

MASTER

SME financing in the Netherlands

an analysis of the current Dutch financing market for small and medium enterprises including alternative financing options and a decision support tool

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Eindhoven, April 2017

SME financing in the Netherlands

**An analysis of the current Dutch financing market for
small and medium enterprises including
alternative financing options
and a decision support tool**

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In Operations Management and Logistics**

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Management summary

This research was conducted at Mondriaan Management & Consultancy (MM&C) which is specialized in financial and strategical advice for small and medium enterprises (SMEs). The **problem** stated by MM&C is that since the financial crisis it has become harder to consistently find funding at banks for their SME clients. MM&C therefore wants to also use alternative ways of financing to fulfill the funding need of their clients. However, it is unclear what all the available alternative financing options are and which ones are suitable for MM&C's clients.

This problem resulted in the following **research goal**: analyze the current Dutch financing market for SMEs, research the newly emerged alternative financing options and develop a tool for proposing suitable financiers in the market for a certain financing need of an SME.

First, an analysis is presented of the current Dutch financing market and the difficulties that SMEs are currently facing.

In 2015 there were in total 348.815 SMEs between 2 and 249 employees (24% of all firms) active in the Netherlands. SMEs are the engine of growth for the economy, are important for employment and contributed to 64% of the national GDP in 2014. It is of high importance to the Dutch economy that SMEs have good access to funding as they need it for the execution of activities. The total credit volume outstanding by financial institutions to non-financial corporations used to be on average €303 billion in 2013 and was on average €266 billion in 2016 of which Dutch banks had a total of €130 billion of loans issued to SMEs. The biggest decreases are in loans up to €250k. SMEs applied for €14 billion of funding in June 2015 - May 2016. The Dutch Ministry of Economic Affairs claims that with micro and small companies 52% of loan applications got rejected and medium companies 28% in 2016.

SMEs have suffered a double blow since the '07-'08 financial crisis. On one hand the demand for goods and services have decreased and on the other hand banks have gotten more risk averse in issuing loans to SMEs in the Netherlands. Increased capital requirements for banks imposed by the Basel II and Basel III regulations made it less attractive to issue loans, especially to the relatively risky SME segment. Monitoring cost and information costs are high and for relatively small SME loans a lot of costly time is spent on the credit approval phase. Furthermore, SMEs are riskier than large corporations because they are less diversified, have weaker financial structures, lower buffer capacity, are less transparent and are often dependent on one main shareholder. This makes them more vulnerable in times of crises resulting in banks downscaling their SME loan portfolio.

This development has created a great base for new alternative financiers to emerge in the Dutch financing market. The research continues with an exploratory research on the new alternative financing options available to SMEs. The most notable new alternative financing options are individual invoice factoring, regional development companies, institutional investment funds, SME stock exchanges, crowdfunding, online credit suppliers, credit unions and microfinancing. Despite the need for more capital, SMEs currently use relatively few of these alternatives to bank financing. Alternative financing options are still relatively unknown to SMEs. The market for new alternatives is responsible for less than 0,5% of total SME funding but is growing rapidly.

A finance decision support tool was created for MM&C which generates a funding proposal for SMEs based on a specific funding need. This funding proposal includes new alternative financing options. The funding decision support tool aids MM&C in selecting the most suitable financing options available on the market for their SME clients. The user is required to fill in financial statements, desired funding goals and answer a number of questions about the company in order to receive a funding proposal for each funding goal. Furthermore, the tool compares the firm and several financial ratios with averages of firms in the same industry and employee segment. On top of that, the tool has the ability to generate a credit rating of the firm and a balance sheet after funding when a certain type of funding is chosen.

The core function of the tool (generating a funding proposal) is validated by two completed client cases of MM&C dealing with an SME in need of funding. For both cases the tool suggests the financing options that MM&C also used to fund their clients and for several funding goals the tool suggests other suitable financing options that could have been used as well. The tool also performs well in giving clear suggestions about which type of finance is of best interest to the firm regarding its risk and financial situation. It was concluded that the tool fundamentally functions as intended. As with every new tool, it will greatly improve with further optimization.

The **practical contribution** is that with a funding proposal generated by the tool, MM&C can apply at selected financiers promptly without having to research the market first. On top of that, it provides a basis for combining financing options to fulfill a total funding need. Above all, MM&C will have knowledge about all financing options in the Dutch financing market. Therefore MM&C can more adequately service their clients by also arranging funding from financiers other than banks or combining funding from new financiers together with banks. This will result in a higher funding success rate for clients of MM&C, hence improving service.

The **theoretical contribution** of this research is that it lists all the financing options and its characteristics because there is currently little academic literature on alternative financing options in the Netherlands. Not only does this research give insight into which financing options are available for SMEs but also insight is given into which financing options are suitable for an SME's specific funding need. Furthermore, this thesis is a source for academics from other countries to learn from the alternative financing market in the Netherlands.

Preface

The thesis in front of you has been carried out in order to complete the Master Operations Management & Logistics at Eindhoven University of Technology. My first university supervisor Mr. Boray Huang and myself agreed quickly on the topic alternative financing as it was in our mutual interest. I appreciate the fact that he gave me the freedom to execute my proposed plans and ideas as well as the ability to meet in his office for feedback soon after I called.

Mr. Alfred Algra, the founder and owner of Mondriaan Management & Consultancy, has given me the opportunity to do this research and gain work experience in the financial consultancy profession. Although the university advises not to 'work' at the firm during the thesis period which indeed turned out to be challenging to combine at times, the work experience has been proven to be complementary to the thesis. In fact, work experience was rather necessary in order to execute a more focused research and increase the quality of the thesis. Besides that, it was an incredible educational practice. Thank you!

Related to this, I would therefore advise any engineering student aspiring entrepreneurship or a management position to gain (some) knowledge (and preferably experience) in finance to become financially literate. It is practically guaranteed that it will come across your career in one way or another.

Mr. Piet Poos was my main company supervisor during the thesis. His constructive feedback, helpful advice and his combined financial and academic experience was indispensable during the process. Mr. Ruben van de Sande, a former colleague in the beginning phase of my internship made corporate finance and accounting come to life for me and always took the time to roll towards my desk and help me when I got stuck.

I am also glad that Mr. Johan Jansen could clearly explain financial concepts, helped me right away on the spot whenever I had a question and for being a fun colleague!

Mrs. Roosmarijn Leenheer: I appreciate you could help me with the layout of my thesis, practical office matters and fuel my travel plans. Furthermore, the workspace provided definitely contributed to the prosperous course of the project.

Last but not least, I want to express my appreciation to family, friends and housemates who were involved, interested, I could depend on and who served as discussion partners. You also pulled me through periods my motivation reached the natural depths by means of healthy spirit. And grandpa, thanks for letting me borrow your car!

Eindhoven, April 2017

Casper Miltenburg

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1 Introduction

This research work was conducted from 5-9-2016 until 31-3-2017 at a financial and strategical consulting firm named Mondriaan Management & Consultancy (MM&C). This was done in close cooperation with Eindhoven University of Technology (TU/e). To give an idea of MM&C's activities, first a brief description of the business is given and from there on the introduction advances with the problem statement, research goal, research questions and the research methodology.

1.1 Description of Mondriaan Management & Consultancy (MM&C)

MM&C is a relatively small consultancy firm founded in 2007 which provides their clients in the small and medium enterprise (SME) segment advice on mainly financial, strategical, organizational and business process matters. The firm is based in Goirle, a suburb of Tilburg and was founded by Alfred Algra, a former ING Bank executive. A large group of clients initially contact MM&C as a result of financial problems or large investment decisions. Subsequently, MM&C often stays connected as financial & strategical management partner or supervisor with their clients. A large part of MM&C's activities consists of finding new funding starting from €500k for their clients. Clients of MM&C are from a variety of industries.

1.2 Background problem context and problem statement

As is commonly known, the '07-'08 financial crisis had its impact on the commercial bank lending market for a lot of SMEs. Whereas banks before the crisis were generous in issuing loans, now they have gotten more risk averse. The general voice of managers and owners of SMEs is that it is significantly more difficult to apply for bank loans in current times.

Also MM&C has noticed that since the '07-'08 financial crisis, banks have gotten less risk appetite and are now more reluctant to issue loans, especially to the more risky SME segment. The most widely read financial newspaper of the Netherlands, Het Financieele Dagblad, writes practically daily about the problems of SMEs finding adequate funding for their business plans. The development of shrinking supply by traditional financing options created a great base for new alternative financiers to emerge on the financing market (Bentham, 2016). Het Financieele Dagblad writes frequently that SMEs have great difficulties in finding out which of those alternative financiers is suitable for their financing need.

As MM&C noticed that it became harder to consistently find new funding for their clients via banks, MM&C wanted to first of all research why exactly banks have become less willing to finance SMEs. Second, because MM&C did not have a clear view of the new financing alternatives available, they wanted a research done on all new alternative financiers available on the Dutch financing market. They value this research because MM&C can then start fulfilling the funding need of their clients also via these new alternatives. This problem that MM&C pointed out formed the basis of this research project, resulting in a problem statement described as follows:

Problem statement by MM&C

Since the financial crisis it has become harder for MM&C to find funding at banks for their SME clients. MM&C therefore wants to also use alternative ways of financing to fulfill the funding need of their clients. However, it is unclear what all the available alternative financing options are and which ones are suitable for MM&C's clients.

The problem statement formulated by MM&C formed the basis for doing further research on the state of the current Dutch financing market in chapter 2. This is done in order to first of all understand the root cause of the difficulties SMEs are currently facing regarding access to funding in the Netherlands. The exploratory research on all the new alternative financing options is discussed in chapter 3.

1.3 Research goal and questions

From the problem statement, an overall goal of this research is derived. This results in several research questions (RQs) that construct the thesis. The answers to these research questions lead to achieving the overall goal.

An analysis of the current Dutch financing market for SMEs and the alternative financing options will be of value to MM&C and SMEs in general. However, MM&C would then still have to put a lot of time in deciding which financing options can be suitable for the financing need of a particular SME as each financing option has their own characteristics and specifications. Therefore in the second part of this master thesis, a funding decision support tool (from now on also referred to as 'tool') is designed to aid an MM&C financial consultant in proposing a selected shortlist of financing options for an SMEs financing need. In this way the user does not have to do a market research on his or her own but can immediately contact and apply for the right financiers which are likely to finance the SME's need.

The overall goal of the master thesis is formulated as follows:

Overall goal

Analyze the current Dutch financing market for SMEs, research the newly emerged alternative financing options and develop a tool for proposing suitable financiers in the market for a certain financing need of an SME.

It is chosen to focus on SMEs because, as mentioned before, clients of MM&C are merely SMEs. In addition, currently big corporations are not having trouble applying for traditional bank loans (Het Financieele Dagblad, 2016). To support the achievement of the overall goal, a set of research questions has been formulated:

- | | |
|-----------------------------|---|
| Research question 1: | What is the current state of the financing market for SMEs in the Netherlands? |
| | <ul style="list-style-type: none"> - Sub question 1: What are the financing needs of SMEs? - Sub question 2: How are SMEs currently financed? - Sub question 3: What is the situation for SMEs applying for funding, what difficulties do they face and what are the reasons for this? |
| Research question 2: | Which forms of suitable financing options exist for MM&C's clients and what are each ones most important characteristics? |
| Research question 3: | What is (are) the most suitable financing option(s) available for a client of MM&C to choose from when having (a) certain funding need(s)? |

First of all the research is divided into roughly two distinct parts. The first part describes the analysis of the current financing market for SMEs in the Netherlands and the alternative financing options available for MM&C's SME clients (first two RQs). The second part of the research focuses on the created finance decision support tool described previously (RQ3).

For the first research question it is chosen to not necessarily compare the current financing market with the financing market of before the crisis as it does not add extra value for the overall goal of the research. It is merely of interest to research the current situation of the financing market for SMEs. However, causes of the current situation can be consequences of the '07-'08 financial crisis and are evidently referred to. Furthermore, it has been decided to only research the Dutch financing market for SMEs. From the literature review completed prior to the thesis it was noticed that the financing market in other countries, even as close as the U.K. or Germany, is substantially different.

For the second research question, all possible financing options for SMEs are researched other than classic bank loans and current accounts. It is assumed that readers of this research already possess a fair amount of knowledge about the functioning of banks. Only the alternative financing options in the Netherlands are discussed as MM&C's clients are all based in this country.

1.4 Methodology

The research is conducted by using the regulative cycle of van Strien (1997). The regulative cycle is a problem-solving cycle which consists of the following steps: problem statement (1), analyses and diagnosis (2), plan of action (3), intervention (4) and evaluation (5). The cycle is depicted in the following figure:

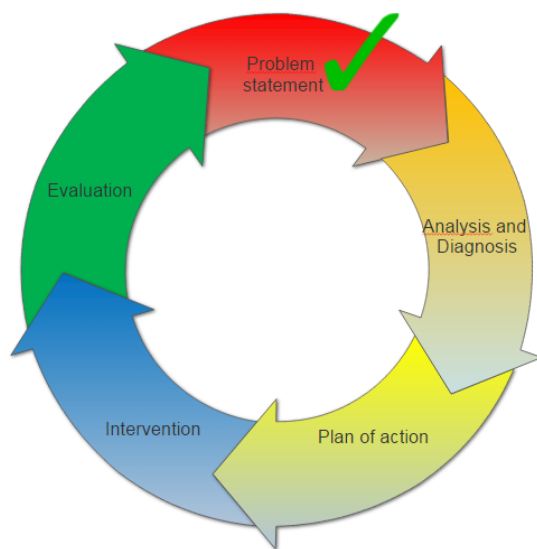


Figure 1: Regulative cycle of van Strien (1997) in relation with the thesis.

With the help of Figure 1 it is explained how the phases of the cycle of van Strien are related to answering the research questions. At this point the first step, problem statement, has been completed.

The second 'analysis and diagnosis' step is fulfilled by the first and second research question. The current Dutch finance market for SMEs is analyzed and the reasons for SME funding problems are clarified. Furthermore, the alternative financing options in the Netherlands are analyzed. As a result of the second step, the problem statement of paragraph 1.2 is clarified and sharpened, therefore providing a good basis for a plan of action in step 3.

The plan of action, intervention and evaluation phase is covered by the third research question. The created funding decision support tool is the intervention step and the validation is completed by testing the tool with two completed (anonymous) client cases of MM&C where their aim was to fund these businesses. The finance proposal that is given for each of the two company cases is compared with how the business was financed in practice.

1.5 Theoretical and practical contribution

1.5.1 Theoretical contribution

The literature review brought up the fact that there is limited academic literature on alternative financing options for SMEs in the Netherlands.

The literature about ‘traditional’ financing alternatives for SMEs i.e. factoring, leasing and informal investors however are plentiful. Options such as crowdfunding and private equity firms are widely spread in the literature, however not focused on the Dutch market in specific. New alternatives such as individual invoice factoring, credit unions, microfinancing, regional development companies, institutional investment funds, government guarantees, SME stock exchanges and emerging online credit suppliers are more or less absent in literature, let alone described for the Dutch market. Besides, senior lecturer at TiasNimbas Business School in Tilburg, Mr. Poos, mentions that the developments in the alternative financing market are fast, resulting in academic literature lagging behind.

This thesis first of all contributes to the academic literature by stating all financing options in the Netherlands meant for the SME segment (also options not suitable for MM&C). This research does not end with stating the options available but also each one’s characteristics (i.e. amounts, type of finance, financing period, financing goals etc.) is described. In this way academics will not have to do a market research for the Netherlands anymore and academics from other countries can learn from the alternative financing options available in the Netherlands. Another addition to the literature that results from the research is that insight is given into which financing options in the Netherlands are suitable for an SME with a certain financing need.

1.5.2 Practical contribution

This thesis provides a finance decision support tool for MM&C that filters the appropriate financing options (including the new alternative financiers) based on the financing needs of the SME. With this finance proposal the user can apply at selected the financiers for funding promptly without having to research the market first. This tool will save a significant amount of time when searching for relevant financiers. On top of that, it provides a basis for combining financing options to fulfill a total funding need. As a financier nowadays is less willing to supply the total amount of required funding on their own (higher risk), multiple financiers can be combined to supply the total amount required. This new emerging trend is called ‘stacking’ financing options and is boosted by the declined willingness of banks since the crisis to finance a complete funding need. Say an SME requires funding and the funding need can be split up into multiple goals, the tool proposes financing options for each of the goals. Subsequently, these options can be combined to arrange all funding required making each financier less prone to risk. By splitting up the funding need over multiple financiers, the business makes it more attractive for each financier to participate. Especially when the returns of a firm are temporarily low (Huijgens, 2016). This is regularly the case for clients of MM&C.

Above all, MM&C will have knowledge about all financiers in the Dutch financing market. Therefore MM&C can more adequately service their clients by also arranging funding from financiers other

than banks or combining funding from new financiers together with banks. This will result in a higher funding success rate for clients of MM&C, hence improving service.

1.6 Thesis structure

This introduction chapter stated the problem formulated by MM&C, discussed the overall goal of the thesis and the research questions to be answered in order to achieve the goal. Next to that, the methodology along which the thesis is structured is described and the contribution of this thesis to the academic literature and in practice at MM&C is clarified.

The following chapter continues with an exploration of the current Dutch financing market and the accompanying difficulties for SMEs. Chapter 3 states all alternative financing options suitable for SMEs in the Netherlands and which one of these are suitable for MM&C's clients. Chapter 4 describes the functioning of the finance decision support tool together with the choices and assumptions used for the design. Two case studies (MM&C's clients) are used to validate the tool in chapter 5 and suggestions for future research and improvements of the tool will be discussed in the last chapter.

2 Current Dutch financing market for SMEs

This section analyzes the current Dutch financing market for SMEs. After the literature methodology is described, the definition of an SME is reported. SMEs require funding for various reasons and therefore the funding needs of SMEs are described. Subsequently the Dutch financing market is analyzed and at last the difficulties that SMEs are currently facing on the funding market are discussed.

2.1 Literature methodology

To increase the quality of the literature used, the inclusion and exclusion criteria are stated. For this chapter only literature since 2009 was used because literature before the financial crisis does not adequately reflect the current situation on the funding market. Also professional literature and government reports from 2009 and onwards were used. Regarding academic literature, papers from 2009 – 2012 were only used if they have an above average number of citations. From 2013 onwards, all relevant academic papers were used. Academic articles have been critically assessed if the information also applies to SMEs in the Netherlands as the nature of the funding markets varies quite significantly across countries. Books and websites were also used as a source. The useful literature found during the process is an equal mix of academic literature, professional literature and research reports funded by the Dutch government.

2.2 Definition of an SME

Before the current Dutch financing market is analyzed, it is important to define an SME because it is a wide definition. First, it is defined what companies belong to the category ‘SME’. The opinions differ across the world but it is chosen to state the two most important definitions:

1. Since 1 January 2005 the European Commission (2005) defines SMEs as the following: “The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro” (Table 1).

