the business environment.

An Estonian scholar Mereste constructed the first version of the matrix by augmenting the principle of systemicity to the complex analysis. It was called the system integrated analysis. In 1981 Mereste analysed public manufacturing in Estonia using the system integrated analysis and published it. The paper inspected numerous aspects of the economic activities and their efficiency in a manufacturing companies using efficiency matrix. Although originally meant to analyse manufacturing companies, in the opinion of Siimann (2018), efficiency matrices could also be utilized to analyse service and merchandising companies (Siimann, 2018, pp. 33–37).

When forming an efficiency matrix, combining a set of quantitative indicators from the financial entity's business activities. Connecting these two indicators together we reach a square matrix consisting two triangles, which are each other's mirror images. The elements of the quantitative indicators are qualitative indicators. The left side of the square is called efficiency field and the right side is called reverse efficiency field. The reverse efficiency field is simply just the inverse values of the efficiency field, hence the name. Since the quantitative indicators are business activities of a company, they can be further divided into different groups. According to Luur (1982) the quantitative indicators can be divided to two groups: input and output indicators (Siimann, 2018 pp. 59–68; Siimann, 2011).

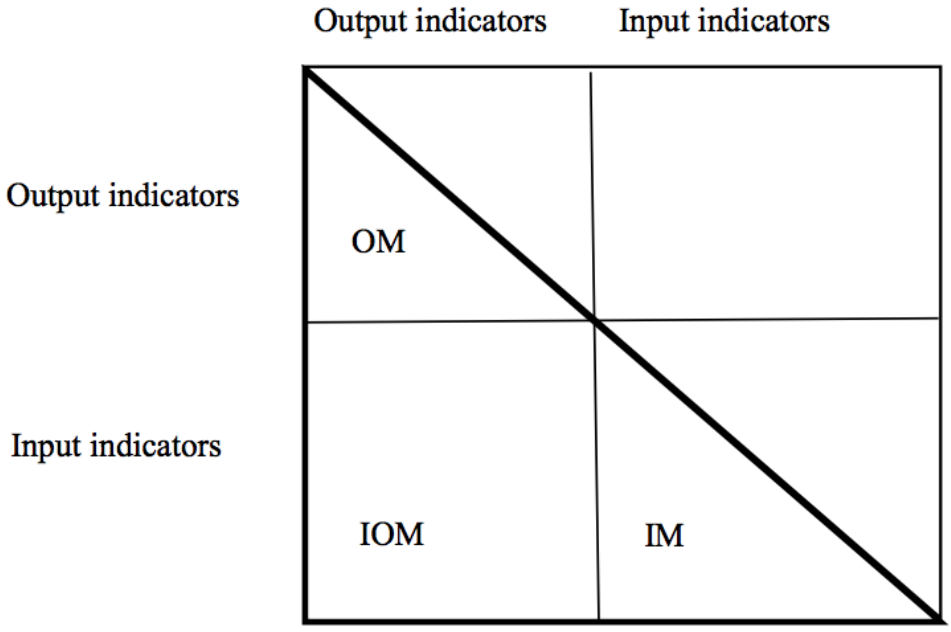

Figure 2: Division of efficiency matrix to submatrices
Source: Luur (1982, pp. 134–136)

The efficiency field has been divided into three submatrices (Figure 2): Output matrix (coordination ratios), Input matrix (coordination ratios) and Input-Output matrix (intensity ratios). In Siimann's and Alver's 2015 article they followed the logic of Alver and Järve (1989) of assembling the output and input indicators to a more precise arrangement. Wherein it is possible to create the following rearrangement:

Resources ⇨ Expenses ⇨ Results

The rearrangement suggests that results (output) are attained from resources and expenses (inputs). In Siimann's 2018 doctoral thesis, he proposed an even more detailed scheme of Alver and Järve's (1989) arrangement of showing how input indicators are used to turn into output indicators.

Following a logical way that every company have the same build of business activities: operating activities, investment activities and financing activities. But before resources can be acquired there needs to be financing for the company (*i.e. a loan from a bank or equity from a business angel*). The financing of the company leads the money further to investments such as fixed tangible assets, for example in a manufacturing company. Thus, these resources can now start generating income and cash through its operating activities. In accordance to the previous reasoning we may include with Alver and Järve's (1989) arrangement of input and output indicators, as proposed by Siimann (2018) to (Siiman, 2018, pp. 69–71):

Capital ⇨ Assets ⇨ Expenses ⇨ Income ⇨ Profit ⇨ Cash Flow

Now from raising capital or financing the company the company is able to acquire assets. After expenses and income there is profit to be turned to cash and the management is left to decide what to do with it. In the opinion of Bolotin (2019) this same arrangement could be further modified to the need of the analyst, depending on the object of the analysis (Bolotin, 2019, p. 14; Siimann, 2018, p. 71).

From these six groups of business activities the first three (Capital, Assets and Expenses) are input indicators and latter three (Income, Profit and Cash Flow) are output indicators. The matrices efficiency field now consists of 21 submatrices (if at least one quantitative indicators is used from each group mentioned above). Although, Siimann (2018) strongly advises to use annual average values in capital and assets quantitative indicators, because expenses, income, profit and cash flow indicators are presented in financial statement as period average values. This provides better comparability (Siimann, 2018, p. 77).

When constructing the efficiency matrix, it is important to follow the sequence of these business activities consequently to their final impact on the results (economically meaningful order). According to the intensity development principle, the rate of growth of the quantitative indicators do not decrease in this way (Siimann, 2018, p. 79).

In so, when compiling a company's overall efficiency matrix, it is done following these presumptions:

- Information is used only from externally available annual reports (availability)
- The quantitative indicators used in the matrix model must be forethought (structure)

- Quantitative indicators used should be such that can be found also in other company's annual reports (comparability)
- Within the matrix model should be used only an even number of indicators, so that the dynamic and the comparative analysis can be performed in such a way that involves all of the quantitative indicators (analysis)

In general, when conducting an overall efficiency of a company it would be advised according to Siimann (2018), that there would be used the following quantitative indicators to compile the company's overall efficiency matrix:

1. Capital: Average capital
2. Assets: Average number of employees or/and Average assets
3. Expenses: Operating expenses
4. Income: Sales revenue
5. Profit: Earnings before interest and expenses (EBIT)
6. Cash Flow: Net operating cash flow or/and Free cash flow

As it can be seen the quantitative indicators have been compiled from each one of the business activities. The use of average capital as the first quantitative indicator contain a company's loan capital and owners' equity. Average capital cannot distinguish the difference in the structure of the companies' total capital and in so eliminating them.

For assets, there have been chosen two more average quantitative indicators to follow after capital: average number of employees and average assets. Due to the use of period indicators in income statement and cash flow statement, the resource indicators need to be calculated using an arithmetic mean from the beginning and end of the year values, providing better comparability between the financial statements.

In the matter of expenses, as a quantitative indicator, operating expenses reflect as a value all the expenditures regarding the sales of a company. Subsequently, in the matter of income as a quantitative indicator, sales revenue reflects as a value all the income regarding the companies' operating activities excluding other income that are not part of the main income.

In case of profits, Siimann (2018) reasoned that the use of EBIT is the most comparable quantitative indicator due to the differences in countries legislation and regulation. For example, net profit is affected by taxes. In the opinion of the author of the thesis this quantitative indicator

is dependable on what kind of a financial analysis is being conducted by the analyst and is subject to alteration.

The last quantitative indicators from cash flow activities are net operating cash flow and free cash flow. Because a company can choose whether to add corporate income tax and paid interest to operating or financing activities. Same with received dividends and interest to operating or investing activities in the cash flow statement, an analyst must inspect where they have been added to guarantee comparability between companies', due to free cash flow is the sum of net investing activities and net operating activities (Siimann, 2018, p. 83).

Table 1.1. The company's overall efficiency matrix.

Quantitative factor	Free cash flow (F)	Net operating cash flow (R)	EBIT (P)	Sales (S)	Operating expenses (O)	Average Assets (A)	Average number of employees (E)	Average Capital (C)
Free cash flow (F)	11 1	12 $\frac{R}{F}$ Op. cash flow to Free cash flow	13 $\frac{P}{F}$ EBIT to Free cash flow	14 $\frac{S}{F}$ Sales to Free cash flow	15 $\frac{O}{F}$ Op. expenses to Free cash flow	16 $\frac{A}{F}$ Assets to Free cash flow	17 $\frac{E}{F}$ No of employees to Free cash flow	18 $\frac{C}{F}$ Capital to Free cash flow
Net operating cash flow (R)	21 $\frac{F}{R}$ CM **Free cash flow to Op. cash flow**	22 1	23 $\frac{P}{R}$ EBIT to Op. cash flow	24 $\frac{S}{R}$ Sales to Op. cash flow	25 $\frac{O}{R}$ Op. expenses to Op. cash flow	26 $\frac{A}{R}$ Assets to Op. cash flow	27 $\frac{E}{R}$ No of employees to Op. cash flow	28 $\frac{C}{R}$ Capital to Op. cash flow
EBIT (P)	31 $\frac{F}{P}$ Free cash flow to EBIT	32 $\frac{R}{P}$ PCM **Op. cash flow to EBIT**	33 1	34 $\frac{S}{P}$ Sales to EBIT	35 $\frac{O}{P}$ Op. expenses to EBIT	36 $\frac{A}{P}$ Assets to EBIT	37 $\frac{E}{P}$ No of employees to EBIT	38 $\frac{C}{P}$ Capital to EBIT
Sales (S)	41 $\frac{F}{S}$ Free cash flow to Sales	42 $\frac{R}{S}$ ICM Op. cash flow to Sales	43 $\frac{P}{S}$ IPM **EBIT to Sales**	44 1	45 $\frac{O}{S}$ Op. expenses to Sales	46 $\frac{A}{S}$ Assets to Sales	47 $\frac{E}{S}$ No of employees to Sales	48 $\frac{C}{S}$ Capital to Sales
Operating expenses (O)	51 $\frac{F}{O}$ Free cash flow to Op. expenses	52 $\frac{R}{O}$ ECM Op. cash flow to Op. expenses	53 $\frac{P}{O}$ EPM EBIT to Op. expenses	54 $\frac{S}{O}$ EIM **Sales to Op. expenses**	55 1	56 $\frac{A}{O}$ Assets to Op. expenses	57 $\frac{E}{O}$ No of employees to Op. expenses	58 $\frac{C}{O}$ Capital to Op. expenses
Average Assets (A)	61 $\frac{F}{A}$ Free cash flow to Assets	62 $\frac{R}{A}$ RCM Op. cash flow to Assets	63 $\frac{P}{A}$ RPM EBIT to Assets	64 $\frac{S}{A}$ RIM Sales to Assets	65 $\frac{O}{A}$ REM **Op. expenses to Assets**	66 1	67 $\frac{E}{A}$ No of employees to Assets	68 $\frac{C}{A}$ Capital to Assets
Average number of employees (E)	71 $\frac{F}{E}$ Free cash flow to No of employees	72 $\frac{R}{E}$ Op. cash flow to No of employees	73 $\frac{P}{E}$ EBIT to No of employees	74 $\frac{S}{E}$ Sales to No of employees	75 $\frac{O}{E}$ Op. expenses to No of employees	76 $\frac{A}{E}$ RM **Assets to No of employees**	77 1	78 $\frac{C}{E}$ Capital to No of employees
Average Capital (C)	81 $\frac{F}{C}$ Free cash flow to Capital	82 $\frac{R}{C}$ KCM Op. cash flow to Capital	83 $\frac{P}{C}$ KPM EBIT to Capital	84 $\frac{S}{C}$ KIM Sales to Capital	85 $\frac{O}{C}$ KEM Op. expenses to Capital	86 $\frac{A}{C}$ Assets to Capital	87 $\frac{E}{C}$ KRM **No of employees Capital**	88 1

Source: Siimann (2018, p. 82).

