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Diploma Thesis

Financial Analysis of Selected Company

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DIPLOMA THESIS ASSIGNMENT

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Thesis title

Financial Analysis of Selected Company

Objectives of thesis

Objectives
To determine Financial performance of SAP SE in 2013-2017;
To evaluate the financial position of SAP SE and determine main influencing factors;
To provide recommendations and proposals on improving financial performance and financial position of SAP SE.

Research Questions
What factors did influence financial performance of SAP SE in 2013-2017?
What measures and recommendations can overcome the influence of negative factors on financial performance of SAP SE?

Methodology

Methodology

Data processing

-Statistical Comparison;

-Financial Analysis: Ratio analysis, Horizontal analysis, Vertical analysis.

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Competitors Analysis

BCG Matrix for Product Portfolio Analysis

The proposed extent of the thesis

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Finance, Accounting, Financial analysis, Financial Statements, Annual Reports, Competitors Analysis, BCG matrix, SAP SE

Recommended information sources

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Declaration

I declare that I have worked on my diploma thesis titled "Financial Analysis of Selected Company" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any third person.

In Prague, March 29th, 2019 _____

Mekhriddin Khotamov

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Finanční analýza vybrané společnosti

Souhrn

Tématem této diplomové práce je finanční analýza vybrané společnosti, SAP SE, ve sledovaném období 2013-2017.

Klesající likvidita, čistý zisk, obrat aktiv a rostoucí finanční vliv byly identifikovány jako hlavní faktory finančního výkonu SAP SE v období 2013-2017. Goodwill převažoval v rozvaze, stoupal od hodnoty 50.53% aktiv v roce 2013 až do nejvyšší hodnoty 54.82% v 2015, a to určilo nižší likviditu společnosti než je průměr odvětví. Z hlediska marže čistého zisku a obratu aktiv, SAP SE vykázalo horší výsledky, než průměr. Autor doporučuje, že SAP SE by měla uvažovat použití oběžných aktiv pro splacení dluhů, aby dosáhla alespoň průměrných hodnot ukazatelů likvidity. Ačkoli SAP SE je lepší než průměr odvětví z hlediska řízení provozních nákladů, existují možnosti další optimalizace za účelem zlepšení marže čistého zisku.

Klíčová slova: finance, účetnictví, finanční analýza, účetní závěrky, výroční zpráva, SAP SE.

Financial analysis of selected company

Summary

This diploma thesis presents financial analysis of selected company, SAP SE, for the period of 2013-2017.

Decreasing liquidity, net profit margin, asset turnover and growing financial leverage were identified as main impacting factors of financial performance of SAP SE during the period of 2013-2017. Goodwill dominated the balance sheet, growing from 50.53% of total assets in 2013 to the highest point of 54.82% in 2015, and it determined less than industry average liquidity of the company. In terms of net profit margin and asset turnover SAP SE performed worse than industry average competitor. Recommendation is given to consider using current assets to settle debt liabilities to reach at least industry averages in relation to liquidity ratios. Although SAP SE is better than industry average competitor in controlling operating expenses, there is a room for further optimization in order to improve net profit margin.

Keywords: Finance, accounting, financial analysis, financial statements, annual reports, SAP SE.

Contents

List of Tables

List of Graphs

1 Introduction

Theory and practice of contemporary economics and management require deep understanding of interconnections between financial performance and financial position of an enterprise. More companies start to do business across the globe, being involved in operations in not only different countries, but also different industries. Some of the industries are relatively young, and this brings new challenges in understanding economic and financial processes which surround these companies. Classical and traditional approaches fail to provide answers to some of the questions about economics of such enterprises.

Information technologies (IT) may serve as an example of an industry with relatively recent history. With its rapid development in the period after World War II, IT industry has become one of the most important drivers of economy nowadays. IT has also shown significant potential for innovation, changing the way how people work, study, do business and live.

Accelerated development of IT industry has not always been supported by development of economic and finance science with the same pace. New business models and especially new ways of employing available resources to produce economic benefits are invented by different entrepreneurs across the globe, while there is no consensus in academic discussion on which implications, positive and negative externalities, these new approaches might have. Deep analysis of IT industry and IT companies are needed to enlarge the scientific knowledge and to be in a better position to predict possible impacts on economy and society.

This diploma thesis focuses on the financial analysis of a selected company, and represents a case study of SAP SE, one of the leading IT companies of the world, which is mainly working in IT industry. SAP SE is one of the leaders in enterprise resource planning software solutions (ERP software), software for financial and management accounting and software for data processing.

Objectives chapter of this thesis describes the aims of the research and formulates research questions.

Methodology chapter of this thesis describes methods and tools used to answer research questions. This chapter also describes data set used for the research.

Literature review gives an overview of scientific and academic literature on the topic of financial analysis, ratio analysis, bankruptcy prediction and contemporary issues of financial statements. Review of the literature attempts to cover main problems and issues

from the field of financial analysis nowadays. As financial analysis of IT companies has its specifics, this chapter also tries to highlight main problems of financial accounting and financial analysis of IT companies. This chapter also gives brief introduction to SAP SE company which is the object of the research.

Practical part of this thesis contains results of the financial analysis of SAP SE, employing chosen methodology, i.e. horizontal and vertical analysis of financial statements, ratio analysis and DuPont model.

Discussion and conclusion part is devoted to compare the results of the current research with other existing pieces of research, evaluating the results of the research and discussing possible outcomes. This chapter also generalizes the results of the research, shows the practical implications and identifies possibilities for following research.

2 Objectives and Methodology

2.1 Objectives

The thesis aims to bring deep analysis of financial performance and financial position of selected company by using traditional and contemporary tools of assessment.

The object of the study is international IT company SAP SE, which is a supplier of specialized software for data management and data processing. The company has offices, affiliated companies and operations in different countries across the globe. For the purposes of current research, consolidated financial statements of SAP Group are considered.

Objectives of this thesis can be formulated as follows:

1. To determine financial performance of SAP SE in 2013-2017.
2. To evaluate the financial position of SAP SE and determine main influencing factors.
3. To provide recommendations and proposals on improving financial performance and financial position of SAP SE.

Each of the objectives add significant part of understanding of the current situation in the company and IT sector as a whole and can be interesting for researchers, entrepreneurs and businessmen in IT sector.

In order to fulfill objectives of the research, following research questions should be answered:

1. What factors did influence financial performance of SAP SE in 2013-2017?
2. What measures can overcome the influence of negative factors on financial performance of SAP SE?

2.2 Methodology

2.2.1 Horizontal, vertical analysis and data for the research

For the purposes of current research, several methods are used:

1. Horizontal and vertical analysis of financial statements.
2. Ratio analysis (liquidity, profitability, financial leverage).

Data used in the research have been collected from SAP SE consolidated financial statements prepared with compliance with International Financial Reporting Standards (IFRS): consolidated statement of financial position, consolidated income statement, consolidated statement of comprehensive income, consolidated statement of cash flow. Time period of the research cover 2013-2017, and annual values of individual indicators are considered.

Vertical analysis is done in classic way, i.e. every balance sheet item is compared to total assets, while in case of income statement every item is compared to total revenues. Common-size statements, i.e. financial statements that are expressed in percentages (as a result of vertical analysis), are prepared as a result of vertical analysis.

For horizontal analysis in current research, year 2013 is taken as a base year. This approach has been chosen in order to identify trends in development of different balance sheet items. As the company works on a very competitive market, performs remarkable amount of new business acquisitions and constantly adds new product lines into product portfolio, it is important to understand how these business operations impact development of individual financial indicators during chosen period of time.

2.2.2 Ratio analysis

Ratio analysis estimates magnitude in company's financial accounts, showing how different items on statement of financial position or income statement relate to each other. Ratios is one of the most popular instruments among financial analysts, however interpretation of the results should be done with care and should take into consideration various factors: industry, country specifics, business environment etc.

In case of ratio analysis, several indicator groups are considered:

1. Liquidity.
2. Profitability.
3. Financial leverage.

Liquidity ratios show how easily can the company pay off its debts, if these debts should be paid off immediately. In terms of current research, following ratios are used: current ratio, quick ratio, receivable turnover, days' sales uncollected, payables turnover, days' payable.

Liquidity ratios are calculated as (Needles & Powers, 2007):

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities} \quad (1)$$

$$Quick\ Ratio = \frac{Cash + Marketable\ Securities + Receivables}{Current\ Liabilities} \quad (2)$$

$$Receivable\ Turnover = \frac{Net\ Sales}{Average\ Accounts\ Receivables} \quad (3)$$

$$Days'Sales\ Uncollected = \frac{365}{Receivable\ Turnover} \quad (4)$$

$$Payables\ Turnover = \frac{Costs\ of\ Goods\ Sold \pm Change\ in\ Inventory}{Average\ Accounts\ Payable} \quad (5)$$

$$Days'Payable = \frac{365}{Payables\ Turnover} \quad (6)$$

Liquidity ratios also helps to analyze how long does it take for the company to turn receivables into net cash flows. Cash conversion cycle (CCC) is the indicators that is used for this analysis, and it is calculated as follows:

$$Cash\ conversion\ cycle = Days' Sales\ Uncollected - Days' Payable$$

(7)

As SAP SE does not possess any inventory held for sale, inventory variable is excluded from the cash conversion cycle formula.

Profitability ratios evaluates the company's ability to produce income. Investors and creditors assess the company's profitability because income is the main requirement for liquidity – as cash flows resulted from being profitable will therefore provide the company with cash to pay off its debts. In current research, following profitability ratios are used: profit margin, asset turnover, return on assets, return on equity.

Profitability ratios are calculated as follows (Friedlob & Schleifer, 2003):

$$Profit\ Margin = \frac{Net\ Profit}{Net\ Sales}$$

(8)

$$Asset\ Turnover = \frac{Net\ Sales}{Average\ Total\ Assets}$$

(9)

$$Return\ on\ Assets = \frac{Net\ Income}{Average\ Total\ Assets}$$

(10)

$$Return\ on\ Equity = \frac{Net\ Income}{Average\ Stockholder's\ Equity}$$

(11)

Financial leverage ratios (i.e. solvency ratios) show the level of financial leverage, or more precisely the structure of company's sources of financing. They show, for example, how big is the company's debt in relation to equity. In current research, following financial leverage ratios are used: debt to equity, financial leverage, interest coverage ratio.

Financial leverage ratios are calculated as follows (Needles & Powers, 2007):

$$Debt\ to\ Equity = \frac{Total\ Liabilities}{Stockholder's\ equity}$$

(12)

$$Interest\ Coverage = \frac{Income\ Before\ Income\ Taxes + Interest\ Expense}{Interest\ Expense}$$

(13)

$$Financial\ Leverage = \frac{Average\ Assets}{Average\ Stockholder's\ Equity}$$

(14)

DuPont model helps to evaluate impact of individual indicators on return on equity (ROE). Basically, this model breaks down ROE into:

$$ROE = Net\ Profit\ Margin \times Asset\ Turnover \times Financial\ Leverage$$

(15)

At the same time, this equation can be rewritten as:

$$ROE = \frac{Net\ Income}{Net\ Sales} \times \frac{Net\ Sales}{Average\ Net\ Assets} \times \frac{Average\ Net\ Assets}{Average\ Stockholder's\ Equity}$$

(16)

DuPont analysis is used to assess the sources of changes in ROE, and to conclude on whether these changes can lead to sustainable long-term benefit for the company.

3 Literature Review

3.1 History of financial analysis

Financial analysis is one of the classic tools used by variety of stakeholders to assess the financial performance of a company and make decisions about the company. It is done by using data provided in financial statements of a company. As data used in financial analysis come from financial statements, it is very important to understand the nature of this data and how it is prepared by accounting function of a company.

Financial statements are prepared by financial accounting function of a company. Financial analysis uses accounting information as a primary source of data. Accounting can be understood as a language of business. It communicates financial information about a company to many different stakeholders: owners, investors, creditors, management, suppliers, customers, government officials, economists etc. (Friedlob & Schleifer, 2003)

Each of the stakeholders possesses different interests in being provided with accounting information. Owners and investors are concerned whether a share in the company increases or decreases their wealth, government officials are concerned whether the company fulfils tax obligations, creditors are concerned whether the company has enough liquidity to pay interest and make loan payments in normal operating mode and repay loan immediately in case of insolvency. Suppliers have similar interest as creditors, as many of the deals are done within credit payment terms, therefore suppliers are concerned whether the company will fulfil its payment obligations. Customers are interested in beneficial long-term business relationships.

Financial accounting is regulated by local and international standards and independent bodies. International Accounting Standards Board (IASB) provides guidance and issues International Financial Reporting Standards (IFRS), previously called International Accounting Standards (IAS), that states how business transactions should be recorded and presented to allow all stakeholders to benefit from good and prudent financial information about a business. IASB is an independent, accounting standard-setting body of IFRS Foundation, which was founded on April 1, 2001. (IFRS Foundation, 2018)

As stated on the mission statement of IFRS Foundation, its mission is “to develop IFRS Standards that bring transparency, accountability and efficiency to financial markets around the world” (IFRS Foundation, 2018). IFRS Foundation highlights three main

outcomes of its work: transparency, strengthened accountability, contribution to economic efficiency.

Financial reporting as per IFRS is now required in 140 countries in the world, and several more is permitted.

The standard convention for financial statements' names is (IFRS Foundation, 2018):

1. Statement of financial position as at the end of the period.
2. Statement of profit and loss and other comprehensive income (income statement) for the period.
3. Statement of cash flows for the period.
4. Statement of changes in equity for the period.

It is important to mention that other comprehensive income includes items that are not recognized in profit or loss as per IFRS and IAS 1 allows the presentation of other comprehensive income in a separate statement.

The history of financial analysis has its origins in second half of nineteenth century in America, which was experiencing significant industrial transformations. Industrial capitalists were replaced in plant managements roles by professional managers, and the need for proper financial presentation of outcomes has become more and more urgent. (Horrigan, 1968)

In the beginning, there were two main paths of ratio analysis: ratio analysis for credit purposes and ratio analysis for managerial purposes. Credit analysis was mainly focused on measuring the ability to pay, while managerial analysis was focused on measuring. Credit analysis dominated at that time, partially with introduction of single-name paper loans, when commercial banks started to request financial statements from potential borrowers. (Horrigan, 1968)

In the late 1890s financial analysis went through several important transformations. Firstly, items on financial statements were analyzed one-by-one, then comparative columnar basis of analysis was developed, and after that, together with newly introduced segregation of current and non-current assets, relationships between different items on financial statements were studied. It brought to life the practice of comparing current assets of the enterprise with current liabilities, producing what is now called current ratio.