Table 1: Definition of an SME by the European Commission (2005).

Category	Employees	Turnover	Balance sheet total
Medium	< 250	≤ € 50m	≤ € 43m
Small	< 50	≤ € 10m	≤ € 10m
Micro	< 10	≤ € 2m	≤ € 2m

2. Since 1 January 2016 the Dutch Chamber of Commerce defines SMEs more or less the same as the European Commission except for the fact that the balance sheet total cannot exceed €20m (Kamer van Koophandel, 2016). See Table 2.

Table 2: Definition of an SME by the Dutch Chamber of Commerce (2016).

Category	Employees	Turnover	Balance sheet total
Medium	< 250	≤ € 50m	≤ € 20m
Small	< 50	≤ € 12m	≤ € 6m
Micro	< 10	≤ € 0,7m	≤ € 0,35m

In 2015 the Central Bureau of Statistics (CBS) counted in total 1.465.405 companies in the Netherlands. 2.840 of these are companies with over 250 employees (category big companies) and 1.116.590 have one employee. This implies that 99,8% of the companies in Netherlands belong to the SME class (see Figure 2). This research however is focused on SMEs that have between 2 and 249 employees. This group consists of 348.815 firms (23,76%) in the Netherlands. The Netherlands has the most SMEs per capita in the European Union (CBS, 2015).

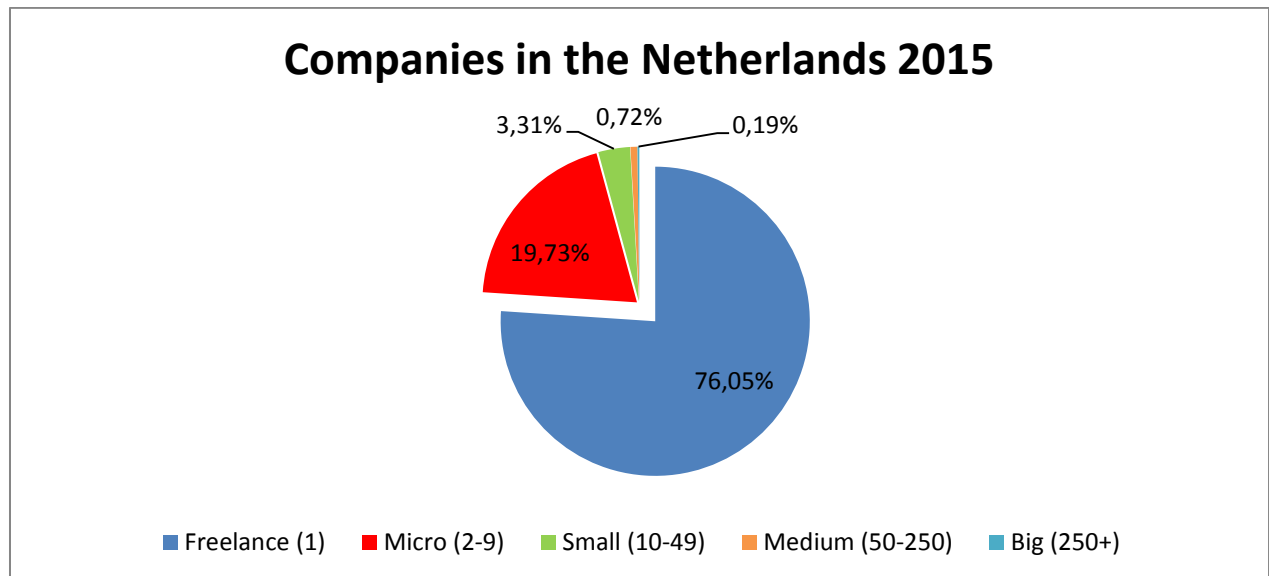


Figure 2: Companies in the Netherlands (CBS, 2015).

2.2.1 MM&C's SME clients

Each financier focuses on a segment of SMEs. When alternative financing options are researched, it is important to know which type of SMEs are clients of MM&C.

MM&C's SME clients exclude micro companies and starters. The client base is entirely formed out of the categories small and medium from Table 1 and Table 2 (Figure 2: 4,03% of the companies in the Netherlands). All clients are established for at least three years, have a track record and are all Dutch 'Besloten Vennootschappen', the equivalent of a private limited company in the U.K. or a limited liability company in the U.S.

2.3 Funding needs of SMEs

Beck & Mac an Bhaird (2013) note that SMEs are important for the contribution to employment. In 2014, the total contribution to the GDP was 64,2% (Autoriteit Consument & Markt, 2015). This percentage is not only high in absolute terms but also in comparison with other European countries

where the contribution to the GDP was on average 57,8% in 2014 (Autoriteit Consument & Markt, 2015). Degryse, de Goeij & Kappert (2010) write the following: “Small unlisted firms make up for more than 90% of all existing firms, and are the engine of growth in most economies”. It is of high importance to the Dutch economy that SMEs have good access to funding as they need funding for the execution of activities.

The average amount an SME orientates on is €300k. This varies between €100k in micro companies, €300k in small companies and €2m in medium companies (Panteia, 2016). These needs can come from investment goals (i.e. housing, machines, vehicles) or to improve working capital. For short-term financing, SMEs mainly use current accounts (Autoriteit Consument & Markt, 2015). For long-term finance mostly loans with collateral are used. External finance can be in the form of corporate bonds, loans or capital from shareholders.

Panteia (2016) states that in the period June 2015 until May 2016, 31% of the companies (approximately 100.000) with two or more people have orientated for funding. Around 80% of these companies actually applied for funding (totaling 25% of all companies with more than two employees). Companies that were profitable in 2015 have orientated more than average for obtaining finance. This also applies to companies with a more than average solvency (Panteia, 2016). It is plausible that a financially well-performing company is focused on investment and expansion. Companies with low solvency often also orientate for obtaining financing. For these companies there is a greater need for working capital (Panteia, 2016). Fast growers orientate often for obtaining financing. This is obvious because without adequate funding growth is jeopardized. Most SMEs do not apply for external financing. The main source for investing activities is still a firm's internal resources (Bentham, 2016; Sociaal-Economische Raad, 2014).

A large proportion (about 50%) of the financing needs of SMEs come from working capital (Sociaal-Economische Raad, 2014). Also Hebbink, Kruidhof & Slingenberg (2014) mention that SMEs mainly require funding for working capital.

Panteia (2016) mentions that other important funding needs are caused by housing, equipment, other fixed assets, refinancing of existing loans and acquisitions. In comparison with previous years, refinancing loans and financing investments has taken a bigger share of the total financing needs than in previous years. This can be seen by comparing earlier yearly research of Panteia dating back until 2010. This can be explained for a large part by the fact that in 2015 and 2016 the interest rates were more favorable than in prior years. The Dutch Chamber of Commerce (2015) researched the funding needs of SMEs with 2 – 50 employees and the result can be viewed in Table 3.

Table 3: Financing needs of SMEs with 2-50 employees. Multiple answers were possible in the research of the Chamber of Commerce (2015).

Type of financing need	Micro and small SMEs (2-50 employees)
Purchase of machinery, assets (incl. ICT/software)	34%
Working capital (inventories, accounts receivable, wages)	47%
Refinancing debt	23%
Marketing, internet and social media	13%
Product/service innovation or development	16%
Pre-financing large orders	17%
Improvement or change of housing	17%
Investments in process optimization and efficiency	13%
(Partial) takeover	8%
Growth in staff	10%
Export	3%

The percentages do not add up to 100 because in the survey SMEs could indicate having multiple financing needs. The research only surveyed micro and small SMEs in the Netherlands. It was not possible to find better and more reliable data on funding needs for all SME categories in the Netherlands. Nevertheless, Table 3 does provide a decent indication of the funding needs of Dutch SMEs and shows again that most of the funding is required for working capital.

Panteia (2016) researched the nature of funding applications and concluded that 91% of the actual applications were for debt finance (see Figure 3).

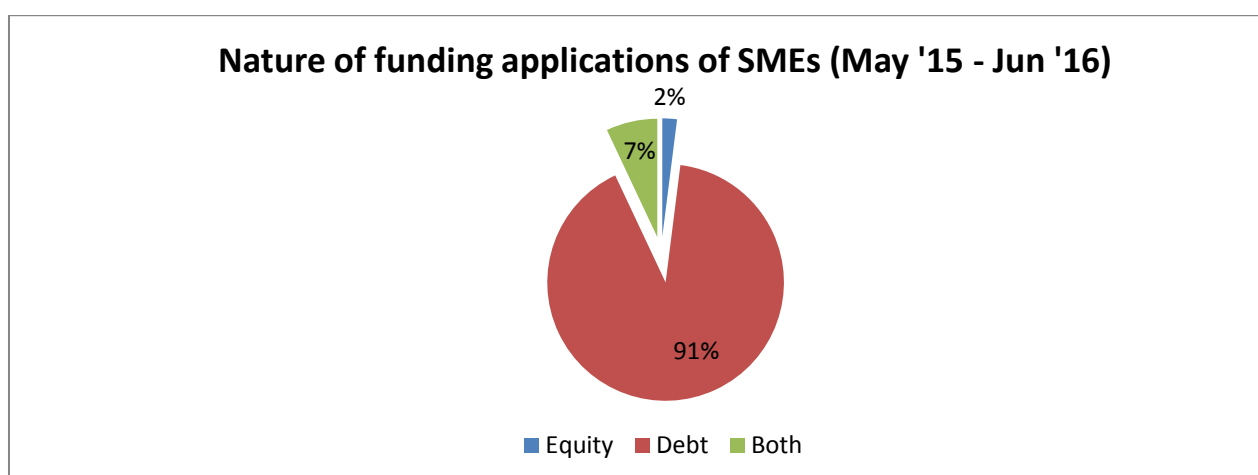


Figure 3: Nature of funding applications of SMEs (Panteia, 2016).

Together with financial consultants of MM&C and this researched section on funding needs, the tool's user input for funding needs was defined. This list is reported in section 4.2.1.1 and the user of the tool is able to choose a funding need from this list.

2.4 Current financing market in the Netherlands in numbers

The largest part of the funding of Dutch SMEs comes from the three 'big banks' namely ABN AMRO, ING and Rabobank. They have for years financed 85% of the SMEs (Autoriteit Consument & Markt, 2015). Autoriteit Consument & Markt (2015) claim there are no other banks that fund SMEs on a large scale. The smaller banks that are active however focus on a specific market segment (Triodos Bank, Deutsche Bank and Svenska Handelsbanken). Since 2008 a number of banks have been merged or taken over, for instance the takeover of Friesland Bank by the Rabobank and Fortis Bank by ABN AMRO. Furthermore, a number of banks decreased their lending activities to SMEs (Deutsche Bank) or even stopped (SNS Bank). Deutsche Bank mentioned that they abandoned part of their SME lending activities because the service model of customized loan approvals was not profitable anymore (Het Financieele Dagblad, 2016). Almost all SMEs with a loan have one at one of the three major banks, see Figure 4.

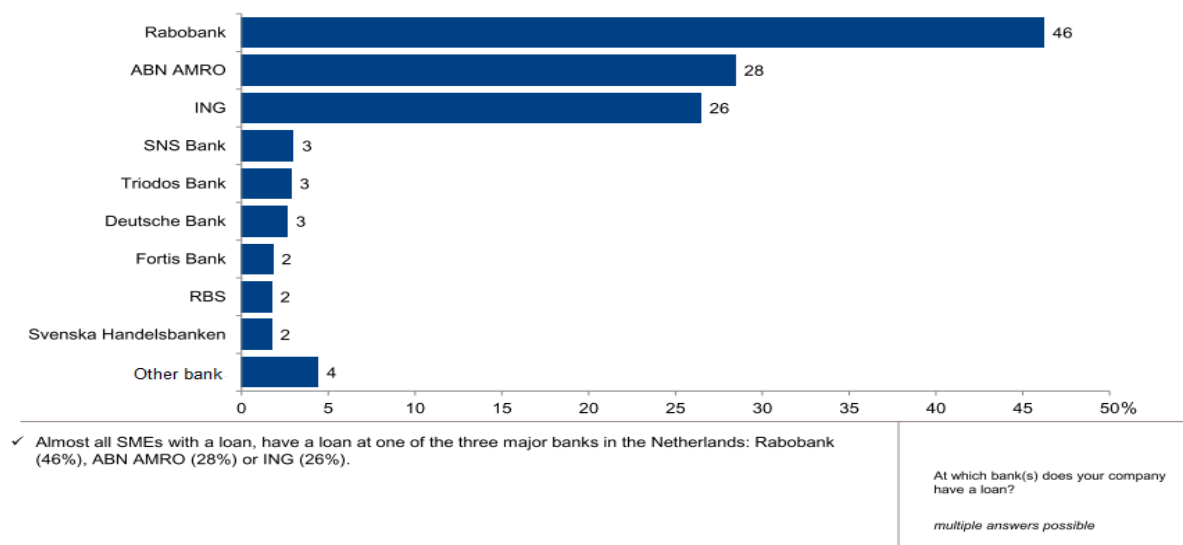


Figure 4: Survey among 509 SMEs asking at which bank SMEs have a loan outstanding (Gfk, 2014).

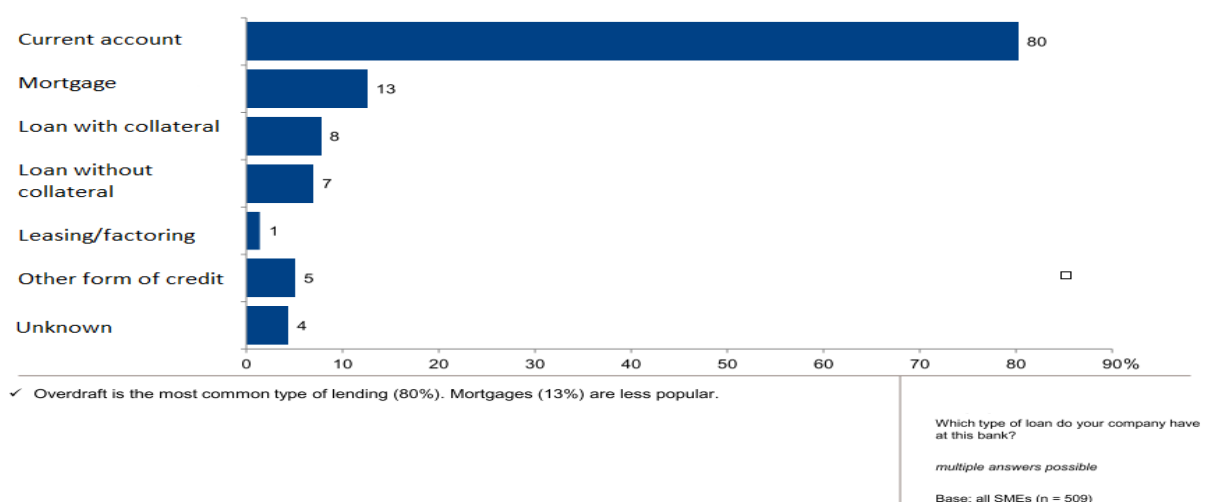


Figure 5: Survey among 509 SMEs asking what type of credit SMEs have at their particular bank (Gfk, 2014).

Despite the need for more capital, SMEs use relatively few alternatives to bank financing. The Dutch association of Banks (2016) claims 80% of SMEs are financed by banks loans and 20% by alternative ways of finance. This last group mostly consists for more than 19% out of the traditional alternatives informal investors (business angels), leasing and factoring. New alternative ways of financing (i.e. crowdfunding, credit unions, microfinancing, SME stock exchanges, institutional investment funds etc.) are responsible for less than half a percent of total SME funding (Nederlandse Vereniging van Banken, 2016).

Regarding other countries, the market for alternative financing in the Netherlands is relatively young and undeveloped (Financieel Dagblad, 2016; Wardrop et al., 2015). However, the market for alternative financing is currently growing fast.

Dutch banks had a total of €130 billion of loans issued to SMEs in 2016 (Nederlandse Vereniging van Banken, 2016). It can be seen from Figure 6 that most (85%) of the granted loans are smaller than €250k. However, these loans make up for only 9% of the volume of all loans outstanding to SMEs (Figure 7).

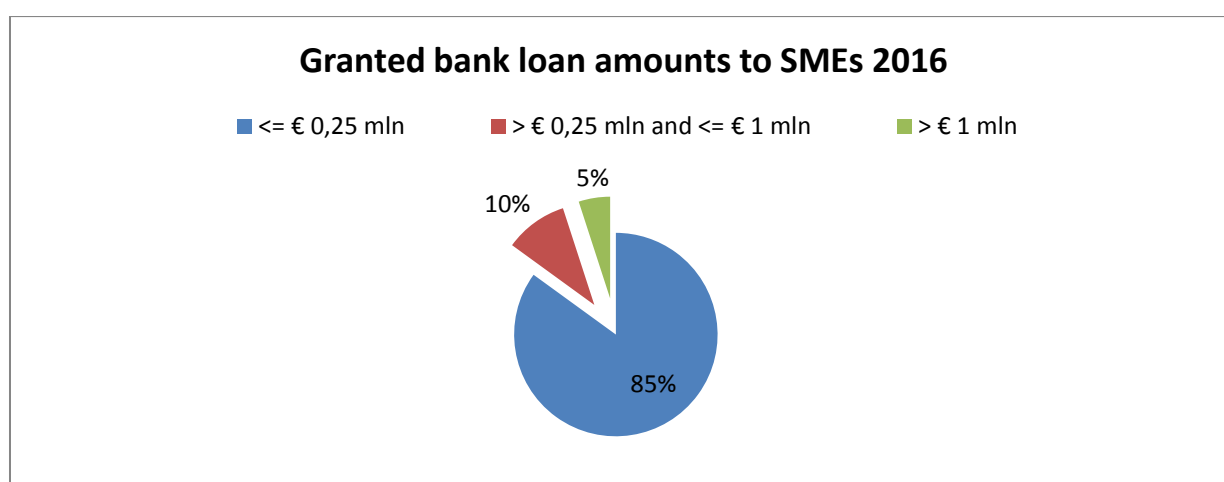


Figure 6: Bank loan amounts (De Nederlandsche Bank, 2016).