Table 1.1. illustrates the ready product of the structured efficiency matrix constructed by Siimann (2018). The left side of the main diagonal represents the efficiency field, where the values of the qualitative indicators grow per efficiency of the quantitative indicators according to intensity development principle and their finality. Within the efficiency matrix there are 28 efficiency field elements that are in the focus of the analyst conducting the analysis (Siimann, 2018, p. 84). The advantages of using the efficiency matrix as a tool for analysis of a company can be summarised to:

- Financial information is portrayed within the matrix in a comprehensible form even to those without a higher business education
- Information needed for the tool is found from externally available data

- Parallel use of other financial analyses is practicable
- By tweaking the model's original indicators, it enables extensive analysis of the company's advantages and drawbacks
- The interrelationship of the financial ratios is easy to analyse in the model
    - Clearer to see which components need to be further analysed for absolute and relative change to the qualitative indicator
- Automation can be applied to the use of matrix modelling

But as no tool of financial analysis comes without limitations neither does this one. There can be within a single enterprise multiple fields of business activities. Making it more difficult to obtain information pertaining subject of the analysis and comparability. Companies choose or have different ending dates for their fiscal years. In the financial statements, there may be different use of accounting principles which creates comparability issues between companies. As well as companies which have negative profit or cash flow indicators, no further analysis can be performed (Siimann, 2018, p. 102).

To conclude, as the company's overall efficiency matrix is a flexible tool of financial statement analysis and it can be used to analyse for various groups of financial statement user's needs. The matrix itself is compiled with the presumptions of the finality of the quantitative indicators, their availability, structure, comparability for the purposes of overall efficiency analysis. Enabling to understand the company's advantages and drawbacks without a higher business education.

1.3.2. Variance analysis

Table 1.1. provides a structured efficiency matrix for the analysis of its absolute and relative changes within the portrayed qualitative indicators. Hence it is also known as the component analysis. In a way variance analysis uses the same methodology of analysis as the DuPont – analysis when inspecting return on equity, but when used to analyse the efficiency matrix it is more holistic. Every qualitative indicator in the matrix has a connection with each other by being interlinked by its elements. This is the chain-linking method (Siimann, 2018, p. 103).

The changes can be analysed via the chain-linking methods arrangement of the matrices elements and their interlinked relationship. As such a simple component system of free cash flow:

$$\boldsymbol{x_1 = x_{81} \times x_8}, \tag{1.1}$$

where x_1 - Free cash flow,

x_{81} – Free cash flow to Average capital,

x_8 – Average capital.

From this example it can be pointed out that free cash flow is formed by multiplication of a qualitative indicator and a quantitative indicator (ratio of free cash flow to average capital multiplied with average capital). The formula states that an increment to the value of free cash flow is possible by three reasons:

1. Increase in free cash flow to average capital ratio
2. Increase in invested capital
3. Increase in both

The same example can be performed on the efficiency elements that are located under the main diagonal:

$$\frac{F}{C} = \frac{F}{R} \times \frac{R}{P} \times \frac{P}{S} \times \frac{S}{O} \times \frac{O}{A} \times \frac{A}{E} \times \frac{E}{C} \quad (1.2)$$

Or more conveniently formula (1.2) can be portrayed like in the previous component system (1.1):

$$x_{81} = x_{21} \times x_{32} \times x_{43} \times x_{54} \times x_{65} \times x_{76} \times x_{87}, \quad (1.3)$$

This formula (1.3) can be inserted to formula (1.1) and in doing so creating a new formula (1.4) which allows us to examine the correlation between free cash flow and its efficiency elements:

$$x_1 = x_{21} \times x_{32} \times x_{43} \times x_{54} \times x_{65} \times x_{76} \times x_{87} \times x_8 \quad (1.4)$$

Formula (1.4) demonstrates that an increase in free cash flow is a result of increase in every other component of the formula. Meanwhile there may not be a decrease from the current values in the components.

To analyse more conveniently the absolute impact and relative impact to free cash flow from its components, the formula (1.1) can be edited to (T = Free cash flow, a = average capital, b = Free cash flow to Average capital):

$$T = a \times b \quad (1.5)$$

To analyse the relative overall change (dynamics) of T (free cash flow):

$$\frac{T_1}{T_0} = \frac{a_1 \times b_1}{a_0 \times b_0}. \quad (1.6)$$

Absolute impact is measured from the previously calculated indices to the difference from change in dynamics of free cash flow:

$$\Delta T(a) = T_a - T_0 = (a_1 - a_0) \times b_0, \quad (1.7)$$

$$\Delta T(b) = T_1 - T_a = a_1 \times (b_1 - b_0). \quad (1.8)$$

Formula (1.9) shows the absolute impact of component "a" (average capital) on the indicator T and formula (1.10) shows the absolute impact of component "b" (free cash flow to average capital) on the indicator T (free cash flow).

After measuring the relative impact of the components to the analysed indicator, the relative change of the total change from the formula (1.6) can be calculated:

$$\frac{\Delta \boldsymbol{T}(\boldsymbol{a})}{\Delta \boldsymbol{T}} \times 100\%, \quad (1.9)$$

$$\frac{\Delta \boldsymbol{T}(\boldsymbol{b})}{\Delta \boldsymbol{T}} \times 100\%. \quad (1.10)$$

The same process can be repeated to examine components absolute and relative impact to the total change of the main element of the efficiency field (Free cash flow to average capital, $\boldsymbol{x_1}$) by editing formula (1.2) to a more convenient formula:

$$\boldsymbol{T = a \times b \times c \times d \times e \times f \times g} \quad (1.11).$$

Variance analysis or component analysis shows each elements impact in the company's overall efficiency matrix to its main efficiency element. Moreover, allowing to understand the reasons behind the total change by analysing the results of each impact.

1.3.3. Growth index of company's overall efficiency

Growth index of a company's overall efficiency (GICOE). The issue of solving a company's dynamic ranking problem (GICOE) is to find out how have the chosen quantitative indicators and the efficiency field elements changed during the analysed period compared to its past performance. GICOE is a financial analysis tool further developed by Siimann in his dissertation (2018) from Root's (1985) formula. In terms of efficiency it is important to determine have the companies been consistently efficient (Siimann, 2018, pp. 100).

When the tool is used an analyst must make sure not to include companies with negative profit or cash flow indicators. Simply because it renders the calculations nearly impossible. There are two

options on how to calculate the GICOE, both using the geometric mean. The first option is including all the growth indices from the efficiency matrices efficiency field.

Firstly, is needed to compose the overall efficiency matrices from all of the companies from the analysed period, as well as including the base year for the comparison.

Second step is to create a comparative efficiency index matrix by dividing every company's efficiency field element by whole period and the base year of the analysis. Resulting in formula:

$$\boldsymbol{i_{ij}^{t_1/t_0}} = \frac{\boldsymbol{i_{ij}^{t_1}}}{\boldsymbol{i_{ij}^{t_0}}}, \tag{1.12}$$

where,

$\boldsymbol{i_{ij}^{t1/t0}}$ – element of the efficiency field from the comparative efficiency index matrix, $\boldsymbol{i_{ij}^{t1}}$ – value of an efficiency field element of the company analysed from analysis period, $\boldsymbol{i_{ij}^{t0}}$ – value of an efficiency field element of the company's base year.

Third step is to calculate GICOE:

$$\sqrt[\frac{n^2-n}{2}]{\prod \boldsymbol{i_{ij}^{t_1/t_0}}}, \tag{1.13}$$

where,

$\boldsymbol{i_{ij}^{t_1/t_0}}$ – efficiency field elements of all of the index matrices,

$\boldsymbol{n}$ – number of quantitative indicators in the model.

Fourth step is to rank the companies according to the results (high to low).

Fifth step is to analyse the results of the company under analysis. In general, the values of the results are compared to the value 1 (reflecting the value of 100%). Thus, the higher the value of the element, the more the it has impacted efficiency is, in terms of growth. Vice versa, the lower the value, the less.

Lastly, as for the sixth step, there is left to make recommendations of improvements of the company analysed, to increase efficiency.

Alternative way to calculate GICOE is less time consuming and shorter due to skipping the formation of the company's overall efficiency matrix and taking a more straightforward route to the results. By including all of the quantitative indicators in the matrix and including the base year index to the formula, the following formula for GICOE is created:

$$\sqrt[28]{\prod_{j=1}^{8} I_j^{8-(2j-1)}} = \sqrt[28]{I_1^7} \times \sqrt[28]{I_2^5} \times \sqrt[28]{I_3^3} \times \sqrt[28]{I_4^1} \times \sqrt[28]{I_5^{-1}} \times \sqrt[28]{I_6^{-3}} \times \sqrt[28]{I_7^{-5}} \times \sqrt[28]{I_8^{-7}}.$$

(1.14)

Just like on the first options fifth step, the higher the value of the growth index of a company's overall efficiency is compared to 1 (100%) the better it is. Vice versa, the lower the lower the efficiency is in comparison to the benchmarked year. As an example, if the result would be 0.8, the interpretation of that result is that the analysed company would be 20% less efficient than on the base year of the analysis.

Both ways of calculating GICOE are correct, but the second option is less time consuming. Considering the possibility of automation (computer software solution), both ways can be used to examine the results. The first option is more detailed and allows also to calculate other companies' overall efficiency growth indexes for ranking purposes.

There is also a possibility to calculate the mean annual growth rate of the company for the period of analysis. Which may on the other hand give more familiar and comprehensible average value of efficiency growth in case of a presentation for example. Nevertheless, a deeper analysis of the growth using the growth index of a company's efficiency matrix -tool created by Siiman (2018) gives more details to why and how has the efficiency changed.

Using a geometric mean from the GICOE indicators for the calculations, the formula is:

$$\sqrt[t_k - t_0]{\overline{GICOE}} = \overline{GICOE}, \quad (1.15)$$

where,

t_k – base year of analysis.

t_0 – base year of analysis.

The value of the result follows the same logic, as before, for interpretation of the numerical value of the calculation.

To conclude, the tool is used analyse a company's efficiency growth on the analysed period to its base year of analysis. A possibility to calculate growth rates with an average value of the analysed period can also be made for more general interpretation of the company's efficiency.

2. OVERVIEW OF GLOBAL PAYMENTS INDUSTRY AND VISA

This chapter gives a brief overview of the industry where Visa operates and the company itself in a few key figures.

2.1. Industry overview

The global payments network industry, in which Visa operates, there has not been clear and unanimous data about the industry, only of the sector (financial services). There have been various sources where different parts of the payments industry has been reviewed or analysed such as card payments (debit, credit, prepaid cards), ATM's and nowadays also fintech and other companies looking to utilise and take advantage of the mobile payments innovation as well as alternative payment methods provided by AliPay and WeChat. Nevertheless, unlike just over a decade ago where there were just a few big companies competing, there are currently multitude of SMEs and large corporations competing in the market. Each one offering different and convenient ways for the consumers, private and corporate customers, to make payments. Thus, making the industry extremely competetive which is fueled by the advancements in technology and in such is difficult to understand the complexity of it.

Boston Consulting Group's (BCG) and McKinsey's (McK) global payment reports 2019 projected that the industry is on a 6% annual growth rate (CAGR) and will keep going so to the future also. The global payments market is nearly $1.5 billion in revenues (BCG Global Payments report, 2019, p.7; McK Global Payments Report, 2019, p. 3). Similar to the industry's historical rate of annual growth, the distribution of revenue sources globally (Europe, Middle East and Africa, Latin America, North America and Asia Pacific) have been changing towards the electronic payments decreasing the use of cash and checks globally. At the same time the growth of revenues globally is driven by A.P (Asia Pacific) countries according to McK's Global Payments Report (2019)

The table 2.1 is compiled by the author of the thesis for a brief overview of some financial information of the global payments industry. It is noteworthy to mention that these companies were selected by their similarity and competetiviness to one another. The numbers in the table are rounded and in so the results may be slightly different. UnionPay from China is excluded from this research, due to the regulation in the country making it inaccessible for Visa and other card network companies.

Table 2.1. Global payments industry 2019.

Company name/Year	Revenue ($M)		Net income margin (%)		Number of employees		Debt/equity (times)		ROE (%)	
	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019
Visa Inc.	6,263	22,977	12.8%	52.6%	5,765	19,500	0.00	0.46	4.5%	30.6%
Mastercard	4,335	16,883	-5.9%	47.9%	5,500	11,400	0.05	1.44	-11.46%	153.8%
American Express	32,989	47,020	8.0%	15.0%	66,000	64,000	5.07	2.54	22.3%	24.15%
Diners Club[1]	4,580	13,990	10,73	20.8%	11,900	17,200	0.29	2.87	9.08%	25.11%

Source: Compiled by the author of the thesis using data provided by Thomson Reuters Peer Evaluation tool.