The commonly accepted practice in ratio analysis in the period before and during World War I was the appearance of absolute ratio criterion. For current ratio, 2 to 1 criterion was one of the accepted by many analysts. Nevertheless, several analysts came to conclusion

that absolute measures might be misleading and biased, therefor these practitioners tended to appeal to the need of interfirm comparison. (Horrigan, 1968)

One of the most remarkable works of that time is the work of Alexander Wall. (Wall, 1936)

The main objective of financial analysis is to provide different users of financial statements a reliable information that can be used in decision making. The purpose of providing reliable information depends for different groups of interested users.

Typical users of financial analysis reports are represented by different groups of stakeholders:

1. Management.
2. Owners.
3. Investors.
4. Suppliers.
5. Government.

Management needs reliable information on financial position and financial performance of the company in order to understand what decisions led to current state, and, more importantly, what decisions and actions should be made to improve the financial state of the company.

Owners need financial analysis results to evaluate the performance of the management in terms of creating and increasing shareholders' wealth. They also use it frequently to make decisions on motivating and incenting management to achieve required results.

Investors use financial analysis to estimate the risks of investing in the company and assess the possible opportunity costs. Suppliers use results of financial analysis to estimate the probability of collecting debts. Government sometimes use financial information, including financial analysis, to assess tax revenues, results of introduced policies and changes in tax revenues after introducing new policies.

General importance of financial analysis cannot be stressed enough. However, several highlights on contemporary approaches are given in the following parts of this research.

3.2 Contemporary approaches to financial analysis

Financial statement analysis, also called financial performance management, is used to analyze the financial performance and financial position of a company. Financial analysis deals with company's financial statements, such as balance sheet (or statement of financial position), profit and loss statement (or statement of comprehensive income) and cash flow statement (or statement of cash flows). Financial performance analysis attempts to show "how important items in a company's financial statements relate to company's financial performance." (Needles & Powers, 2007, p. 706)

Different stakeholders are interested in getting most relevant and prudent information on company's financial performance. Basically, they can be divided into two groups (Needles & Powers, 2007, p. 706):

1. A company's top managers, who aims to achieve financial performance objectives. Middle-level managers, as well as low-level employees who own stock in the company, are also interested in measuring company's financial performance.
2. Creditors and investors, as well as some of the customers who have partnership agreements with the company.

Strategic and operating plans should be formulated in terms of financial objectives. If a primary objective of the company is to maximize stockholders' wealth, this objective should be divided into several categories (Needles & Powers, 2007, p. 706):

1. Liquidity, or an ability of the company to pay bills and meet unexpected needs for cash.
2. Profitability, or an ability of a company to earn profit.
3. Long-term solvency, or an ability of the company to be solvent (or survive) for many years.
4. Cash flow adequacy, which means the ability to generate sufficient amount of cash as a result operating, investing and financing activities.
5. Market strength, or an ability of a company to possess specified market position in order to increase shareholder's wealth.

Management of a company analyze key financial performance measures of current and previous periods to ensure the compliance with strategic and operating plans. The analysis includes determining the cause of variations between planned and actual financial

performance. This analysis is also used to propose ways of correcting these deviations, and normally is done on a monthly, quarterly or annual basis.

There is a significant difference between creditors' and investors' objectives in relation to financial performance measurement. Both use financial performance analysis to understand a company's past performance, present position and future prospects. At the same time, difference lies in the fact, that creditors focus on the ability of a company to pay debt, while investors are more concerned with the amount of potential dividends and market price of a share.

The cornerstone of financial analysis is the statement that past results might be useful to predict future performance. Nevertheless, financial measures should be used with caution. As a rule of thumb, a user of financial analysis is not able to understand the financial position or performance of a company without comparison with similar companies within the same industry, the same region or stage of development. Specific values of some financial measures might be quite normal for one industry, while being completely unacceptable for a stable company in another industry. One of the ways to support sound decision making in evaluating financial performance is to consult the industry norms, for example published by Dun & Bradstreet.

Another way to deeper understanding of financial performance of a company is to compare financial measures, or ratios, over period of time. It gives an analyst an opportunity to judge whether the ratio is getting better or worse. It might also help to identify trends in ratio's development over time, however such projections have to consider the fact, that trends revert in time. (Needles & Powers, 2007, p. 706)

Industry norms give sound information for comparison, a user of industry norms for financial analysis should bear in mind three main limitations (Needles & Powers, 2007, p. 706):

1. Companies in the same industry may not be strictly comparable. This limitation takes into consideration the differences of business model, and the nature of the operations.
2. As norms are calculated for companies within specific industry, it is quite difficult to apply them to corporations operating in more than one industry.
3. Different (but acceptable) accounting procedures may be used in companies (e.g. different methods of inventory valuation).

Despite these limitations, industry norms give the user the best available standards for judging current performance.

Before the massive development and use of quantitative measures to detect company's operational and financial difficulties, there has been several attempts to use qualitative data for this purpose. History of contemporary credit agencies started with establishing of a forerunner of Dun & Bradstreet, Inc in Cincinnati, Ohio in 1849, called R.G. Dun & Company. The agency provided independent credit investigations on creditworthiness of particular merchants using own network of correspondents and operated on a subscription basis.

First scientific works in the field of accounting that tried to assess the financial position of a company using ratios are dated to 1930s. The main aim of these works was to predict how vulnerable the company is from financial point of view, and whether the company will become insolvent or not in the nearest future. These studies were concerned of finding portents of business failures, and many of them concluded that failing firms show significantly different ratios than continuing entities.

One of the most remarkable works on ratio analysis is the classic work of Edward I. Altman on financial ratios, discriminant analysis and the prediction of corporate bankruptcy. (Altman, 1968) The author criticized exceptional use of financial ratios to predict business failure, and also pointed out that almost every work before has placed priority in predicting business failure to different group of ratios – profitability, liquidity and solvency. In the intention to produce more universal measure of business failure probability, he attempted to combine these ratios in one model. As a result, Altman came up with so-called Z-Score, or a number showing what is the probability that the company will go bankrupt in next year. Z-Score is calculated as following (Altman, 1968):

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5 \qquad (1)$$

where X1 – Working capital / Total assets;

X2 – Retained earnings / Total assets;

X3 – Earnings before interest and taxes / Total assets;

X4 – Market value equity / Book value of total debt;

X5 – Sales / Total assets;

Z – Overall score.

Z-score of 1.8 or below means the company is likely going bankrupt, while Z-Score above 3 tells that the company is not likely to go bankrupt. In relation to Z-Score, it is

important to mention, that Altman tested this dependence on two groups of US publicly-traded manufacturing companies, operated on United States in 1960s. Each group consisted of 33 companies, and first group included bankrupt companies, while second included companies still in operation.

Z-Score is one of the well-known practices to assess the financial health of a company, however practicing analyst should bear in mind the primary focus group used for this method (manufacturing companies) and the fact that Altman Z-Score only shows trusted result for next year. In 2012, professor Altman in partnership with Business Compass LLC introduced web-based application that uses modified version of Z-score, "Altman Z-Score Plus", that can help to predict bankruptcy among non-US and non-manufacturing companies – however the methodology of the improved analysis procedure was not disclosed. (NYU Stern, 2012)

An attempt to develop better procedure for bankruptcy prediction than Altman Z-Score has been done in 2017 by Shaonan Tian and Yan Yu. The aim of the research was to accept or reject the possibility to use Altman Z-Score for other firms, rather than only US-based manufacturing companies. The authors tested 29 candidate financial ratios on the empirical data for firms from Japan, United Kingdom, Germany and France to find out which of the financial ratios are better predictors of bankruptcy. As a result for Japan, the authors have selected three ratios: Retained Earnings/Total Assets, Total Debt/Total Asset and Current Liabilities/Sales. Authors also underline, that one of the selected ratios, Retained Earnings/Total Assets, is included in Z-Score calculation, therefore they agree on high predictive power of this ratio. At the same time, for European market, which in terms of the research included UK, Germany and France, the ratio Equity/Total Liabilities showed the greatest predictive role in determining firm's default risk. Authors interpret it as Japan firms mostly pertain to a multi-industrial conglomerate and rely on financing from associated bank or parental company, while European firms mostly rely on financing through the market, by issuing or trading securities or other financial products to obtain funds for regular operations. (Tian, Yu, 2017)

One of the widely discussed and very important topics related to financial analysis is the question of financial statements comparability. As mentioned before, financial ratios can only be used when comparing the ratios of different companies within the same industry. Literature on financial analysis stress the importance of comparability in relation to financial statements when using financial ratios to judge the firm's performance. In this case, it

becomes crucial to ensure, that ratios were calculated using comparable financial statements. Financial Accounting Standards Board (hereafter FASB) underlines the importance of comparable financial statements that "investing and lending decisions essentially involve evaluations of alternative opportunities, and they cannot be made rationally if comparative information is not available" (FASB, 1980).

At the same time, comparability is one of the three qualitative characteristics (as well as relevance and reliability) of accounting information, that are included in accounting conceptual framework (FASB, 1980). Nevertheless, there is still a discussion on what can be called "comparable financial statements". One of the arguments are given by De Franco, Kothari and Verdi, who state that "as an accounting system is a mapping of economic events to financial statements, for a given set of economic events, two firms have comparable accounting systems if they produce similar financial statements". Based on this statement, authors develop their own measure for financial statement comparability, that allows to conclude, whether financial statements of the company are comparable across the industry or with financial statements of another company. (De Franco et al., 2011).

Financial statements comparability can have impact on company's financials, as stated in one of the recent research papers. On a large sample of US firms from 1981 to 2013, authors have found consistent evidence that financial statements comparability can significantly reduce corporate cash holdings, while they also find that this relation can be mediated by financing constraints, financial reporting quality and corporate governance. (Habib et al., 2017)

Although the works mentioned above show contemporary approaches and current developments in the field of financial analysis, each industry has its own specifics. In case of SAP SE, it is IT (or digital, technology) industry that affects the suitable approaches to financial analysis. Overview of contemporary issues and developments in financial analysis of IT company is presented below.

3.3 Specifics of financial analysis of IT companies

Financial analysis of IT companies has its specifics. Some approaches that are perfectly applicable to manufacturing companies might mislead in case of a company from technological sector. This might be caused by the nature of business operations, that most of IT company have.

Several remarkable events have been passed in the period after global financial crisis of 2007-2008 in the technological sector, primarily in United States. Uber, which business model is based on connecting individual drivers and those who want to order a taxi service, has been reporting losses for several years in a row, still decided to go for IPO in 2018. Value of Uber is estimated to be between $48 and $70 billion. Twitter is another important example. It reported losses of $76 million before IPO, but still managed to get a value of $24 billion. One can recognize the same pattern in the deal of Microsoft buying loss-making LinkedIn for $26 billion in 2016. When Facebook acquired WhatsApp for $19 billion in 2014, the latter had no revenue or profits at all. At the same, when more traditional company like General Electric reports losses, the stock price instantly reacts, and the prices plunge significantly.

These deals are an everyday practice in technology sector, while would be regarded by analysts and investors as wrong investment decision in more traditional sector, as manufacturing, energy or transportation. This brings to a question: why do investors react negatively to financial statement losses for an industrial firm but disregard such losses for a technology firm?

The answer for the abovementioned question might come from the work of NYU Stern professor Baruch Lev. The author tells about continuous financial statements deterioration in relation to investor's decisions. In other words, it becomes more and more irrelevant to base the investment decision on financial statement results, and he also proves this statement on large empirical material from last 100 years. (Baruch, 2016)

Traditional accounting practices focuses on tangible assets, within the assumption that tangible assets are only source of economic benefit for the company and its stakeholders. This assumption cannot capture the specifics of digital and technology companies, especially so-called increasing return to scale on intangible investments. As per traditional accounting practices for an industrial firm, balance sheet shows which physical assets are productive assets and income statement shows what expenses have been incurred to create shareholders equity and value. Traditional approach tells, that in order for the assets to be productive, they

have to be physical, have to be owned by a firm and be within company's confines. Nevertheless, some or even all of these statements might not be true in case of digital and technology companies. An example of AirBnB, one of the biggest accommodation providers in the world, shows that its main productive asset – residential properties for rent – are not owned by the company and are provided by the network of individuals. Applying traditional accounting practices to such companies might be misleading. In case of digital companies, it is more convenient to consider so-called building blocks of a company, rather than hard assets. (Harvard Business Review, 2018)

The building blocks of a digital company are brands, ecosystems of suppliers and peers, organizational strategy, customer relationships, human capital, research and development (R&D) and computerized data and software. At the same time, investments in such building blocks are considered as expense in financial statements and are not capitalized as assets. This leads to a situation when the more company invests in its building blocks in attempt to have better prospects, the less are the reported profits (or even more losses) on income statement. (Harvard Business Review, 2018)

As many digital and technology companies are publicly traded companies, it is interesting to understand how earnings impact stock returns. In the work from 2014, author estimates that only 2.4% of stock returns variation for 21st century company can be explained by earnings. This shows, that earnings as a signal to buy or sell stocks become less important for investors and analysts. As the study was done on large sample of newly listed companies, author highlights several other points. First, each new cohort of listed firms uses higher intangible investments. Second, earnings quality is negatively associated with intangibles density, or, in other words, listed firms with higher intangibles density tend to have lower earnings quality. (Srivastava, 2014)

As current widely accepted accounting practices tend to consider building blocks of digital company as intangible asset, these practices assume that assets should be depreciated over time. This statement from traditional accounting is based on the assumption, that asset's ability to produce economic benefits declines with use. While it is undoubtedly true for physical assets, intangible assets like brand or peer ecosystem may exhibit increasing ability to produce economic benefit with use. For example, an ecosystem of users for a company that maintain social network. The ability of such an ecosystem to bring economic benefits to the company will increase with increasing number of users and might increase over time as well. If the R&D costs of this network would be capitalized under standard practice, the

company would be obliged to depreciate created intangible asset over time. Depreciation expense would be charged to income statement, decreasing profits, and might even lead to reporting of losses.

Another insight comes from several works of Govindarajan, Rajgopal and Srivastava, who work closely on the topic of digital companies' valuation and financial reporting issues, as well as executives' compensation. In the work of 2018, authors attempt to propose "new method to estimate intangible investment outlays, other than expenditures on advertising and research and development, that are reported on a commingled basis with operating expenses in the selling, general, and administrative category of expenses (Srivastava, Enache, 2018). "

Authors argue, that these outlays are in fact investments, as they are made with intention to improve organizational capabilities and knowledge. Authors also show that when these outlays are distinguished from operating expenses the predictability of earnings and returns improves. As a conclusion, authors claim that exclusion these outlays from operating expenses and separate reporting could accrue benefits. (Srivastava, Enache, 2018)

As highlighted by different authors, financial analysis of IT, digital and technology companies might have its specifics. Many authors outline that applying traditional financial analysis techniques and approaches to such companies might lead to misleading results as some common practices in IT industry (for example, higher selling, general and administrative expenses, higher workforce costs, higher research and development costs, lower tangible assets balances) are recorded as expense, decreasing net profit, while in fact these expenses are investments in major building blocks of a company: people, brand or technology.