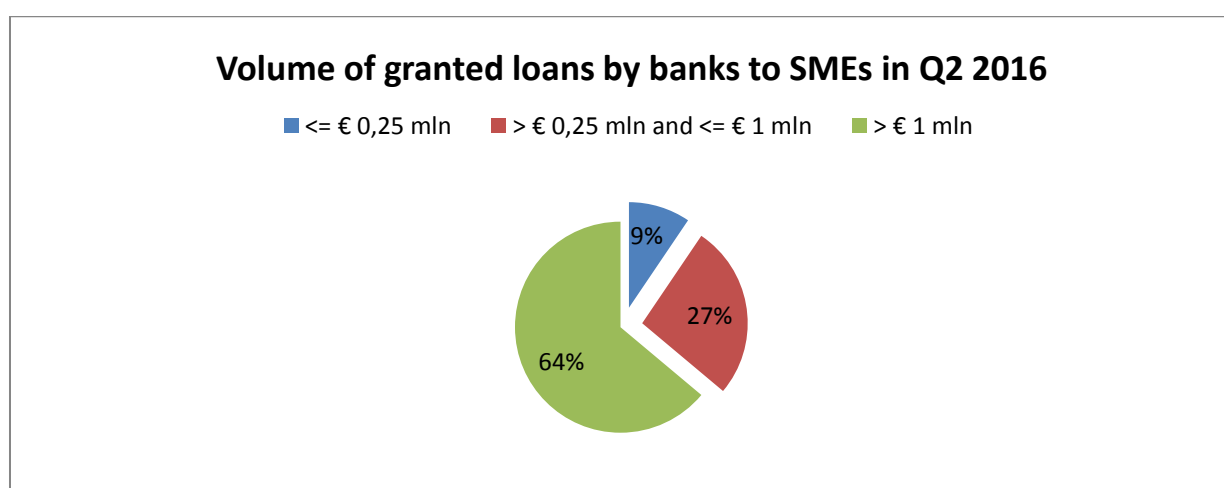


Figure 7: Volume of granted loans by Dutch banks to SMEs (De Nederlandsche Bank, 2016).

Panteia (2016) researched that 72% of SMEs that applied for funding received the full amount, 8% received part of their request and 19% of applications got rejected. The rejection rates have improved with regard to previous years. For instance in 2014, Panteia found that 38% of bank loan

applications were rejected. Big corporations are more likely to receive the funding than SMEs (Panteia, 2016). For the classes small and medium companies (Table 1 and Table 2) the success rates are higher than for micro companies. For micro companies the success rate was just 57% in the period June 2015 – May 2016 (Panteia, 2016). Henk Kamp, the Dutch Minister of Economic Affairs claims that with micro and small companies 52% of loan applications got rejected and medium companies 28% (NRC, 2016).

SMEs orientated for a total of €18 billion from June 2015 - May 2016 of which only €14 billion was actually applied for (Panteia, 2016). One can understand these numbers in the way that after first orientation talks with banks or other suppliers of capital, these SMEs already feel their plans will not have a big chance to be funded. On top of that, applying for funding requires much time. This combination can make many SMEs decide not to apply. Looking at it from a broader perspective one can conclude that € 4 billion of needed funding was already rejected before actually applying. Of the amount actually applied for, 28% got rejected fully totaling €3,92 billion (Panteia, 2016). One can therefore conclude that $€4 + €3,92 = €7,92$ billion of needed SME funding was not received in the period June 2015 – May 2016. Looking at these numbers in this way, one could conclude that a little more than half of the required funding, 56%, was actually received.

According to Panteia (2016), in general SMEs pay higher interest rates for loans than big companies because funding SMEs is riskier. Micro companies pay the highest interest rate (about 1,6% more than the average SME). Furthermore, Panteia (2016) claims that the most common reasons for rejecting funding applications are too large risk, too low solvency and a too large debt comparing to profit. 47% of the rejected companies claim that a rejection for a fund application had serious consequences for growth impediment including not being able to invest. For 1% of the rejected SMEs it meant discontinuation of the company (Panteia, 2016). The average processing time of an application for funding is seven weeks. The average processing time of an application for funding is higher than what businesses deem acceptable (Panteia, 2016).

Figure 8 composed by De Nederlandsche Bank (2016) indicates that the total amount of credit supplied by Dutch monetary financial institutions (MFIs) to all non-financial corporations in the country is decreasing since 2013. The Minister of Economic Affairs, Henk Kamp, confirms this in a letter written in December 2016 to the Dutch House of Representatives. The credit volume outstanding used to be on average €303 billion in 2013 and was on average €266 billion in 2016 (De Nederlandsche Bank, 2016). The biggest decreases are in the loans up to €250k (Hebbink, Kruidhof, & Slingenberg, 2014).

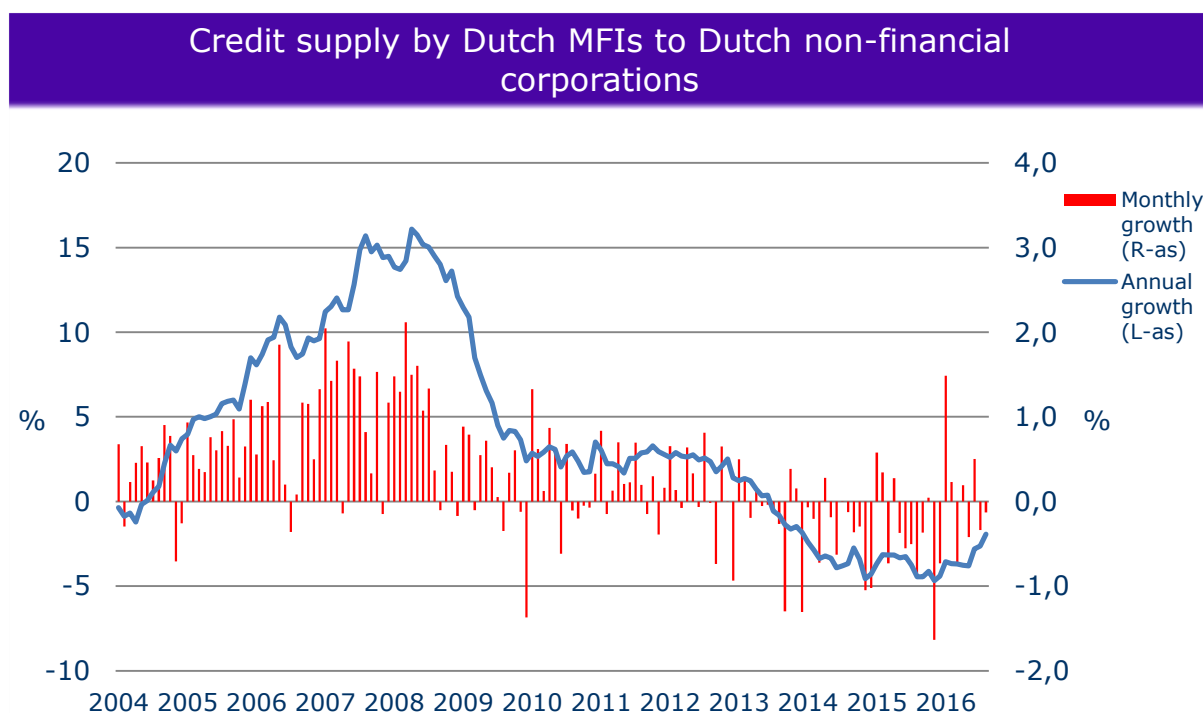


Figure 8: Growth/decline of credit supply by Dutch monetary financial institutions (De Nederlandsche Bank, 2016).

Since 2016 the demand for credit is rising again after the demand dropped between 2009 and 2015 (Centraal Plan Bureau, 2016).

10% of the SME loans are more than 90 days late with repayments and are monitored by special departments of banks for accounts that experience repayment problems (Elsevier, 2016). The percentage of problem loans is currently declining suggesting a recovery in the economy (Nederlandse Vereniging van Banken, 2016). The percentage of problem loans compared to total loans in the Netherlands is relatively low when compared with other European countries (Nederlandse Vereniging van Banken, 2016).

2.5 Difficulties in SMEs funding

Since the financial crisis, the funding landscape for SMEs changed dramatically. It is clear that before the crisis banks were less critical towards loan applications and it was much easier for SMEs to get funding (McKinsey & Company, 2014). Practically all the media and academic articles after 2009 relating to SME funding mention that funding for SMEs became more difficult since the economic crisis. Holton, Lawless & McCann (2013) proved that banks increase credit conditions when the economy is weak. This section examines how these difficulties are caused.

Many academic articles mention SMEs as the group who appears to have great difficulty acquiring financial means in the post-crisis time through traditional bank lending (Artola and Genre, 2011; Casey and Toole, 2014; Mac an Bhaird, 2013; Paulet, Parnaudeau and Abdessemed, 2014). This causes a measured negative effect on a firm's investing activities (Artola and Genre, 2011; Behr, Norden and Noth, 2013; Mamica and Tridico, 2014).

Wehinger (2014) mentions that European SMEs have been affected more by the crisis than American ones. He also claims SMEs suffered a double blow since the crisis: on the one hand an important decrease of demand of goods and services and on the other hand a tightening of credit conditions.

Also McKinsey & Company (2014) confirms this. Wehinger (2014) claims SMEs are in general more vulnerable in times of crises than big corporations for the following reasons: they are less diversified, have difficulties downsizing activities as they are already small, have weaker financial structures, little or no credit ratings and have fewer financing options. Mills (2014) confirms this. SMEs have less buffer capacity, lower profit and reduced value of collateral since the crisis (Hebbink, Kruidhof, & Slingenberg, 2014). At last SMEs are often dependent on one main shareholder which is the engine of the organization, making it more risky by definition. Large corporations are on average less risky, have lower operational costs and have a better negotiation position. They therefore pay a lower interest than SMEs (Autoriteit Consument & Markt, 2015).

According to Commissie Hoek (2013) the reduction in outstanding loans can on one hand be explained by a decline in demand for funding of SMEs since the crisis. In a situation of economic stagnation the demand for working capital, assets, housing and investment decreases. According to Nederlandse Vereniging van Banken (2016), the decreased domestic consumption and lower growth expectations reduced demand for financing. Combined with the reduced risk appetite of banks, this translated into a decrease in loan volume outstanding since 2013 as can be seen in Figure 8. The demand for credit however (after a long time of decreasing demand) is rising since 2016 while the acceptance criteria have not become milder, if not, more strict (Centraal Plan Bureau, 2016).

According to McKinsey & Company (2014), the number of problem loans has increased in the period of 2008-2013 by at least four times. Currently, the number of problem loans is 10% of the total loans issued (Elsevier, 2016). Money which is lent out cannot be reinvested (NRC, 2016). This forced banks to tighten lending conditions. According to McKinsey and Company (2014), banks admit they have too easily issued loans before the crisis. Furthermore, they claim that lending to SMEs by itself has become a low-profit business. Monitoring and information costs are high and for relatively small loans a lot of costly time is spent on the credit approval phase. The costs for risk judgment and other handling costs are independent of the size of the loans (Kamp, 2016). On top of that, SMEs are frequently non-transparent making them more costly to judge (Baalhuis, 2011). Kamp (2016) states in his letter to the Dutch House of Representatives that the most important reason for the decrease in the supply of funding is the stricter acceptance criteria of banks. According to him, mainly earning capacity, the size of the firm, healthy cash flow and solvency figures are key for successfully attracting funding.

In addition, McKinsey and Company (2014) note that increased capital requirements (Basel II and III) made it even less attractive for banks in general to provide loans to the relatively risky SMEs. For loans to small companies a bank needs to reserve 6-14% capital (McKinsey & Company, 2014). In relation to the high cost of administration of the loans, the yields are relatively low. Goverde (2016) explains Basel II and III as “an international framework for liquidity risk measurement, standards and monitoring for the banking sector. The objective of the reforms is to improve the banking sector’s ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the real economy. During the economic crisis, many banks were holding insufficient liquidity buffers and were not able to cope with credit losses. The weaknesses in the banking sector were exposed to the financial system and real economy and resulted in a massive contraction of liquidity and credit availability”.

Because of Basel II and III banks have to finance every loan with a minimum required amount of equity. This means that banks are limited in their capacity to supply loans because of the equity

restrictions. For riskier types of lending, such as SME lending, Basel III now requires banks to hold additional capital. Dutch banks are forced to improve their capital ratios and there are three ways of doing that: retain earnings (1), raise new equity (2) or reducing the balance sheet total (3) (Het Financieele Dagblad, 2016). Raising new equity is extremely costly (and even impossible for the major bank Rabobank due to their cooperative structure). Banks therefore decide to shorten their balance sheet total which implies a cut in credit supply (Sociaal-Economische Raad, 2014).

De Nederlandsche Bank and Centraal Plan Bureau state that Basel III will have severe implications for SME lending, especially because Dutch banks decide to process these standards even earlier than 2019 (Sociaal-Economische Raad, 2014). Basel III also requires banks to hold additional capital for unused overdraft limits and working capital financing. Healthy SMEs (which deserve a lot lower risk weight) are automatically at disadvantage. These higher risk weights will soon lead to a reduction in lending, either in volume or by the price of credit. All in all, the new regulations of Basel III will provide less room for SME lending and plans for Basel IV imply even more stringent capital requirements (ICAEW, 2017). Mainly SMEs with funding needs smaller than €250k will experience trouble in the future because profits for banks will be too low or negative (Sociaal-Economische Raad, 2014). A report of BNP Paribas is showing that economic growth is already and will be even more limited due to the shortage of SME credit supply by banks (NRC, 2016).

Mr. J. Koelewijn, professor of corporate finance at Nyenrode Business School states in Het Financieele Dagblad (2017) that SMEs are 'suffering' from the tightening credit conditions of banks. Banks are filling up their balance sheets with safe mortgages resulting in less money being available to finance companies, especially SMEs. He also mentions that lots of SMEs in the Netherlands have too low solvency which causes banks to restrain from financing. The demand for risk capital therefore is emerging but banks generally do not supply this. Alternative financiers will have to fill this gap up. Minister Kamp (2016) of Economic Affairs makes it also clear that there is a growing need of risk capital for SMEs and that it is currently hard for SMEs to get access to alternative financing options. The reason for this is that the knowledge about these financiers is lacking among businesses. Also, the distribution function of these new alternatives form a bottleneck. Generally, there is capital from alternative financiers available and there is plenty of demand from SMEs as well. However it is difficult for the suppliers and customers to find each other.

Furthermore, Benthem (2016) states that the cost of capital of alternative finance is perceived as high in contrast to traditional financing (whether this is true or not) and is perceived as rather an option for constrained companies. He concludes that alternative finance organizations are troubled with image and trust complications resulting in them being overlooked by SMEs. Ecorys (2016) mentions that entrepreneurs are having difficulties finding the right funding party because of the abundance of new alternatives. Benthem (2016) states that alternative finance can be a solution for the current SME financing complication.

Concluding, this section described the difficulties on the financial market for SMEs in the Netherlands and its reasons. The need for other financing options is evident. The main problem is that these alternatives are relatively unknown to SMEs. This problem was described by previous references and is reported frequently in recent newspaper articles of 'Het Financieele Dagblad'. Therefore in the following chapter the alternative financing options are researched and described.

3 Alternative financing options

In this chapter, the alternative financing options which are available to Dutch SMEs are discussed. It is assumed that the traditional financing activities of banks are well known to a reader of this thesis and are only shortly elaborated. It is chosen to elaborate first on traditional alternative financing options and subsequently on new alternatives (since the '07-'08 financial crisis) which are suitable for MM&C's SME clients. New financing options which are suitable for SMEs in general but not for MM&C clients are listed in section 3.4. It is discussed why these are not suitable for MM&C's clients because these arguments are also regarded as added value to the research.

As mentioned in section 2.2.1, MM&C has no starting SME clients (<3 years lifetime). All clients are established enterprises with long track records. MM&C provides mainly funding for their SME clients starting at €500k up until €5m. Most financing options which are mentioned are ones that supply funding in this range. However, some financing options available fund significantly smaller amounts. The ones which finance up until €250k are still chosen to be included in the list because they can form part of a total funding solution consisting of multiple financiers.

3.1 Literature methodology

It was preferable to use most recent academic and professional literature because rapid developments in alternative financing options make literature about this topic fairly quickly outdated. As several financing alternatives exist since long before the crisis, pre-financial crisis academic papers, professional literature and government reports have also been used. Websites and books were used as well. Only academic papers until 2009 with an above average number of citations were used and all relevant academic papers from 2010 on the topic of alternative financing were used. In practice mainly recent (2013-2016) professional literature and research commissioned by the Dutch government were used. It was discovered that academic literature is lagging behind regarding the current developments on the Dutch financing market.

3.2 Visits to alternative finance seminars and fairs

The literature about alternative financing that was used did provide useful information but did not supply enough details and exact information about how these alternative financiers operate and what their conditions are. It was therefore decided to visit four events which all had a plenary session and a fair with alternative financiers present. These visits made it possible to properly investigate these financiers by consulting representatives of these institutions. A great deal of the information about these new financiers in the following section and how they operate come from noted conversations with these representatives. Statements of these representatives were as far as possible verified with literature and discussed with experienced financial experts of MM&C. Also professional literature could be verified with practice this way. The following events (translated from Dutch to English) were visited and described in the following order: date, event title, organizer and location.

- 29-09-2016: "Day of the new funding", Rabobank, Tilburg;
- 05-10-2016: "Alternative finance", Municipality of Almere, Almere;
- 15-11-2016: "New funding event", KroeseWevers Accountants, Enschede;
- 29-11-2016: "Special Financing", Synpact and MKB Nederland, Utrecht.

3.3 Suitable traditional and alternative financing options for MM&C and their characteristics.

First, the traditional (and traditional alternative) financing options are described and subsequently the newly emerged alternatives. A list of names of each financing option is listed in the tool.

3.3.1 Banks (traditional)

MM&C's experience is that secured loans from banks are a low-cost source of financing (3-6 % interest). Current accounts supplied by banks are particularly interesting when a business needs working capital or if the business experiences strong seasonal fluctuations (De Hooge Waerder, 2017). Current accounts are generally more expensive than regular loans because there is no fixed repayment scheme (De Hooge Waerder, 2017). Huijgens (2016), Het Financieele Dagblad (2016) and MM&C note that banks mostly fund firms starting at €250k.

One notable initiative named Rabo&Co started was started in May 2016 by a major bank in the Netherlands, Rabobank. The idea of Rabo&Co is to issue loans to SMEs which are for 50% supplied by wealthy private investors who are looking for higher gains on their capital (Het Financieele Dagblad, 2016). When the Rabobank wants to lend to an SME but cannot fully provide the loan because of either Basel capital restrictions or the risk, half of the loan can be provided by a private investor. In this way the bank can still fulfill its core function, namely judging loan applications and lending money but now without having to state too many loans on their balance sheet. With this initiative, the Rabobank banks can provide loans to SMEs they could otherwise not have. On top of that, unused liquid assets from investors can be invested in the Dutch economy. Private investors will pay a premium (1%) to the Rabobank for their credit approval process and their monitoring function (Elsevier, 2016). Interest rates are around 3% to 8% and it is an online platform (Het Financieele Dagblad, 2016). Investors have to take part with at least €100k, implying loans amounts for SMEs start at €200k. It is a 50-50 cooperation between the bank and the private investor implying the risks are shared as well.