The debt/equity ratio gives quick glance to the liabilities in the balance sheet of the selected companies, enabling to form a picture of the company's asset financing structure, the capital. Essentially it shows the debt leverage of the company. Revenues show the total revenues of the companies and their gross income generated from different business activities before taxes and other costs related to the companies. Consequently, the income after tax margin shows the bottom line of the income statement, where all costs and taxes have been deducted from the revenues. Return on equity (ROE) is a financial ratio which indicates how well the company is able to generate profit from a single USD invested to the company's equity (Drezewski, Kruk, Makowka, 2018).

The revenues for card issuers (banks and other financial institutions) are formed from multiple sources. Revenues linked with cards are traditionally generated from the retail market and from the use of cards that link the customers to the bank. The use of cards on the other hand creates interchange fees, which goes a long way to generate income for various financial entities (Verdier, 2011).

[1] Diners Club International was acquired by Discover Financial Services in 2008.

The card payment network companies (*i.e. Visa, MasterCard*) earn from the use of their (manufactured) cards based on the volume of usage. By letting the card issuers use their globally established card network (data processing) adapted by different merchants and retail companies for example. However, the card issuers are being monitored closely by central banks and is highly regulated and, so interchange fees are also increasingly regulated over the years. The factors affecting interchange fees are card type, business size, industry and the type of the transaction. Competition in the industry is introducing cheaper ways for cross-border payments (Verdier, 2011; BCG, 2019; McKinsey, 2019; Visa, 2019, pp. 39–40). Payment networks and other companies operating in the payments industry have had to further innovate and acquire startups and fintech companies to keep up with the competition while at the same time legal requirements and the increasing regulation of the industry is impacting the expenses of the companies.

2.2. Company overview

Visa Inc. (Visa) is a company that has a vast card network allowing the use of its general purpose cards globally and making the everyday life of a consumer more convenient and safer. Visa enables this through the array of services and products, which can be categorised to:

- Core products:
    - Debit (pay now),
    - Credit (pay later),
    - Prepaid (pay before),
    - ATM network.
- Transaction processing infrastucture and services:
    - VisaNet (global processing network) with the help of Visa debit processing services (authorization, clearing and transaction settlement) enables payments globally,
    - Value-added services such as data-analytics and consultation.
- Digital products:
    - Visa Direct (realtime payment service),
    - Visa Checkout (online transaction service),
    - Visa Token Service (financial information protection).
- Merchant and acquirer products:
    - Visa Advertising Solutions (customer reach and efficacy)
    - Visa Consumer Network (customer acquisition)

    - CyberSource (security, authorization and management)
- Risk aversion products:
    - Visa Consumer Transaction Control (cardholders management over card settings)
    - Visa Transaction Advisor (gas station fraud protection)

These services and products allow consumers, merchants, financial and governmental institutions to be connected to electronic payments. Essentially, the use of these products and services support Visa to grow and enhance its payments network.

Table 2.2. is compiled by the author of the thesis to demonstrate the growth of the Visa Inc. total transactions during the analysed period alongside horizontal and trend analysis. Also to support the growth of the total transactions, total cards issued by Visa is added to the table 2.2. without further analysis.

Table 2.2. Visa Inc. Transactions and Cards.

Year	Number of transactions (in millions)	Growth rate (YoY)	Overall growth of transactions	Total cards (in billions)
2007	32,720	-	100 %	1.354
2008	36,957	12.9 %	113 %	1.594
2009	39,885	7.9 %	122 %	1.717
2010	45,411	13.9 %	139 %	1.808
2011	50,922	12.1 %	156 %	1.897
2012	53,324	4.7 %	163 %	2.011
2013	58,472	9.7 %	179 %	2.128
2014	64,993	11.2 %	199 %	2.219
2015	70,968	9.2 %	217 %	2.402
2016	83,159	17.2 %	254 %	3.009
2017	111,215	33.7 %	340 %	3.143
2018	124,320	11.8 %	380 %	3.243
2019	138,329	11.3 %	423 %	3.359
CAGR 2019/2007	12.8 %	-	-	7.9 %

Source: Visa Annual Reports, 2007–2019. Compiled by the author.

During the years 2007–2015 Visa Europe's results are not included in the card transactions and the total cards due to Europe having its own payment processing network. After 2016, the subsidiary Visa Europe was acquired. Hence, the number of transactions and cards may not reflect the actual

results, which can be seen by the significant increase (33,7%) in the transactions from the year 2016 to 2017.

The number of transactions have been growing nearly 12,8% yearly (CAGR) and when comparing it with the CAGR of total cards, approximately 7,9%. It means that consumers are using more and more cards instead of cash and checks and that cards are becoming a more popular way to conduct transactions. During the analysed period, electronic payments have increased over four times by the trend analysis of transactions. The more consumers use electronic payments the more revenue Visa generates.

The structure of revenue source is divided to:

- Service revenues (consumer usage of Visa products)
- Data processing revenues (transaction and information processing in the payment network)
- International transaction revenues (currency conversions and cross-border transactions)
- Other revenues (value-added services and license fees among others)

The revenues added together is the sum of gross revenue, from which client incentives are subtracted to form the gross revenue. Client incentives are expenses for the encouragement of the target market to use Visa's products and services. Service revenues have been historically the largest share of the revenues, but data processing revenues have been the largest source of the revenues on the last two years. Mainly because the processed transactions have been growing at a quick rate, which are the main driver for data processing revenues. Where on the other hand payments volume is the main driver for service revenues. Nevertheless, Visa's business model is transaction based. On the years 2019 and 2018 the distribution of the revenue geographically to the U.S. and internationally, 45% and 55% respectively, on both years. Since the revenues are converted to USD it is impacted by the exchange rate of the currency. Also, it is noteworthy to mention that from Visa's annual report, not a single year of the analysed period had seasonality on the revenues. (Visa Inc., 2018; Visa Inc., 2019)

Based on the annual reports (2007–2019), the events compiled by the author of the thesis are added (in appendix 7), in the opinion of the author have had impacts on Visa's business.

Regulation in China by the Bank Card Clearing Institution (BCCI) and People's Bank of China (PBOC) has effectively limited international card payment services to enter the Chinese markets,

to only a domestic card payment transaction processing company, UnionPay. As long as Visa has limited operating possibilities in China, UnionPay will continue to grow larger. Meanwhile, eCommerce and digital payment providers are getting bigger market share China, such as Alipay and WeChat Pay, with strong backing from the Chinese government. Other countries besides China to exclude international competition from card network companies are Russia, Thailand and India.

The litigation escrow accounts sole purpose is to cover monetary liabilities from litigation settlements. Therefore, is restricted cash and the account's reserves are not for operational needs. (Visa Inc., 2007–2019)

Focusing on growing and emerging markets or economies gives a chance for further growth for Visa with their core products and services. Wherein, developed economies and markets with high technological advancement present opportunities to implement new solutions to conventional products and services to further innovate, such as transit and public transportation with contactless cards.

Overall, to conclude this chapter, regulation may limit transactions and payment volumes, having a direct link to the business performance of Visa. Global economic conditions impact directly to consumer spending due to unemployment and increased savings in times of uncertainty, such as market crashes and pandemics for example. Rapid innovations and developments on technology require Visa to keep up with the changes, otherwise they may be in risk of losing substantial position in the global payments industry to their competition.

3. OVERALL EFFICIENCY ANALYSIS OF VISA INC.

This chapter will look in depth at Visa's overall efficiency throughout the analysed period. In addition to analysing the overall efficiency of Visa year by year, the focus will be on which year was the most efficient during the analysed period and breaking down the components for further examination of the reasons.

3.1. Compilation of overall efficiency matrix and initial data overview

For the analysis of the efficiency matrix, the initial data must be first compiled (table 3.1) to reflect what kind of changes there have been within Visa. The information within the table is gathered using only externally available financial information, the company's annual reports, from the years 2007–2019.

The author of the thesis decided to adopt Siimann's proposed quantitative indicators to be used on the compilation of the company's overall efficiency matrix with modifications. The input indicators are the same (average capital, average number of employees, average assets and operating expenses) and instead of one income indicator there now are two (number of transactions and sales revenue). Profit indicator has not been changed, but cash flow indicator now consequently has now only one quantitative indicator (net operating cash flow).

The number of transactions were chosen due to its direct link with Visa's business model and its availability in annual reports. The elimination of free cash flow from the cash flow indicators was done to reflect the negative impacts of legal matters (litigation expenses) and acquisitions before investing and financing activities.

Table 3.1. Formated initial data of Visa 2008–2019.

Year/QI (in millions $, except for E&T)	Net operating cash flow (R)	EBIT (P)	Sales revenue (S)	Number of transactions (T)	Operating expenses (O)	Average assets (A)	Average no. of employees (E)	Average capital (C)
2019	12,784	15,001	22,977	138,329	7,976	70,900	18,250	51,025
2018	12,941	12,954	20,609	124,320	7,655	68,601	16,000	50,882
2017	9,208	12,144	18,358	111,215	6,214	66,006	14,600	49,961
2016	5,574	7,883	15,082	83,159	7,199	51,701	12,750	39,318
2015	6,584	9,064	13,880	70,968	4,816	38,968	10,400	28,628
2014	7,205	7,967	12,702	64,993	5,005	37,263	9,500	27,142
2013	3,022	7,239	11,778	58,472	4,539	37,985	9,000	27,250
2012	5,009	2,139	10,421	53,324	8,282	37,387	8,000	27,034
2011	3,872	5,456	9,188	50,922	3,732	34,084	7,150	25,748
2010	2,691	4,589	8,065	45,411	3,476	32,845	6,250	24,154
2009	558	3,538	6,911	39,885	3,373	33,631	5,733	22,248
2008	531	1,232	6,263	36,957	5,031	19,686	5,622	10,394
2019/2018	0.99	1.16	1.11	1.11	1.04	1.03	1.14	1.00
2018/2017	1.41	1.07	1.12	1.12	1.23	1.04	1.10	1.02
2017/2016	1.65	1.54	1.22	1.34	0.86	1.28	1.15	1.27
2016/2015	0.85	0.87	1.09	1.17	1.49	1.33	1.23	1.37
2015/2014	0.91	1.14	1.09	1.09	0.96	1.05	1.09	1.05
2014/2013	2.38	1.10	1.08	1.11	1.10	0.98	1.06	1.00
2013/2012	0.60	3.38	1.13	1.10	0.55	1.02	1.13	1.01
2012/2011	1.29	0.39	1.13	1.05	2.22	1.10	1.12	1.05
2011/2010	1.44	1.19	1.14	1.12	1.07	1.04	1.14	1.07
2010/2009	4.82	1.30	1.17	1.14	1.03	0.98	1.09	1.09
2009/2008	1.05	2.87	1.10	1.08	0.67	1.71	1.02	2.14
CAGR 2019/2008	1.34	1.26	1.13	1.13	1.04	1.12	1.11	1.16

Source: Compiled by the author based on Appendix 5.

During the analysed period CAGR (table 3.1) shows that all of the quantitative indicators (net operating cash flow, EBIT, sales revenue, number of transactions, average assets, average number of employees and average capital) increased. Operating expenses have increased the least (approximately $2.95 billion) during the analysed period (4% annual growth) and the net operating cash flow has increased relatively the most from $531 million to $12,784 million (34% annual growth). Sales revenues, number of transactions, average number of employees and average capital did not decrease even once, relatively, during the analysed period. But when looking into the events that have had the biggest negative impacts to the quantitative indicators, 2016 and 2012. On both years EBIT has decreased and operating expenses have increased. During the years 2012 and 2016 operating expenses increased due to a litigation settlement agreement and the acquisition

of Visa Europe respectively. Although the sales revenues were increasing they were offset by the acquisition cost lowering EBIT and net operating cash flow compared to the last years results. Apart for the years 2012 and 2016 EBIT has remained positive relatively to the previous year, during the analysed period.

When analysing the indicators, on all of the quantitative indicators CAGR has remained positive according to the initial data (table 3.1). In the case of the operating expenses the sudden growths were, due to legal matters and acquisitions, balanced out to regular rate of growth on the following years. Likewise with the output indicators the decreases in EBIT and net operating cash flow are explained by the previous reasons. Net operating cash flow had the highest growth relatively from the output indicators (number of transactions, sales revenue, EBIT and net operating cash flow) nearly five times more (2010/2009). Primary cause was the provision of litigation escrow accounts and payments from it during the years 2008 and 2009 - after the IPO in the year 2008 and $3.0 billion from total equity raised was deposited to the litigation escrow account. The disproportion in the data (table 3.1) during the years 2012 and 2016 in operating expenses (2.22 times to 0.55 and 1.49 times to 0.86, respectively), demonstrates the litigation payments effects on the litigation provisions from previous year to the company's cash flow. Although the nature of the expenses are different, they occur approximately a year later, resulting in overall efficiency in the output indicators (EBIT and net operating cash flow).