In this relation, standard approaches to financial analysis should be adjusted and considered with rational criticism, taking into consideration the nature of business, industry practices and latest theoretical developments.

4 Practical Part

4.1 SAP SE: short overview

SAP SE is one of leading IT companies in the world, specializing on enterprise application software solutions for enterprises in different sectors of economy. SAP SE stands for abbreviation of German name: Systeme, Anwendungen und Produkte in der Datenverarbeitung.

In terms of market capitalization, SAP SE is the world's third largest independent software manufacturer (SAP SE, 2018). According to the official data of the company, SAP SE serves more than 450,000 customers in more than 180 countries. At the same time, approximately 80% of SAP customers are small and medium enterprises. Almost 92% of the Forbes Global 2000 companies, as well as 98% of the 100 most valued brands and 100% of the Dow Jones top scoring sustainability companies. Regarding economic impact of SAP customers, they produce 78% of the world's food and 82% of the world's medical devices. (SAP Corporate Fact Sheet, 2018) It is important to mention, that 77% of the world's transaction revenue touches one or more SAP system.

SAP was founded in 1972 in Mannheim, Germany by five former engineers of IBM. Founders were deeply involved in the development of the company up until 1990's, and several founders - Dietmar Hopp, Klaus Tschira, Hasso Plattner and Hans Werner Hector-- were still with SAP in early 1996. Five former IBM employees start a company they call SAP Systemanalyse und Programmentwicklung ("System Analysis and Program Development") as a side project. The development of the first version of the software was done mainly during the nights and on weekends. The development was mainly focused on standard application software for real-time data processing. On of SAP's first clients, Imperial Chemical Industries in Oestrigen, owned a datacentre, and most of their time founders spent there, as well as on the premises of other clients. In 1973, SAP finishes development of its first software product – financial accounting software RF, which became the founding stone for first SAP modular product SAP R/1. Meanwhile, SAP itself is using IBM servers and the DOS operating system. (SAP SE, 2018)

In 1974, SAP converts its first product SAP R/1 from DOS operating system onto OS operating system over an eight-week period. The company existed for two and half years, but already had a reference list of 40 customers. More companies in southeast Germany started to use SAP software for their operating needs. In 1977 SAP started to sell its products

outside of Germany, as two Austrian companies were ready to implement SAP software solutions to control the business operations. Next version of SAP flagman financial accounting software, R/2, was released in 1982, when SAP celebrated 10-year anniversary. (SAP SE, 2018)

As R/2's potential began to peak in the mid-1980s, Plattner, one of the SAP founding partners, and company's former employer, IBM, announced a new "system applications architecture" (SAA) technology in which all IBM operating systems and platforms would be fully harmonized such that code written for one product would work with any other. Seeing the ramifications of such integrability for its own products, in 1987 SAP began developing R/3 for use in the decentralized, non-mainframe computing environment known as client-server. In client-server arrangements, data is processed not by a single costly mainframe but by many cheaper networked "server" computers, which display their data on flexibly arrangeable PCs called "clients." While R/2 focused on providing data processing solutions for static, individual functions of business operations, such as inventory tracking or shipping, R/3 was designed to allow a business to view its entire business operation as a single integrated process in which data entered into any single application in the system would simultaneously be registered in every other. In theory, a company's entire data network would now be a cohesive, interpretable whole that would enable management to more efficiently allocate resources, develop products, manage inventory, forecast trends, streamline manufacturing processes, and automate routine operations. (FundingUniverse, 2018)

R/3 itself consisted of IBM's OS/2 operating system as its "front end" or user interface, IBM's DB2 program as its database component, and SAP's own proprietary application component, which was based on AT&T's Unix operating system because it offered the greatest functionality with other vendors' systems. Thus was created the three-tiered architecture - interface or desktop, database, application - on which all later versions of R/3 would be based. (FundingUniverse, 2018)

By 1987 SAP had grown to 450 employees and boasted sales of DM150 million. And although no less than 27 percent of this was plowed back into research, in 1988 SAP GmbH formally converted itself to a publicly traded Aktiengesellschaft (AG) to raise even more capital for research and development. SAP had established its first operations outside Germany in the mid-1980s, but it was not until the creation of a Swiss-based subsidiary, SAP International, in the late 1980s that it began the expansion that would make it a truly

international player in the global client-server software market. In 1988, it established SAP America in Philadelphia, staffing it initially with transplanted German managers. SAP executives soon realized, however, that an American team was more likely to be able to maneuver through the idiosyncrasies of the U.S. software market and soon began hiring U.S. professionals. One not unimportant result was the abandonment of traditional German business practices in favor of a more American approach: lifting limits, for example, on how much salesmen could earn in commissions and submitting budgets in which fully one-third of all annual resources were devoted to product marketing. Fueled by the release of R/3 in 1992, SAP America began to grow into SAP AG's most profitable subsidiary, expanding from two U.S. offices to twenty between 1992 and 1995 alone. (FundingUniverse, 2018)

In the mid-1990s industry observers agreed that SAP's continued dominance of the client-server business software market rested on its ability to stay ahead of the breathtaking pace of change in the global software market. In the mid-1990s, for example, SAP was directly affected by the rise of the "intranet," a microcosmic version of the Internet created by companies as in-house data networks, mirroring the structure and appearance of the World Wide Web but protected from the cybersurfing public by so-called firewalls. By seeming to offer the potential to perform many of the same business applications and data processing features of R/3, such intranets represented a plausible threat to SAP's market leadership. SAP responded by announcing new features that would turn R/3 into an Internet-capable tool. Using a browser connected to the Web, for example, two companies with R/3 installed in their systems could process orders in real time over the Internet, while consumers could order products electronically from a company's online catalog and be confident the order was registered immediately in the company's R/3 system. (FundingUniverse, 2018)

SAP's ability to sustain its success also depended on its willingness to continue working, like Microsoft, with its hundreds of strategic partner firms throughout the computer and services industries. SAP's Platform Partners program, for example, had enabled it to cooperate with computer manufacturers such as Compaq and IBM in tailoring SAP products to new hardware developments. And its partnership program with such Big Six accounting firms as Arthur Andersen and Price Waterhouse had spawned a lucrative new subindustry of R/3 consultants whose institutional independence from SAP enabled it to focus more of its resources on improving its product. Finally, SAP's participation with other software vendors in industry-wide initiatives (such as the Open Application Group) to determine standards for new technologies demonstrated its willingness to cooperate with potential

competitors to ensure the continued functionality and influence of its products. (FundingUniverse, 2018)

Significantly, in 1994 SAP formed an alliance with America's software giant Microsoft to make SAP software integratable with such Microsoft products as Windows NT, an operating system for networked computers, and SQL Server, a database product. In 1995, Microsoft returned the favor by selecting R/3 for its global finance and accounting data system. In early 1996, Microsoft founder and chairman Bill Gates paid a symbolic visit to SAP AG's German headquarters to talk up the two megacompanies' budding relationship. “We love SAP," he said. "SAP has had more impact on our general product direction than any other software company we have worked with.... [Microsoft and SAP] are the two best companies to be in.” (FundingUniverse, 2018)

By learning how to quash media and public relations flare-ups and better market its products, by continuing to modify R/3 to capitalize on new technologies like the Internet, and by encouraging third-party vendors to develop specialized add-on applications to extend the number of business areas in which R/3 could be used, SAP appeared to have positioned itself to remain a formidable presence in the global business software market. (FundingUniverse, 2018)

In 2009, with the effects of the global financial crisis having reached the real economy in 2008, the business world faces its own plight. Susceptible to the situation at hand, SAP initiates personnel cutbacks and other cost-saving measures. As of Q3 2009, SAP still employs some 47,800 people. Meanwhile, the company supports its customers with special programs designed to help them emerge from the crisis with the strength to succeed. Thanks to these programs and its cutbacks, SAP is able to improve its operating margin despite the difficult circumstances. SAP's revenues climb to DM 3.7 billion, and its employees’ number 9,202 by year's end. In 1997, SAP sees its financial results before taxes reach the billions for the first time (DM 1.6 billion). The company's revenues grew by 62% to DM 6.02 billion, 81% of which comes from outside of Germany. SAP's workforce also expanded to nearly 13,000 employees – a 40% increase. High-profile customers, such as Deutsche Post AG, Daimler-Benz, and General Motors, implement SAP R/3. More than two million users work with SAP solutions. Right on schedule, SAP completes release 4.0 of SAP R/3 and delivers it to pilot users at the end of the year. SAP resolves to enter the New York Stock Exchange (NYSE) in Q3 1998. In doing so, it mainly aims to raise its profile

and presence in the world's biggest and most important market for information technology and strengthen its relationships with shareholders. (SAP SE, 2018)

In 2011, customers already excited in 2010 by SAP's vision of SAP in-memory computing, are able to take full advantage of its benefits. Initial customers implement the first in-memory product, the SAP HANA platform, enabling them to analyse data in seconds rather than the days or even weeks they would otherwise have needed. Demand for SAP HANA can be compared to that for SAP R/3 software at the time of its launch. SAP's strategy for mobile business applications is also bearing fruit. Since its acquisition of Sybase, an SAP company, in 2010, SAP and its partners now ship mobile applications that open up the SAP world to a new type of user – those who are out in the field rather than in the office. (SAP SE, 2018)

SAP acquires Ariba, with the goal to deliver an end-to-end cloud procurement solution and become the leader in the fast-growing segment of inter-enterprise cloud-based business networks. SAP plans to enable its more than 195,000 customers to easily connect to the Ariba business network through pre-built integration points. SAP also plans to provide open access to the business network, extending the benefits of business collaboration to any company, on any system, from any provider. SAP announces its plans for growth: It is looking to expand in emerging market economies such as Brazil, India, Russia, and especially China, and it intends to invest some EUR 2 billion in the mid-market sector alone. It also has growth plans for its business in the booming cloud-computing market. Just before the end of the year, SAP announces its EUR 2.5 billion acquisition of SuccessFactors, the leading provider of cloud applications. (SAP SE, 2018)

In 2014 SAP changes its legal form from an “AG” company to a European Company (Societas Europaea, SE), underscoring the company's international nature. The SAP Supervisory Board now holds five of 18 members that are of non-German background. Later in 2015, SAP unveils the next generation of enterprise software with a new business suite, SAP S/4HANA. Fully built on the SAP HANA advanced in-memory platform to break through all limitations of the past, it is designed on modern design principles with the SAP Fiori user experience (UX) for mobile devices. The initial launch is soon followed by SAP S/4HANA, cloud edition, which gives customers the opportunity to deploy real hybrid scenarios - combining on-premise and cloud solutions - for unprecedented IT flexibility and accelerated business innovation. (SAP SE, 2018)

In 2018, SAP also announces its ambition to disrupt the marketplace for customer relationship management (CRM) with the formal introduction of a new suite of applications, SAP C/4HANA, to help businesses serve and retain customers. SAP C/4HANA is an integrated offering designed to modernize the sales-only focus of legacy CRM solutions. Following the completed acquisitions of market leaders Hybris, Gigya, and CallidusCloud, SAP now ties together solutions to support all front-office functions, such as consumer data protection, marketing, commerce, sales, and customer service. The new SAP C/4HANA suite will offer full integration with SAP's business applications portfolio, led by its market-leading ERP suite, SAP S/4HANA. (SAP SE, 2018)

One of the latest news of November 2018 is that SAP announces its intent to acquire Qualtrics International, the global pioneer of the experience management (XM) software category. Together, SAP and Qualtrics plan to accelerate the new XM category by combining experience data and operational data to power the experience economy and realize the potential of the Intelligent Enterprise. Under the terms of the agreement, SAP will acquire all outstanding shares of Qualtrics for US$8 billion in cash. (SAP SE, 2018)

SAP SE is incorporated under one of the unique forms of corporation in Europe. SE stands for Societas Europaea (or European society or company), which is form of an enterprise registered in accordance with European corporate law. This type of the company was introduced by Council Regulation (EC) No 2157/2001 (The Council of European Union, 2001). This Council regulation states, that "the completion of the internal market and the improvement it brings about in the economic and social situation throughout the Community mean not only that barriers to trade must be removed, but also that the structures of production must be adapted to the Community dimension. For that purpose, it is essential that companies the business of which is not limited to satisfying purely local needs should be able to plan and carry out the reorganisation of their business on a Community scale" (The Council of European Union, 2001).

Regarding the nature of the incorporation, SE must "take the form of a company with share capital, that being the form most suited, in terms of both financing and management, to the needs of a company carrying on business on a European scale. In order to ensure that such companies are of reasonable size, a minimum amount of capital should be set so that they have sufficient assets without making it difficult for small and medium-sized undertakings to form SEs." (The Council of European Union, 2001)

The problem of sound administration is underlined in paragraph 14 of EC 2157/2001, where it is stated, that “An SE must be efficiently managed and properly supervised. It must be borne in mind that there are at present in the Community two different systems for the administration of public limited-liability companies. Although an SE should be allowed to choose between the two systems, the respective responsibilities of those responsible for management and those responsible for supervision should be clearly defined.” (The Council of European Union, 2001)

SE form of incorporation has been chosen by SAP as it has operations across different countries, in different jurisdictions and different international law regulations are applied to the company.

4.2 Financial Analysis

4.2.1 Financial Statements Analysis

Financial statements analysis in current research is done using the methodology of vertical and horizontal analysis.

Results of vertical analysis can be expressed in the form of common-size statement, i.e. financial statement expressed in percentages. Assets side of common-size statement of financial position is shown in Table 1.

Table 1. Common-size statement of financial position of SAP SE for the fiscal years ended in 2013-2017, assets.

	2013	2014	2015	2016	2017
Cash and cash equivalents	10.14%	8.63%	8.24%	8.36%	9.44%
Other financial assets	0.93%	1.76%	0.85%	2.54%	2.33%
Trade and other receivables	14.26%	11.26%	12.74%	13.38%	13.88%
Other non-financial assets	1.28%	1.13%	1.13%	1.31%	1.71%
Tax assets	0.52%	0.56%	0.57%	0.53%	0.72%
Total current assets	27.13%	23.33%	23.53%	26.12%	28.07%
Goodwill	50.53%	54.45%	54.82%	52.65%	50.06%
Intangible assets	10.90%	11.94%	10.34%	8.55%	6.98%
Property, plant, and equipment	6.72%	5.45%	5.30%	5.83%	6.98%
Other financial assets	2.24%	2.65%	3.23%	3.07%	2.72%
Trade and other receivables	0.36%	0.26%	0.21%	0.28%	0.28%
Other non-financial assets	0.39%	0.43%	0.80%	1.20%	1.46%
Tax assets	0.63%	0.60%	0.68%	1.02%	1.04%
Deferred tax assets	1.08%	0.89%	1.09%	1.29%	2.40%
Total non-current assets	72.87%	76.67%	76.47%	73.88%	71.93%
Total assets	100%	100%	100%	100%	100%

Source: *SAP SE*, *own calculations.*

Structure of assets of SAP SE for the period of 2013-2017 shows the dominance of non-current assets over current assets. This can be regarded as a sign of decreasing liquidity, as non-current assets are less likely to be rapidly converted to cash. During the period of 2013-2017, the highest percentage of current assets was 28.07% in year 2017, and lowest point was 23.33% in 2014.