3.3.2 Funding from non-financial institutions (traditional alternatives)

3.3.2.1 Informal investors

S. Dolmans (2015) explains informal investors as wealthy individuals aiming to invest equity in companies in order to make a profit. A subcategory of informal investors are so-called business angels, who are closely involved with the company in which they invest. The advantage is that they often bring their own network and knowledge on top of the fact that SMEs have an important ambassador. This involvement can also be a disadvantage: often investors want control because they own shares in the company. Investments are usually in the range of €25k - €250k. Investors look for high growth, scalable business models and a strong business forecast keeping in mind an exit strategy in the long-term (3-5 years). Business angels usually invest in the starting or high growth phase of the business and often prefer to invest in their region of residence or with people they know (S. Dolmans, 2015). Business angels also can supply risk capital in the form of subordinated loans (Matchinvest, 2016).

It is also possible that managers of a business can supply equity finance in return for partial ownership of the firm. It is chosen not to define this type of finance as management buy-outs or buy-ins (MBO or MBI) because an MBO or MBI implies taking over a large part or the entire business. MBOs and MBIs are only practiced when businesses are being sold. Wanting to sell a business cannot

be regarded as a financing need. If a manager wants to fund a business by buying part of the company's shares, he or she can be seen as informal investor.

3.3.2.2 Supplier credit

If a business's current creditor days are low (i.e. 15-45 days), it can consider asking their suppliers for a longer payment period (i.e. 90 days). This is a costless way to raise working capital (no interest), however it can result in missing out on discounts terms provided by suppliers when paying on short notice.

3.3.2.3 Vendor loan

When a business wants to purchase expensive assets and can only pay a part of the purchasing price immediately, it can arrange a loan from the vendor for the remaining price of the asset. This is a relatively low-cost type of loan and often vendors offer to finance part of the price of the asset in order to make more sales. This type of finance is also suitable for acquisitions whereby the prior owner supplies a loan for part of the acquisition price to the buyer.

3.3.3 Leasing (traditional alternative)

Leasing is a traditional alternative for financing and widely used by companies nowadays. There are two types of leasing: financial and operational lease. In the case of financial lease, the lessee is (or will be) the owner of the object being financed and the asset will therefore appear on the balance sheet. With operational lease, the lessor remains owner (and thus is responsible for functioning) of the asset which does not appear on the balance sheet. Therefore operational lease can be compared with rent. A firm with low solvency can use operational leasing (in contrast with buying an asset) to influence financial ratios positively (Huijgens, 2016). Leasing is suitable for funding assets such as machines or vehicles and does not need to be expensive from MM&C's experience. Lease institutions are specialized in knowledge on the value of their assets over time which serves as collateral. Leasing is provided by banks or specialized lease institutions.

3.3.4 Factoring (traditional alternative)

Factoring is a traditional financing alternative and is together with leasing the most used alternative to conventional bank loans (Nederlandse Vereniging van Banken, 2016). Factoring is used often in combination with bank loans. Goverde (2016) states in her research the following definition of factoring: "factoring account receivables is an economic decision whereby a specialized firm assumes the responsibility for the administration and control of a company's debtor portfolio. It is a method for raising short-term capital in exchange of selling trade debts at a discount, or for a prescribed fee and interest. The customer of the client firm becomes the debtor of the factor and thus, has to pay the factor directly".

It can be helpful by solving cash-flow problems of a business as companies in the Netherlands pay on average after 54 days (Het Financieele Dagblad, 2016). Before financing a client, a factor will first check the creditworthiness of their client's debtors. Based on this, from MM&C's experience the factor will finance a certain percentage (60% - 90%) of the client's debtor portfolio. Clients are not able to select which debtors to factor. In the case that 90% of the invoices are factored, it is often required for the firm to have trade credit insurances. Factoring has benefits especially for companies which have late accounts receivable and therefore suffering from cash flow problems. Factoring is suitable for growing firms because the funding grows along with the size of the debtor's portfolio (Nationale Financierings Wijzer, 2016). The costs of factoring is dependent on the risk profile of the clients' debtors, the total amount of turnover, the financial situation of the company and the debtor

collection period. The costs of factoring are on average between 3% and 6% of the turnover of the invoices and higher for non-recourse factoring (appendix II). Factors are mainly banks or separate factoring institutions.

3.3.5 Private Equity Firms (traditional alternative)

A private equity firm is an organized group of informal investors investing in a company. They provide capital in exchange for shares of the company and (temporary) co-owner rights (Ondernemersplein, 2016). In some cases private equity firms provide subordinated loans although this is not their core activity (Huijgens, 2016). Also fast growing startups belong to this group. In this case it is called venture capital. Because MM&C does not have starting SMEs as clients, it is decided to not go into further detail on venture capital firms.

Often private equity firms are specialized in company life phases or industry branches. Minimum investments for private equity firms start at €1m (Ondernemersplein, 2016). Cooperation with a private equity firm mostly lasts no longer than five years (NVP, 2016). Huijgens (2016) claims that private equity firms cooperate with a firm for 4-7 years. The NVP (2016) states that the most common reason for using private equity finance are: growth by internationalization, acquisitions, changing financing structures of firms, financing IPOs or taking companies of the stock exchange. Cooperation with a private equity firm not only supplies funding but also specific knowledge and network (Nationale Financierings Wijzer, 2016).

Since 1981 the first private equity firm started operating in the Netherlands (Huijgens, 2016). About 1400 companies in the Netherlands are financed by private equity firms and in 2015 private equity firms invested €3,3 billion in 348 companies (NVP, 2016). 83% of the private equity finance is invested in SMEs but mainly for medium sized companies. 87% of the investments were smaller than €5m (NVP, 2016). Private equity firms are only interested in big investments with potentially high gains when exiting and selling their stock. 70 private equity firms are active in the Netherlands (Ondernemersplein, 2016).

3.3.6 Individual invoice factoring (new alternative)

Online individual invoice factoring institutions comprehend the same idea of factoring but the only difference is that individual invoices are sold to the factoring company. Some individual invoice factors match to-be-sold invoices with individual investors, creating a marketplace where SMEs with invoices can sell to investors. To estimate the risk, these factoring companies mostly use machine learning and big data (Het Financieel Dagblad, 2016). The price is about the same as described in the previous description of conventional factoring. Individual invoices are not factored by banks.

3.3.7 Regional Development Companies (new alternative)

All Dutch provinces have their own private equity firms meant for financing companies in the region. Their goal is to strengthen the regional economy. Funding supplied by regional development companies (RDCs) is in the form of risk capital, so either subordinated loans or equity finance (Ondernemersplein, 2016). The specific goals of RDCs differ per region but it is mainly for promoting risky innovation and development of SMEs (innovative product and services), enhancing employment opportunities, restructuring deteriorated business parks, inviting foreign companies to settle in the Netherlands and prevent Dutch companies from moving abroad (Ondernemersplein, 2016). A regional development company can be a suitable source of finance, especially for companies with high-risk profile (Nationale Financierings Wijzer, 2016). The RDCs see it as their task to invest in risky companies with high potential because private parties often find it too risky to invest in. In 2016 all

RDCs combined had €320m available for investing (Het Financieele Dagblad, 2016). RDCs offer expertise and provide finance for both startups and established companies which have innovation, expansion or acquisition plans (Ecorys, 2016). More than half of the funding in the Netherlands for innovative startups is supplied by RDCs (NVP, 2016).

It is difficult to compare different RDCs because they differ in size and each one's capacity to finance is dependent on what the government supplies (Ecorys, 2016). Five RDCs are partly owned and subsidized by the Dutch Ministry of Economic Affairs and these are therefore the ones with the largest investment capacity. These are named in the following list together with their finance capacity and provinces they operate in.

- LIOF (€102,3m, Limburg);
- Brabantse Ontwikkelingsmaatschappij (BOM) (€86,3m, Noord-Brabant);
- Oost N.V. (€64,5m, Gelderland, Overijssel);
- Noordelijke Ontwikkelingsmaatschappij (NOM) (€39,1m, Friesland, Groningen, Drenthe);
- Innovation Quarter (€20,0m, Zuid-Holland).

Each of these five RDCs focus their funding on particular industry branches which are related to the regional economic policies of their provinces (Ecorys, 2016). The remaining RDCs (OMFL Flevoland, NHN Noord-Holland, Impuls Zeeland, OMU Utrecht) have significantly less resources (range €1-10m) as they are not supported by the Ministry (Ecorys, 2016). In the tool these latter RDCs can still appear in the funding proposal, however the user must note a small chance of funding from these non-government supported RDCs.

The maximum amount an RDC can invest in a single SME is €2,5m (Het Financieele Dagblad, 2016). RDCs start investing at €100k, making it lower than the minimum of private equity firms because RDCs also finance innovative starters (NVP, 2016).

3.3.8 Institutional Investment funds (new alternative)

In the Netherlands exist several investment funds that enable institutional investors like pension funds and insurance companies to invest directly into Dutch SMEs. For pension funds and insurance companies individual investments in SMEs are too small, costly and time-consuming. They prefer bundling their money into one investment fund that invests it for them in SMEs. Several institutional investment fund credit managers which finance SMEs are Neos, FundIQ and the Subordinated Loan Fund (ALF).

Neos provides loans (and subordinated loans) between €250k and €10m with a maximum duration of 7 years (Neos, 2016). Often a loan of Neos will be part of a total funding solution in cooperation with a bank where Neos receives underprivileged collateral rights. FundIQ is also an investment fund which manages capital from wealthy individuals and provides fully subordinated loans in the range of €250k - €2,5m for a maximum of 6 years (FundIQ, 2016).

ALF invests only in subordinated loans to Dutch SMEs in combination with bank loans (Aegon Asset Management, 2016). The idea is that an SME applies for a loan at a bank and in the case the bank judges the loan too risky for the full amount, the bank can cooperate with the ALF (subordinated loan) to fully finance the SME. Mostly the SME needs to attend this possibility at the bank. It is a 50-50 cooperation. To encourage economic growth, the Dutch Government guarantees 50% of the losses on the principal amount of the subordinated loans of the ALF to its institutional investors. ALF loans range from €150k - €5m with a duration of maximum eight years and the SME needs to be

existent for at least three years. This implies that the funding need should be at least €300k and at the utmost €10m (Aegon Asset Management, 2016).

A subordinated loan issued by these institutional investment funds make it easier for banks to finance an SME afterwards because these loans increase the SME's solvency (a subordinated loan can be seen as owners' equity). SMEs are often in the core healthy companies but have too little collateral or equity to provide security for the bank. Funds investing in subordinated loans are only getting paid back when the bank (or sometimes even after all creditors) has been paid back. These loans are riskier and result in higher interest rates (10+%) than the bank. However combining a high interest subordinated loan with a normal low-interest bank loan can still result in decent costs. Institutional investment funds are becoming increasingly interesting for pension funds, insurance companies and wealthy individuals to invest in because in 2015 they have made striking low (and even negative) returns since the European Central Bank lowered interest rates (Het Financieele Dagblad, 2016). Het Financieele Dagblad (2016) also note that experts expect returns for pension funds to be structurally lower in the coming years and they search other investments opportunities (for instance these investment funds) in order to fulfill their future payment obligations.

3.3.9 SMEs stock exchange (new alternative)

NPEX is an online stock exchange in the Netherlands that focuses specifically on SMEs with growth plans. Companies can issue shares or issue bonds through this platform. Contrary to the normal stock exchange (i.e. Euronext), shares and bonds of SMEs are not exchanged as rapidly. Companies can attract capital from investors at a minimum amount of €500k either via issuing shares or bonds (NPEX, 2016). A listing is relatively expensive if the SME needs less than €1m as the preparations are time-consuming (Huijgens, 2016). An SME that wants to participate must be existent for at least three years and have been profitable for at least one year. Furthermore, a firm wanting to go to the stock exchange must be stable and have a solid track record. The SME stock exchanges focus on companies that are looking for growth capital amounting between € 500k and € 10m (Ondernemersplein, 2016). NPEX standardized its processes so that companies can be listed faster and cheaper than a regular exchange. The costs for being listed consist of a single listing fee and a fixed annual fee together with a premium for the number of investors in the company (NPEX, 2016). Partly funding an SME with equity via this stock exchange can make it more interesting for banks to provide loans. On the NPEX website there are currently 28 listings listed which partly consists of investment funds as well. The total amount of tradable assets on the NPEX exchange was €474m on 16-3-2017 (NPEX, 2016). Alternatives for NPEX are Enternext, a European orientated SME Stock Exchange which has in total 750 listings in the Netherlands, Belgium, France and Portugal. A disadvantage of a stock exchange for an SME is the mandatory information duty (i.e. public yearly and half yearly financial statements) and the lengthy process prior to listing.

3.3.10 Crowdfunding (new alternative)

Baardwijk (2014) gives the following definition of crowdfunding: "the process where a two-sided market is formed by a request from entrepreneurs to a relatively large number of investors ('the crowd') to provide relative low investments amounts each for funding in exchange for a form of value, generally supported by a web-based platform". A total of 140 crowdfunding platforms are active of which only 10 are responsible for 99% of the market volume in the Netherlands (BNR, 2016). In 2015 businesses have been crowdfunded for a total of €128m (Nederlandse Vereniging van Banken, 2016). This is more than double the amount in 2014. Crowdfunding seems to be growing

fast; only in the first half of 2016 businesses have already been crowdfunded for €86m already (Nederlandse Vereniging van Banken, 2016). Each crowdfunding platform differs in target audience and method. Some platforms focus on a niche and specialize in for instance only sustainable businesses, like One Planet Crowd.

Spotcap (2016) discusses that a successful campaign can provide a lot of exposure and is fairly accessible to start. Furthermore, it is tested right away if there is a demand in the public for the product or service. Disadvantages are that crowdfunding campaigns do not always get the desired amount (all or nothing principle), the entire process could take months and starting a campaign can be time-consuming. Moreover, the high degree of visibility could also have adverse effects and most often entrepreneurs are held personally liable because crowdfunding platforms do not have licenses to pledge.

Having talked to multiple account managers of crowdfunding platforms, it can be concluded that loans of more than €250k rarely occur. On average businesses had been crowdfunded for €90k (Nederlandse Vereniging van Banken, 2016). Occasionally it occurs that a loan in the range of €1m has been issued but this is rarely the case in the Netherlands. Furthermore, crowdfunding platforms mostly accept businesses that have at least a 2-3 year track record, unless it is an exceptionally good business plan. Lending is the most dominant form of crowdfunding which needs to be paid back in a period of 4-5 years on most crowdfunding platforms. Crowdfunding also can take place in the form of donations, rewards or equity (S. Dolmans, 2015). In the case of equity financing the advantage is that the owner does not lose a lot of power over the business as opposed to private equity firms or informal investors. Representatives from crowdfunding agencies disclose that interest rates on loans vary from project to project but are in general slightly higher (average 8%) than bank loans. Funded companies however also have to pay a percentage commission (usually about 2% of the loan) and a €500 fee when being actually listed on the platform.

It is decided to include crowdfunding as a financing option for clients of MM&C because a loan from a crowdfunding campaign of €250k can be part of a total funding solution.

3.3.11 Online credit suppliers (new alternative)

Spotcap is an online supplier of credit, mainly for the purpose of supplying working capital. By using data and algorithms in combination with investing knowledge this firm can quickly decide (1-2 days) whether a company qualifies for a loan. In contrast to banks wherein the average application takes seven weeks to get a decision (Panteia, 2016). Spotcap issues loans ranging from € 10k - € 250k and it can be chosen to repay in a period of 3 - 15 months (Spotcap, 2016). No collateral is required. Interest rates are about 10-12% for a one year loan (Spotcap, 2016). Lendico is another online credit supplier operating in a similar way but supplies loans for multiple purposes up to 5 years as well (Lendico, 2017). Because Spotcap and Lendico each finance a maximum of €250k, it can still be used for MM&C's clients when combining it with other sources of finance as well.

3.3.12 Government

In total the Dutch government provides around 2600 types of guarantee schemes, loans and subsidies on regional, national and European level (Rijksdienst voor Ondernemend Nederland, 2016).

3.3.12.1 Government Guarantee schemes

Nationale Financieringswijzer (2016) and Kamp (2016) note that through various arrangements the Dutch government wants to stimulate growth of SMEs. The most important ones suitable for

MM&C's clients are the SME Guarantee arrangement (BMKB) and Growth Facility (GF) arrangement. With the BMKB arrangement, the Dutch Government secures (not supply) a maximum of 50% on the total loan issued by a bank in the case an SME defaults. The bank can make use of the BMKB arrangement if it decides that the loan is too risky or if there are not enough securities available. The BMKB is the most widely used guarantee scheme and exists since 1915, however not all SMEs know it exists. The government can guarantee the bank to cover a maximum loss of €1,5m on a total loan of €3m provided by the bank (Rijksdienst voor Ondernemend Nederland, 2016). To make use of this scheme, the SME has to pay the government 4,8% premium on the amount that the government secures (Rijksdienst voor Ondernemend Nederland, 2016). It is often the case that the SME needs to attend the bank of the BMKB arrangement if the bank is reluctant to supply the full amount of a loan. The BMKB guarantee makes it possible for SMEs to receive the full loan in the case banks deem the SME too risky.

The same idea goes for the Growth Facility arrangement. The only difference is that the Government backs up a maximum of 50% of the risk capital (share capital or subordinated loans) invested in an SME by a private equity firm or an issuer of subordinated loans.

Another government initiative is the Innovation fund SME+ (Innovatiefonds MKB+). SMEs with risky innovative projects (max 5 years) can apply for these loans. The government is willing to partly finance (25-45% of the costs) risky fast growing projects as they are often too risky for banks (NRC, 2014). Innovative projects include substantial technical risks and therefore financial risk. Both starting and established SMEs can utilize this facility. NRC (2014) notes that these loans are only provided if at least half of the total loan amount is supplied by another party. The innovation fund SME+ will finance a minimum of €150k and a maximum of €10m on a project (7-10% interest rate) and if the project fails the loans is exempted from being repaid (Rijksdienst voor Ondernemend Nederland, 2016). There are also other funds that the Dutch government provides which are not suitable for MM&C's clients such as the fund for upcoming markets for SME that are willing to invest in developing countries and the seed capital fund which supplies equity finance for innovative starting businesses.

3.3.12.2 Subsidies

A subsidy is a temporary or permanent grant supplied by the government for activities which are of general interest and cannot be carried out by the government but it does want to encourage. There are hundreds of grants available which are mainly suitable for specific sectors or for firms that are highly innovative and are engaged in research and development. Businesses frequently complain about the fact that it is hard to find the suitable subsidies in this 'jungle'. In order to get a shortlist of the available subsidies relevant for a particular financing need of an SME, the website 'www.open4b.nl/almerebus' is able to filter the suitable available subsidies.