Overall the results are compared to the first year of the analysed period and during the years 2007 and 2008 there were big changes within Visa's organisational structure (reorganisation) and the Discover litigation occuring an additional expense of $1.7 billion. Affecting the overall results linked with the average capital efficiency and average asset efficiency.

3.2. Dynamic ranking and detailed overall efficiency analysis of Visa Inc.

Based on the initial data (table 3.1), the overall efficiency matrix was compiled (table 3.2). The overall efficiency matrix demonstrates quite unique results. Comparing out of 28 efficiency elements, eight elements decreased over time from 2008 to 20019. Five of the decreased efficiency elements were linked with average capital (CAGR<1). The reason is caused by the growth of average capital from 2008 to 2009 (absolute growth approximately $12 billion) due to the negative equity in the year 2007 -$501 million (appendix 2). Subsequently following the IPO the capital

increased, causing a "distortion" in the overall efficiency matrix (table 3.2) when comparing changes within the quantitative indicators to average capital. The value of average capital is significantly lower on the year 2008, thus decreasing the technical efficiency of average capital. If there would not have been these significant events impacting Visa's capital and asset structure, the results would have been less substantial (Appendix 6).

Table 3.2. (Shorter version) Visa Inc. overall efficiency matrix 2008–2019.

Year/QI (in mil. of $, excl. E&T)	Net operating cash flow (R)	EBIT (P)	Sales revenue (S)	Number of transactions (T)	Operating expenses (O)	Average assets (A)	Average no. of employees (E)	Average capital (C)
R	1							
P	R/P							
2019	0,852	1						
2008	0,431							
CAGR 2019/2008	1,064							
S	R/S	P/S						
2019	0,556	0,653	1					
2008	0,085	0,197						
CAGR 2019/2008	1,187	1,115						
T	R/T	P/T	S/T					
2019	0,092	0,108	0,166	1				
2008	0,014	0,033	0,169					
CAGR 2019/2008	1,184	1,113	0,998					
O	R/O	P/O	S/O	T/O				
2019	1,603	1,881	2,881	17,343	1			
2008	0,106	0,245	1,245	7,346				
CAGR 2019/2008	1,281	1,204	1,079	1,081				
A	R/A	P/A	S/A	T/A	O/A			
2019	0,180	0,212	0,324	1,951	0,112	1		
2008	0,027	0,063	0,318	1,877	0,256			
CAGR 2019/2008	1,189	1,117	1,002	1,004	0,928			
E	R/E	P/E	S/E	T/E	O/E	A/E		
2019	0,700	0,822	1,259	7,580	0,437	3,885	1	
2008	0,094	0,219	1,114	6,574	0,895	3,502		
CAGR 2019/2008	1,200	1,128	1,011	1,013	0,937	1,009		
C	R/C	P/C	S/C	T/C	O/C	A/C	E/C	
2019	0,251	0,294	0,450	2,711	0,156	1,390	0,358	1
2008	0,051	0,119	0,603	3,556	0,484	1,894	0,541	
CAGR 2019/2008	1,156	1,086	0,974	0,976	0,902	0,972	0,963	

Source: Compiled by the author based on the initial data of Visa Inc. 2008–2019 (Appendix 5).

Contrarily, there are many positive results from the use of overall efficiency matrix. Earnings before interest and taxes have performed well to net operating cash flow (profit to cash flow) demonstrating efficiency in cash flow management. During years 2009 and 2013 it was negative due to the litigation payments.

Sales revenue grew yearly and showed no inefficiency in long term (CAGR). Only during the year 2009 (compared to 2008) the growth of net operating cash flow decreased, due to the effects of Discover litigation settlement agreement to the operating cash flow. Just like sales, transactions grew yearly. The decrease in CAGR (0.998) of sales to transactions is not significant (-0.02%). Primarily because transactions outpaced the growth of sales revenue due to increase in transactions, which is because the transactions include Visa Europe's transactions as well after the year 2016. Nevertheless, approximately one dollar of sales revenues was generated from a single transaction during the analysed period.

Operating expenses have been efficiently used to generate transactions, sales, profit and income. Overall, one dollar of operating expenses has generated over 1.5 processed transactions, but due to the increase in litigation expense in the year 2012, there was an inefficiency in T/O where, operating expenses had a large increase (approximately $4.0 billion). Consequently, lowering CAGR.

Due to the reorganisation in 2007, the total assets grew by over $30 billion, to $34 billion in 2008. As the first year of analysed period is significantly lower as a value, the qualitative indicators reflect negative technical efficiency, as more assets have been generated, but less of transactions or sales for example. Even so, the initial relationship was curbed and CAGR indicated overall growth in efficiency of asset usage. Operating expenses CAGR decreased over the analysed period, which shows a positive result to the asset efficiency in Visa.

Average number of employee indicator demonstrated positive efficiency throughout the analysed period. There was a negative relationship with operating expenses to employees, meaning that less expenses occurred from a single employee. Controversially operating expenses include personnel expense, in other words payments made to the employees (Appendix 5). During two years, 2013 and 2016, there were inefficiencies in T/E, caused by the slower growth in transactions, because of challenging economic conditions internationally. In 2016 it is due to the acquisition of Visa Europe during the 3rd quarter of the year, thus accounting transactions that happened only by that

time, unlike the change in employees was immediate. It is noteworthy to mention that the regional changes in the calculation of transactions are discussed in Visa's current reports with more detail.

According to the table 3.3. the overall efficiency growth of Visa has been consistently efficient, which is calculated using the Visa's overall efficiency matrix (table 3.2.). It indicates that the year 2014 was the best one (nearly 2 times better) and the year 2009 was the most challenging (-3,3%) when compared to 2008 in terms of overall efficiency for Visa.

Table 3.3. Overall efficiency growth of Visa 2019–2008.

Year	GICOE
2019/2008	194.7 %
2018/2008	192.9 %
2017/2008	178.0 %
2016/2008	156.4 %
2015/2008	193.4 %
2014/2008	**197.3 %**
2013/2008	155.8 %
2012/2008	140.3 %
2011/2008	164.4 %
2010/2008	149.7 %
2009/2008	**97.7 %**
CAGR 2019/2008	106.2 %

Source: Compiled by author based on overall efficiency matrix of Visa 2008–2019 (Appendix 6).

The reasons for the excellent efficiency on the year 2014 is primarily from a huge increase in net operating cash flow (nearly $4.2 billion, which is also the largest absolute growth of it) and a regular growth in every other quantitative indicator for the exception of average assets. Average assets decreased after the year 2012 (payment of MDL). The year 2009 showed consistent ineffiency with the effiency elements regarding net operating cash flow, in the first column of the table 3.2. Since the overall efficiency matrix demonstrates the efficiency between the efficiency elements in it – looking at the initial data of Visa (table 3.1.) – although the net operating cash flow did not decrease relatively to 2008, every other quantitative indicator did increase relatively more, for the exception of operating expenses and average employees. Primarily caused by the litigation settlement agreement payments, the equity raised through the IPO and the payments to the litigation escrow account.

The most efficient year compared to 2008 was 2014, but the efficiency after 2017 has been on par with the efficiency of 2014. Mainly because of the integration of the quantitative indicators from the acquisition of Visa Europe. Noteworthy to mention that there were appointed new CEOs on the years 2013 and 2016, after which the overall efficiency of Visa has improved significantly. The year 2019 was the second best year on terms of the overall efficiency of Visa and it has not decrased from the year 2016 (acquisition).

3.3. Variance analysis of change in net operating cash flow 2008–2019

To take an in-depth at the components of the main quantitative indicator and its distribution by modifying the formula (1.4) in subchapter 1.3.2 by conveying it in formula (1.2) manner expressing net operating cash flows changes in absolute and relative, composing formula (3.1):

$$\boldsymbol{R = C \times \frac{E}{C} \times \frac{A}{E} \times \frac{O}{A} \times \frac{T}{O} \times \frac{S}{T} \times \frac{P}{S} \times \frac{R}{P}}, \quad (3.1)$$

where R - Net operating cash flow,

C – Average capital,

$\frac{E}{C}$ – Average number of employees to Average capital,

$\frac{A}{E}$ – Average assets to Average number of employees,

$\frac{O}{A}$ – Operating expenses to Average assets,

$\frac{T}{O}$ – Number of transactions to Operating expenses,

$\frac{S}{T}$ – Sales revenue to Number of transactions,

$\frac{P}{S}$ – Earnings before interest and taxes to Sales revenue,

$\frac{R}{P}$ – Net operating cash flow to Earnings before interest and taxes.

By using the chain-linking method found in formulas (1.7) and (1.8) the values for every components absolute (ΔR) and relative impact (%(ΔR)) to Net operating cash flow are calculated. The R(Conditional) is obtained by replacing every component (*i.e. R+ΔR(C)+ΔR(E/C)...*).

The table 3.4. is composed.

Table 3.4. Distribution of absolute increment.

	Year	R	C	E/C	A/E	O/A	T/O	S/T	P/S	R/P
	2019	12,784	51,025	0,358	3,885	0,112	17,343	0,166	0,653	0,852
	2018	12,941	50,882	0,314	4,288	0,112	16,240	0,166	0,629	0,999
	2017	9,208	49,961	0,292	4,521	0,094	17,897	0,165	0,662	0,758
	2016	5,574	39,318	0,324	4,055	0,139	11,551	0,181	0,523	0,707
	2015	6,584	28,628	0,363	3,747	0,124	14,736	0,196	0,653	0,726
	2014	7,205	27,142	0,350	3,922	0,134	12,986	0,195	0,627	0,904
	2013	3,022	27,250	0,330	4,221	0,119	12,882	0,201	0,615	0,417
	2012	5,009	27,034	0,296	4,673	0,222	6,439	0,195	0,205	2,342
	2011	3,872	25,748	0,278	4,767	0,109	13,645	0,180	0,594	0,710
	2010	2,691	24,154	0,259	5,255	0,106	13,064	0,178	0,569	0,586
	2009	558	22,248	0,258	5,867	0,100	11,825	0,173	0,512	0,158
	2008	531	10,394	0,541	3,502	0,256	7,346	0,169	0,197	0,431
	ΔR(Component)	ΔR	ΔR(C)	ΔR(E/C)	ΔR(A/E)	ΔR(O/A)	ΔR(T/O)	ΔR(S/T)	ΔR(P/S)	ΔR(R/P)
2019/2018	R(Conditional)	-	12,977	14,761	13,375	13,484	14,399	14,428	14,986	12,784
	ΔR	-157	36	1,783	-1,386	109	916	29	558	-2,202
	%(ΔR)	100 %	-23 %	-1136 %	883 %	-69 %	-583 %	-18 %	-355 %	1403 %
2018/201	R(Conditional)	-	9,378	10,091	9570	11,343	10,293	10,337	9,822	12,941
t	ΔR	3,733	170	713	-521	1,773	-1,050	44	-515	3,119
	%(ΔR)	100 %	5 %	19 %	-14 %	48 %	-28 %	1 %	-14 %	84 %
2017/2016	R(Conditional)	-	7,083	6,383	7,116	4,811	7,455	6,785	8,587	9,208
	ΔR	3,634	1,509	-700	733	-2,305	2,643	-670	1,802	621
	%(ΔR)	100 %	42 %	-19 %	20 %	-63 %	73 %	-18 %	50 %	17 %
2016/2015	R(Conditional)	-	9,043	8,072	8,735	9,842	7,715	7,154	5,726	5,574
	ΔR	-1,a010	2,459	-971	664	1,106	-2,127	-561	-1,428	-152
	%(ΔR)	100 %	-243 %	96 %	-66 %	-110 %	211 %	56 %	141 %	15 %
2015/2014	R(Conditional)	-	7,599	7,888	7,535	6,933	7,867	7,873	8,197	6,584
	ΔR	-621	394	288	-353	-602	934	6	324	-1,613
	%(ΔR)	100 %	-64 %	-46 %	57 %	97 %	-150 %	-1 %	-52 %	260 %
2014/2013	R(Conditional)	-	3,010	3,190	2,965	3,332	3,359	3,259	3,326	7,205
	ΔR	4,183	-12	180	-225	368	27	-100	67	3,879
	%(ΔR)	100 %	0 %	4 %	-5 %	9 %	1 %	-2 %	2 %	93 %
2013/2012	R(Conditional)	-	5,049	5,635	5,089	2,745	5,493	5,661	16,952	3,022
	ΔR	-1,987	40	586	-546	-2,344	2,747	169	11,291	-13,930
	%(ΔR)	100 %	-2 %	-29 %	27 %	118 %	-138 %	-8 %	-568 %	701 %
2012/2011	R(Conditional)	-	4,065	4,332	4,247	8,593	4,055	4,392	1,518	5,009
	ΔR	1,137	193	267	-85	4,346	-4,538	337	-2,874	3,491
	%(ΔR)	100 %	17 %	23 %	-7 %	382 %	-399 %	30 %	-253 %	307 %
2011/2010	R(Conditional)	-	2,869	3,079	2,793	2,889	3,018	3,066	3,199	3,872
	ΔR	1,181	178	210	-286	97	128	48	134	673
	%(ΔR)	100 %	15 %	18 %	-24 %	8 %	11 %	4 %	11 %	57 %
2010/2009	R(Conditional)	-	606	608	545	575	635	651	724	2,691
	ΔR	2,133	48	3	-63	30	60	16	73	1,967
	%(ΔR)	100 %	2 %	0 %	-3 %	1 %	3 %	1 %	3 %	92 %
2009/2008	R(Conditional)	-	1,137	541	907	356	573	586	1,525	558
	ΔR	27	606	-595	366	-551	217	13	939	-967
	%(ΔR)	100 %	2243 %	-2204 %	1355 %	-2041 %	804 %	48 %	3478 %	-3581 %

Source: Compiled by the author.