Cash and cash equivalents showed rather stable dynamics, with slight drop from 10.14% in 2013 to the lowest point of 8.24% in 2015. In the same period, goodwill showed

opposite dynamics, increasing from 50.53% in 2013 to the highest point of 54.82% in 2015. These two trends might be considered together, as goodwill arises from mergers and acquisitions, and most of these deals are partially or fully financed by cash. Analysis of changes in goodwill is conducted in this chapter later.

Trade and other receivables, as a component of current assets, showed a significant movement downwards between years 2013 and 2014, moving from 14.26% to 11.26%. In years 2015-2017 the percentage of trade receivables was moving in the tight range of 12.7-13.9%. Such a tight range of accounts receivables percentage shows quite efficient work billing and collections departments within SAP SE, however analysis of Receivables Turnover ratio and Days' Sales Uncollected is needed in order to get a deeper insight in receivables. This analysis if a part of liquidity ratio analysis, presented later.

Intangible assets accounted for 10.9% of total assets in 2013, while their part decreased to 6.98% in 2017. The percentage levels of intangible assets on SAP SE is quite similar to other IT, digital and technological companies, as significant part of their business is dependent on patent, intellectual property, licenses and other types of intangible assets. The drop of intangible assets portion in 2017 is mainly caused by increase in another balance sheet items, and partially by impairment of intangible assets.

Percentage of property, plant and equipment (PP&E) in total assets were moving in the range of 5.30%-6.98%, with the lowest point in 2015 and highest point in 2017. Relatively low level of PP&E is ordinary for a company working in IT, digital or technological sector. Traditional accounting approaches capture so-called fixed assets into the PP&E category. In case of IT company, they are mostly real estate, computer equipment, servers, hardware, furniture and office equipment. Some of these assets were acquired through financial leasing, and they are shown on the statement of financial position of a company, however they pertain to leasing company. Accounting treatment of assets acquired via financial leasing is dictated by current accounting standards accepted by SAP SE.

The industry practice also shows that many IT companies are using operating leasing as a financial tool for acquiring PP&E, such as cars, trucks, hardware, servers and even real estate. As per current accounting standards accepted by SAP SE, operating leases are not shown on the statement of financial position, and expenses arising for these types of arrangements are expensed as incurred, i.e. are shown on income statement in expenses section, decreasing taxable income.

Common-size statement of financial position shows, that in years 2014-2016 more than a half of total assets of SAP SE was represented by just one balance sheet item, which was goodwill. At the same time, in 2013 and in 2017 goodwill was slightly lower, accounting for roughly 50% of SAP SE total assets. Goodwill accounts for larger part of non-current assets during the whole period of 2013-2017. Other non-current assets account for comparable part in relation to current assets (respectively 27.13% and 22.34% in year 2013, 23.53% and 21.65% in year 2015, 28.07% and 21.87% in year 2017). As goodwill accounts for significant part of total assets of SAP SE, it is important to analyze in detail the reasons for this predominance.

Goodwill appears on balance sheet in relation to mergers and acquisitions (or business combinations) of another company or companies. As per SAP SE accounting policies, goodwill that arise as a result of business combinations should be allocated per cash generating unit (or operating segment) and should be tested on impairment annually. In order to understand the impact of goodwill on statement of financial position of SAP SE, it is crucial to track the development of this item through the period of 2013-2017.

In case of year 2013 goodwill was allocated per operating segments as shown on the Table 2.

Table 2. Goodwill by operating segment in 2013, SAP SE, million EUR.

	On-Premise Products	**On-Premise Services**	**Cloud Applications**	**Ariba**	**Total**
Carrying value	7462	1122	2167	2523	13274
Adjustments	0	0	0	-82	-82
January 1, 2013	7462	1122	2167	2441	13192
Additions from business combinations	726	85	27	2	840
Foreign currency exchange difference	-105	-12	-126	-100	-344
December 31, 2013	8083	1195	2067	2343	13688

Source: *SAP SE*, 2013 *Annual Report on Form* 20-*F*.

As can be seen on the Table 2, more than a half of goodwill carrying amount of SAP SE in year 2013 was allocated to On-Premise Products. At the same time, €726 million out of €840 million goodwill acquired in year 2013 was allocated to On-Premise Products. Annual Report on Form 20-F of SAP SE for year 2013 shows, that most of the goodwill was generated by acquisition of Hybris AG. The company works in the independent commerce

technology, on both B2B and B2C markets. SAP SE acquired Hybris AG to combine Hybris's omnichannel commerce solution with SAP's enterprise technology, in order to facilitate higher customer engagement and insight.

In 2014 SAP SE acquired Concur Technologies, Inc, one of the leading providers of travel and expenses management solutions. SAP SE paid $7.7 billion for the Concur acquisition, and this business combination resulted in acquisition of €5408 million of goodwill. SAP SE had single operating segment to allocate goodwill in 2014. Structure of goodwill in 2014 is shown on Table 3.

Table 3. Goodwill in 2014, SAP SE, million EUR.

	Single Segment
Carrying value	13785
Adjustments	0
January 1, 2014	13785
Foreign currency exchange difference	1247
Additions from business combinations	6012
December 31, 2014	21044

Source: *SAP SE*, 2014 *Annual Report on Form* 20-*F*.

It is important to mention, that acquisition of Concur Technologies, Inc happened on December 4, 2014, therefore, due to short period of time between acquisition and preparing financial statements, SAP SE disclosed in the note 4 to 2014 Annual report on Form 20-F that not all of the circumstances connected with this business combination have been taken into consideration.

In 2015 SAP SE did not conduct any business combinations. However, due to revaluation of Concur Technologies acquisition in 2014, value of goodwill has changed as shown on Table 4.

Table 4. Goodwill in 2015, SAP SE, million EUR.

	Single Segment
January 1, 2014	13785
Foreign currency exchange difference	1242
Additions from business combinations	6072
December 31, 2014	21099

Table 4 (continued)

Foreign currency exchange difference	1666
Additions from business combinations	27
December 31, 2015	22792

Source: *SAP SE*, 2015 *Annual Report on Form* 20-*F*.

In 2016 SAP SE did not conduct any significant business combinations. Nevertheless, carrying value of goodwill changed due to foreign currency exchange difference, which is shown on Table 5.

Table 5. Goodwill in 2016, SAP SE, million EUR.

	Single Segment
January 1, 2016	22792
Foreign currency exchange difference	566
Additions from business combinations	57
December 31, 2016	23415

Source: *SAP SE*, 2016 *Annual Report on Form* 20-*F*.

In 2017 SAP SE acquired Gigya, Inc., a US-based firm specializing on customer identity and access management solutions. Goodwill arose from this transaction, however the most significant effect on goodwill in 2017 was from foreign currency exchange difference. Goodwill balances for the year 2017 is shown on Table 6.

Table 6. Goodwill in 2017, SAP SE, million EUR.

	Single Segment
January 1, 2017	23415
Foreign currency exchange difference	-2249
Additions from business combinations	208
December 31, 2017	21374

Source: *SAP SE*, 2017 *Annual Report on Form* 20-*F*.

Analysis of changes in goodwill shows, that during the period of 2013-2017 goodwill changed from €13274 million to €21374 million, while the percentage of goodwill to total assets changed from 50.53% to 50.06%. These changes might be regarded as a warning sign,

as company's total assets are being inflated by goodwill as a result of mergers and acquisitions rather than being increased as a result of acquiring tangible assets.

Liabilities and equity side of common-size statement of financial position is shown on Table 7.

Table 7. Common-size statement of financial position of SAP SE for the fiscal years ended in 2013-2017, liabilities and equity.

	2013	2014	2015	2016	2017
Trade and other payables	3.14%	2.68%	2.63%	2.89%	2.71%
Tax liabilities	1.60%	0.88%	0.56%	0.71%	1.40%
Financial liabilities	2.76%	6.64%	2.03%	4.09%	3.67%
Other non-financial liabilities	9.46%	7.29%	8.23%	8.35%	9.29%
Provisions	1.28%	0.39%	0.72%	0.41%	0.43%
Deferred income	5.20%	4.36%	4.83%	5.38%	6.52%
Total current liabilities	23.43%	22.23%	19.01%	21.85%	24.03%
Trade and other payables	0.17%	0.14%	0.20%	0.29%	0.28%
Tax liabilities	1.18%	0.96%	0.97%	0.82%	1.11%
Financial liabilities	13.87%	23.29%	20.97%	14.64%	11.85%
Other non-financial liabilities	0.95%	0.57%	0.80%	1.04%	1.18%
Provisions	0.49%	0.39%	0.43%	0.49%	0.71%
Deferred tax liabilities	0.41%	1.56%	1.08%	0.93%	0.56%
Deferred income	0.27%	0.20%	0.26%	0.32%	0.19%
Total non-current liabilities	17.33%	27.12%	24.71%	18.53%	15.88%
Total liabilities	40.76%	49.35%	43.72%	40.38%	39.90%
Issued capital	4.54%	3.19%	2.97%	2.78%	2.89%
Share premium	2.03%	1.59%	1.35%	1.35%	1.34%
Retained earnings	60.01%	47.50%	48.43%	50.37%	58.34%
Other components of equity	-2.65%	1.46%	6.19%	7.56%	1.20%
Treasury shares	-4.72%	-3.17%	-2.72%	-2.48%	-3.74%
Equity attributable to owners of parent	59.21%	50.56%	56.21%	59.57%	60.03%
Non-controlling interests	0.03%	0.09%	0.07%	0.05%	
Total equity	59.24%	50.65%	56.28%	59.62%	
Total equity and liabilities	100%	100%	100%	100%	

Source: *SAP SE, own calculations.*

Liabilities and equity side is composed of combination of current and non-current liabilities, as well as equity. Total equity represents the biggest portion of total assets, accounting for 59.24% in 2013 and 60.1% in 2017. Higher portion of total equity in total assets is usually a positive sign, showing higher use of internal resources for financing the company.

Current trade and other payables accounted for 3.14% of total assets in year 2013, which was the highest peak for the period of 2013-2017. The lowest percentage value of trade and other payables was in 2015 (2.63%), while in 2017 this balance sheet item accounted for 2.71%. Trade and other payables characterize how the company uses resources from suppliers to finance operating activities. It is important to mention that part of trade payables is situated in non-current part of statement of financial position, at the same time non-current trade payables moved in the range of 0.14%-0.28% representing insignificant portion of liabilities.

Comparison of current and non-current trade payables shows predominance of current payables, which might be a disadvantage for a company. Moving current trade payables to non-current for the purposes of efficient cash management would improve cash conversion cycle (CCC), i.e. company would keep cash for a longer time before paying it out to suppliers. Nevertheless, detailed look into trade payables should be given as a part of liquidity analysis.

Other non-financial liabilities accounted for 9.46% in 2013, which is the highest value of this balance sheet item for the period of 2013-2017. The lowest value of other non-financial liabilities portion in total assets was in 2014, when it was accounting for 7.29% of total assets. Generally, in the period of 2013-2017 the portion of this balance sheet item moved in the range of 7.29%-9.46%, being the biggest balance sheet item in current liabilities section.

As described in SAP 2013 Annual report on Form 20-F (SAP SE, 2013), other non-financial liabilities in 2013 were comprised mainly of employee-related liabilities such as vacation accruals, bonus and sales commission accruals, social security obligations, payroll tax liabilities, but also included portion of value-added tax liabilities. Structure of other non-financial liabilities changed in 2014, as share-based payments liabilities was also included in this item (SAP SE, 2014). Share-based payments liability represent an incentive scheme for employees and management of SAP SE, comprised of cash payments based on share market price if key performance indicators (KPIs) are achieved. Basically, share-based

payments are a bonus scheme, where bonus amount is connected with share price performance. In 2015-2017 the structure of other non-financial liabilities did not change, while it showed significant year-on-year growth in absolute numbers, as well as a percentage of total assets. General look on other non-financial liabilities shows, that the biggest portion of it relates to workforce expenses. For a company working in IT, digital and technology industry, higher expenses on workforce are not surprising, as well as higher contributions to incentive plans, bonuses and commissions.

A significant part of current liabilities pertains to deferred income. Deferred income portion of current liabilities moves in the range of 4.36% (in 2014) to 6.52% (in 2017).

In case of SAP SE, deferred income represents cash prepaid by the customers for support and cloud subscriptions, software support and services, as well as amounts recorded in purchase accounting at fair value for obligations to perform under acquired customer contracts in connection with acquisitions. (SAP SE, 2013) Significant portions of deferred income (or deferred revenue) is expected for IT-company, especially for a service company, as this type of business implies advance payments, or payments made before a customer starts to get benefits from using the services. Higher amounts of deferred revenue would also have positive impact on company's cash position, decrease days' cash uncollected, and therefore improve cash collection cycle. It is important to mention, that very small part of deferred income is situated on non-current section of liabilities, representing advance payments, for which obligations should be fulfilled by SAP SE in the timeframe of more than one year. It would be more beneficial for SAP SE to re-negotiate contract terms in order to move these obligations more than just one-year to the future, however it is very difficult or even hardly possible on competitive market.

The biggest part of non-current liabilities is comprised by financial liabilities. All other balance sheet items in non-current liabilities section account for less or equal 1% of total assets. In percentage terms, non-current financial liabilities moved from 13.87% of total assets in 2013 to 11.85% of total assets in 2017, with highest peak in 2014 (23.29%) and lowest point in 2017. The predominance of non-current financial liabilities over current financial liabilities if a positive sign. Longer maturities of a financial debt give a company an advantage because of time value of money. At the same time, longer maturities bring higher risk, as it becomes more difficult to forecast interest rates, foreign exchange rates (in case of a company working in different countries, which is clearly a case of SAP SE), economy growth, competition and customer demand.

Table 8. Structure of financial liabilities of SAP SE for the fiscal year 2013, € millions.

	Financial liabilities	Other financial liabilities	Financial Debt		
			Total	Bonds	Private placements transactions
Current	748	162	586	500	86
Non-current	3758	76	3682	1791	1891
Total	4506	238	4268	2291	1977

Source: 2013 *Annual Report on Form* 20-*F*.

Financial liabilities of SAP SE in 2013 were comprised mostly of non-current portion, with bonds and private placements transactions of comparable size. At the same time, bonds comprised significant part of current financial liabilities.

Difference between private placements transactions and bonds lies in the fact, that bonds are offered to broader investors community, while private placement (as can be understood directly from the name) is usually arranged between company and investor, or among group of selected investors. Naturally, private placement notes are usually characterized by lower volatility and lower liquidity but are less risky for the borrower as holders of private placement notes are less likely to succumb to market sentiment and tend to hold the notes for longer periods of time, normally until maturity date.