3.4 Alternative financing options unsuitable for MM&C

3.4.1 Credit Unions (new alternative)

A credit union is a non-profit cooperation between entrepreneurs from the same sector, profession or region, which lend each other money. Wealthy members make money available to fellow entrepreneurs which is then allocated by the credit union board to entrepreneurs. The starting point for the credit union is to provide coaching to fellow entrepreneurs to whom money is lent. Credit unions are suitable for companies with a relatively low risk until €250k which need long or short-term

loans (De Hooge Waerder, 2017). Financing investments exceeding €250k can be possible when credit unions work together with other sources of financing (Nationale Financierings Wijzer, 2016). A disadvantage of credit unions is that it is only accessible when the SME is part of a specific region, industry or profession. This also means that the available capital is dependent on the wealth of the members of the union. The goal is to improve the community and not necessarily make profits. Profits are used to fund other projects or part of it is shared among members. Borrowing money via a credit union is often cheaper than at a bank and SMEs have better access to specialized knowledge. Both borrowers and lenders are co-owners of the credit union.

Although credit unions finance projects until €250k and could be part of a funding combination, the reason for not including credit unions as suitable financiers for MM&C's clients is because the decision process within credit unions is too slow. Representatives of credit unions mention that it is often the case that there is not a central amount deposited and being managed by one credit committee. Instead, every member investor who is willing to invest a part of the amount will decide for themselves. This results in a lengthy decision process. Furthermore, the Dutch Minister of Economic Affairs H. Kamp (2016) states that financing capacity of credit unions is limited, although there is abundant interest in developing credit unions. Only €4,6m has been used by ten credit unions to finance SMEs in the Netherlands (Kamp, 2016). It must be noted that it is unclear from this source in exactly which time period is referred to. No other sources were found with more accurate data on the financing volume of credit unions. Nevertheless, it can be concluded from this source that their financing capacity is indeed limited. Huijgens (2016) notes there are few credit unions that are actually active. Many however are in preparation. Huijgens (2016) expects that credit unions will be able to finance more than €250k in the near future.

3.4.2 Microfinancing (new alternative)

Starting and established entrepreneurs who need maximum €250k for setting up or expanding their business can make use of microfinancing. MKB service desk (2016) notes that Qredits is the only micro financier (loans up to €50k) in the Netherlands for starting businesses. Qredits is a non-profit organization and was introduced by the Dutch government. Qredits offers beside 'microcredit' also 'SME credit' (MKBservicedesk, 2016). Qredits (2016) states that microcredits are loans up to €50k mainly meant for starting entrepreneurs. Interest rates start at 9,75% per year. Kerste & Weda (2016) mention that since the start of Qredits until July 2015 a total of €98,5m microcredit has been issued. 'SME credit' is a loan from € 50k - € 250k and are meant mainly for starting entrepreneurs as well. Interest rates start at 8,75%. It is also possible to receive subordinated loans since 2016, evidently for higher interest rates (Kamp, 2016). This type of credit is mainly meant for businesses whose bank loans applications have been rejected. A disadvantage is that Qredits demands that the borrower is held personally liable. In addition to the loans, Qredits offers the possibility to receive paid coaching which is often as important as the loan itself for starting businesses.

The 'microcredit' and 'SME credit' options of Qredits are mainly meant for starting entrepreneurs and therefore have not been included in the finance decision support tool.

There is also another moneylender which lends on small scale namely 'PIN Voorschot'. The difference with Qredits is that their purpose is not to help businesses start but provide solutions for established businesses in the form of down payments and working capital. In January 2015 'PIN Voorschot' was launched. They offer short (6-12 months) loans from € 2k - € 50k to businesses which have facilities for paying with debit cards (European Merchant Finance, 2016). The maximum loan is dependent on

the weekly turnover by a shops' pay-by-card terminal. Interest rates start at 9% for a half year loan and 19% for a loan of a year (European Merchant Finance, 2016). The loan is repaid by charging a percentage of the pay-by-card terminal turnover which automatically goes back to PIN Voorschot. Several advantages are that loans can be approved in several days and no collateral is required. The loans are mainly aimed for healthy businesses with a proven pay-by-card turnover. The idea is that business can purchase extra stock, new equipment or a make-over/expansion (European Merchant Finance, 2016).

The reason to not include 'PIN Voorschot' is because the maximum of €50k is too little for MM&C's clients, even when it is part of a total funding combination.

3.5 Conclusion

The complete list of financing options in section 3.3 is used when creating a funding proposal for a client of MM&C. The financing options of section 3.4 are not used because of the arguments mentioned. It must be noted from experience of the four visited events that the alternative financing market is developing rapidly. Frequently, new private initiatives emerge as well as governmental ones resulting from new incentive policies. In general, the returns demanded from alternative financing options is relatively high compared with the interest rates traditional financial institutions provide (Benthem, 2016).

4 Funding decision support tool

In this chapter the created finance decision support tool is described. The tool is made to aid MM&C in selecting appropriate financiers for a certain funding need of their clients. It is made with the use of Microsoft Excel and is (only) suitable for:

- Established SMEs (>3 years lifetime);
- SMEs of the small and medium segment, so excluding the micro segment (section 2.2);
- A funding need starting at €500k;
- SMEs of all industries;
- Dutch 'Besloten Vennootschappen' (U.S.A.: limited liability company).

The reasons for adapting the tool to this segment of SMEs is made clear from section 1.1 and 2.2.1. To give the reader a general interpretation of the functioning of the tool, first a conceptual overview is given. From section 4.2 onwards, the choices and assumptions used for the design are reported and elaborated on. Furthermore, the tool is explained more accurately.

4.1 Conceptual overview

In the conceptual overview, the steps that the user will need to go through to achieve a funding proposal are displayed in Figure 9 and Figure 10:

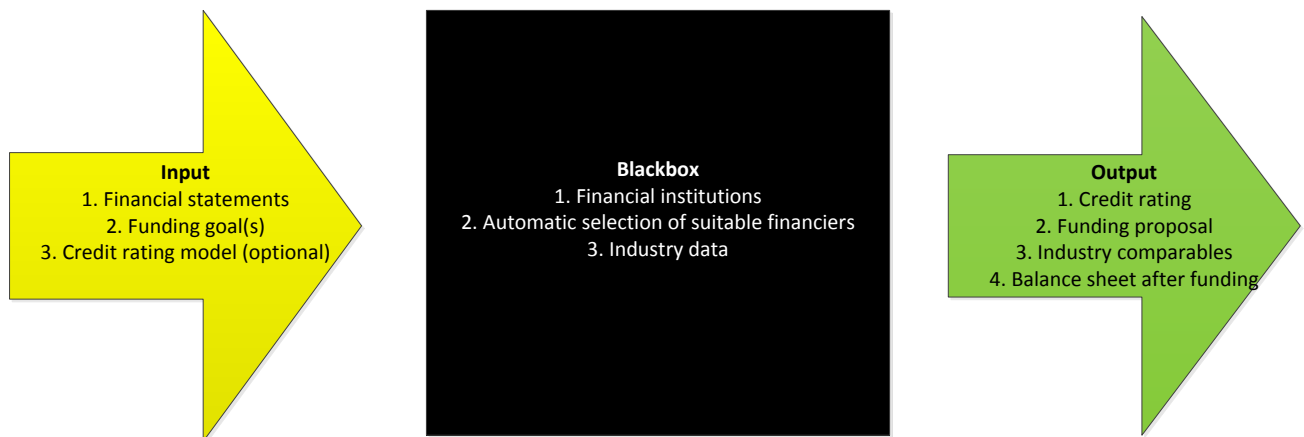


Figure 9: High-level conceptual overview of the funding decision support tool.

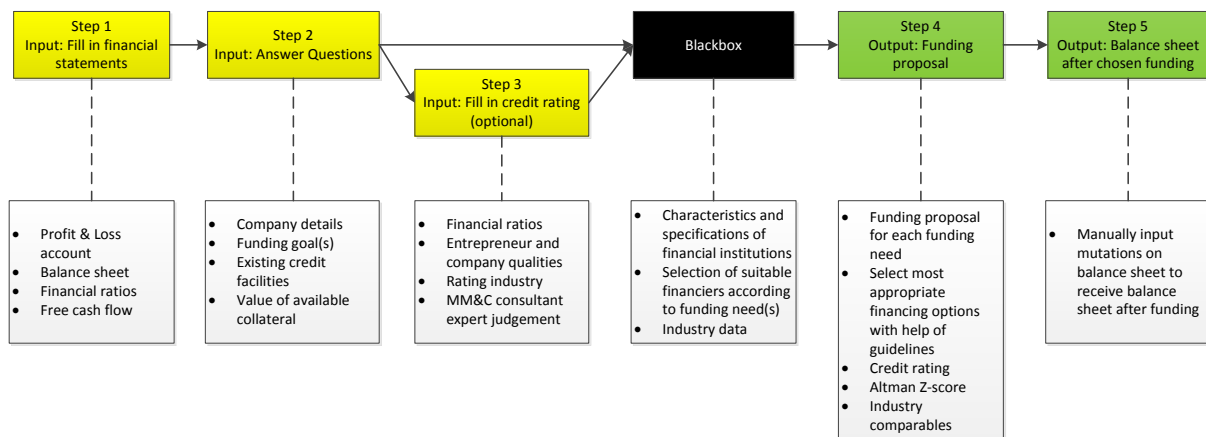


Figure 10: Detailed conceptual overview of the funding decision support tool.

When opening the tool, first of all the user needs to fill in the financial statements of the SME. This stage is discussed in section 4.2.1. Subsequently, questions about the company and funding goals will need to be answered (section 4.2.2) and the user can decide to score on criteria resulting in a credit rating for the SME as well (4.2.3). The black box is not a user step in the process but can be considered as ‘the engine’ of the tool. Amongst other functionalities, the black box’s main task is to select the suitable financing options according to input given in step 1 and step 2. The suitable financing options for the selected funding goals will be displayed in step 4. Frequently, there are multiple financing options suitable for a company’s financing need. Depending on the input of the financial statements in step 1 and the questions in step 2, advice will be given on the most appropriate financing options to select. Correspondingly, the user must select the most suitable financing option for every funding goal in step 4 to examine the influence on the balance sheet after funding in step 5.

4.2 Input (step 1,2 & 3)

4.2.1 Financial statements (step 1)

The major financial statements aim to give an overview of the financial position and performance of a firm (Atrill & McLaney, 2011). The financial statements in the tool have been made in accordance with the Dutch Civil Law Code on models of financial statements.

The financial statements consist of the profit and loss account (P&L), balance sheet and the statement of cash flows which are interrelated. The P&L account is used to measure how much wealth (profit or loss) is generated in a certain period (Atrill & McLaney, 2011). The balance sheet states the accumulated wealth of a firm at a particular time moment (Atrill & McLaney, 2011). It sets out the firm’s assets and the claims (equity and liabilities) against the firm. MM&C considers subordinated debt as part of owner’s equity on the balance sheet because when a company defaults they are the last to receive any part of the proceeds. Subordinated debt can therefore be defined as risk capital. The statement of cash flows deals with the cash movements that took place over a particular period (Atrill & McLaney, 2011). It shows the sources and uses of cash for a period and reveals the amount of cash the company has on hand. Each statement itself provides only a part of the information on a company’s financial status. Together they provide a complete picture (Investopedia, 2017).

The user is asked to first fill in the profit and loss account and the balance sheet from three years ago until two years in the future. This implies that on the completion date of this thesis (31-3-2017), the years 2014 until 2018 are asked to be filled in for both statements. MM&C consultants consider it important to look at the history of a firm’s financial position and to a larger extent its financial performance as it is often a predictor of the future. A prognosis can be made fairly well for the current year and the one after. After this time prognoses tend to become unreliable according to MM&C.

The balance sheet in the tool contains a separate ‘revaluation’ column to adjust the balance sheet of the previous year. MM&C notes that when financing businesses, financiers compare the market value with the book value of assets on the most recent auditor’s annual account. This is done in order for financiers to more accurately judge the collateral capacity of a business which is further elaborated in section 4.2.1.2. Suppose on 31-12-2016 the inventory of a business was valued €250k on the balance sheet by the auditor. However, the inventory is actually worth €175 because part of

the inventory appears to be damaged and therefore cannot be resold in case of company default. The user of the tool is then able to mutate the value on the 2016 balance sheet conveniently resulting in an adjusted balance sheet 2016 after revaluation.

The adjusted balance sheet after revaluation also takes into account deferred taxes in the case of increased value adjustments of assets. Suppose it is decided to increase the value of a machine by €100k, around 20-25% of this amount will be stated as a provision for deferred tax on the balance sheet and the remaining part is added to owner's equity.

Completing financial statements of five years requires the user to spend a decent amount of time but it forms a good overview of the company's financial performance and position. The financial statements are made in a format which can be displayed to financiers when applying for funding. In the case the user has little time, it is only necessary to fill in the balance sheet of 2016 together with its revaluations in order to receive a funding proposal in step 4. The financial statements have been made suitable for production firms as well service firms.

The financial statements need to be completed before completing the second input sheet 'questions' (step 2) because when determining funding goals and collateral available for financiers, values are used from the adjusted balance sheet of 2016.

4.2.1.1 Financial ratios

An additional advantage of completing the financial statements is that multiple financial ratios can be automatically derived. Atrill & McLaney (2011) state that "Financial ratios provide a quick and relatively simple means of assessing the financial health of a business. By calculating the ratios it is possible to build up a revealing picture of the performance and strengths and weaknesses. There is no generally accepted list of ratios that can be applied to financial statements". It is decided to automatically calculate the ratios that MM&C considers relevant when it comes to decision-making on funding. In collaboration with MM&C consultants it is decided that the tool incorporates the following ratios which are important for making credit decisions:

1. Current ratio;
2. Quick ratio;
3. Working capital;
4. Solvency;
5. Accounts receivable days;
6. Accounts payable days;
7. Earning capacity EBITDA(L);
8. Net debt/EBITDA(L);
9. Debt service coverage ratio;
10. Interest coverage ratio;
11. Free cash flow.

The definition, meaning and interpretation of these ratios can be found in appendix III.

In particular the solvency, earning capacity EBITDA(L) and free cash flow are important ratios when financing a business. This is explained in section 4.4.1.1 on funding guidelines.

The only ratio that can only be partly derived from the financial statements is the free cash flow (FCF). It measures the cash flow available for distribution to all company stockholders (Investopedia,

2016). It can be regarded as cash available after the financing of projects to maintain or expand the asset base. Companies with a higher operating and free cash flow tend to have higher share value (Investopedia, 2016).

The FCF surplus/deficit is the net profit after tax plus depreciation minus the change in working capital minus capital expenditures. The operating cash flow is calculated likewise, but without the capital expenditures (Investopedia, 2016).

The calculation of the operational cash flow is automatically derived from the profit and loss account and balance sheet. The FCF is partly automatically derived from the profit and loss account (net profit after tax, depreciation) and balance sheet (mutations in provisions, working capital and long-term debt). The user will still need to manually fill in the cash movements of dividend payments, capital contribution by shareholders, investment expenses or other expenses of each year resulting in the FCF surplus or deficit. The reason for this is that dividend payments and capital contribution reflect in the equity account but cannot necessarily be derived directly. Investments expenses reflect in mutations of asset values but cannot be derived directly either.

4.2.2 Questions (step 2)

The second input sheet requires the user to first fill in questions about the firm: name, number of employees, industry and the region of the Netherlands the firm is operating in. The industry and the number of employees need to be known in order to compare the company with other companies of the same industry and employee amount category. It is decided to let the user choose the industry from the 'Standard Industrial Classifications 2008' list (SBI 2008) which is composed by the Central Bureau of statistics (CBS, 2017). This list is on itself based on the industry activity classification of the European Union (NACE). This information is compared in the black box to data mainly from the Central Bureau of Statistics (CBS) which is described in section 4.3.3 and subsequently displayed in the output in step 4 (section 4.4.1). The region the firm is based in is demanded so that if a regional development company (RDC) is listed as a suitable financing option, it automatically generates the name and other information of the RDC which is active in that region (see section 3.3.7).

4.2.1.1 Funding goals

Seventeen different funding goals have been defined. It is chosen first of all to order the funding goals in four general categories namely investments in innovation, expansion, replacement and refinancing. There exists a significant difference between applying for expansion capital or replacements investments as for instance equity financiers are only willing to finance businesses that have high growth potential. Furthermore, a larger working capital need originates when a firm is expanding from experience of MM&C. The choice of order the funding goals in four categories forces the user to think about the type of investments the firm wants to make. In cooperation with MM&C consultants, an ex-banker and the literature of section 2.3 on funding needs of SMEs, the four general categories have been extended with specific funding goals which are listed in Table 4.

Table 4: Funding goals for SMEs that can be chosen from in the tool.

1. Innovation investment > R&D
2. Innovation investment > R&D project shorter than five years for highly innovative product(s) or service(s)
3. Expansion investment > acquisition, goodwill
4. Expansion investment > property, plant or housing
5. Expansion investment > machines, equipment (incl. ICT/Software)
6. Expansion investment > transportation vehicles
7. Expansion investment > working capital > pre-financing inventory
8. Expansion investment > working capital > invoices
9. Expansion investment > working capital > individual invoices
10. Expansion investment > working capital > other
11. Expansion investment > extra employees, reorganization, optimization or other
12. Replacement investment > property, plant or housing
13. Replacement investment > machines, equipment (incl. ICT/Software)
14. Replacement investment > transportation vehicles
15. Replacement investment > renovation property, plant or housing
16. Refinancing > refinancing debt
17. Refinancing > refinancing equity

When selecting funding goals the user can choose from this dropdown list. The funding goals have been listed in the sequence they appear on the balance sheet. The first goal (R&D) includes product/service innovation and development. The second goal (R&D project shorter than five years etc.) is added to the list because the government initiative ‘Innovation fund MKB+’ can be a financing option (section 3.3.12.1). The goal ‘expansion investments for transportation vehicles’ is mainly meant for transportation firms or firms with an insourced transportation department.

For financing invoices, the complete debtor’s portfolio can be factored or one can choose to factor individual invoices. Therefore a distinction between goal 8 and 9 is made.

As refinancing debt is a common practice, in accordance with an ex-banker it is decided to also include goal 17: refinancing equity. Refinancing equity happens when a well-performing company lacks cash to pay out dividend to its shareholders. In this case a company requires a loan to pay out its shareholders. Suppose a firm has a solvency of 50% (implying 50% equity, 50% debt). The firm can then refinance for instance 10% of its equity with a loan which is used to pay out dividend. The solvency will afterwards decrease to 40%.

Investments in marketing and advertising have been chosen not to include because from MM&C’s experience it happens rarely that clients need funding for specifically for this goal. The latter purpose is mostly financed by internal resources or an informal investor.