In 2019 157$ million decrease in Net operating cash flow, was primarily driven by (table 3.4.):

- By the decrease of $2,202 million in Net operating cash flow to EBIT from 0.431 times to 0.158 accounting for 1403% of the change. Due to decreased cash flow to operating assets (client incentives) and EBIT increased by increase net revenues (Visa Inc., 2019, p. 62).
- By the decrease of $1,386 million in Average assets to Average number of employees from 4.288 times to 3.885 accounting for 883% of the change. Due to the growth in the average number of employees from acquisitions and current ones (Visa Inc., 2019, p. 15).

In 2018 $3,733 million increase in Net operating cash flow, was primarily driven by:

- By the increase of $3,119 million in Net operating cash flow to EBIT from 0.758 times to 0.999 accounting for 84% of the change. Due to increased cash flow from operating activities and EBIT increased by the increase in net revenues (Visa Inc., 2019, p. 62).
- By the increase of $1,773 million in Operating expenses to Average assets from 0.094 times to 0.112 accounting for 48% of the change. Due to minimal increase in operating expenses and average assets grew from acquisitons and purchases of non-current investment securities (Visa Inc., 2018, p. 56).

In 2017 $3,634 million increase in Net operating cash flow, was primarily driven by:

- By the increase of $2,643 million in Number of transactions to Operating expenses from 11.511 times to 17.897 accounting for 73% of the change. Due to a decrease in operating expenses (Visa Europe Framework Agreement Loss) while transactions continued to grow (Visa Inc., 2018, p. 57).
- By the increase of $ 1,802 million in EBIT to Sales revenue from 0.523 times to 0.662 accounting for 50% of the change. Due to an increase in sales revenues and decreased operating expenses (Visa Europe's financial results are included) (Visa inc., 2018, p. 57).

In 2016 $1,010 million decrease in Net operating cash flow, was primarily driven by:

- By the decrease of $2,127 million in Number of transactions to Operating expenses from 14.736 times to 11.551 accounting for 211% of the change. Due to increase in operating expenses (Visa Europe Framework Agreement Loss) and an increase in transactions (Visa Inc., 2017, p. 55).
- By the decrease of $1,428 million in EBIT to Sales revenue from 0.653 times to 0.523 accounting for 141% of the change. Due to decrease in EBIT and increase in Sales revenues (Visa Inc., 2017, p. 57).

In 2015 $621 million decrease in Net operating cash flow, was primarily driven by:

- By the decrease of $1,613 million in Net operating cash flow to EBIT from 0.904 times to 0.726 accounting for 260% of the change. Due to increased cash inflow from operating activities and increased EBIT from overall decreased operating expenses (Visa Inc., 2016, p. 54).
- By the decrease of $353 million in Average assets to Average number of employees from 3.922 times to 3.747 accounting for 57% of the change. Due to increase in assets (investment securities) (Visa Inc., 2015, p. 55).

In 2014 $4,183 million increase in Net operating cash flow, was primarily driven by:

- By the increase of $3,879 million in Net operating cash flow to EBIT from 0.417 times to 0.904 accounting for 93% of the change. Due to an increase in cash flow to operating activities (accrued litigation 2014/2013) (Visa Inc., 2014, p. 61).
- By the increase of $368 million in Operating expenses to Average assets from 0.119 times to 0.134 accounting for 9% of the change. Due to increase in average assets (acquisitions, investment securities and deferred tax assets). (Visa Inc., 2014, p. 53).

In 2013 $1,987 million decrease in Net operating cash flow, was primarily driven by:

- By the decrease of $13,930 million in Net operating cash flow to EBIT from 2.342 times to 0.417 accounting for 701% of the change. Due to increase in cash flow from operating activities (MDL payment) (Visa Inc., 2014, p. 61).
- By the decrease of $2,344 million in Operating expenses to Average assets from 0.222 times to 0.119 accounting for 118% of the change. Due to decrease in operating expenses (MDL payment) (Visa Inc., 2013, p. 53).

In 2012 $1,137 million increase in Net operating cash flow, was primarily driven by:

- By the increase of $4,346 million in Operating expenses to Average assets from 0.109 times to 0.222 accounting for 382% of the change. Due to increase in operating expenses (MDL payment) (Visa Inc., 2013, p. 53).
- By the increase of $3,491 million in Net operating cash flow to EBIT from 0.710 times to 2.342 accounting for 307% of the change. Due to increase in cash inflow from the litigation payment (MDL) (Visa Inc., 2013, p. 96).

In 2012 $1,181 million increase in Net operating cash flow, was primarily driven by:

- By the increase of $673 million in Net operating cash flow to EBIT from 0.586 times to 0.710 accounting for 57% of the change. Due to increased cash flow to operating activities,

payment to the litigation escrow account, and increased sales revenues (Visa Inc., 2011, p. 70).

- By the increase of $210 million in Average number of employees to Average capital from 0.259 times to 0.278 accounting for 18% of the change. Due to increase in employees and the purchase of investment securities (Visa Inc., 2011, p. 68).

In 2010 $2,133 million increase in Net operating cash flow, was primarily driven by:

- By the increase of $1,967 million in Net operating cash flow to EBIT from 0.158 times to 0.586 accounting for 92% of the change. Due to sales revenues increased and operating expenses remained the same. Also, increased cash flow to from operating activities due to decreased litigation escrow account (Visa Inc., 2011, p. 76).
- By the increase of $60 million in Number of transactions to Operating expenses from 11.825 times to 13.064 accounting for 3% of the change. Due to increase in transactions (Visa Inc., 2011, p. 44).

In 2009 $27 million increase in Net operating cash flow, was primarily driven by:

- By the increase of $939 million in EBIT to Sales revenue from 0.197 times to 0.512 accounting for 3478% of the change. Due to payment of Discover litigation in 2008 lowering operating expenses in 2009 and increasing EBIT (Visa Inc., 2010, p. 69).
- By the increase of $606 million in Average capital from 10.394 times to 22.248 accounting for 2243% of the change. Due to the reorganisation in 2007-2008 and the increase in capital structure (Visa Inc., 2009, p. 32).

To conlude, the most impactful events to the company's efficiency has been during the year 2009 where several of the most significant events occured at once. Consequently the best year was 2014 where to the same type of events in nature impacted positively to the company's overall efficiency through the offset in expenses through the mitigation of the risk according to the Retrospective Responsibility Plan made before 2007 (undisclosed date).

3.4. Recommendations for overall efficiency improvements

Based on the overall efficiency matrix of Visa (Appendix X and table 3.3) the strengths of the company are employee usage efficiency, efficiency of expense management, transactions profitability and capital usage efficiency. Improvements could be made in transactions to sales.

As for the recommendations the author of the thesis would like to suggest from improvements from inspection of the overall efficiency matrix of Visa and the annual reports of 2007–2019:

1. To continue to mitigate risk from legal matters according to the Retrospective Responsibility Plan to cover future liabilities from pending litigations.
2. Continue to invest in the card processing network for improvement of their product and service quality incenting customers to choose them over others.
3. To actively pursue new fintechs and to continue acquisitions, while maintaining and improving asset efficiency due to the reserves set aside from the litigation escrow account.
4. Launching new innovation initiatives directed at universities; acquiring new and capable employees for future growth.
5. Maintain the current growth and the structure of personnel expenses while increasing the number of employees. Due to good employee efficiency and employee expenses being the largest part of operating expenses.
6. Pursue new and emerging markets and to find strategic alliances within ones that are inaccessible due to regulation (i.e. Russia) to maintain and increase global influence.
7. Maintaining client incentives at 21% of gross revenues to keep encouraging new clients.
8. Reviewing and maintaining the fee structure with existing clients.
9. Maintain and increase incrementally the amount of investment securities and to continue hedging programs for further mitigation of market risks as the company grows.
10. To maintain the current structure of capital (debt/equity).
11. Increase sales from processed transactions (S/T CAGR<1).

Moreover, continuous strategy assessment and careful planning of the near future while mitigating risks from the most impactful events are recommended by the author for overall efficiency growth of Visa.

CONCLUSION

The aim of the thesis was to find out the overall efficiency of Visa Inc. during a longer period and to make proposals on efficiency improvements for the future. The object of the study is Visa Inc., a leading global card network company and the objective was to construct an overall efficiency matrix suitable for the analysis of the company and to make recommendations for the overall efficiency improvement based on the results. Essentially creating an amended overall efficiency matrix model from Siimann's and recommending it to be used for Visa and other card payment companies by the author of the thesis.

To respond to the first question "Which year for Visa, the overall efficiency was the highest during the analysed period (2008–2019) and why?"

According to the received results, 2014 was the most efficient year during the analysed period compared to 2008 (higher by 97.3%), mainly because of increases in all of the efficiency elements except for Average capital efficiency due to distortion in the efficiency matrix itself (negative equity in 2007 resulting in lower quantitative indicator). Meaning that all of the output indicators (Net operating cash flow, EBIT, Sales revenue and Number of transactions grew the most from the given amount of input indicators (Average capital, Average number of employees, Average assets and Operating expenses) compared to 2008. Primarily driven by the offset of multidistrict litigation payment ($4.0 billion) and takedown payments ($1.1 billion.) from the defendants from the same litigation deposited into the litigation escrow account. Decreased personnel costs from the decreased incentive compensation, severance charges and periodic pension cost lowering operating expenses. Meanwhile growth in all of the sales revenue sources reflecting continued growth in payments volume, cross-border volume and processed transactions. As well as the successful mitigation of Dodd-Frank Act (in 2012) by renegotiating client contracts and lowering fees.

Consequently to the best year there is also the worst year. The year 2009 had the lowest dynamic ranking (-2.3%) of the overall efficiency growth indices compared to the year 2008. This was primarily due to the reorganization of the company (2007–2008), the IPO in 2008 and the litigation

payments made due to Discover litigation and American express litigation ($1.7 billion) in 2008–2009. Resulting 2009 to be the most challenging year according to the table (3.3).

To respond to the second question "What are the main changes in the efficiency during the analysed time period and what were the significant positive and negative causes to them?"
Throughout the analysed period from the quantitative indicators Net operating cash flow, EBIT, Operating expenses, Average assets and Average Capital were impacted most by the significant events of Visa Inc. Consequently the most overall efficient year and the most challenging years (2014 and 2009, respectively) were impacted the most by these events and had the largest changes in the quantitative indicators mentioned. Although Sales revenue, Number of transactions and Average number of employees consistently proved to be efficient in the overall efficiency analysis.