Structure of financial liabilities of SAP SE in 2014 is shown on Table 9. Financial liabilities structure had undergone significant changes in 2014, as two new classes of financial instruments had been added to the list: derivatives and bank loans.

Table 9. Structure of financial liabilities of SAP SE for the fiscal year 2014, € millions.

	Financial liabilities	Derivatives	Other financial liabilities	Financial Debt			
				Total	Bonds	Private placements transactions	Bank loans
Current	2561	287	120	2154	630	247	1277
Non-current	8980	46	4	8931	3998	1948	2985
Total	11542	333	124	11085	4628	2195	4261

Source: 2014 *Annual Report on Form* 20-*F*.

SAP SE had three outstanding bank loans as of December 31, 2014. Two of them were issued to SAP SE in connection with Concur Technologies acquisition in 2014 and totaled €4252 million, the third one was issued to finance operating activities in India and totaled €9 million. Bank loans for Concur Technologies acquisition had been issued with maturity in 2015 and 2017 respectively.

Structure of financial liabilities of SAP SE in year 2015 is shown on Table 10. Financial liabilities in this year can be characterized by remarkable decrease in bank loans. 70% of all bank loans issued in 2014 were paid off by SAP SE in 2015, showing very good performance and quality of SAP SE as a borrower. However, company increased bonds balance by €1105 million, effectively substituting part of bank loan financing with bonds financing. It might be considered as a sound financial decision, as bank loans were issued in 2014 with effective interest rate of 1.64% and 0.98% respectively, while three new SAP Eurobond tranches issued in 2015 had effective interest rates of 0.127% and 0.259% (both variable) and 1% fixed respectively.

Table 10. Structure of financial liabilities of SAP SE for the fiscal year 2015, € millions.

	Financial liabilities	**Derivatives**	**Other financial liabilities**	**Financial Debt**			
				Total	**Bonds**	**Private placements transactions**	**Bank loans**
Current	841	70	204	567	0	551	16
Non-current	8681	58	-5	8628	5733	1651	1245
Total	9522	128	199	9195	5733	2202	1261

Source: 2015 *Annual Report on Form* 20-*F*.

Structure of financial liabilities of SAP SE in year 2016 is shown on Table 11. As can be seen from the data, SAP continued to decrease and optimize its portfolio of financial liabilities. Total financial liabilities decreased from €9522 million to €8294 million, mostly driven by decrease in private placement transactions and bank loans. At the same time, decrease in these two balance sheet items was offset by €414 million increase in bonds.

Table 11. Structure of financial liabilities of SAP SE for the fiscal year 2016, € millions.

	Financial liabilities	Derivatives	Other financial liabilities	Financial Debt			
				Total	Bonds	Private placements transactions	Bank loans
Current	1813	152	231	1430	996	418	16
Non-current	6481	43	-12	6450	5151	1298	0
Total	8294	194	219	7880	6147	1717	16

Source: 2016 *Annual Report on Form* 20-*F*.

Structure of financial liabilities of SAP SE in year 2016 is shown on Table 12. Overall picture of changes in financial liabilities structure remained the same as in 2015-2016, although significant decrease of €1000 million in bonds is evident in 2017. In general, the company continued to follow the strategy of decreasing financial debt, which is also reflected on common-size statement of financial position where the percentage of current and non-current financial liabilities totaled only 15.52%.

Table 12. Structure of financial liabilities of SAP SE for the fiscal year 2017, € millions.

	Financial liabilities	Derivatives	Other financial liabilities	Financial Debt			
				Total	Bonds	Private placements transactions	Bank loans
Current	1561	57	205	1298	1149	125	24
Non-current	5034	29	2	5002	3997	1005	0
Total	6595	86	208	6301	5147	1130	24

Source: 2017 *Annual Report on Form* 20-*F*.

Overall structure of financial liabilities of SAP SE shows short-term decreasing trend, that can be distinguished as a positive sign as it decreases company's dependence on external sources of financing, however it also decreases return on equity (ROE). More detailed analysis of ROE changes in the period of 2013-2017 should be done as part of profitability analysis.

Common-size statement of financial position also shows, that total equity accounted for 50.65% to 60.1% of total assets in the period of 2013-2017. At the same time, retained earnings dominate in the structure of equity, representing from 47.5% to 60.01%. Issued capital accounted for 2.78% to 4.54% of total assets. Such high levels of total equity show

relatively stable structure of financing. It might be considered as positive sign, especially if there is a significant possibility of financial crisis.

It is important to mention, that some components of equity are shown on common-size statement of financial position with negative sign, for example treasury shares accounting for -2.48% to -4.72%. This simply means, that book entries were done on the debit side, meaning decrease in liability, which is true in case of treasury shares and is a common practice in accounting.

Treasury shares appear on the statement of financial position because of so-called buybacks, i.e. when company is buying its shares back from shareholders. One of the reasons of buybacks might be an effort to support share price, as any buyback increases demand side on the stock market. Another reason of buyback might be to give a signal to the broader investor community that the company expects significant growth in share price somewhen in the future, therefore it is buying its own shares in order to sell it after at a higher price. Most of the buybacks are done at the price higher than current market price, so some increase in the share price might be expected as a result.

In its 2013 annual report on Form-20F, SAP SE stated: “Although treasury shares are legally considered outstanding, there are no dividend or voting rights associated with shares held in treasury. We may redeem or resell shares held in treasury, or we may use treasury shares for the purpose of servicing option or conversion rights under the Company’s share-based payment plans. Also, we may use shares held in treasury as consideration in connection with mergers with, or acquisitions of, other companies.” (SAP SE, 2013)

Vertical analysis of income statement is effectively repeating the results of ratio analysis described in following chapters of current work. At the same time, ratio analysis brings more insight on the financial performance and financial position and is more sophisticated analytical method. Therefore, separate vertical analysis of income statement will not bring added value and ratio analysis is done instead.

Horizontal analysis is used in current research to identify possible trends in development of balance sheet items. Results of horizontal analysis is shown on Table 13, Table 14, Table 15. Data is separated into three tables for the purposes of better visual comprehension.

Table 13. Changes in statement of financial position of SAP SE for the fiscal years ended in 2013-2017, assets side, € millions.

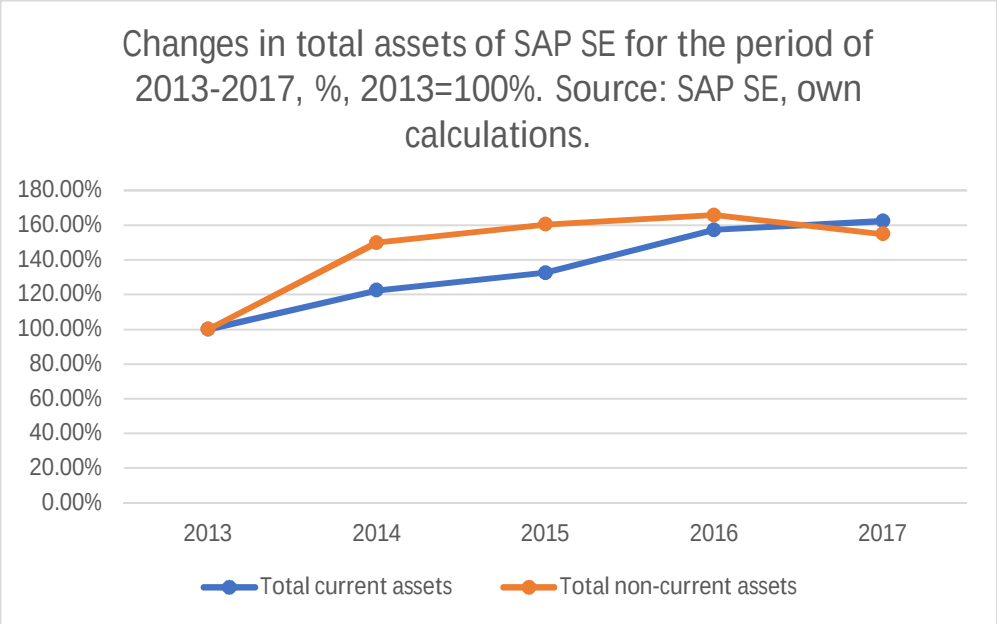
	2013	2014	% change to 2013	2015	% change to 2013	2016	% change to 2013	2017	% change to 2013
Cash and cash equivalents	2748	3328	21.11%	3411	24.13%	3702	34.72%	4011	45.96%
Other financial assets	251	678	170.12%	351	39.84%	1124	347.81 %	990	294.42 %
Trade and other receivables	3864	4342	12.37%	5274	36.49%	5924	53.31%	5899	52.67%
Other non-financial assets	346	435	25.72%	468	35.26%	581	67.92%	725	109.54 %
Tax assets	142	215	51.41%	235	65.49%	233	64.08%	306	115.49 %
Total current assets	7351	8999	22.42%	9739	32.49%	11564	57.31%	11930	62.29%
Goodwill	13690	21000	53.40%	22689	65.73%	23311	70.28%	21274	55.40%
Intangible assets	2954	4604	55.86%	4280	44.89%	3786	28.17%	2967	0.44%
Property, plant, and equipment	1820	2102	15.49%	2192	20.44%	2580	41.76%	2967	63.02%
Other financial assets	607	1021	68.20%	1336	120.10%	1358	123.72 %	1155	90.28%
Trade and other receivables	98	100	2.04%	87	-11.22%	126	28.57%	118	20.41%
Other non-financial assets	107	164	53.27%	332	210.28%	532	397.20 %	621	480.37 %
Tax assets	172	231	34.30%	282	63.95%	450	161.63 %	443	157.56 %
Deferred tax assets	292	343	17.47%	453	55.14%	571	95.55%	1022	250.00 %
Total non-current assets	19739	29566	49.78%	31651	60.35%	32713	65.73%	30567	54.86%
Total assets	27091	38565	42.35%	41390	52.78%	44277	63.44%	42497	56.87%

Source: *SAP SE*, *own calculations.*

All balance sheet items showed growth during 2013-2017, and in general this might be considered as positive sign. However, the pace of this growth was different for different balance sheet items.

Figure 1 shows the trend in decreasing non-current assets for the period 2016-2017, however for the period of 2013-2017 both current and non-current assets rose more than 50%.

Figure 1: Changes in total assets of SAP SE for the period of 2013-2017, %, 2013=100%.



Source: SAP SE, own calculations.

It is important to mention, that after 2016 current assets grew faster than non-current assets, that might be considered as a positive sign, as it positively impacts liquidity of a company.

Remarkable growth is evident in other financial assets, both current and non-current. This item includes time deposits, investments in pension assets and loans to employees and third parties. In 2013, majority of other financial assets of SAP SE were concentrated in United States, but already in 2017, the majority of these assets were pertaining to Germany.

Cash and cash equivalents grew by 45.96% during period of 2013-2017, which should significantly increase liqiudity, however more detailed look on liquidity is provided as a part of liquidity analysis.

Trade and other receivables grew 52.67% during 5 years in terms of current portion, and 20.41% during 5 years in terms of non-current portion, reflecting the growth in total assets, growth in revenue, enlarging business operations and acquisitions of another companies.

Other non-financial assets have shown growth of 480.37% for non-current part and 109.54% growth for current part, which is the most remarkable growth among all balance sheet items. As disclosed by SAP SE in annual report for years 2013-2017, other non-financial assets consist primarily of prepaid expenses, capitalized contract costs and other tax assets. Growth in prepaid expenses is expected due to growth of SAP's business operations and revenue, however capitalized contract costs were the main driver of growth in other non-financial assets.

Capitalized contract costs are usual to appear on balance sheets of IT-companies providing services to the customers, as these costs represent expenses that will be recovered by the customer under ongoing contract in future. These costs are not recognized on income statement by SAP SE in the period when they were paid out because these costs should only be recognized together with related revenue and in the same period as related revenue. Therefore, these costs form separate balance sheet item called "capitalized contract costs". Usually these costs are capitalized in relation to development of specific product for the customer, e.g. customized software or customized IT service. (SAP SE, 2013, 2014, 2015, 2016, 2017)

Tax assets and deferred tax assets showed significant increase during 2013-2017. Deferred tax assets grew by 250% from €292 million in 2013 to €1022 million in 2017, while the most remarkable growth was shown in between 2016 and 2017. As described in SAP SE 2017 Annual report on Form 20-F, this increase is mostly driven by increase in deferred tax assets for intangible assets resulted from intra-group transfer of intellectual property rights to SAP SE. (SAP SE, 2017)

Although goodwill is the biggest item on SAP's balance sheet, changes in goodwill showed mild dynamics in comparison to other items. During 2013-2017, goodwill grew by 55.4% and the biggest part of this change happened between 2013 and 2014, which related to acquisition of several companies, including Hybris AG.

Intangible assets are the balance sheet item with lowest dynamics. Through the period of 2013-2017 this item rose only 0.44%. At the same time, there was a significant movement of 55.86% in 2014, driven mostly by mergers and acquisitions, but then two sequential decreases in 2016 and 2017 brought the balance back to the level of 2013.

It might be interesting to compare dynamics of intangible assets and property, plan and equipment. It is usual in case of IT-company to expect higher dynamics in intangible assets then in property, plant and equipment, but in case of SAP SE it is vice versa. However,

SAP SE does not only supply software to its client, but also provide IT-services, including software-as-a-service (SaaS). This type of business requires investment in solid physical IT-infrastructure which SAP did throughout the period of 2013-2017. As it is disclosed by SAP SE in annual report for 2017, additions other than via acquisitions amounted to €1196 million in 2017 and €933 million in 2016. (SAP SE, 2017)

Changes in assets are also accompanied by changes in liabilities and equity. All the items except one on the liabilities side of statement of financial position rose during period of 2013-2017. Current provisions were the only item that showed negative dynamic. The highest drop was in 2014 when current provisions decreased by 56.65% from €346 million to €150 million. At the same time, non-current provisions showed increase by 129.55% for 5 years. Effectively, part of the current provisions was reclassed to non-current, which is a positive sign.

Provisions comprise pension plans and similar obligations, amounted to €136 million in 2017, and bigger item for other provisions, including employee- and customer-related provisions. In general, this balance sheet item provides for expected cash outflows in following years, however the reason for cash outflows has appeared in current year. This approach is the cornerstone of accrual accounting, which is widely accepted in international accounting standards, as it gives more reliable picture of financial performance and financial position of a company.

Other balance sheet item that showed significant dynamics is current tax liabilities. This item was decreasing until 2016 by 27.02%, but in 2017 it showed increase by 37.88%. It is important in this relation to take a look on non-current tax liabilities, which were increasing until 2017 by 47.34%. However, these dynamics were also caused by low base in 2013, so it is highly likely to see an evidence of so-called low base effect in this case.