In total, the user can define four separate funding goals (needs) in the tool and can for each chose a funding amount and expected financing period. This forces the user to split up the total funding need and define it precisely. This results that for each funding goal suitable financiers will be listed in the funding proposal (output). In this way financing options can be combined to form one total funding solution. This choice is made in accordance with the newly emerging tendency toward ‘stacking’

finance forms as discussed in section 1.5.2. When choosing an expected finance period for debt finance, it is advised to not take a loan longer than the depreciation period of the asset (Kers & Partners, 2007). For financing (individual) invoices, a maximum of three months can be chosen. This will be displayed as a pop up in the tool when the user selects either of these goals. Furthermore it displays a maximum or minimum amount that can be factored based on the accounts receivable item on the adjusted balance sheet 2016.

Furthermore, the user needs to state separately if the owner tolerates making the business idea public online. If not, crowdfunding as a financing option will be excluded from the funding proposal. The toleration of power and influence of a financier combined with dilution of existing shares is also asked. If not, financing options which only supply equity finance will be excluded from the funding proposal as well. At last it is asked if pawning restrictions of creditors are active on invoices, indicating if factoring invoices will be possible or not.

4.2.1.2 Collateral

The user is asked to fill in the current existing credit facilities of the business (loan, current account, loan, subordinated loan, vendor loan, vendor loan subordinated) and for each facility the amount to be repaid along with the collateral amount issued if it has been provided to this facility. If it turns out that the collateral provided for a credit facility is in excess of the amount due to be repaid, this value will be automatically calculated and displayed. This gives MM&C a signal to contact the credit supplier in order to renegotiate the collateral terms down to approximately the amount that needs to be repaid. This can result in being able to offer more collateral to new financiers, increasing the likelihood they will be included in the financing proposal.

The company's assets can serve as collateral for financial institutions that require them. However, from MM&C's experience and Huijgens (2016), financiers view only a percentage of the book value of the assets as collateral. Intangible assets such as goodwill, software and intellectual property are often not used as collateral from experience of MM&C. This is confirmed by Kers & Partners (2007) and Borsboom, Dekker & Huls (2006).

Huijgens (2016) provides in his book an indication of the minimum and maximum percentages banks utilize as guidelines for estimating the collateral capacity of a firm. Next to that, a former banker was asked to give input from his experience on these percentages. The results are listed in Table 5.

Table 5: Minimum and maximum collateral percentages utilized by banks for estimating collateral capacity of a firm from its assets. Two sources are used: Huijgens (2016) and the experience of a former banker.

Assets (collateral)	Min. Huijgens (2016)	Max. Huijgens (2016)	Min. Ex-banker	Max. Ex-banker
Property and plant	60%	80%	25%	70%
Machines and equipment	25%	50%	25%	70%
Means of transport	40%	60%	50%	70%
Inventories (incl. finished goods & work in progress)	10%	35%	10%	25%
Accounts receivable (trade)	30%	60%	50%	70%
Cash	100%	100%	80%	100%

The biggest difference in the two sources is their view on the assets ‘property and plant’ and ‘machines and equipment’. The reason for this as stated by the former banker is that some business premises are specific for an industry and are difficult to be sold (e.g. steel factory). Therefore a (much) lower minimum is indicated. Furthermore, the former banker mentions that machines are in general fairly easy to sell for decent prices resulting in a higher maximum percentage.

The user of the tool can manually decide in a dropdown list which percentage of the business’ asset can serve as collateral. The user can choose percentages in the range provided by the former banker because he first analyzed the values of Huijgens (2016) and subsequently gave his comments from experience. Note that the user must always insert the percentage which resembles the execution value of the asset in case of default as that is the value most financiers work with when determining collateral capacity. The total collateral amount available resulting from the user’s input on percentages will then be corrected for the collateral that has already been issued. This results in the total collateral available for issuing to new financiers. Note that the original assets values are collected from the adjusted 2016 balance sheet after revaluation of assets done in step 1.

4.2.3 Credit rating (step 3 – optional)

As the tool is considered an ‘expert’ decision support tool and therefore requires to give the user an idea of the creditworthiness of a firm, an optional credit rating model can be filled in. The basis of the credit rating is taken from Huijgens (2016) supplemented by ‘small firm premium factors’ of the research conducted by van de Sande (2012) and remaining criteria which MM&C consultants consider important factors when grading the creditworthiness of a firm.

The credit rating model from Huijgens (2016) consists of three main components:

Table 6: The three main components of the credit rating model and each element’s weight in the overall score.

Components	Weight
Financial ratios	50%
Entrepreneur & company qualities	35%
Rating of the firm’s industry	15%

Every criterion of all main components needs to be rated from 1 (very bad) to 5 (very good). Most of the financial ratios are rated automatically from the ratios calculated in step 1. Each criterion carries a different weight (also 1-5) which was judged by an expert panel of MM&C. The rating criteria of the model can be found in appendix IV. For each of the three main elements a score will be generated. Subsequently, the overall credit rating consists of the weighted average of the main components to form an overall credit score.

The original weights mentioned in Table 6 were originally valued 60%, 25% and 15% respectively by Huijgens (2016). However, when consulting a former banker, it became clear that more emphasis needed to be on the entrepreneur and company qualities. MM&C regards the owner/main shareholder as the main drive behind the enterprise, especially when it comes to SMEs. This resulted in the weights displayed in Table 6.

As mentioned earlier, the credit rating model of Huijgens (2016) has been supplemented with small firm premium criteria from the research of van de Sande (2012). Van de Sande (2012) shows there is more risk involved in the valuation of an SME, compared to the valuation of a big corporation. To account for this risk, small firm premium factors were added to his valuation model for SMEs. In his valuation model it was asked to first of all score these small firm premium factors which would then

be incorporated in his valuation model. These small firm premium factors are also asked to be scored in this credit rating model. The factors include dependence on customers, dependence on suppliers, dependence on management, spread of activities, barriers of entry and flexibility to deal with changing market or demand conditions. These factors have been added as criteria to the element 'Entrepreneur & Company Qualities'. Furthermore, in consultation with MM&C, the criteria debt service ratio, the topicality of financial statements and an expert judgement score of the company were added to the credit rating.

The topicality of financial statements is considered important because not up-to-date financial statements could suggest a disorganized financial administration. The user has the ability to add an expert judgement score of the firm (score 1-5) which has a relatively big impact (33%) on the total score. The reason for adding this criterion with its large corresponding weight is because a truthful credit rating of an SME firm cannot only be formed by a systematically modeled credit rating method. The entrepreneur is often the main 'engine' and a determining factor in the firm's success. Especially in the case of SMEs, it is important to judge this aspect as well. Judgements on trust, leadership, transparency and capability of the entrepreneur can be incorporated by means of this expert judgement score.

The overall 'MM&C credit rating' is thus also a score between 1 and 5. Huijgens (2016) interprets the meaning of a score in the way described in Table 7.

Table 7: Interpretation of the credit rating score by Huijgens (2016).

Score	Meaning
0-2	Extremely low rating: lending money is irrational.
2-2,5	Very low rating: lending money is unwise unless 100% collateral can be provided.
2,5-3	Lending is to be considered on condition that prospects and forecasts are well argued for and collateral is provided. Preferably a loan shorter than 3 years.
>3	Lending is appropriate for a fair price.

It is possible to compare this score with Standard & Poor's (S&P) credit rating definitions. Major rating agencies such as S&P do not publicize how they rate firms but the meaning of their credit rating is known (Standard & Poor's, 2016). To give the user an indication of how these score compare, the model displays the estimated corresponding S&P credit rating. The results are displayed in Table 8.

Table 8: An indication of the relation between the credit rating of the tool and Standard & Poor's ratings.

Credit rating tool	S&P comparable
0-2	D, C, CC
2-2,5	CCC, B
2,5-3	BB, BBB
3-3,5	A
3,5-4	AA
4-5	AAA

It is decided not to make the credit rating a mandatory requirement because it does not have direct influence on the funding proposal. The credit rating gives the expert user an indication of the creditworthiness of the firm and therefore also an indication of the interest rate to expect when

applying for debt finance. Firms with lower credit ratings can be expected to pay for higher interest rates (possibly causing liquidity problems or a longer repayment period) and for these firms it is suggested in the output to also consider subordinated debt or equity finance. Evidently, also the score for each of the individual criteria gives the user a feeling of the firm. For instance, if a firm has high current liabilities and high accounts payable days, it has a serious short-term chance of default (Borsboom, Dekker, & Huls, 2006).

4.2.3.1 Altman Z-score for private firms

Another important criteria for making credit decisions is the Edward Altman Z-score model (Borsboom, Dekker, & Huls, 2006). This model has been composed by a multiple discriminant analysis and predicts with the use of five financial ratios the chance of bankruptcy of a firm within two years (Borsboom, Dekker, & Huls, 2006). The model was originally designed for publicly held manufacturing companies and later variations of the formula were designed in order for it to be applicable to privately held firms, public non-manufacturing firms and firms in emerging markets (Skuzet, 2016). The model does not give accurate results for financial companies (Altman, 2000). Only private firms are clients of MM&C, so only this specific variation of the formula is used. The Z-score formula for private firms (applicable to all industries) uses multiple income and balance sheet ratios and is as follows:

$$Z = 0,717 * X1 + 0,847 * X2 + 3,107 * X3 + 0,420 * X4 + 0,998 * X5$$

X1 = net working capital / total assets

X2 = retained earnings / total assets

X3 = earnings before interest and taxes (operating result / total assets)

X4 = book value of equity / total liabilities

X5 = turnover / total assets

Skuzet (2016) gives the flowing interpretation of the Z-score (Table 9):

Table 9: Interpretation of the Altman Z-score for private firms.

Z-Score	Interpretation
$Z > 2,9$	Safe Zone: risk of bankruptcy is small.
$1,23 < Z < 2,9$	Grey Zone.
$Z < 1,23$	Distress Zone: risk of bankruptcy is high.

The user is not required to take any action for calculation of the Altman Z-score. The score is calculated automatically (independent of the credit rating model from the previous section) as long as the financial statements of 2016 have been filled. It must be noted to be careful when making conclusions about a firm on the basis of this Z-score as the formula is based on research of companies in the United States in the period of 1946 until 1965 (Borsboom, Dekker, & Huls, 2006). Nevertheless, the Altman Z-score is still useful as a method for an indication of the chance of bankruptcy of an SME to be financed as the model is accurate in 80-90% of the cases according to Altman (2000).

4.3 Black box

As mentioned in the beginning of chapter 4, the main function of the black box is to select suitable financiers for the funding need(s) chosen in the input. In order to do this, data on all financial

institutions has been imported. According to the inserted financial statements and funding needs specified by the user, the black box runs a selection process in order to select suitable financiers. At last the black box compares the firm with data on its industry and employee range, providing the user with comparison figures on the solvency, current ratio, amount of companies active in the industry and the bankruptcy rate.

4.3.1 Financing options

All the suitable financing options for clients of MM&C listed in section 3.3 have been inserted in the tool. This also includes the options which fund amounts until €250k because they can form part of a total funding solution consisting of multiple financiers. The tool selects from these 20 imported financing options (Table 10):

Table 10: The 20 financing options which are incorporated in the tool.

1. Bank: traditional loans	2. Bank: current account
3. Bank: factoring	4. Factoring individual invoices
5. Leasing (operational/financial/vendor)	6. Informal Investors/Business Angels
7. Supplier credit	8. Vendor loan
9. Private Equity Firms	10. Regional development companies (RDCs)
11. Institutional Investment fund: ALF & Bank	12. Institutional Investment fund: FundIQ
13. Institutional Investment fund: Neos	14. SME stock exchange
15. Crowdfunding	16. Online suppliers of fast credit (Spotcap)
17. Government guarantee scheme: BMKB in combination with a Bank	18. Government guarantee scheme: Growth Facility
19. Government: Innovation credit MKB+	20. Government: Subsidies

The three institutional investment funds of section 3.3.8 (Neos, FundIQ and ALF) have been split up into three separate financing options because it was found out that each institution operates differently. For instance, Neos both supplies subordinated loans and normal loans whereas FundIQ only supplies subordinate loans. The ALF supplies a subordinated loan in combination with a normal loan of a bank. It is therefore evident that these financial institutions cannot be grouped under one type of financing option in the tool.

For each financing option the following data attributes have been collected:

1. Financing amount range (min. and max.);
2. Financing period range (min. and max.);
3. Type of supplied finance: equity, short-term debt, long-term debt, subordinated loans and/or bonds;
4. Which funding goals of Table 4 in section 4.2.1.1 are financed;
5. Network and advice is available for SME: yes/no;
6. Availability in the market/chance of approval: (score 1-5). If it is generally difficult to apply and succeed in getting funding, the financing option receives a low score and vice versa;
7. Estimated average duration of application time;
8. Collateral demanded: yes/no;
9. Maximum grace period allowed (for explanation, see appendix II);
10. Cost class: the desired margin by the financier (see the next page for explanation);
11. Power and influence of financier in business: yes/no;

12. Industries particularly financed and which particularly not if explicitly known;
13. Relevant extra useful information if necessary for decision-making process of the user;
14. Names of financial institutions specific for a financing option where MM&C or the SME can apply at.

In accordance with MM&C it is decided that these listed attributes are needed in order to select and filter financing options. All data on financing options imported has been collected from section 3.3, professional literature, government reports, conversations with representatives of financial institutions at the events named in section 3.2, websites and brochures of financial institutions and from experience of MM&C (the latter mainly for banks). In appendix V it is shown how this data is inserted in the tool by means of an example of one financing option.

Data attributes on financial institutions will evidently mutate over time. Modifications can therefore easily be made in the tool. Most data has been collected and attributed to financing options in a fairly straightforward way, however some important choices in attributing data to financing options must be noted.

It is chosen that suppliers of equity finance such as private equity firms and informal investors mainly look for potential high-growth firms within five years. These institutions therefore do not supply replacement investments. For the estimation of the cost of a financier, it is decided to attribute a cost class to a financier instead of an actual cost or interest rate (Huijgens, 2016). This is done because it is difficult to predict the interest of a debt financier before having applied for funding. Besides interest rates are dependent on the Euro Interbank Offered Rate (Euribor) set by the European central bank and market prices of financiers fluctuate over time (Huijgens, 2016). To make a classification of cost classes, not the actual market prices have been compared but the desired margin of the financiers in regard with the cost of their source of funding (Huijgens, 2016). The following cost classes have been used and are defined by Huijgens (2016):

- Low-cost class (desired margin by financier <3% per year)
- Medium-cost class (desired margin by financiers 3-6% per year)
- High-cost class (desired margin by financier >6% per year)

In particular equity financing is the most expensive form of capital (de Vries & van der Wielen, 2017). All suppliers of risk capital (subordinated debt and equity finance) demand a high margin (Huijgens, 2016). In case of default, the shareholders are the last in the line in the hierarchy of creditors (de Vries & van der Wielen, 2017).

Loans from banks, vendor loans, supplier credit and own equity are considered to belong to the low-cost class (Huijgens, 2016). Debt is also cheaper because interest payments are tax deductible while rewards of equity finance (dividend) are charged with corporate tax (Het Financieele Dagblad, 2016). Crowdfunding, leasing and factoring belong to the medium-cost class. Furthermore, shorter loans are in general cheaper than longer ones due to the lower risk perception (Borsboom, Dekker, & Huls, 2006).

4.3.2 Selection of financing options

Several data attributes on financing options from the previous section and the user input (step 2) is used for automatically selecting financing options resulting in a generated funding proposal. In the questions tab (step 2) the user is required to fill in four financing goals (along with the required amount and expected financing period). For each of these funding goals a suitable list of financing

options will be presented in the output sheet (step 4). A selection process is undergone per funding goal to achieve the list. This is described in Figure 11.

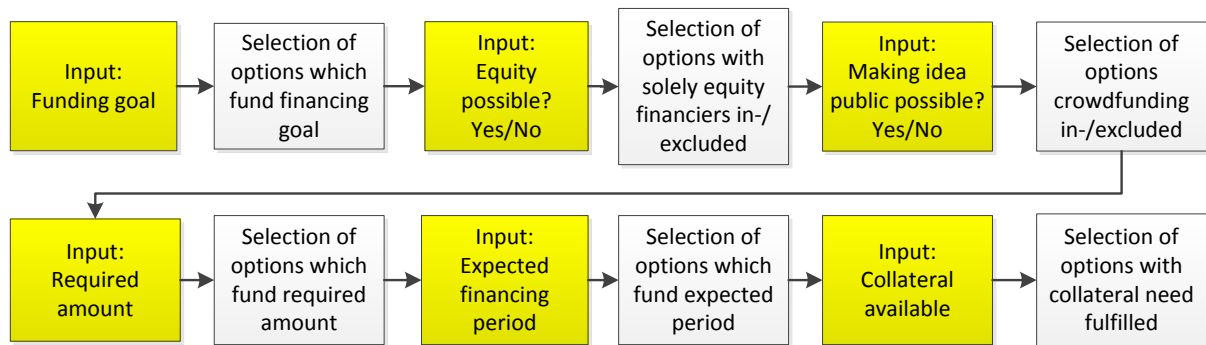


Figure 11: Flow diagram of the selection process of financing options for a funding goal.

As can be seen from Figure 11, the selection decision process is based on the following input information:

- Funding goal;
- Whether equity finance is tolerable for the owner (power and influence in business);
- Whether making a business idea public is tolerable for the owner;
- Required funding amount;
- Expected financing period;
- Collateral available.

It depends on the funding goal, the financier and the type of finance if collateral is required when funding. Equity finance by definition does not require collateral. Suppliers of subordinated loans receive a higher interest because they have either no collateral or 2nd priority (after the bank) pledges. Huijgens (2016) mentions that collateral forms a minor role for vendor loans and supplier credit. For crowdfunding the role is larger but still limited (Huijgens, 2016). With crowdfunding it is often the case that business owners are held personally liable. Collateral is crucial for banks, lease and factoring. However, suppose a firm decides to buy new housing property, lease new trucks or factor its invoices, these same assets will serve as collateral. The financiers will then only have to determine if the firm has enough cash flow to repay the loan as well as the interest.

It is decided that debt financiers (excl. subordinated debt financiers) require collateral for the funding goals which do not directly fund an asset that could serve as collateral. In accordance with MM&C it is chosen that the tool requires collateral by means of the firm's assets when the user chooses funding goal 1, 7, 10, 11, 15 or 17 from Table 4 in section 4.2.1.1. When selecting financing options for one of these funding goals, the debt financing options (excl. subordinated debt) will be filtered based on the firm's collateral capacity. For instance if a firm requires €1m for an R&D project, banks will be only listed as an option if the firm can provide at least €1m in collateral.

It is decided not to filter goal 3 and 16 based on the collateral capacity of the firm because it is difficult to determine the amount of collateral which is required for these funding goals. When funding an acquisition, part of the take-over amount is paid for the intrinsic value and a part for goodwill. For the goodwill part, collateral is demanded by banks. However, the tool cannot filter financing options based on collateral requirement only for the goodwill part of this funding goal.