To respond to the third question "Which improvements could be made to Visa according to the analysis?"
According to the received results, the strengths of the company are employee usage efficiency, efficiency of expense management, transactions profitability and capital usage efficiency. Thus, the author of thesis recommends for Visa to:

- Actively mitigate risks from litigations and markets
- Continue investing in card processing network
- Actively pursue fintechs and to continue acquisitions
- Maintaining the the current structure of employee expenses while increasing employee count through initiatives directed at universities
- Pursue new and emerging markets and find strategic alliances in markets that are inaccessible due to regulation
- Maintaining client incentives at 21% of gross revenue
- Actively reviewing fees with current clients
- Maintaining current structure of capital
- Improving the gross revenue from transactions

The results of the research can be used by Visa Inc. to increase its overall efficiency for further improvent and to maintain its current position in the industry to keep ahead of the increased competition. In addition, the efficiency matrix can be further amended for the different needs of an analyst or a researcher.

The author of the thesis would also like to recommeded future uses of this research to extend the analysis of Visa Inc. and the industry itself via benchmark analysis based on the overall efficiency matrix against its closest competitors.

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APPENDICES

Appendix 1. Visa Inc. Balance sheet 2007–2019

Indicator (in millions of $)/Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Assets													
Cash and cash equivalents	275	4,979	4,617	3,867	2,127	2,074	2,186	1,971	3,518	5,619	9,874	8,162	7,838
Litigation Escrow Account		1,298	1,365	1,866	2,857	4,432	49	1,498	1,072	1,027	1,031	1,491	1,205
Investment securities:													
- Trading		59	59	60	57	66	75	69	66	71	82	98	
- available-for-sale	747	355	56	124	1,214	677	1,994	1,910	2,431	3,248	3,482	3,449	4,236
Settlement receivable	10	1,131	605	402	412	454	799	786	408	1,467	1,422	1,582	3,048
Accounts receivable	245	342	444	476	560	723	761	822	847	1,041	1,132	1,208	1,542
Customer collateral	68	679	812	899	931	823	866	961	1,023	1,001	1,106	1,324	1,648
Current portion of client incentives	96	256	214	175	278	209	282	210	303	284	344	340	741
Current portion of deferred tax assets	795	944	703	623	489	2,027	481	1,028					
Prepaid expenses and other current assets	271	1,190	366	242	265	122	187	216	353	555	550	562	712
Total Current Assets	**2,507**	**11,174**	**9,241**	**8,734**	**9,190**	**11,786**	**7,822**	**9,562**	**10,021**	**14,313**	**19,023**	**18,216**	**20,970**
Restricted Cash - Litigation Escrow Account		630	350	70									
Investment securities - available-for-sale	737	244	168	24	711	3,283	2,760	3,015	3,384	3,931	1,926	4,082	2,157
Client incentives (Volume and Support)	44	123	102	101	85	58	89	81	110	448	591	538	2,084
Investment in Visa International	227												
Property, equipment and technology	313	1,080	1,204	1,357	1,541	1,634	1,732	1,892	1,888	2,150	2,253	2,472	2,695
Deferred tax assets	471												
Other assets	91	634	125	197	129	151	521	855	778	893	1,226	1,165	2,232
Intangible assets, net		10,883	10,883	11,478	11,436	11,420	11,351	11,411	11,361	27,234	27,848	27,558	26,780
Goodwill		10,213	10,208	11,447	11,668	11,681	11,681	11,753	11,825	15,066	15,110	15,194	15,656

Appendix 1 continued

Total Assets	**4,390**	**34,981**	**32,281**	**33,408**	**34,760**	**40,013**	**35,956**	**38,569**	**39,367**	**64,035**	**67,977**	**69,225**	**72,574**
Liabilities													
Accounts payable	99	159	156	137	169	152	184	147	127	203	179	183	156
Settlement payable	50	1,095	634	406	449	719	1,225	1,332	780	2,084	2,003	2,168	3,990
Customer collateral	68	679	812	899	931	823	866	961	1,023	1,001	1,106	1,325	1,648
Accrued compnesation and benefits	244	420	396	370	387	460	523	450	503	673	757	901	796
Client incentives	188	249	284	418	528	830	919	1,036	1,049	1,976	2,089	2,834	3,997
Accrued liabilities	356	306	754	625	562	584	613	624	849	1,128	1,129	1,160	1,625
Deferred purchase consideration	-	-	-	-	-	-	-	-	-	-	-	1,300	-
Current maturities of long-term debt	41	51	12	12	-	-	-	-	-	-	1,749	-	-
Accrued litigation (Current portion)	2,236	2,698	1,394	631	425	4,386	5	1,456	1,024	981	982	1,434	1,203
Redeemable class C common stock	-	1,508	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	**3,282**	**7,165**	**4,442**	**3,498**	**3,451**	**7,654**	**4,335**	**6,006**	**5,355**	**8,046**	**9,994**	**11,305**	**13,415**
Long-term debt	-	55	44	32	-	-	-	-	-	15,882	16,618	16,630	16,729
Accrued litigation	1,446	1,060	323	66	-	-	-	-	-	-	-	-	-
Deferred tax liabilities	-	3,811	3,807	4,181	4,205	4,058	4,149	4,145	3,273	4,808	5,980	4,618	4,807
Deferred purchase consideration	-	-	-	-	-	-	-	-	-	1,225	1,304	-	-
Other liabilities	125	613	472	617	667	371	602	1,005	897	1,162	1,321	2,666	2,939
Total Liabilities	**4,853**	**12,704**	**9,088**	**8,394**	**8,323**	**12,383**	**9,086**	**11,156**	**9,525**	**31,123**	**35,217**	**35,219**	**37,890**
Total temporary equity and minority interest	38	1,136	4	-	-	-	-	-	-	-	-	-	-
Equity	-	-	-	-	-	-	-	-	-	-	-	-	-
Preferred stock	-	-	-	-	-	-	-	-	-	5,717	5,526	5,470	5,462
Common stock	-	-	-	-	-	-	-	-	-	-	-	-	-
Treasury stock	-	-35	-2	-	-	-	-	-	-	-170	-	-	-
Right to recover for covered losses	-	-	-	-	-	-	-	-	-	-34	-52	-7	-171
Additional paid-in capital	-	21,060	21,160	20,794	19,907	19,992	18,875	18,299	18,073	17,395	16,900	16,678	16,541
Accumulated income	-	186	2,219	4,368	6,706	7,809	7,974	9,131	11,843	10,462	9,508	11,318	13,502

Appendix 1 continued

Accumulated other comprehensive income, net:													
- Investment securities	-	-	10	3		3	59	31	5	36	73	-17	6
- Defined benefit pension and other postretirement plans	-	-	-136	-115	-186	-186	-60	-84	-161	-225	-76	-61	-192
- Derivative instruments	-	-	-58	-40	18	19	23	38	83	-50	-36	60	199
- Foreign currency translation adjustments	-	-	-4	1	-8	-1	-1	-2	-1	-219	917	565	-663
Total accumulated other comprehensive income, net	**-501**	**-70**	**-188**	**-151**	**-176**	**-171**	**21**	**-17**	**-74**	**-458**	**878**	**547**	**-650**
Non-controlling interest	-	-	3	4	-	-	-	-	-	-	-	-	-
Total equity	**-501**	**21,141**	**23,193**	**25,014**	**26,437**	**27,630**	**26,870**	**27,413**	**29,842**	**32,912**	**32,760**	**34,006**	**34,684**
Total liabilities and equity	**4,390**	**34,981**	**32,281**	**33,408**	**34,760**	**40,013**	**35,956**	**38,569**	**40,236**	**64,035**	**67,977**	**69,225**	**72,574**

Source: Annual reports of Visa Inc. 2007–2019

Appendix 2. Visa Inc. Income statement 2007–2019

(in millions of $)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating revenues													
Service revenues	1,945	3,061	3,174	3,497	4,261	4,872	5,352	5,797	6,302	6,747	7,975	8,918	9,700
Data processing revenues	1,416	2,073	2,430	3,125	3,478	3,975	4,642	5,167	5,552	6,272	7,786	9,027	10,333
International transaction revenues	454	1,721	1,916	2,290	2,674	3,025	3,389	3,560	4,064	4,649	6,321	7,211	7,804
Other revenues	280	596	625	713	655	704	716	770	823	823	841	944	1,313
Client incentives	-505	-1,161	-1,234	-1,560	-1,880	-2,155	-2,321	-2,592	-2,861	-3,409	-4,565	-5,491	-6,173
Net revenues	**3,590**	**6,263**	**6,911**	**8,065**	**9,188**	**10,421**	**11,778**	**12,702**	**13,880**	**15,082**	**18,358**	**20,609**	**22,977**
Operating expenses													
Personnel	721	1,199	1,143	1,222	1,459	1,726	1,932	1,875	2,079	2,226	2,628	3,170	3,444
Marketing	581	1,016	918	964	873	873	876	900	872	869	922	988	1,105
Network and processing	249	339	393	425	414	414	468	507	474	538	620	686	721
Visa International fees	173	-	-	-	-	-	-	-	-	-	-	-	-
Professional fees	334	438	353	286	337	385	412	328	336	389	409	446	454
Depreciation and amortization	126	237	226	265	288	333	397	435	494	502	556	613	656
General and administrative	202	332	338	359	414	451	451	507	547	796	1,060	1,145	1,196
Litigation provision	2,653	1,470	2	-45	7	4,100	3	453	14	2	19	607	400
Visa Europe Framework Agreement Loss	-	-	-	-	-	-	-	-	-	1,877	-	-	-

Appendix 2 continued

Total operating expenses	**5,039**	**5,031**	**3,373**	**3,476**	**3,732**	**8,282**	**4,539**	**5,005**	**4,816**	**7,199**	**6,214**	**7,655**	**7,976**
Operating income	**-1,449**	**1,232**	**3,538**	**4,589**	**5,456**	**2,139**	**7,239**	**7,967**	**9,064**	**7,883**	**12,144**	**12,954**	**15,001**
Non-operating Income (expense)													
Equity in earnings of unconsilidated affiliates	40	1	-	-7	-	-	-	-	-	-	-	-	-
Interest expense, net	-81	-143	-115	-72	-32	29	-4	-8	-3	-427	-563	-612	-533
Investment income and other	103	246	577	128	232	39	22	35	-66	556	113	464	416
Total non-operating income (expense)	**62**	**104**	**462**	**49**	**200**	**68**	**18**	**27**	**-69**	**129**	**-450**	**-148**	**-117**
Income before income taxes	-1,387	1,336	4,000	4,638	5,656	2,207	7,257	7,724	8,995	8,012	11,694	12,806	14,884
Income tax expense	-316	532	532	1,674	2,010	65	2,277	2,286	2,667	2,021	4,995	2,505	2,804
Loss attributable to non-controlling interest	-5	-	1	2	4	2	-	-	-	-	-	-	-
Net income	**-1,076**	**804**	**2,353**	**2,964**	**3,650**	**2,144**	**4,980**	**5,438**	**6,328**	**5,991**	**6,699**	**10,301**	**12,080**

Source: Annual reports of Visa Inc. 2007–2019

Appendix 3. Visa Inc. Cash flow statement 2007–2019

(in millions of $/Year)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Operating Activities													
Net (loss) income	**-1,076**	**804**	**2,353**	**2,964**	**3,646**	**2,142**	**4,980**	**5,438**	**6,328**	**5,991**	**6,699**	**10,301**	**12,080**
Adjustments to reconcile net income including non-controlling interest to net cash provided by operating activities:													
Amortization of client incentives	489	1,161	1,234	1,560	1,880	2,155	2,321	2,592	2,861	3,409	4,565	5,491	6,173
Fair value adjustment for the Visa Europe put option	-	-	-	-79	-122	-	-	-	110	-255	-	-	-
Share-based compensation	-	74	115	131	154	147	179	172	187	221	235	327	407
Excess tax benefit for share-based compensation	-	-	-7	-14	-18	-71	-74	-90	-84	-63	-	-	-
Depreciation and amortization of property, equipment, technology and intangible assets	126	237	226	265	288	333	397	435	494	502	556	613	656
Deferred income taxes	-874	-27	297	249	164	-1,690	1,527	-580	195	-764	1,700	-1,277	214
Right to recover for covered losses recorded in equity	-	-	-	-	-	-	-	-	-	-9	-209	-11	-172
Litigation provision and accretion	2,913	1,601	95	-18	18	4,101	3	453	14	-	-	-	-
Chartitable contirbution of Visa Inc. shares	-	-	-	-	-	-	-	-	-	-	192	-	-
Other	-26	19	-492	-32	-104	-8	50	37	24	64	50	-74	-271
Change in operating assets and liabilities:													
Settlement receivable	32	-543	526	203	-4	-42	-345	13	378	391	94	-223	-1,533
Accounts receivable	-29	-24	-102	-7	-79	-161	-38	-53	-19	-65	-54	-70	-333
Client incentives	-507	-1,378	-1,136	-1,386	-1,857	-1,757	-2,336	-2,395	-2,970	-3,508	-4,628	-4,682	-6,430
Other assets	-172	-158	-75	-42	2	-26	-506	-379	-41	-315	-252	59	-310
Accounts payable	-20	-10	-3	-21	29	-17	40	-56	-13	43	-30	3	-24
Settlement payable	-39	451	-461	-245	36	270	506	107	-552	-302	-176	262	1,931
Accrued and other liabilities	62	-148	190	165	129	-227	702	513	118	277	465	1,760	627
Accrued litigation	-231	-1,525	-2,201	-1,002	-290	-140	-4,384	998	-446	-43	1	452	-231