Low base effect is a commonly known effect, that happens when small absolute changes entail high percentage changes due to low initial value of indicator. Low base effect also describes movements in another non-current balance sheet items. Due to relatively small amounts in trade and other payables, provisions, other non-financial liabilities, deferred income and deferred tax assets in 2013, relatively small absolute movements entailed high percentage changes.

On the contrary, non-current financial liabilities changed from € 3758 million in 2013 to €5034 million in 2017 that is equal to 33.95% percentage change and €1276 million absolute change. This percentage change might not be so dramatic in comparison with

current financial liabilities, which rose by 108.69% and €813 million in absolute terms, but it shows the long-term trend of increasing financial liabilities and increasing financial leverage.

Table 14. Changes in statement of financial position of SAP SE for the fiscal years ended in 2013-2017, liabilities side, € millions.

	2013	**2014**	**% change to 2013**	**2015**	**% change to 2013**	**2016**	**% change to 2013**	**2017**	**% change to 2013**
Trade and other payables	850	1,032	21.41%	1088	28.00%	1281	50.71%	1151	35.41%
Tax liabilities	433	339	-21.71%	230	-46.88%	316	-27.02%	597	37.88%
Financial liabilities	748	2561	242.38%	841	12.43%	1813	142.38%	1561	108.69%
Other non-financial liabilities	2562	2811	9.72%	3407	32.98%	3699	44.38%	3946	54.02%
Provisions	346	150	-56.65%	299	-13.58%	183	-47.11%	184	-46.82%
Deferred income	1408	1680	19.32%	2001	42.12%	2383	69.25%	2771	96.80%
Total current liabilities	6347	8574	35.09%	7867	23.95%	9674	52.42%	10210	60.86%
Trade and other payables	45	55	22.22%	81	80.00%	127	182.22%	119	164.44%
Tax liabilities	319	371	16.30%	402	26.02%	365	14.42%	470	47.34%
Financial liabilities	3758	8980	138.96%	8681	131.00%	6481	72.46%	5034	33.95%
Other non-financial liabilities	257	219	-14.79%	331	28.79%	461	79.38%	503	95.72%
Provisions	132	151	14.39%	180	36.36%	217	64.39%	303	129.55%
Deferred tax liabilities	110	603	448.18%	448	307.27%	411	273.64%	240	118.18%
Deferred income	74	78	5.41%	106	43.24%	143	93.24%	79	6.76%
Total non-current liabilities	4,695	10457	122.73%	10228	117.85%	8205	74.76%	6747	43.71%
Total liabilities	11043	19031	72.34%	18095	63.86%	17880	61.91%	16958	53.56%

Source: *SAP SE*, *own calculations*.

As it was showed above during vertical analysis of statement of financial position, equity comprises highest part of total assets. In this relation, detailed overview of changes in equity accounts should help to understand the financial stability of SAP SE.

Table 15. Changes in statement of financial position of SAP SE for the fiscal years ended in 2013-2017, equity side, € millions.

	2013	2014	% change to 2013	2015	% change to 2013	2016	% change to 2013	2017	% change to 2013
Issued capital	1229	1229	0.00%	1229	0.00%	1229	0.00%	1229	0.00%
Share premium	551	614	11.43%	558	1.27%	599	8.71%	570	3.45%
Retained earnings	16258	18317	12.66%	20044	23.29%	22302	37.18%	24794	52.50%
Other components of equity	-718	564	178.55%	2561	456.69%	3346	566.02%	508	170.75%
Treasury shares	-1280	-1224	-4.38%	-1124	-12.19%	-1099	-14.14%	-1591	24.30%
Equity attributable to owners of parent	16040	19499	21.56%	23267	45.06%	26376	64.44%	25509	59.03%
Non-controlling interests	8	34	325.00%	28	250.00%	21	162.50%	31	287.50%
Total equity	16048	19534	21.72%	23295	45.16%	26397	64.49%	25540	59.15%
Total equity and liabilities	27091	38565	42.35%	41390	52.78%	44277	63.44%	42497	56.87%

Source: *SAP SE*, *own calculations.*

Balance item with the most remarkable performance during 2013-2017 was other components of equity. In case of SAP SE, this item is used to disclose other comprehensive income items that will be reclassified to profit or loss. As it disclosed in 2017 Annual report on Form 20-F, this account comprises mostly foreign exchange differences attributed to equity accounts. Basically, other components of equity are balancing items that do not tell much about financial performance of the company.

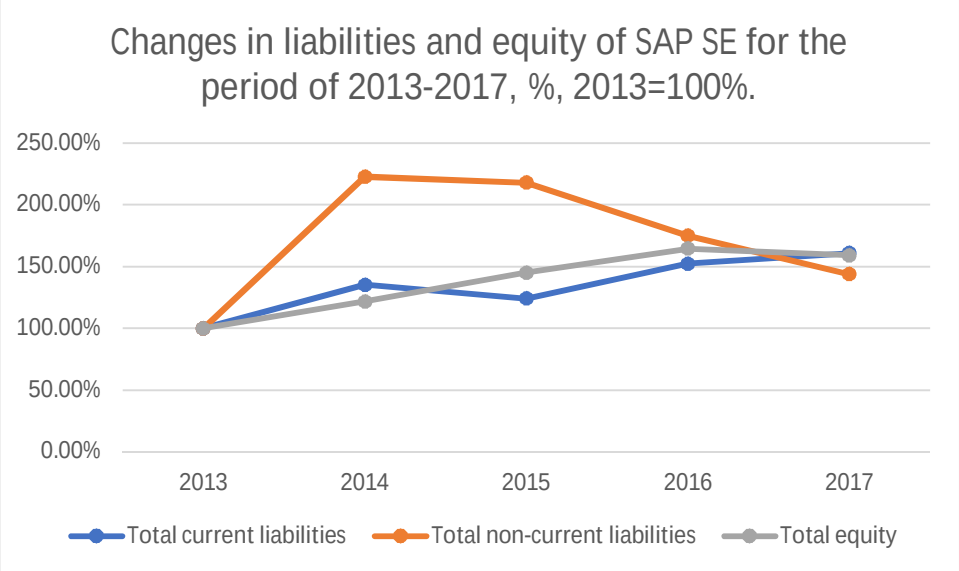
Changes in non-controlling interest can be fully described by low base effect, as it changed from €8 million in 2013 to €31 million in 2017. This item also represents balancing item which only appears on consolidated financial statements of a group of the companies.

This accounts for minority equity interests that owners other than SAP SE have in companies inside the group.

Retained earnings are the most important item among equity accounts of SAP SE. During the whole period of 2013-2017 it showed positive dynamics, which as a result led to 52.5% increase until 2017. Retained earnings also represent the biggest part of total assets, and this is a positive sign for financial stability of SAP SE. Companies with higher retained earnings balances tend to use internal sources of financing rather than external sources, i.e. debt or equity financing, and therefore take lower credit risk. Such a company tend to be more stable during economic or financial downturn and show higher probability to survive through crises.

General overview on dynamics of current and non-current liabilities and equity during the period of 2013-2017 is shown on Figure 2.

Figure 2: Changes in liabilities and equity of SAP SE for the period of 2013-2017, %, 2013=100%.



Source: *SAP SE*, *own calculations*.

Horizontal analysis of income statement is an integral part of financial statements analysis. Results of horizontal analysis of income statement of SAP SE for the period of 2013-2017 is shown on Table 16, Table 17 and Table 18.

Table 16. Changes in income statement of SAP SE for the fiscal years ended in 2013-2017, € millions, part 1.

	2013	2014	% change to 2013	2015	% change to 2013	2016	% change to 2013	2017	% change to 2013
Cloud subscriptions and support	696	1087	56.18%	2286	228.45%	2993	330.03%	3769	441.52%
Software licenses	4516	4399	-2.59%	4835	7.06%	4860	7.62%	4872	7.88%
Software support	8293	8829	6.46%	10093	21.71%	10571	27.47%	10908	31.53%
Cloud and software	13505	14315	6.00%	17214	27.46%	18424	36.42%	19549	44.75%
Services	3310	3245	-1.96%	3579	8.13%	3638	9.91%	3911	18.16%
Total revenue	16815	17560	4.43%	20793	23.66%	22062	31.20%	23461	39.52%
Cost of cloud subscriptions and support	-314	-481	53.18%	-1022	225.48%	-1313	318.15%	-1660	428.66%
Cost of software licenses and support	-2056	-2076	0.97%	-2291	11.43%	-2182	6.13%	-2234	8.66%
Cost of services	-2660	-2716	2.11%	-3313	24.55%	-3089	16.13%	-3158	18.72%
Total cost of revenue	-5031	-5272	4.79%	-6626	31.70%	-6583	30.85%	-7051	40.15%
Gross profit	11784	12288	4.28%	14167	20.22%	15479	31.36%	16410	39.26%

Source: *SAP SE*, *own calculations*.

Revenue section of income statement shows 4.4 times increase in cloud subscriptions and support, and this increase was evident every year throughout the period of 2013-2017, while more traditional sectors of SAP SE's business, software licenses and software support, showed only 7.88% and 31.53% growth respectively. General cloud and software revenue grew by 44.75%, while other SAP SE business stream Services grew only by 18.16%. As a result, percentage of Services revenue in total revenue fell from 19.6% in 2013 to 16.6% in 2017. From this perspective, it is possible to say that SAP SE is changing its business model towards becoming cloud subscriptions-oriented company, rather than traditional license-based software developer.

Cost of revenue section of income statement showed exactly the same dynamics as revenue section, except of cost of software licenses and support. Percentage and absolute

changes in this income statement item was lower than in corresponding revenue item, and this shows increasing efficiency in this part of SAP SE's business.

All changes in revenue and cost of revenue mentioned above led to growth in gross profit by 39.26% in 2017. The most part of the growth is attributed to 2015, when gross profit grew by 20.22% to the level of 2013, while in 2014 the growth was only 4.28%.

Operating expenses section of income statement shows quite different dynamics than revenue section. The biggest item among operating expenses is sales and marketing, and at the same time this item showed the most rapid dynamics among other operating expenses accounts. Overall, during the period of 2013-2017 sales and marketing expenses grew by 67.61%, from the level of €4131 million in 2013 to €6924 million in 2017.

Table 17. Changes in income statement of SAP SE for the fiscal years ended in 2013-2017, € millions, part 2.

	2013	2014	% change to 2013	2015	% change to 2013	2016	% change to 2013	2017	% change to 2013
Gross profit	11784	12288	4.28%	14167	20.22%	15479	31.36%	16410	39.26%
Research and development	-2282	-2331	2.15%	-2845	24.67%	-3044	33.39%	-3352	46.89%
Sales and marketing	-4131	-4304	4.19%	-5401	30.74%	-6265	51.66%	-6924	67.61%
General and administration	-866	-892	3.00%	-1048	21.02%	-1005	16.05%	-1075	24.13%
Restructuring	-70	-126	80.00%	-621	787.14%	-28	-60.00%	-182	160.00%
TomorrowNow and Versata litigation	31	-309	-1096.77%	0	-100.00%	0	-100.00%	0	-100.00%
Other operating income/expense. Net	12	4	-66.67%	1	-91.67%	-3	-125.00%	1	-91.67%
Total operating expenses	-12336	-13230	7.25%	-16541	34.09%	-16928	37.22%	-18584	50.65%
Operating profit	4479	4331	-3.30%	4252	-5.07%	5135	14.65%	4877	8.89%

Source: *SAP SE, own calculations.*

Most part of the growth in sales and marketing expenses happened in and after 2015, and this fact might be evaluated as a negative sign. At the same time, this growth is explained

by the fact that SAP SE acquired Concur Technologies in 2014, and it was natural for such a deal to accelerate synergetic effect of merger by spending more on marketing. Growth in sales and marketing expenses was also accompanied by comparable growth in research and development by 46.89%, in general and administration expenses by 24.13% and in restructuring expenses by 160%.

Table 18. Changes in income statement of SAP SE for the fiscal years ended in 2013-2017, € millions, part 3.

	2013	2014	% change to 2013	2015	% change to 2013	2016	% change to 2013	2017	% change to 2013
Operating profit	4479	4331	-3.30%	4252	-5.07%	5135	14.65%	4877	8.89%
Other non-operating income/expense. net	-17	49	-388.24%	-256	1405.88%	-234	1276.47%	-36	111.76%
Finance income	115	127	10.43%	241	109.57%	230	100.00%	463	302.61%
Finance costs	-181	-152	-16.02%	-246	35.91%	-268	48.07%	-278	53.59%
Financial income. net	-66	-25	62.12%	-5	92.42%	-38	42.42%	185	380.30%
Profit before tax	4396	4355	-0.93%	3991	-9.21%	4863	10.62%	5026	14.33%
Income tax expense	-1071	-1075	0.37%	-935	-12.70%	-1229	14.75%	-970	-9.43%
Profit after tax	3325	3280	-1.35%	3056	-8.09%	3634	9.29%	4056	21.98%
Attributable to owners of parent	3326	3280	-1.38%	3064	-7.88%	3646	9.62%	4018	20.81%
Attributable to non-controlling interests	-1	0	-100.00%	-8	700.00%	-13	1200.00%	38	-3900.00%

SAP SE, own calculations.

TomorrowNow and Versata litigation expenses is actually a one-time expense, that was booked as a provision. The reason for this booking is a legal case between SAP and Oracle in relation to intellectual property rights. It was not completely clear in 2013 and 2014 whether Oracle or SAP will have to pay out the litigation fee, as the legal case was not over yet. Therefore, there was no booking of these expenses in 2015, 2016 and 2017.

Bottom line of the operating profit section gives an interesting picture of changes in operating profit. Despite the increases in revenues and, as a result, in gross profit in 2014 and 2015, operating profit decreased by 3.3% in 2014 and by 5.07% in 2015. At the same time, changes in TomorrowNow and Versata litigation fee increased expenses by €340 million. If litigation expenses would be added back, SAP SE would have ended year 2014 with operating profit of €4671 million or with 4.2% growth to the level of 2013. Decline in operating growth in 2014 can be fully explained by litigation fee.

Decrease in operating profit in 2015 can be fully explained by increase in restructuring expenses. Restructuring expenses comprised €126 million in 2014, but these expenses increased by €495 million to €621 million in 2015. If this increase would be added back, SAP SE would end year 2015 with operating profit of €4747 million, showing 5.98% increase to 2013. Increase in restructuring expenses in 2015 was expected as SAP acquired Concur Technologies in the end of previous year. As most of mergers and acquisitions deals are seeking to benefit from synergetic effect, certain initial investment in changes of organizational structure, business processes, workforce structure and so on, i.e. restructuring expenses, are necessary.

As shown on the Table 18, other non-operating income and expense demonstrated bidirectional dynamics during 2014-2017. This item mostly includes foreign exchange effect. The low base effect is also evident in relation to this income statement item.