When refinancing debt, multiple types of debt can be refinanced. In the case a mortgage is refinanced, the property serves as collateral. However, when for instance a subordinate vendor loan is refinanced the new financier might (partly) demand collateral.

It is decided that when funding goal 7, collateral is also required for debt financiers because the inventory itself only has marginal value as collateral. From experience of MM&C, inventories are worth little when execution sales take place.

The data attributes from the list of section 4.3.1 which were decided *not* to use as selection criteria for a funding proposal are number 5, 6, 7, 9, 10, 12, and evidently 13 and 14. These characteristics do not form crucial decision criteria for the initial proposal. Instead, these characteristics are mentioned alongside the list of suitable financing options in the output so that the user can subsequently view these characteristics per financing option to make a profound decision when selecting.

It was decided to not filter attribute 12 because the proposed list consists mostly of financing options, not specific names of financing institutions. Evidently, it would be too time-consuming to research every institution's excluded industries. For the specific financial institutions in the list (government supported RDCs, Neos, FundIQ) however, the favored and excluded industries are displayed together with the other non-decision characteristics mentioned above to give the user adequate information for selection in step 4.

4.3.3 Industry data

As the tool is considered an 'expert' decision support tool, the user is provided with useful information about the company's industry and comparable firms. Therefore several sheets of industry data from the Central Bureau of Statistics (CBS) have been added to the tool:

- Number of companies per industry, categorized per employee class from 2009-2016;
- Number of bankrupted companies per industry from 2009-2016;
- Financial performance indicators: solvency and current ratio of companies per industry categorized per employee class in 2013 (excl. financial services industry).

All three sheets exclude data on freelancers (single employee firms) and companies with 250 or more employees as they are not clients of MM&C. The industries in CBS data have been ordered according to the 'Standard Industrial Classifications 2008' list (SBI 2008) which makes it convenient for the tool to compare the company's industry (input of step 2) with these data sheets.

The CBS was contacted if more recent data was available for the latter data sheet. The CBS pointed out that their supplier of this data, the Dutch Ministry of Economic Affairs, stopped measuring these financial performance indicators since 2014. It has been tried to retrieve more recent data from other sources such as ING bank or the Chamber of Commerce but this data was not exportable to software and was only available against high cost respectively. The CBS defines current ratio and the solvency in this data sheet as (1,2):

1. Current ratio:
$$\frac{\text{current assets}}{\text{current liabilities}}$$

2. Solvency (way of CBS):
$$\frac{\text{total owner's equity}}{\text{total liabilities}}$$

MM&C calculates the solvency in the following way:

3. Solvency (way of MM&C):
$$\frac{\text{total owner's equity (incl.subordinated debt)} - \text{intangible assets}}{\text{balance sheet total} - \text{intangible assets}}$$

The reason for calculating the solvency accordingly is because intangible assets possess a book value but are highly unlikely to be sold for this value in case of company default. For the purpose of comparing, it is also chosen to also calculate the solvency in the way of CBS for the output (step 4). Furthermore a data sheet from Huijgens 2016 on solvency benchmarks per industry (no SBI 2008, a less detailed classification) has been added to the black box (appendix VI). This will provide the user an indication for what a good and bad solvency is for a company in a specific industry. The definition of solvency used by Huijgens (2016) is again different:

4. Solvency (way of Huijgens, 2016):
$$\frac{\text{total owner's equity}}{\text{balance sheet total}}$$

For the purpose of comparing, the solvency of an inserted firm in the tool is also calculated in the way of Huijgens (2016).

In the output (step 4) relevant industry data for the user's firm on the number of companies active, bankruptcy rates, solvency, current ratio and solvency benchmarks will be displayed along with the funding proposal.

4.4 Output

Before the funding proposal, the output sheet first displays the credit rating if filled in (step 3) and the Altman Z-score together with their interpretation. Subsequently, the number of companies in 2016 of the firm's industry and employee class is shown together with the number of bankruptcies in the industry from 2009-2016. To supply the user with a more relevant meaning of the number of bankruptcies in the firm's industry, also a bankruptcy rate (%) from 2009-2016 is calculated. Besides, the average solvency and current ratio of the firm's industry and employee class are given (CBS data) together with the firm's actual solvency and current ratio. At last the solvency benchmarks (critical, low, sufficient, optimal, strong, surplus) from Huijgens (2016) of the firm's industry are displayed.

4.4.1 Funding proposal (step 4)

For each of the funding goals selected, a list of suitable financing options will appear. All available financing options have been selected on the basis of criteria in the input mentioned in section 4.3.2. For each of these options the user is supplemented with additional information from section 4.3.1 on the cost class, type of finance supplied, which industries are and which are particularly not financed, network and advice function, availability in the market, average application time, maximum grace period, extra useful information and a list of actual financial institutions the user of SME could apply at. Furthermore, if factoring (individual) invoices is displayed as a suitable financing option, there will be a warning for these options in the case pawning restrictions have been indicated active in the input sheet of step 2.

The format of the funding proposal (a list of suitable financing options per funding goal) is deliberately chosen to stimulate ideas about combining different types of financing options to form one total funding solution (as discussed in section 1.5.2). The new way of financing is recognized by a conscious choice of different financing options. Businesses which consciously choose financiers are seen as more professional and are more likely to raise funding (Huijgens, 2016).

At this point the user can decide to end the process because the tool has provided the necessary information on suitable financing options for the specified funding goals. However, if the user wants to view the effects on the balance sheet of a funding option, the user will have to manually select a financing option. Subsequently, it is asked to choose the type of finance that the selected financier supplies. The user can use the guidelines in the following section to select the best options and types from the shortlist.

4.4.1.1 Funding guidelines

In this section funding guidelines will be mentioned which the user can use to select the most optimal financing option(s) for the funding goal(s). Huijgens (2016) notes that the three most important selection criteria for the first filtering round of financing options are the duration of the funding, the amount of funding and the risk perception. Because the tool already selects financing options based on the funding duration and amount, only the risk perception of the firm is discussed in this section.

A firm can not only be funded by debt but also requires equity finance. The main function of equity is risk absorption (Huijgens, 2016). If the firm temporarily realizes insufficient returns, there are no obligations towards suppliers of equity finance in contrast with debt financiers. The more equity a firm possesses (higher solvency), the lower the financial risk of the firm because the firm is more resistant to misfortunes (Huijgens, 2016). The riskier the firm is perceived (low credit rating), the greater the amount of risk capital that is demanded (Kers & Partners, 2007). On the current financing market there exists great attention from financiers for sufficient equity in sharp contrast with the pre-crisis era where banks used to fund SMEs royally. These times made enterprises get used to high proportions of debt in relation to equity (Huijgens, 2016). According to Huijgens (2016), it is important for the expert user to first analyze if the proportion equity/debt (solvency) of a firm is sufficient. If not, the firm should not only acquire new debt, but also a portion of equity or subordinated debt. It is often required to have sufficient equity in order to receive debt finance. Kers & Partners (2007) mention that capital-intensive industrial/production firms have higher solvency requirements than service companies. The tool advises the user in the output to apply for risk capital in the case the solvency of the company (calculated in Huijgens way) is below the 'critical' level of solvency benchmarks of Huijgens (appendix VI). The tool advises the user to apply for cheaper debt finance if the solvency level is at least 'sufficient'.

It is decided not to automate funding guidelines which would result in a most optimal proposal. The reason for this is the time scope of the thesis, the complexity, the then resulting inflexibility of choosing other financing options and because the user of the tool is an MM&C consultant considered experienced in financing businesses.

The user can furthermore use the most important additional funding guidelines below to select the best financing option(s). The additional guidelines are based on Borsboom, Dekker & Huls (2006), Kers & Partners (2007), Huijgens (2016) and MM&C.

- Debt and interest payments must be able to be paid from the earning capacity: EBITDA(L). If the EBITDA(L) of the firm is too low or just enough to cover these expenses, it is advised to attract more equity finance. If the EBITDA(L) is high and the firm possesses stability there is room for debt finance.
- If the firm is expected to grow very rapidly in the near future (3-5) years and prefers to omit the repayment burden, suppliers of equity finance are a suitable option.

- The generated cash flow of a firm is roughly what is left when existing capital and interest repayments are subtracted from the EBITDA(L). This cash flow combined with future generated cash flows is the resource that can be used to make replacement investments and expansion investments. If the investment cannot be paid back in time from current and future cash flows (or if the investment will start generating returns only after a few years), equity finance is required.
- The amount left over from the EBITDA(L) after subtracting repayments, interest and necessary replacement investments is the buffer capacity of the firm against times with lower returns. The EBITDA(L) is generally more important for financiers than the collateral capacity. In the case collateral capacity is a problem but the firm generates enough cash, it is advised to try debt financing options with government guarantee schemes instead because it remains cheaper than equity finance.
- It is advised to finance fixed assets with long-term debt or equity and short-term assets with short-term debt.
- Finance the fixed core of the current assets with long-term debt or equity. Temporary fluctuations in current assets should be financed with current accounts. This makes it possible to finance fluctuation in working capital in a flexible manner.

4.4.2 Balance sheet after funding (step 5)

At the top of this output sheet in the tool, each funding goal together with its chosen financing option, type of finance and required amount is summarized. Furthermore, the adjusted balance sheet of 2016 is displayed too.

To view the effect on the balance sheet after funding, the user can enter the mutations in the 'mutation column' in the asset and liability side of the balance sheet. This will result in a balance sheet after funding which can for instance be used to present to a financier when applying for funding. Furthermore, the financial ratios mentioned in section 4.2.1.1 will also be updated according to the balance sheet after funding so one can notice for instance the effect on solvency after funding.

The reason why the balance sheet after funding is not generated automatically is because of a number of reasons which make it difficult to generate it correctly.

The main problem lies in the fact that if you decide to use funding to invest in assets, it will not necessarily mean that the funding amount represents the same increase in asset value. A €100k renovation investment a firm's plant does not necessarily mean the plant has actually gained €100k market value. When choosing a current account as financing option it is unknown how much of this credit will be actually used. When leasing, it can be chosen to lease financially or operationally. In the first case the asset appears on the balance sheet and in the second case it does not. It is even more difficult to estimate the value mutations of investments in intangible assets such as software. Or in the case of an acquisition where the take-over amount is split into intrinsic value and goodwill. As the user is considered experienced when it comes to financing SMEs it is decided to let the user manually enter the mutation(s) to obtain the balance sheet after funding.

4.5 Added value of the tool for MM&C

With the finance proposal produced by the decision support tool the user can apply at selected financiers for funding, therefore saving significant time by not having to research the market every time a client needs funding. In this way MM&C can more quickly approach suitable financier(s), therefore improving service to its clients. On top of that, this tool provides a basis for combining

financing options for different funding goals to fulfill a total funding need.

It must be noted that it is a high-maintenance tool which requires MM&C to regularly update the tool with possible new financing options that emerge in the future or modified specifications (i.e. finance period, amounts financed, type of finance) of the existing financing institutions inserted in the tool.

Furthermore, the tool supplies MM&C with automatically calculated relevant financial ratios and a developed credit rating model for decision-making purposes. It has been made accessible to compare a client firm with industry data and quickly generate a balance sheet after funding for a chosen financing option. Besides, instead of having to make new layouts of financial statements, manually calculate financial ratios and develop a credit rating each time a client requires funding, this tool incorporates these facets allowing the user to produce these items in relatively short time.

5 Case studies: validation of the finance decision support tool

In order to validate the tool, two completed client cases of MM&C were used. Both clients cases deal with an SME in need of funding. First, the two SMEs and their corresponding funding need will be shortly described. For confidentiality reasons the client cases are anonymized. Both client cases were supplied with complete financial statements.

With the description of the firm and the financial statements, the tool was used to find out which (optimal) financing options and type of finance are suggested for each of the SME's funding need(s). The outcome of the tool will be compared with the financing option(s) and type of finance that MM&C used to fund the SME. On one hand, it is analyzed if the tool is suggesting the financing options that were actually used by MM&C. On the other hand it is analyzed if the tool suggests other (and/or better) financing options that could of have been used.

It is chosen to focus the validation section of this thesis on the financing proposal generated by the tool as this is the main function of the tool. The tool however has already been verified with multiple small fictive cases during the design of the tool. This happened in the way that a fictive company case was created with the idea that the tool needed to give accompanying pre-defined outcomes. When filling in the data and information of the fictive case it was checked if the projected accompanying funding proposal was actually displayed. If not, the problem was found and the tool was adapted. In the following sections, the two client cases will be described and subsequently used for validating the tool.

5.1 Case study 1: Graphic printing company (GPC)

Table 11: Facts of GPC.

Number of employees	60
Establishment	1934
Time period case	September 2016 - March 2017
EBITDAL 2016	€1.204k
EBITDA 2016	€691k
Turnover and profit 2016	€11,8m / €49k
Solvency before funding 31-12-2016	-1%

5.1.1 Description

Graphic printing company (GPC) is specialized in customized printing solutions for packaging and point-of-sale prints. GPC possesses a modern production facility which is suitable for the processing of plastic, cardboard and paper. The firm is well organized and communicating with clients is one of GPC's USPs. GPC is innovative and helps every client personally with finding the best solution. The company premises is located in an environment of good logistical infrastructure and the processes are supported by an integrated workflow management system. GPC has experienced difficult times since and during the crisis but from 2015/2016 the financial results show a clear recovery pattern and meanwhile profits are being made again.

5.1.2 Management

By means of a management buyout (MBO) just prior to the financial crisis in 2007, the firm was taken over from the former owner by the current owner for approximately €7m. The MBO was financed by the bank (€4m normal loan) and by the vendor (€2.953k subordinated no collateral vendor loan + €150k current account). The current owner has been active in the graphical industry his complete

working life and is the main 'engine' of the firm. His management team consists of four members (each at least five years active at GPC).

5.1.3 Role of MM&C

At the instigation of GPC's main bank (due to financial problems in the financial crisis), MM&C has been involved as external consultant since 2009. MM&C has led a large reorganization since the crisis and has since then always been actively involved at GPC. MM&C was also involved in the following funding problem which is described below.

5.1.4 Funding goals

The goal was to make GPC autonomously fundable by improvement of returns and solvency after a long period of high debt obligations (€5,1m repaid from 2007-2015). The funding problem took place in mid-2016. To realize financial independence and improvement of returns, the following funding goals totaling €2,51m were defined:

1. Refinance €1,5m of subordinated vendor loan debt from the former owner. The outstanding amount of the vendor loan remained €2.953k since the MBO in 2007 because GPC had difficulties repaying the vendor due to financial troubles relating to the crisis.
As soon as €1,5m of the vendor loan has been refinanced, the former owner is prepared to write off the other €1.453k and thus take a loss. This implies that GPC would have €1.453k less debt to repay. The financier of the refinance is expected to be paid back in 6-8 years.
2. €750k funding for three years for the final installment payment of the financial lease contract for the printing presses. The original lease contract (ending 31-12-2016) was for €4,3m and was until 2016 repaid with €502 per year.
3. €300k funding for five years for an extra punch press because the capacity of the current single punch press forms a bottleneck in the production process.

5.1.5 Input of tool

First of all, in step 1 the financial statements have been filled in, which results in automatically generated financial ratios. In step 2, the general questions were answered along with existing credit facilities and the percentages of the firm's assets which can be used for collateral. The result is that the firm cannot supply collateral to new financiers because all collateral has been issued to existing credit suppliers.

The first funding goal, refinancing debt, corresponds to goal number 16 of Table 4 in section 4.2.1.1 and is expected to be repaid in 6-8 years. The second and third funding goal are both considered replacement investments in machines matching with goal number 13. The firm's turnover is expected to steadily grow in the future but there are no steep growth plans (or expectations). Therefore the investments are considered replacement investments. The second funding goal is expected to be repaid in three years and the third one in five years. The managers do not want to be financed by equity. In step 3 the credit rating has been filled in.

5.1.6 Output of tool

In step 4, the output, it is displayed that the firm has a credit rating result of 2,87 (S&P: BB, BBB) and a solvency of -1%. Furthermore, the Altman Z-score makes it clear that the firm's chance of bankruptcy is in the 'grey zone' defined by Altman (section 4.2.3.1). On the basis of these outcomes, the tool suggests the firm to apply for subordinate loans. Furthermore, GPC has a considerably lower

solvency (-1% compared with 23%) and current ratio (0,59 compared with 1,42) than similar sized firms in GPC's industry. The funding proposal is described below:

1. For the first goal it is suggested to refinance debt by means of the bank, the local regional development company (RDC) Innovation Quarter in Zuid-Holland (subordinated loan), the institutional investment funds Neos and FundIQ or the SME stock exchange (bonds).
2. For the second goal, the tool suggests to finance the final installment payment of the printing presses with a bank loan, leasing, vendor loan, all three institutional investment funds or a bank loan with BMKB guarantee scheme.
3. For the third goal the tool suggest to finance the new punch press by the same means as stated in goal 2, but with RDC Innovation Quarter in Zuid-Holland (subordinated loan) as an extra option.

Because the firm has a low solvency, low credit rating and no collateral to issue, there are practically no other options than to apply for subordinated debt for the first goal. For the second and third goal however, the machines can serve as collateral making it possible to also be financed by normal long-term debt.

1. It is chosen not to refinance the debt with bonds on the SME stock exchange. The reason for this is that a listing is too costly regarding the amount to be refinanced and the process would be too time-consuming (explained in section 3.3.9). The bank cannot be chosen to refinance either because this vendor loan debt cannot be backed by collateral. This leaves three suitable options left: a subordinated loan from the government supported RDC Innovation Quarter (Zuid-Holland) or a subordinated loan from Neos or FundIQ.
2. As the second goal consists of financing a final installment payment of a lease contract, leasing is evidently not an option anymore. Furthermore the institutional investment funds are not advised for goal 2 because these supply more expensive (subordinate) debt. Therefore the following options remain for goal 2: traditional bank loan (with or without BMKB government guarantee scheme) or a vendor loan.
3. For the third goal, the RDC and institutional investment funds are not advised because of the high-cost class. Therefore the following options remain for goal 3: traditional bank loan (with or without BMKB government guarantee scheme), leasing or a vendor loan.

5.1.7 Actual result of MM&C

- Goal 1 was financed for €1.152k by the institutional investment fund Neos. Neos issued loan subordinated to the bank (2nd priority pledges). It was agreed on an interest rate of 10% and repayment within seven years. The remaining part of the amount to be refinanced was supplied once again by the former owner by means of a subordinated loan. With this construction the former owner immediately received €1.150k (€1m for the subordinated vendor loan and €150k for the current account), wrote off €1.453k and once more issued a subordinated loan for €500k to GPC because Neos refused to refinance the complete vendor loan.
- Goal 2 was financed by means of a vendor loan from the lease institution. In this case, the lease company which was previously the lessor of the printing presses now issued a loan to GPC for the final installment payment of the lease contract. GPC will have to repay €250k per year over a three year time period with an interest rate of 4,8%.