Appendix 3 continued

Member deposits	-143	-3	-	-	-	-	-	-	-	-	-	-	-
Net cash provided by operating activities	**505**	**531**	**558**	**2,691**	**3,872**	**5,009**	**3,022**	**7,205**	**6,584**	**5,574**	**9,208**	**12,941**	**12,784**
Investing Activities													
Purchases of property, equipment and technology	-160	-415	-306	-241	-353	-376	-471	-553	-414	-523	-707	-718	-756
Proceeds from sale of property, equipment and technology	-	4	-	3	-	2	-	-	10	-	12	14	-
Investment securities, available-for-sale:													
- Purchases	-3,070	-1,509	-7	-11	-1,910	-4,140	-3,164	-2,572	-2,850	-10,426	-3,238	-5,772	-2,653
- Proceeds from maturities and sales	2,769	2,458	297	67	129	2,093	2,440	2,342	1,925	9,119	5,012	3,636	3,996
Acquisitions, net of cash and restricted cash acquired	-	-	-	-1,805	-268	-3	-	-149	-93	-9082	-302	-196	-699
Purchases of / contributions to other investments	-3	-25	-48	-17	-13	-12	-3	-9	-25	-10	-46	-50	-501
Proceeds / distributions of other investments	1	22	1,010	11	116	22	34	-	12	6	4	2	12
Distribution from money market investment	-	-	884	89	-	-	-	-	-	-	-	-	-
Cash acquired through reorganization	-	1,002	-	-	-	-	-	-	-	-	-	-	-
Reclassification of money market investment	-	-983	-	-	-	-	-	-	-	-	-	-	-
Other investing activities	-	-	-	-	-	-	-	-	-	-	-	-	10
Net cash (used in) provided by investing activities	**-463**	**554**	**1,830**	**-1,904**	**-2,299**	**-2,414**	**-1164**	**-941**	**-1435**	**-10,916**	**735**	**-3,084**	**-591**
Financing Activities													
Repurchase of class A common stock	-	-	-	-1,000	-2,024	-710	-5,365	-4,118	-2,910	-6,987	-6,891	-7,192	-8,607
Proceeds from short-term borrowing	-	2	-	-	-	-	-	-	-	-	-	-	-
Payments on short-term borrowing	-	-2	-	-	-	-	-	-	-	-	-	-	-
Proceeds from sale of common stock, net	-	19,100	-	-	-	-	-	-	-	-	-	-	-
Repayments of long-term debt	-	-	-	-	-	-	-	-	-	-	-	-1,750	-
Treasury stock-class C common stock	-	-	-	-	-	-	-	-	-	-170	-	-	-
Dividends paid	-	-93	-318	-368	-423	-595	-864	-1,006	-1,177	-1,350	-1,579	-1,918	-2,269
Proceeds from issuance of senior notes	-	-	-	-	-	-	-	-	-	15,971	2,488	-	-
Debt issuance costs	-	-	-	-	-	-	-	-	-	-98	-15	-	-

Appendix 3 continued

Deposit into U.S. litigation escrow account-U.S. retrospective responsibility plan	-	-3,000	-1,800	-500	-1,200	-1,715	-	-450	-	-	-	-600	-572
Payments from U.S. litigation escrow account-U.S. retrospective responsibility plan	-	1,085	2,028	280	280	140	4,383	-999	426	45	-	150	803
Cash proceeds from exercise of stock options	-	-	32	56	99	174	108	91	82	95	149	164	162
Restricted stock and performance shares settled in cash for taxes	-	-	-	-	-	-	-64	-86	-108	-92	-76	-94	-111
Excess tax benefit for share-based compensation	-	-	7	14	18	71	74	90	84	63	-	-	-
Payment of deferred purchase consideration related to the Visa Europe acquisition	-	-	-	-	-	-	-	-	-	-	-	-	-1,236
Payments for earn-out related to PlaySpan acquisition	-	-	-	-	-	-14	-12	-	-	-	-	-	-
Principal payments on capital lease obligations	-4	-4	-4	-12	-10	-6	-6	-	-	-	-	-	-
Principal payments on debt	-33	-18	-50	-12	-44	-	-	-	-	-	-	-	-
Funding of tax escrow account for income tax withheld on stock proceeds	-	-116	-	-	-	-	-	-	-	-	-	-	-
Payments from tax escrow account	-	116	-	-	-	-	-	-	-	-	-	-	-
Payment for redemption of stock	-	-13,446	-2,646	-	-	-	-	-	-	-	-	-	-
Net cash used in financing activities	**-37**	**3,624**	**-2,751**	**-1,542**	**-3,304**	**-2,655**	**-1,746**	**-6,478**	**-3,603**	**7,477**	**-5,924**	**-11,240**	**-11,830**
Effect of exchange rate changes on cash and cash equivalents	-	-5	1	5	-9	7		-1	1	-34	236	-101	236
Increase in cash and cash equivalents	5	4,704	-362	-750	-1,740	-53	112	-215	1,547	2,101	4,255	-1,712	-324
Cash and cash equivalents at beginning of year	270	275	4,979	4,617	3,867	2,127	2,074	2,186	1,971	3,518	5,619	9,874	8,162
Cash and cash equivalents at end of year	275	4,979	4,617	3,867	2,127	2,074	2,186	1,971	3,518	5,619	9,874	8,162	7,838

Source: Annual reports of Visa Inc. 2007–2019

Appendix 4. Visa Inc. Employees and transactions 2007–2019

(Transactions in millions)/Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Visa Inc. Employees (end of year)	5,479	5,765	5,700	6,800	7,500	8,500	9,500	9,500	11,300	14,200	15,000	17,000	19,500
Visa Inc. processed transactions	32,720	36,957	39,885	45,411	50,922	53,324	58,472	64,993	70,968	83,159	111,215	124,320	138,329

Source: Annual reports of Visa Inc. 2007–2019

Appendix 5. Initial data for matrix compilation

Visa Inc. initial data for efficiency matrix compilation 2008–2019

Quantitative indicator (mil $)	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Average Capital (mil $)	10,394	22,248	24,154	25,748	27,034	27,250	27,142	28,628	39,318	49,961	50,882	51,025
Average number of employees	5,622	5,733	6,250	7,150	8,000	9,000	9,500	10,400	12,750	14,600	16,000	18,250
Average assets (mil $)	19,686	33,631	32,845	34,084	37,387	37,985	37,263	38,968	51,701	66,006	68,601	70,900
Total operating expenses (mil $)	5,031	3,373	3,476	3,732	8,282	4,539	5,005	4,816	7,199	6,214	7,655	7,976
Total number of Visa processed transactions (mil)	36,957	39,885	45,411	50,922	53,324	58,472	64,993	70,968	83,159	111,215	124,320	138,329
Sales Revenue (mil $)	6,263	6,911	8,065	9,188	10,421	11,778	12,702	13,880	15,082	18,358	20,609	22,977
Operating income (mil $)	1,232	3,538	4,589	5,456	2,139	7,239	7,967	9,064	7,883	12,144	12,954	15,001
Net operating cash flow (mil $)	531	558	2,691	3,872	5,009	3,022	7,205	6,584	5,574	9,208	12,941	12,784

Source: Annual reports of Visa Inc. 2007–2019

Appendix 6. Visa Inc. Overall efficiency matrix 2008–2019

Year/QI (in mil. of $, excl. E&T)	Net operating cash flow (R)	EBIT (P)	Sales revenue (S)	Number of transactions (T)	Operating expenses (O)	Average assets (A)	Average no. of employees (E)	Average capital (C)
R	1							
P	R/P							
2019	0.852							
2018	0.999							
2017	0.758							
2016	0.707							
2015	0.726							
2014	0.904	1						
2013	0.417							
2012	2.342							
2011	0.710							
2010	0.586							
2009	0.158							
2008	0.431							
2019/2008	1.977							
2018/2008	2.318							
2017/2008	1.759							
2016/2008	1.641							
2015/2008	1.685							
2014/2008	2.098							
2013/2008	0.969							
2012/2008	5.433							
2011/2008	1.647							
2010/2008	1.361							
2009/2008	0.366							
CAGR 2019/2008	1.064							
S	R/S	P/S						
2019	0.556	0.653						
2018	0.628	0.629						
2017	0.502	0.662						
2016	0.370	0.523						
2015	0.474	0.653	1					
2014	0.567	0.627						
2013	0.257	0.615						
2012	0.481	0.205						
2011	0.421	0.594						
2010	0.334	0.569						

Appendix 6 continued

2009	0.081	0.512			
2008	0.085	0.197			
2019/2008	6.562	3.319			
2018/2008	7.406	3.195			
2017/2008	5.916	3.363			
2016/2008	4.359	2.657			
2015/2008	5.595	3.320			
2014/2008	6.690	3.189			
2013/2008	3.026	3.124			
2012/2008	5.669	1.043			
2011/2008	4.971	3.019			
2010/2008	3.935	2.893			
2009/2008	0.952	2.602			
CAGR 2019/2008	1.187	1.115			
T	R/T	P/T	S/T		
2019	0.092	0.108	0.166		
2018	0.104	0.104	0.166		
2017	0.083	0.109	0.165		
2016	0.067	0.095	0.181		
2015	0.093	0.128	0.196		
2014	0.111	0.123	0.195	1	
2013	0.052	0.124	0.201		
2012	0.094	0.040	0.195		
2011	0.076	0.107	0.180		
2010	0.059	0.101	0.178		
2009	0.014	0.089	0.173		
2008	0.014	0.033	0.169		
2019/2008	6.432	3.253	0.980		
2018/2008	7.245	3.126	0.978		
2017/2008	5.762	3.276	0.974		
2016/2008	4.665	2.844	1.070		
2015/2008	6.457	3.831	1.154		
2014/2008	7.716	3.677	1.153		
2013/2008	3.597	3.714	1.189		
2012/2008	6.538	1.203	1.153		
2011/2008	5.292	3.214	1.065		
2010/2008	4.124	3.031	1.048		
2009/2008	0.974	2.661	1.022		
CAGR 2019/2008	1.184	1.113	0.998		
O	R/O	P/O	S/O	T/O	
2019	1.603	1.881	2.881	17.343	1
2018	1.691	1.692	2.692	16.240	

Appendix 6 continued

2017	1.482	1.954	2.954	17.897	
2016	0.774	1.095	2.095	11.551	
2015	1.367	1.882	2.882	14.736	
2014	1.440	1.592	2.538	12.986	
2013	0.666	1.595	2.595	12.882	
2012	0.605	0.258	1.258	6.439	
2011	1.038	1.462	2.462	13.645	
2010	0.774	1.320	2.320	13.064	
2009	0.165	1.049	2.049	11.825	
2008	0.106	0.245	1.245	7.346	
2019/2008	15.186	7.680	2.314	2.361	
2018/2008	16.017	6.910	2.163	2.211	
2017/2008	14.040	7.981	2.373	2.436	
2016/2008	7.336	4.472	1.683	1.573	
2015/2008	12.953	7.686	2.315	2.006	
2014/2008	13.639	6.500	2.039	1.768	
2013/2008	6.308	6.513	2.084	1.754	
2012/2008	5.730	1.055	1.011	0.876	
2011/2008	9.830	5.970	1.978	1.857	
2010/2008	7.335	5.391	1.864	1.778	
2009/2008	1.567	4.283	1.646	1.610	
CAGR					
2019/2008	1.281	1.204	1.079	1.081	