Financial income increased by 380.3% to the level of 2013 in 2017, and this increase was mostly driven by increase in finance income. Finance income represents income from available-for-sale financial assets, or short-term financial investment of SAP SE. Most of the time these investments are shares, bonds, derivatives and other financial instruments, that SAP SE use to diversify its financial portfolio.

Profit before tax followed the dynamics of operating profit, with decrease by 0.93% in 2014 and 9.21% in 2015, and with increase by 10.62% in 2016 and 14.33% in 2017.

SAP SE also showed bidirectional dynamics in relation to income tax expense. There was an insignificant increase in 2014 by 0.37%, while year 2015 showed decrease by 12.7%. It was followed by increase by 14.75% in 2016 and decrease by 9.43% in 2017. Data for 2017 is extremely interesting, as this decrease was caused by Tax Cuts and Jobs Act introduced on December 22nd, 2017 by United States. The Act decreased income tax rate for companies from 35% to 21%, and the decreased tax rate was already applied by SAP SE to fiscal year ended on December 31st, 2017.

Before analyzing changes in profit after tax (or net profit), it is important to mention other not very important income statement items. High percentage changes in profit after tax attributable to non-controlling interests were caused by low base effect. At the same time, the absolute value of this item is insignificant and is of no interest for the purposes of analysis.

Dynamics of profit after tax (or net profit) was mainly following dynamics of profit before tax, except for year 2017. Decrease in income tax expense as a result of US tax reform had the highest level of influence on increase in profit after tax. This brings to an important observation, that net profit dynamics would not be so favorable without the US tax reform. In 2016, SAP SE had an effective tax rate of 25.22%, while in 2017 the effective tax rate amounted to 19.2%. This change in effective tax rate brought SAP SE net benefit of €300 million savings on income tax expense. If profit before tax in 2016 that amounted to €5026 million would be taxed at the effective rate of 25.22%, net profit of SAP SE in 2017 would be equal to €3758 million, which is only 13.02% growth to the level of 2013.

As a conclusion, horizontal analysis of income statement showed stable dynamics of revenue and cost of revenue, increased growth of operating expenses, bidirectional dynamics in operating profit and profit after tax, decrease in income tax expense and, as a result, increase in profit after tax.

4.2.2 Liquidity Analysis

Liquidity ratio analysis shows the financial position of a company and gives an insight on company's ability to pay out its debt. Liquidity ratios of SAP SE for the fiscal years ended in 2013-2017 are shown on the Table 19.

Table 19. Liquidity ratios of SAP SE for the fiscal years ended in 2013-2017.

	Current ratio	**Quick ratio**	**Receivable turnover**	**Days' sales uncollected**	**Payables turnover**	**Days' payable**
2013	1.16	1.04	4.32	84.45	5.85	62.39
2014	1.05	0.89	4.28	85.28	5.60	65.15
% change year-on-year	-9.38%	-14.13%	-0.98%	0.99%	-4.23%	4.42%
2015	1.24	1.10	4.32	84.40	6.25	58.39
% change year-on-year	17.95%	23.41%	1.05%	-1.04%	11.57%	-10.37%
2016	1.20	1.00	3.94	92.63	5.56	65.68
% change year-on-year	-3.44%	-9.87%	-8.89%	9.75%	-11.09%	12.48%
2017	1.17	0.97	3.97	91.97	5.80	62.95
% change year-on-year	-2.25%	-2.45%	0.72%	-0.71%	4.33%	-4.15%

Source: *SAP SE*, *own calculations.*

As can be seen from the Table 19, current ratio and quick ratio showed mixed year-on-year dynamics during the period of 2013-2017. All of the shown liquidity indicators showed most favorable values in 2015, in the first full year when Concur Technologies was included in consolidated financial statements of SAP SE. After 2015, all of the indicators showed worse dynamics, with declining current and quick ratio, decrease in receivables turnover and payables turnover, and increase in days' sales uncollected and days' payable.

It is possible to compare the indicator of quick liquidity, quick ratio, to industry average values in order to clear of the external effects on liquidity ratios. Industry average values of quick ratio for technology industry is shown in comparison with quick ratio of SAP SE on Table 20.

Table 20. Industry average values of quick ratio for technology industry for the years ended in 2013-2017.

	Industry average	Quick ratio of SAP SE
2013	1.33	1.04
2014	1.3	0.89
2015	1.05	1.24
2016	1.3	1.2
2017	1.37	1.17

Source: *Dun & Bradstreet, own calculations.*

As can be seen on the Table 20, industry average values were higher than SAP SE's in all years except 2015, when industry average quick ratio amounted to 1.05 while SAP SE's quick ratio was equal to 1.24. This fact shows lower liquidity of SAP SE than average liquidity of an IT-company.

Another insight into liquidity of SAP SE can be seen in analysis of changes in cash conversion cycle. Cash conversion cycle is used to analyze changes in trade payables and is shown Table 21.

Table 21. Cash conversion cycle (CCC) of SAP SE and industry averages for the fiscal years ended in 2013-2017.

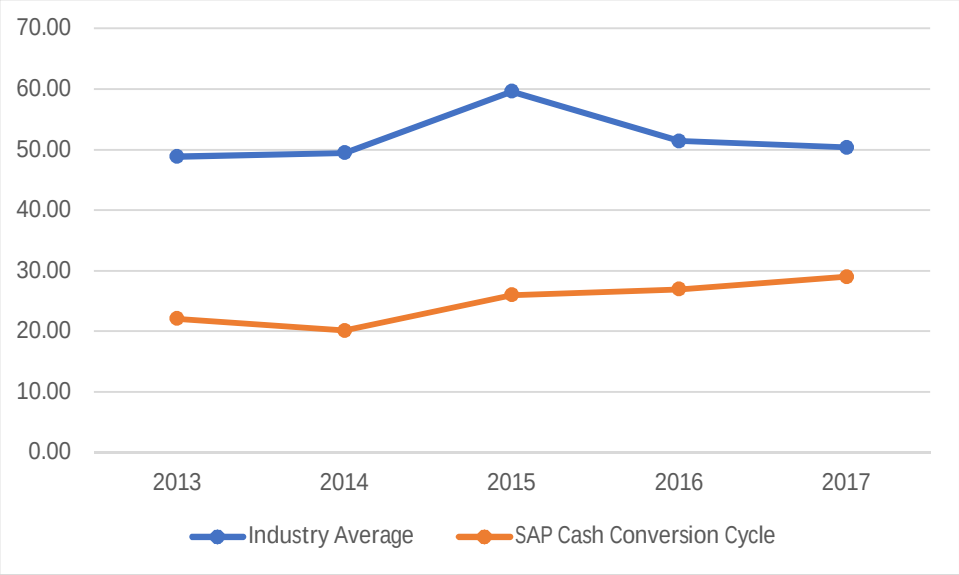
	Days' sales uncollected	Days' payable	Cash conversion cycle	CCC – Industry Average
2013	84.45	62.39	22.06	48.83
2014	85.28	65.15	20.14	49.45
% change year-on-year	0.99%	4.42%	-8.71%	1.27%
2015	84.40	58.39	26.01	59.58
% change year-on-year	-1.04%	-10.37%	29.17%	20.48%
2016	92.63	65.68	26.96	51.4
% change year-on-year	9.75%	12.48%	3.64%	-13.73%
2017	91.97	62.95	29.02	50.35
% change year-on-year	-0.71%	-4.15%	7.67%	-2.04%

Source: *SAP SE, own calculations.*

Cash conversion cycle shows how many days it is needed for SAP SE to convert cash invested in operating activities into cash inflows. Higher values of this indicator are unfavorable for any company for obvious reasons. As can be seen from the Table 21, cash conversion cycle was on the lowest value in 2014, but after that this indicator showed only increases.

Figure 3 shows the upward trend in cash conversion cycle of SAP SE during the period of 2013-2017.

Figure 3: Cash conversion cycle of SAP SE in years 2013-2017, days.



Source: SAP SE, own calculations.

As days payable changed insignificantly during period of 2013-2017, the main driver of increasing trend in cash collection cycle is days sales uncollected. As it is seen on the Table 21, days sales uncollected increased from 84.45 days in 2013 to 91.97 days in 2017.

Growth in days sales uncollected can be a result of changes in payment terms that SAP SE gives to the clients, or it can be a sign of ineffective cash collection procedures. Changes in payments terms might be an expected reason and caused by increasing competition in IT industry as it becomes more mature, however ineffective cash collection procedures are a negative sign for a company. Nevertheless, comparison of SAP Cash Conversion Cycle values to industry averages shows, that SAP was significantly overperforming industry average competitor during whole period of 2013-2017.

Liquidity ratio analysis has shown decreasing liquidity of SAP SE caused by decrease in quick ratio and increase in cash conversion cycle caused either by changes in payment

terms for SAP SE’s clients or ineffective cash collection procedures. Both of the facts are unfavorable for a company, and a great attention should be given to these issues by management.

4.2.3 Profitability Analysis

Profitability analysis helps to identify whether the company is able to produce economic benefits to shareholders. Results of profitability ratio analysis are shown on the Table 22.

Table 22. Profitability ratios of SAP SE for the fiscal years ended in 2013-2017.

	Gross profit margin	Net profit margin	Asset turnover	Return on assets (ROA)	Return on equity (ROE)
2013	70.08%	19.77%	62.98%	12.45%	22.03%
2014	69.98%	18.67%	53.49%	9.99%	18.43%
absolute change year-on-year	-0.10%	-1.09%	-9.49%	-2.46%	-3.59%
2015	68.13%	14.69%	52.01%	7.64%	14.27%
absolute change year-on-year	-1.84%	-3.98%	-1.47%	-2.34%	-4.16%
2016	70.16%	16.47%	51.50%	8.48%	14.62%
absolute change year-on-year	2.02%	1.77%	-0.50%	0.83%	0.35%
2017	69.95%	17.28%	54.07%	9.34%	15.61%
absolute change year-on-year	-0.22%	0.81%	2.56%	0.86%	0.99%

Source: *SAP SE*, *own calculations.*

SAP SE showed very stable gross profit margin, which moved in the range of 68.13%-70.16%, while net profit margin moved in wider range of 14.69%-19.77%. Highest peak of net profit margin was achieved in 2013, while the lowest point was in 2015. Stable gross profit margin can be explained by stable growth in revenues and cost of revenues, while changes in net profit margin were likely to be caused by increase in operating expenses during these years.

Asset turnover declined after 2014, moving in the range of 51.5%-54.07%, while this indicator was on the level of 62.98% in 2013. Generally, asset turnover ratio of 50% and more is regarded as efficient use of assets to generate sales, however it is a best practice to compare the ratio with industry average.

Both return on assets (ROA) and return on equity (ROE) decreased during 2013-2017. ROA decreased from 12.45% in 2013 to 9.34% in 2017, and ROE decreased from 22.03% in 2013 to 15.61% in 2017.

Industry average values of profitability ratios for technology industry is shown in comparison with profitability ratios of SAP SE on Table 23 and Table 24.

Table 23. Industry average values of gross profit margin, net profit margin and asset turnover for technology industry for the years ended in 2013-2017.

	Gross profit margin		Net profit margin		Asset turnover	
	Industry average	SAP SE	Industry average	SAP SE	Industry average	SAP SE
2013	75.59%	70.08%	23.58%	19.77%	117%	62.98%
2014	70.66%	69.98%	20.45%	18.67%	122%	53.49%
2015	69.09%	68.13%	0.86%	14.69%	93%	52.01%
2016	77.4%	70.16%	13.87%	16.47%	92%	51.50%
2017	77.59%	69.95%	12.42%	17.28%	82%	54.07%

Source: *Dun & Bradstreet, own calculations.*

Comparison to industry average values shows, that in 2014 and 2015 SAP SE was very close to industry average, while in 2013, 2016 and 2017 industry average values were higher than those of SAP SE. It shows, that SAP SE has relatively higher cost of revenue than competitors, which is a slightly negative sign.

Net profit margin of SAP SE was lower than industry average in 2013 and 2014, but already in 2015-2017 showed advantage to the industry average. At the same time, this advantage was due to decline in industry average rather than due to increase of SAP SE's net profit margin.

It is very remarkable that asset turnover of SAP SE was significantly lower than industry average. In 2013 and 2014 the difference was almost twofold. This fact should be given a close attention of management, as it means that SAP SE does not generate the same level of revenue from its assets than even average competitor in the industry. The reason of lower asset turnover ratio might be found in the fact, that more than half of SAP SE's assets is goodwill. One can conclude, that SAP SE failed to achieve synergetic benefits from acquisitions and business combinations, converting overpayment for acquisition into comparable increase in revenue.

Comparison of industry average ROA and ROE to those of SAP SE gives another picture. ROA of SAP SE was slightly higher or almost equal to industry average, and almost the same situation is observed in case of ROE.

Difference between asset turnover and ROA is in the way how the company works with its operating expenses. As can be seen from comparison of these two indicators to industry average, SAP SE is more careful in spending cash on operating expenses than industry average competitor, as ROA is higher than industry average, which is a good sign,

while asset turnover is lower than industry average. At the same time, average industry competitor might be more successful in gaining sales than SAP SE, which should be given a close attention by the management.

Table 24. Industry average values of return on assets and return on equity for technology industry for the years ended in 2013-2017.

	Return on assets		Return on equity	
	Industry average	**SAP SE**	**Industry average**	**SAP SE**
2013	12.38%	12.45%	22.49%	22.03%
2014	10.64%	9.99%	20.39%	18.43%
2015	0.44%	7.64%	0.85%	14.27%
2016	6.19%	8.48%	13.74%	14.62%
2017	5.64%	9.34%	12.21%	15.61%

Source: *Dun & Bradstreet, own calculations.*

Profitability analysis has shown decreases in all profitability ratios of SAP SE during the period of 2013-2017. At the same time, comparison with industry average values has shown, that SAP SE is less successful in producing revenues from assets but is more careful in operating expenses than industry average competitor.

4.2.4 Financial Leverage Analysis

Financial leverage analysis shows the magnitude of debt and equity, or sources of financing, on company's statement of financial position, therefore providing an insight in financial stability of the company. As financial leverage increases return on equity, financial leverage ratios also show to what extent is return on equity caused by operational activities or increase in debt financing. Financial leverage ratios of SAP SE for the period of 2013-2017 are shown on the Table 25.

Table 25. Financial leverage ratios of SAP SE for the fiscal years ended in 2013-2017.

	Debt to equity	**Interest coverage**	**Financial leverage**
2013	0.688	25.287	1.769
2014	0.974	29.651	1.845
percentage change year-on-year	41.58%	17.26%	4.29%
2015	0.777	17.223	1.867
percentage change year-on-year	-20.27%	-41.91%	1.17%
2016	0.677	19.145	1.724
percentage change year-on-year	-12.80%	11.16%	-7.65%
2017	0.664	19.079	1.671
percentage change year-on-year	-1.97%	-0.35%	-3.09%

Source: *SAP SE*, *own calculations.*

Debt-to-equity of SAP SE significantly increased in 2014, from 0.688 in 2013 to 0.974. This is explained by acquisition of Concur Technologies in 2014, which was financed by bank loan. Nevertheless, debt-to-equity returned to 0.664 in 2017, as most of this bank loan was paid out or refinanced through bonds and private placements. These events are almost not reflected in financial leverage ratio, which was moving in the tight range of 1.671-1.867 during this period.

Interest coverage also declined, from 25.287 in 2013 to 19.079 in 2017, reflecting increase in debt and changes in operating profit. However, all three indicators should be compared to industry average in order to get a full picture.

Industry average values of financial leverage ratios for technology industry are shown in comparison with financial leverage ratios of SAP SE on Table 26.

Table 26. Industry average values of financial leverage ratios for technology industry for the years ended in 2013-2017.

	Debt to equity		Interest coverage		Financial leverage	
	Industry average	**SAP SE**	**Industry average**	**SAP SE**	**Industry average**	**SAP SE**
2013	0.29	0.688	45.83	25.287	1.17	1.769
2014	0.36	0.974	40.89	29.651	1.22	1.845
2015	0.03	0.777	10.97	17.223	0.93	1.867
2016	0.04	0.677	12.76	19.145	0.92	1.724
2017	0.06	0.664	12.42	19.079	0.82	1.671

Source: *Dun & Bradstreet, own calculations.*

Debt to equity ratio of SAP SE was higher than industry average during the whole period. Generally, it shows that SAP SE is using more external sources of financing than industry average competitor. As can be seen from the Table 26, it is a common practice in IT and technology industry to use more internal sources of financing, i.e. retained earnings and equity, than external sources, like bank loans, bonds or private placements of debt.

Interest coverage of SAP SE was lower than industry average in 2013 and 2014 but starting from 2015 SAP SE overperformed average industry competitor. It can be interpreted in a way, that SAP SE now has more capability to survive in the event of interest rates going up, which is a positive sign for the company.

Financial leverage ratio was higher than average industry during the whole period and was on a stable level, while industry average values decreased from 1.17 in 2013 to 0.82 in 2017. This fact shows, that changes in ROE were more caused by increased financial leverage than increase in net profit margin or asset turnover. However, more detailed look into this is given by DuPont analysis presented below.

4.2.5 DuPont Model

DuPont analysis is devoted to break down changes in ROE by changes in net profit margin, asset turnover and financial leverage. As ROE can be calculated as a product of these three financial ratios, each of the ratio make an impact on ROE. This analysis helps to understand the sources of changes in ROE and therefore advise the correcting actions for the management.

Results of DuPont analysis are shown on Table 27.

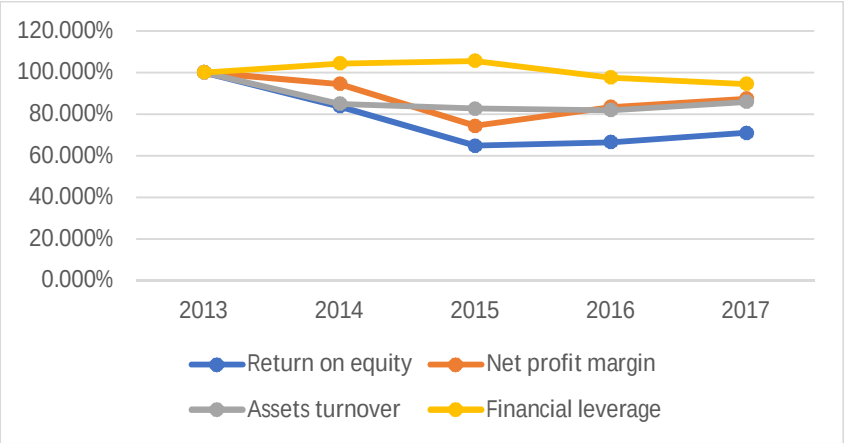
Table 27. DuPont analysis of changes in return on equity of SAP SE for the years ended in 2013-2017.

	Return on equity	Net profit margin	Asset turnover	Financial leverage
2013	0.22	0.198	0.63	1.769
2014	0.184	0.187	0.535	1.845
2015	0.143	0.147	0.520	1.867
2016	0.146	0.165	0.515	1.724
2017	0.156	0.173	0.541	1.671

Source: SAP SE, own calculations.

DuPont analysis gives two important insights. Firstly, as ROE was declining in 2013-2015 and returned to slow growth in 2016-2017, net profit margin and asset turnover were also declining. It shows, that decline in ROE was caused mainly by decline in net profit margin and asset turnover. Secondly, financial leverage was on a relatively more stable trajectory, meaning that it supported ROE from declining even more.

Figure 4: Changes in ROE, net profit margin, asset turnover and financial leverage of SAP SE in years 2013-2017, 2013=100%.



Source: SAP SE, own calculations.

Figure 4 shows the changes in DuPont analysis indicators as a percentage to the base year pf 2013.

These two observations can lead to a conclusion that during 2013-2017 SAP SE was mostly using external financing in order to eliminate decrease in ROE, rather than increase in operating efficiency, growth in sales and control over operating expenses to increase net profit margin and generate more sales increasing asset turnover. It is clearly seen from analysis, that SAP SE did undertake significant measures to increase revenues, nevertheless these efforts did not overperform the negative impact of growing operating expenses.

5 Discussion and conclusion

Financial analysis of SAP SE has shown several important highlights in relation to financial position and financial performance of the company and has helped to fully answer research questions. However, it is better to summarize these findings and then answer the research questions in detail.

Horizontal and vertical analysis of statement of financial position and income statement has shown several aspects. Structure of assets of SAP SE for the period of 2013-2017 shows the dominance of non-current assets over current assets. This can be regarded as a sign of decreasing liquidity, as non-current assets are less likely to be rapidly converted to cash. There is an evidence of goodwill and intangible assets predominance on statement of financial position, which is expected for IT company and in line with the findings of Enache and Srivastava (Enache & Srivastava, 2018).

Cash and cash equivalents showed rather stable dynamics, with slight drop from 10.14% in 2013 to the lowest point of 8.24% in 2015. At the same time, relatively low level of PP&E is ordinary for a company working in IT, digital or technological sector, which was also shown by Enache and Srivastava in one of the most recent works (Enache & Srivastava, 2018).

Common-size statement of financial position shows, that in years 2014-2016 more than a half of total assets of SAP SE was represented by just one balance sheet item, which was goodwill. In period of 2013-2017 goodwill has shown increasing dynamics, growing from 50.53% in 2013 to the highest point of 54.82% in 2015.

Comparison of current and non-current trade payables shows predominance of current payables, which might be a disadvantage for a company. Moving current trade payables to non-current for the purposes of efficient cash management would improve cash conversion cycle (CCC), i.e. company would keep cash for a longer time before paying it out to suppliers.

General look on other non-financial liabilities shows, that the biggest portion of it relates to workforce expenses. For a company working in IT, digital and technology industry, higher expenses on workforce are not surprising, as well as higher contributions to incentive plans, bonuses and commissions. A significant part of current liabilities pertains to deferred income. Deferred income portion of current liabilities moves in the range of 4.36% (in 2014) to 6.52% (in 2017).

Financial liabilities of SAP SE in 2013 were comprised mostly of non-current portion, with bonds and private placements transactions of comparable size. At the same time, bonds comprised significant part of current financial liabilities. Overall structure of financial liabilities of SAP SE shows short-term decreasing trend, that can be distinguished as a positive sign as it decreases company's dependence on external sources of financing, however it also decreases return on equity (ROE).

High levels of total equity as a percentage of total assets show relatively stable structure of financing. It might be considered as positive sign, especially if there is a significant possibility of financial crisis. High levels of total equity as a percentage of total assets are not very common in technology industry, which was highlighted by Srivastava. (Harvard Business Review, 2018)

All balance sheet items showed growth during 2013-2017, and in general this might be considered as positive sign. However, the pace of this growth was different for different balance sheet items. Cash and cash equivalents grew by 45.96% during period of 2013-2017. Growth in prepaid expenses is expected due to growth of SAP's business operations and revenue, however capitalized contract costs were the main driver of growth in other non-financial assets. Tax assets and deferred tax assets showed significant increase during 2013-2017. Although goodwill is the biggest item on SAP's balance sheet, changes in goodwill showed mild dynamics in comparison to other items.

There is an evidence of the long-term trend of increasing financial liabilities and increasing financial leverage. Retained earnings represent the biggest part of total assets, and this is a positive sign for financial stability of SAP SE.

From revenue's point of view, it is possible to say that SAP SE is changing its business model towards becoming cloud subscriptions-oriented company, rather than traditional license-based software developer. It shows, that SAP SE is working towards its long-tern vision, which is described on the company's website. (SAP, 2018)

Percentage and absolute changes in services cost of revenue was lower than in corresponding revenue item, and this shows increasing efficiency in this part of SAP SE's business.

The biggest item among operating expenses is sales and marketing, and at the same time this item showed the most rapid dynamics among other operating expenses accounts. At the same time, this growth is explained by the fact that SAP SE acquired Concur

Technologies in 2014, and it was natural for such a deal to accelerate synergetic effect of merger by spending more on marketing.

Decline in operating growth in 2014 can be fully explained by litigation fee. Decrease in operating profit in 2015 can be fully explained by increase in restructuring expenses.

Other non-operating income and expense demonstrated bidirectional dynamics during 2014-2017. This item mostly includes foreign exchange effect. The low base effect is also evident in relation to this income statement item. Financial income increased by 380.3% to the level of 2013 in 2017, and this increase was mostly driven by increase in finance income.

Ratio analysis has also brought additional value in understanding company's financial position and financial performance in the period of 2013-2017.

Liquidity indicators showed most favorable values in 2015, in the first full year when Concur Technologies was included in consolidated financial statements of SAP SE. After 2015, all of the indicators showed worse dynamics, with declining current and quick ratio, decrease in receivables turnover and payables turnover, and increase in days' sales uncollected and days' payable. SAP SE showed lower liquidity than average IT-company in technologies industry.

Growth in days sales uncollected can be a result of changes in payment terms that SAP SE gives to the clients, or it can be a sign of ineffective cash collection procedures. Changes in payments terms might be an expected reason and caused by increasing competition in IT industry as it becomes more mature, however ineffective cash collection procedures are a negative sign for a company. Cash conversion cycle was on the lowest value in 2014, but after that this indicator showed only increases.

Liquidity ratio analysis has shown decreasing liquidity of SAP SE caused by decrease in quick ratio and increase in cash conversion cycle caused either by changes in payment terms for SAP SE's clients or ineffective cash collection procedures. Both of the facts are unfavorable for a company, and a great attention should be given to these issues by management.

Stable gross profit margin can be explained by stable growth in revenues and cost of revenues, while changes in net profit margin were likely to be caused by increase in operating expenses during these years.

Both return on assets (ROA) and return on equity (ROE) decreased during 2013-2017. ROA decreased from 12.45% in 2013 to 9.34% in 2017, and ROE decreased from 22.03% in 2013 to 15.61% in 2017.

Comparison profitability ratios to industry average values shows, that in 2014 and 2015 SAP SE was very close to industry average, while in 2013, 2016 and 2017 industry average values were higher than those of SAP SE. It shows, that SAP SE has relatively higher cost of revenue than competitors, which is a slightly negative sign.

Net profit margin of SAP SE was lower than industry average in 2013 and 2014, but already in 2015-2017 showed advantage to the industry average. At the same time, this advantage was due to decline in industry average rather than due to increase of SAP SE's net profit margin.

It is very remarkable that asset turnover of SAP SE was significantly lower than industry average. In 2013 and 2014 the difference was almost twofold. This fact should be given a close attention of management, as it means that SAP SE does not generate the same level of revenue from its assets than even average competitor in the industry. The reason of lower asset turnover ratio might be found in the fact, that more than half of SAP SE's assets is goodwill. One can conclude, that SAP SE failed to achieve synergetic benefits from acquisitions and business combinations, converting overpayment for acquisition into comparable increase in revenue.

Profitability analysis has shown decreases in all profitability ratios of SAP SE during the period of 2013-2017. At the same time, comparison with industry average values has shown, that SAP SE is less successful in producing revenues from assets but is more careful in operating expenses than industry average competitor.

Debt-to-equity of SAP SE significantly increased in 2014, from 0.688 in 2013 to 0.974. This is explained by acquisition of Concur Technologies in 2014, which was financed by bank loan. Interest coverage also declined, from 25.287 in 2013 to 19.079 in 2017, reflecting increase in debt and changes in operating profit.

Debt to equity ratio of SAP SE was higher than industry average during the whole period. Generally, it shows that SAP SE is using more external sources of financing than industry average competitor.

Interest coverage of SAP SE was lower than industry average in 2013 and 2014 but starting from 2015 SAP SE overperformed average industry competitor. It can be interpreted

in a way, that SAP SE now has more capability to survive in the event of interest rates going up, which is a positive sign for the company.

Financial leverage ratio was higher than average industry during the whole period and was on a stable level, while industry average values decreased from 1.17 in 2013 to 0.82 in 2017. This fact shows, that changes in ROE were more caused by increased financial leverage than increase in net profit margin or asset turnover.

Finally, DuPont analysis helped to shed light on the main drivers of changes in ROE. Relatively high level of financial leverage supported ROE, however ROE was decreasing due to less than industry average levels of net profit margin and asset turnover. Effectively, SAP SE was using financial leverage to offset negative impact of declining net profit margin and asset turnover.

As a result of research, research questions can be answered.

1. What factors did influence financial performance of SAP SE in 2013-2017?

Financial performance of SAP SE during the period of 2013-2017 was under huge influence of decreasing liquidity, net profit margin, asset turnover and growing financial leverage. At the same time, predominance of specific balance sheet items, such as goodwill, determined less than industry average performance of SAP SE. In terms of net profit margin and asset turnover SAP SE performed worse than industry average competitor.

2. What measures can overcome the influence of negative factors on financial performance of SAP SE?

SAP SE should devote great attention in order to increase liquidity and profitability and decrease financial leverage. Industry averages show that there is a capacity to improve these indicators. Specifically, a greater attention should be given to structure and size of financial liabilities. SAP SE can consider using current assets to settle debt liabilities to reach at least industry averages in relation to liquidity ratios. Although SAP SE is better than industry average competitor in controlling operating expenses, there is a room for further optimization in order to improve net profit margin. A specific attention should be given on pre-check of business combinations and acquisitions, as previous experience of SAP SE has created big goodwill position on balance sheet. SAP SE should focus more on generating more sales with existing assets in order to improve asset turnover at least to industry average level.

Current research has attempted to determine current financial position and financial performance of SAP SE, identify main influencing factors and propose ways to improve

situation. However, not every financial problem can be solved using financial analysis. A certain capacity for additional research exists to look deeply into the nature of business operations of SAP SE, sales and marketing issues, as well as technological specifics, which definitely have significant influence on financial position and financial performance. All these options are available for further research.

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