A	R/A	P/A	S/A	T/A	O/A
2019	0.180	0.212	0.324	1.951	0.112
2018	0.189	0.189	0.300	1.812	0.112
2017	0.140	0.184	0.278	1.685	0.094
2016	0.108	0.152	0.292	1.608	0.139
2015	0.169	0.233	0.356	1.821	0.124
2014	0.193	0.214	0.341	1.744	0.134
2013	0.080	0.191	0.310	1.539	0.119
2012	0.134	0.057	0.279	1.426	0.222
2011	0.114	0.160	0.270	1.494	0.109
2010	0.082	0.140	0.246	1.383	0.106
2009	0.017	0.105	0.205	1.186	0.100
2008	0.027	0.063	0.318	1.877	0.256
2019/2008	6.685	3.381	1.019	1.039	0.440
2018/2008	6.993	3.017	0.944	0.965	0.437
2017/2008	5.172	2.940	0.874	0.897	0.368
2016/2008	3.997	2.436	0.917	0.857	0.545
2015/2008	6.264	3.717	1.120	0.970	0.484
2014/2008	7.168	3.416	1.071	0.929	0.526
2013/2008	2.949	3.045	0.975	0.820	0.468
2012/2008	4.967	0.914	0.876	0.760	0.867

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Appendix 6 continued

2011/2008	4.211	2.558	0.847	0.796	0.428		
2010/2008	3.037	2.232	0.772	0.736	0.414		
2009/2008	0.615	1.681	0.646	0.632	0.392		
CAGR							
2019/2008	1.189	1.117	1.002	1.004	0.928		
E	R/E	P/E	S/E	T/E	O/E	A/E	
2019	0.700	0.822	1.259	7.580	0.437	3.885	
2018	0.809	0.810	1.288	7.770	0.478	4.288	
2017	0.631	0.832	1.257	7.617	0.426	4.521	
2016	0.437	0.618	1.183	6.522	0.565	4.055	
2015	0.633	0.872	1.335	6.824	0.463	3.747	
2014	0.758	0.839	1.337	6.841	0.527	3.922	1
2013	0.336	0.804	1.309	6.497	0.504	4.221	
2012	0.626	0.267	1.303	6.666	1.035	4.673	
2011	0.542	0.763	1.285	7.122	0.522	4.767	
2010	0.431	0.734	1.290	7.266	0.556	5.255	
2009	0.097	0.617	1.206	6.958	0.588	5.867	
2008	0.094	0.219	1.114	6.574	0.895	3.502	
2019/2008	7.417	3.751	1.130	1.153	0.488	1.109	
2018/2008	8.563	3.695	1.156	1.182	0.535	1.224	
2017/2008	6.677	3.796	1.129	1.159	0.476	1.291	
2016/2008	4.629	2.821	1.062	0.992	0.631	1.158	
2015/2008	6.703	3.977	1.198	1.038	0.517	1.070	
2014/2008	8.030	3.827	1.200	1.041	0.589	1.120	
2013/2008	3.555	3.670	1.175	0.988	0.564	1.205	
2012/2008	6.629	1.220	1.169	1.014	1.157	1.335	
2011/2008	5.734	3.482	1.154	1.083	0.583	1.361	
2010/2008	4.559	3.351	1.158	1.105	0.621	1.501	
2009/2008	1.031	2.816	1.082	1.058	0.658	1.675	
CAGR							
2019/2008	1.200	1.128	1.011	1.013	0.937	1.009	
C	R/C	P/C	S/C	T/C	O/C	A/C	E/C
2019	0.251	0.294	0.450	2.711	0.156	1.390	0.358
2018	0.254	0.255	0.405	2.443	0.150	1.348	0.314
2017	0.184	0.243	0.367	2.226	0.124	1.321	0.292
2016	0.142	0.200	0.384	2.115	0.183	1.315	0.324
2015	0.230	0.317	0.485	2.479	0.168	1.361	0.363
2014	0.265	0.294	0.468	2.395	0.184	1.373	0.350
2013	0.111	0.266	0.432	2.146	0.167	1.394	0.330
2012	0.185	0.079	0.385	1.973	0.306	1.383	0.296
2011	0.150	0.212	0.357	1.978	0.145	1.324	0.278
2010	0.111	0.190	0.334	1.880	0.144	1.360	0.259
2009	0.025	0.159	0.311	1.793	0.152	1.512	0.258
2008	0.051	0.119	0.603	3.556	0.484	1.894	0.541

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Appendix 6 continued

2008	0.051	0.119	0.603	3.556	0.484	1.894	0.541
2019/2008	4.904	2.480	0.747	0.762	0.323	0.734	0.661
2018/2008	4.978	2.148	0.672	0.687	0.311	0.712	0.581
2017/2008	3.607	2.051	0.610	0.626	0.257	0.698	0.540
2016/2008	2.775	1.691	0.637	0.595	0.378	0.694	0.600
2015/2008	4.502	2.671	0.805	0.697	0.348	0.719	0.672
2014/2008	5.196	2.476	0.777	0.673	0.381	0.725	0.647
2013/2008	2.171	2.241	0.717	0.603	0.344	0.736	0.611
2012/2008	3.627	0.668	0.640	0.555	0.633	0.730	0.547
2011/2008	2.944	1.788	0.592	0.556	0.299	0.699	0.513
2010/2008	2.181	1.603	0.554	0.529	0.297	0.718	0.478
2009/2008	0.491	1.342	0.516	0.504	0.313	0.798	0.476
CAGR 2019/2008	1.156	1.086	0.974	0.976	0.902	0.972	0.963

Source: Compiled by the author on the basis of the initial data of Visa Inc (Appendix 1)

Appendix 7. Significant events of Visa Inc. 2007–2019

Based on the annual reports (2007–2019) the following events were in the opinion of the author the most meaningful and had impacts on the business (subchapter 2.2)

2007

- New CEO appointed and a new CFO
- Global Restructuring Agreement (GRA)
    - Prior to 2007 Visa U.S.A, Visa International, Visa Europe, Visa Canada and Inovant were independent financial organisations. October 2007 GRA was implemented and all previously mentioned organisations became subsidiaries of Visa Inc. (for the exception of Visa Europe).
- Payments of litigations on various court settlement agreements altogether a total of over $2 billion from which over $1 billion was paid on 2008

2008

- Investment to a new data center to U.S. cost of $390 million
- IPO in March 2008 raised (from A-Class chares) $19.1 billion in net income from which $13.4 billion was used to redeem B and C-Class shares. $3.0 billion was put to an escrow account
- Discover litigation recorded a provision of $1.1 billion for the pending Discover settlement agreement
- Issuer fees were eliminated and service fee was introduced increasing net revenues

2009

- New data center became operational decommissioning an old one
- Joint venture with the bank of U.S. named Syncada
- Sale of 10% stake in VisaNet do Brasil gaining $1 billion in net profit and $473 million in investment income from which net of $273 million.
- Creation of Visa Processing Services (VPS) as a joint venture with Yalamanchili Int. Ltd. Extending Visa's business to growing markets

2010

- Acquisition of CyberSource
- Global economic recovery increased primary revenues (for the exception of other revenues) by double digits

Appendix 7. Continued

- Sponsorship to FIFA and also an exclusive sponsorship to Olympics until 2020 (the only payment service sponsor at the Olympics)
- Data processing revenues include CyberSource's data processing transactions

2011

- Change in fee's structure for merchants, designed to lower costs and be an incentive for merchants to use Visa's payment network for transaction processing
- Economic growth continues to increase global net revenues (except other revenues) by double digits
- Acquisition of Fundamo, a mobile financial service provider, for $110 million
- Acquisition of PlaySpan, a oonline games payment platform, for $225 million
- Licensing Visa payWave, NFC technology, to Google and Isis (nowadays Softcard) in the use of mobile wallets
- Government regulation to interchange fees, setting a cap to debit transactions in the U.S. by the Reform Act (Wall Street reform and Consumer Protection Act, later known as the Dodd-Frank Act)
- Australian government regulates interchange fees both in debit and credit transactions

2012

- Visa modified pricing due to Dodd-Frank Act's regulation over interchange fees
- Revisal of prior litigations, in terms of deductible expenses, increased net income by $326 million
- Litigation provision of $4.1 billion nearly doubling operating expenses due to a settlement agreement in interchange multidistrict litigation (MDL)
- No acquisitions

2013

- New CEO appointed
- Partnering with Samsung for the use of Visa payWave NFC in Samsung smartphones
- Visa paid approximately $4.0 billion from the litigation escrow account
- Pricing modifications made in 2012 3rd Quarter were effective and data processing revenues kept increasing
- Repurchase of stock (A-class) for $15.4 billion and additional $5.0 billion repurchase program authorized by the management for the next fiscal year

Appendix 7. Continued

- No acquisitions

2014

- Multiple steps for product and service innovations
    - Announcement of a new developer center
    - Launch of Visa Ready programme
    - Innovation center for new global commerce solutions
    - Visa Token Service to enhance mobile and online payments
    - EMV-chip technology to decrease frauds
    - Visa Checkout
    - Visa Direct
    - Visa payWave to enable contactless card payments
- Merchants filed a petition for the revisal of interchange fees
- The 2014 events in Ukraine leading U.S. to impose sanctions on Russia's financial sector. In response Russian government modified the payments in Russia to be processed in a government owned payment system in 2015
- The return of $1.1 billion in takedown payments from the defendants
- Acquisition of businesses which Visa had minor interest before for $93 million (in 2017 Annual report was mentioned once of an acquisition of TrialPay)

2015

- Visa Everywhere Initiative (mentioned in 2018 annual report), a global innovation program for start-ups to solve commerce challenges
- Visa Token Service is used now with several partners including Apple, Google and Samsung
- New technology center in Bangalore, India. The largest office outside the U.S.
- Launch of mVisa in India with several banks, a mobile application for the use of debit, credit and prepaid accounts in-store, online and person-to-person transactions
- Russian domestic transactions are required to be processed within the Russian government owned network processor. Announcing also new national payment card "Mir"
- Visa Inc. and Visa Europe reached an agreement of Visa Europe's acquirement

2016

- New CEO

Appendix 7. Continued

- Acquisition of Visa Europe for $20 billion and $1 billion with a 4% compound annual interest to be paid on 2019
- Issuance of senior notes worth of $16 billion during 2015 4th quarter
- Launch of Visa Developers Platform (VDP), where over 180 products and services are available in API for customers and partners
- Launch of Threat Intelligence Fusion platform, a command center for cybersecurity to protect data and assets
- Opened new innovation centers in Dubai, Singapore, Miami, Tel Aviv, London and Berlin
- Launch of Visa Advertising Solutions
- Launch of Visa Consumer Transaction Control
- Migration of EMV-technology in the U.S.
- Second Payment Service Directive (PSD2) implemented in Europe
- Visa Europe Framework Agreement Loss increased operating expenses by $1.9 billion and net income increased $1.2 billion and income taxes increased by $700 million

2017

- Acquisition of CardinalCommerce, a digital payment authentication platform, for $302 million
- Establishment of Visa Foundation, a non-profit public benefit corporation
- Issuance of $2.5 billion senior notes from which $1.75 billion was used for the redemption of previous senior notes maturing
- Reorganisation of Visa Europe with geographic jurisdiction where they conduct business, recognizing a $1.5 billion non-cash income tax provision (deferred tax balance)
- Argentina's central bank regulated a cap to interchange fees both to debit and credit

2018

- Strategic decision to help micro and small enterprises financially via Visa Foundation
- Completion of Visa Europe's technological migration with VisaNet, bringing about a globally connected payments network
- Several investments to Fintech fast-track program
- A $600 million litigation provision and $137 million tax benefits related to the interchange multidistrict litigation (MDL)

Appendix 7. Continued

- Transition tax on foreign earnings connected with the Tax Act, requiring all of non-U.S. subsidiary earnings to be included in taxable income. Thus, realising a $1.1 billion one-time income tax benefit

2019

- In the U.S. the adoption of contactless payment cards is in rapid growth
- According to World Bank, 1.7 billion people still lack formal financial services
- Acquisition of Earthport, a provider of cross-border payments for banks via one of the largest Account Clearing House (ACH) network in the world
- Launch of Visa B2B Connetc, a separate payment network for businesses
- Acquisition of Verifi, a technology solution for transaction disputes and resolutions reducing costs
- Visa acquired Payworks, a payment gateway software provider. Payworks solution will be complimenting CyberSources digital payments acceptance solution
- Renewal of sponsorships for NFL and continued global sponsorship of FIFA and the Olympics
- A $370million litigation provision to the escrow account, recording a $83 million tax benefit

Source: Visa Inc. Annual reports 2007–2019.

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