- Goals 3 is funded by means of operational lease from a lease department of another bank. €52k will be repaid per year over 5 years with a final installment payment of €40k. In order to not lower GPC's solvency even more, it was wiser to make use of operational lease instead of financial lease because the press will not be stated on the balance sheet in this way.

5.1.8 Comparison of result tool and result MM&C

For each goal, MM&C arranged funding from financial institutions that were also proposed by the tool.

1. For the first goal, the tool shows that MM&C could have also approached the new alternative RDC Innovation Quarter in Zuid-Holland or the institutional investment fund FundIQ. Price-wise the options would not of have differed much: both Neos, FundIQ and the RDC are categorized in the high-cost class. However, FundIQ finances for maximum six years and GPC's repayment capacity could possibly form a problem.
2. For the second goal the tool shows that the final installment payment could have also been financed by a traditional bank loan. However, the financial lease institution that supplied the vendor loan is owned by GPC's main bank so it was decided by the bank to fund the presses by means of their lease institution.
3. For the third goal, GPC could have also been financed by a traditional bank loan or a vendor loan instead of operational leasing. Price-wise this would not of have been a big difference. But if GPC used a bank loan or a vendor loan however, the machine would have to be stated on the balance sheet which would further reduce the firm's solvency. Therefore operational lease was the best option.

For this case the tool suggests the most suitable financing options that have actually been used by MM&C to fund GPC. The most significant result of the comparison is that MM&C could have also approached the RDC or FundIQ to fund the first funding goal.

5.2 Case study 2: Fencing protection company (FPC)

Table 12: Facts of FPC.

Number of employees	25
Establishment	2005
Time period case	October 2015 – April 2016
EBITDA 2015	€385k
Turnover and profit 2015	€6,2m / €237k
Solvency before funding 31-12-2015	67%

5.2.1 Description

Fencing protection company (FPC) focusses on the production, sales, installation and maintenance of high-quality fence protection facilities of their self-developed brand. The company has developed quickly since the start and has also made stable returns during the recent financial crisis. The company's turnover is expected to grow 10-12% per year to €6,7m in 2016 with an accompanying EBITDA of €443k in 2016. FPC does not make use of a bank loan.

5.2.2 Management

The current management of FPC consists of three managers (1: director, 2: director technology and 3: director business development & marketing) which each possess 20-30 years of experience in the fencing industry. The first director possesses 50% of the shares of FPC.

5.2.3 Role of MM&C

MM&C has been asked by the managers of the firm to assist with the funding goal described in the following section. It is the first time MM&C and FPC are cooperating.

5.2.4 Funding Goals

The managers of the firm have plans for growth of the firm, on strengthening the management team and are determined on gaining extra knowledge. Therefore the second director wants to buyout 'silent' FPC shareholders. The second director will then possess the other 50% of FPC's shares. The silent shareholders are united in a financial holding which are barely involved in managing FPC. The first director is prepared to guarantee the repayments of the loan of the second director. With the take-over of shares, the passive shareholders will be replaced by a new active owner which will enable the firm to realize its growth plans.

MM&C was first asked to give an independent second opinion on the valuation of FPC after the already made valuation of FPC by another financial consultancy firm. Second MM&C was asked to assist in negotiations about the buyout amount and the funding related. After negotiation with the vendors, it is determined that the to be sold shares are worth €1,7m euro. The €1,7m buyout amount consists of €937k intrinsic value (owner's equity) and €763 goodwill. The funding goal can therefore be defined as:

- Fund the buyout of shares from silent shareholders totaling €1,7m split up into €937 intrinsic value and €763 goodwill. The expected financing period is five years.

5.2.5 Input of tool

First of all, in step 1 the financial statements have been filled in, which results in automatically generated financial ratios. In step 2, the general questions were answered along with the percentages of the firm's assets which can be used for collateral. The result is that the firm can supply €745k worth of collateral.

As the goal of the funding is an expansion investment by means of buying out shares, the funding goal is considered to be number 3 of Table 4 in section 4.2.1.1.

Because the take-over amount consists of intrinsic value and goodwill and the collateral amount is €745k, it can be wise to split the funding goal in two. So one for €937k and one for €763k. The expected financing period for both funding goals is five years. Note that evidently one funding goal of €1,7m can also be filled in. The managers have indicated not to be wanted to be financed by equity. In step 3 the credit rating has been filled in.

5.2.6 Output of tool

In step 4, the output, it is displayed that the firm has a credit rating result of 3,95 (S&P: AA) and a solvency of 67%. Furthermore, the Altman Z-score makes it clear that the firm has little chance of bankruptcy within two years. On the basis of these outcomes, the tool suggests the firm to apply for low-cost debt finance as the firm has low risk and high solvency. Furthermore, FPC has a considerably

higher solvency (67% compared with 26%) and current ratio (3,1 compared with 1,4) than similar sized firms in FPC's industry. The funding proposal is described shortly below:

- For the first €937k of the funding, the tool suggests to finance by means of a bank loan, vendor loan from the silent shareholders, regional development company (subordinated loan), the three institutional investment funds, SME stock exchange (bonds) or a bank loan with BMKB guarantee scheme.
- For the second €763k, the tool suggests the same.
- Note that if only one funding goal of €1,7m is inserted, the suggestions are the same.

As mentioned earlier, because of the high solvency and credit rating the firm does not need to use expensive equity finance or subordinated debt. Therefore an RDC, the institutional investment funds and the SME stock exchange are out of scope for FPC's funding proposal. The normal bank loan is still suggested in the funding proposal for funding goal 3 even though not enough collateral can be provided by FPC. The reason for this is described in section 4.3.2.

- It can now be chosen to fund the €937k intrinsic value of the shares by either a vendor loan or a traditional bank loan with BMKB guarantee scheme. Because the firm has a collateral shortage of $€937k - €745k = €192k$ the firm cannot utilize a bank loan without the BMKB guarantee scheme.
- The €763k goodwill can be financed in the same way.
- The total €1,7m cannot be financed by the bank and BMKB guarantee scheme alone because of a collateral shortage for the bank: $(1,7/2 = €850k) - €745k = €105k$ shortage.

With the help of this funding proposal, an option can be to finance the €937k intrinsic value of the shares by a bank loan with BMKB guarantee scheme (medium-cost class) and the €763k goodwill by a vendor loan (low-cost class). It is evident that in order for the vendor loan to be realized, the current silent shareholders must first agree with this proposal. The current EBITDA of the firm is €385k and expected to grow in the future. The firm will therefore have enough capacity to repay €1,7m in five years (€340k per year) together with expected low-interest payments.

5.2.7 Actual result of MM&C

MM&C arranged that of the €1,7m takeover amount, €900k was financed by a bank loan with BMKB guarantee scheme. The remaining €800k was financed by the selling party, in the form of a vendor loan. This vendor loan was subordinate in regard to the bank loan.

€900k was directly transferred from the bank to the vendors at the moment the shares were handed over. This amount was chosen because it reflects approximately the intrinsic value of the shares.

All three major banks were willing to fund FPC against low-interest rates because the deal was not perceived risky. The cheapest offer with approximately 2% interest rate was chosen. The bank was provided security with the following pledges: accounts receivable and inventory (including machines, software, office equipment etc.). This totaled €745k worth of collateral. Because the collateral shortage for the €900k bank loan was €155k, the bank loan made use of the BMKB guarantee scheme described in section 3.3.12.1. The €155 unsecured part of the loan is now covered by the government in case FPC defaults.

The subordinated loan of €800k will need to be repaid in five years with an interest rate of 2%. The silent shareholders possess second priority pledges on the accounts receivable and inventory.

5.2.8 Comparison of result tool and result MM&C

The tool does suggest other financing options such as the new alternatives SME stock exchange, institutional investment funds and the local RDC. However, these were not optimal options for FPC. The remaining optimal options resulting from the tool are the ones also used by MM&C to fund FPC. In this way it can be concluded that MM&C chose the most optimal financing options which the tool suggested.

A notable aspect of this case was that the percentages of assets that FPC's bank utilized to calculate the collateral capacity were low. For all assets, FPC's bank chose the minimum percentages which can be chosen in the tool (percentages stated in Table 5 of section 4.2.1.2). The low percentage chosen for the asset property can be explained by past capitalized renovation costs which cannot serve as collateral. For the other assets, it is unclear why the collateral percentages have been chosen this low. This result suggests that the minimum and maximum percentages of assets which can be used as collateral could possibly be reevaluated again in the future by experienced bankers.

5.3 Conclusion case studies

The validation of the tool was done by means of two completed client cases of MM&C. All in all it can be said that validation proves the tool basically functions as intended. For both cases the tool suggests the financing options that MM&C also used to fund their clients. Furthermore, for several funding goals the tool suggests other suitable financing options which could have been used as well. The tool performs well in giving clear suggestions about which types of finance is of best interest to the firm regarding its solvency and credit rating. On top of that, the credit rating and the comparison with industry data from similar firms functions as projected. Nevertheless, during the use of the tool several suggestions for improvement of the tool came to mind to make it even more useful for the user. These are discussed in chapter 7. Due to the time limit of the thesis only two cases were used to validate the tool. In the future the validation can be made more rigorous if the tool is validated by using more cases.

6 Reflection on research goal and research questions

Looking back at the research questions defined in section 1.3, it can be concluded that the all three questions have been answered resulting in the achievement of the overall goal of the research.

An analysis was made of the current Dutch financing market for SMEs and the difficulties facing SMEs have been studied (RQ 1). Subsequently, this research investigated all the traditional and new alternative financing options on the market, specified and assessed these and judged them on the appropriateness for MM&C's client range (RQ 2). The last section of the thesis describes the customized tool made for MM&C which proposes the most suitable financing options in the market for a certain SME's financing need (RQ 3). The tool supports the new trend to combine financing options to form a total funding solution.

7 Suggestions for improvement of the tool

The finance decision support tool has been mainly designed to give a funding proposal for an SME with a certain funding need. Fundamentally, the tool succeeds in accomplishing this goal. This was demonstrated by the validation phase of this thesis.

However, the tool can be further optimized to display more relevant information, make the displayed information more meaningful to the user and to create a more accurate funding proposal.

Suggestions for further improvements of the tool are:

1. As mentioned in section 4.5 the tool is a high-maintenance tool which requires MM&C to regularly update the tool with future emerging financing options or modified specifications (i.e. finance period, amounts financed, funding goals, type of finance) of the existing financing options in the tool.
2. The scoring criteria in the credit rating each have each been assigned a weight which contributes to the total score. Currently, the credit rating gives a fairly accurate idea of the creditworthiness of a firm. However, the credit rating still leaves room for improvement to make it even more accurate. Although the criteria have been allocated weights by experts of MM&C, it is still advised to regularly reassess these weights in the future. One way to do this is by checking which criteria banks or other financiers use to rate MM&C's clients and how important they value these criteria in funding applications. Possibly some financiers develop credit scores as well for MM&C's clients in the funding application process which can be used to fine-tune the tool's credit rating model.
3. The tool currently automatically calculates the Altman Z-score for a firm. However, the score could inform the user even more if it can be compared with average Z-scores of similar firms in the same industry. The suggestion is to find data on Z-scores of firms for each type of industry and insert these in the tool in order to make a comparison of Z-scores possible.
4. Almost all financing options choose not to finance certain industries. Some specific financing options such as RDC's and the three institutional investment funds explicitly state the industries they do not finance. This information is currently stated in the funding proposal whenever one of these financing options is suggested. However, the tool does not filter financing options based on industries they do not finance. A suggestion for the tool's further improvement is to first research which industries each financing options does not fund and subsequently let the tool filter financing options based on this information. It must be noted that this can be time-consuming practice.
5. As mentioned in section 5.3, due to the time limit of the thesis only two cases were used to validate the tool. In the future the validation can be made more rigorous if the tool is validated by using more cases.

The tool can also be improved in order to suggest an optimal funding option or combination on the basis of price and financing period. This can be done with the following improvements:

6. Currently, the cost class of a financing option is displayed which aids the user in selecting financing option(s) and combinations on the basis of price. A suggestion for further improvement of the tool is to research the cost of funding (exact or a range) for each financing option. The cost of each proposed financing option over its expected financing period can be estimated making it possible for the user to subsequently chose the optimal option or combination.

7. As mentioned in section 4.4.1.1, debt repayments and interest must be able to be paid from the earning capacity: EBITDA(L). The tool can be further improved by using the current and future P&L statements to automatically calculate in what time span debt and interest can be paid. Subsequently, the tool can suggest an optimal financing period for a debt financing option (within the range of the finance option) whereby the SME pays as little costs as possible. Furthermore, the P&L statements can be used to detect a strong growth pattern in turnover. It can then be used to suggest financing by means of equity.

MM&C may decide to further professionally develop this tool in order to make it available online and therefore create a solution to the distribution problem of alternative financing options.

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Appendices

Appendix I: Abbreviations

1. ALF: Subordinated Loan Fund (NL: Achtergestelde Leningen Fonds)
2. BMKB: Government Guarantee Scheme for SMEs
(NL: Borgstelling Midden en Klein Bedrijf)
3. CBS: Central Bureau of Statistics
4. EBITDA (L): Earnings before interest, tax, depreciation, amortization, (operational lease)
5. FCF: Free cash flow
6. FPC: Fencing Protection Company
7. GDP: Gross Domestic Product
8. GPC: Graphical Printing Company
9. k: Thousand
10. m: Million
11. MBO: Management Buyout
12. MM&C: Mondriaan Management & Consultancy
13. NVP: Dutch Association of Private Equity Firms
(Nederlandse vereniging van Participatiemaatschappijen)
14. R&D: Research & Development
15. RDC: Regional Development Company
16. RQ: Research Question
17. S&P: Standard & Poor's
18. SBI: Standard Industrial Classifications
(NL: Standaard Bedrijfsindeling)
19. SME: Small and Medium Enterprise
20. USP: Unique selling point

Appendix II: Definitions

Subordinate debt:	<p>Debt which ranks after other debt in case of company default. Debt can be subordinated to for instance only the bank or even to all creditors. Subordinated debt can be unsecured or (partly) secured. Subordinate loans typically have a higher yield than senior debt due to the higher risk involved.</p> <p>By many financial institutions, subordinate debt is regarded as part of owner's equity for solvency calculations. Often banks only allow the subordinated to loan to be repaid after the bank has been (partly) repaid.</p>
Risk capital:	Private equity or subordinated debt.
Intrinsic value:	The intrinsic value of a firm is determined by subtracting the liabilities from the total sum of the value of assets. The intrinsic value is essentially the owner's equity.
Goodwill:	Intangible asset which can originate in the case of an acquisition. It comprehends the part of the market value of a firm which is not directly attributable to the assets of a firm. It can be regarded as the surplus value of a firm on top of owner's equity. Goodwill is depreciated over a number of years.
Balance sheet total:	Total assets or owner's equity + liabilities
Deferred tax:	<p>A future tax debt. Technically, the tax debt does not exist yet. However, it is certain that the debt will be collected by the tax authorities somewhere in the future. For example: if a company premises is revalued for €100k by a certain amount on the balance sheet, the firm is required to pay corporate tax over this amount (20-25% in the Netherlands) at the moment the property would be sold.</p>
Grace period:	A with the financier agreed period in which no repayments of debt have to be made. A grace period can be installed in for instance the case an investment will start generating returns only after a certain period. Normally interest payments will still have to be made, but also this is negotiable. Grace periods are usually active in the first months or possibly years of the loan.
Non-recourse factoring:	Form of factoring whereby also the credit risk is transferred to the factor. In other words, the factor will account for the risk of a bad debt.
Final installment payment:	The (extra) amount that has to be paid at the end of a lease contract.

Appendix III: Financial ratios

The sources of the definitions, meaning and interpretation of financial ratios are from practitioners of MM&C, Atrill & McLaney (2011), Investopedia (2017) and official annual accountant reports of Hoek and Blok Accountants in Sliedrecht.

Current ratio:
$$\frac{\text{current assets}}{\text{current liabilities}}$$

Reveals the ability of a business to meet its short-term payment obligations. Different type of businesses require different type of current ratio. The higher the ratio the more liquid the business is considered to be. In general, a current ratio of 1 and higher is considered sound.

Quick ratio:
$$\frac{\text{current assets} - \text{inventories}}{\text{current liabilities}}$$

The quick ratio is used for the same reason as the current ratio. It is mostly used for firms which have non-liquid inventories. In general, a quick ratio of 1 and higher is considered sound.

Working capital:
$$\text{current assets} - \text{current liabilities}$$

The capital a firm needs to fulfill its payment obligations. Current assets such as inventories and accounts receivable create a funding need which is funded by accounts payable and other current liabilities. Working capital must be as small as possible, yet enough to fulfill payment obligations.

Solvency (way of MM&C):
$$\frac{\text{total owner's equity} - \text{intangible assets}}{\text{balance sheet total} - \text{intangible assets}}$$

Represents the proportion of owner's equity and liabilities on a firm's balance sheet. Solvency benchmarks are different per industry but in general a sufficient solvency is between 25 and 40% (appendix VI). Solvency gives an indication of the creditworthiness, the capability of a firm to pay back its liabilities in the long term.

Solvency (way of CBS):
$$\frac{\text{total owner's equity}}{\text{total liabilities}}$$

Solvency (way of Huijgens):
$$\frac{\text{total owner's equity}}{\text{balance sheet total}}$$

Accounts receivable days:
$$\frac{\text{accounts receivable}}{\text{turnover}} \times 365$$

Measures how long on average customers take to pay the invoice after it has been sent. Businesses prefer a short average settlement period because these funds can be used for more profitable purposes. Having accounts which are more than 90 days late is alarming.

Accounts payable days: $\frac{\text{accounts payable}}{\text{purchasing price of turnover}} \times 365$

Measures how long on average the business takes to pay those who have supplied good and services on credit. Accounts payable are a free source of funding, however it must be noted not to risk the goodwill of suppliers. An average of more than 90 days might be a sign of liquidity problems of the firm.

Earning capacity: $\frac{\text{EBITDA(L)}}{\text{turnover}} \times 100$

EBITDA(L): Earnings before interest, tax, depreciation, amortization, (operational lease). A firm must be able to repay loans, interest (and off-balance sheet operational lease obligations) from EBITDA(L).

Net debt/EBITDA(L): $\frac{(\text{outstanding interest carrying short and long term debt}) - \text{cash}}{\text{EBITDA(L)}}$

This ratio shows approximately how many years it will take the firm to pay off its incurred debt. A high ratio suggests a firm may not be able to repay its debt in an appropriate time span and results in a lower creditworthiness. Generally, a ratio of 4 or higher is considered too high (but depends on the industry).

Short and long-term debt includes operational & financial lease but excludes subordinated debt payments.

Debt service coverage ratio: $\frac{\text{operational result}}{\text{total debt repayments} + \text{interest payments}}$

The DSCR measures the cash flow available to pay current debt obligations. A DSCR higher than 1 means the firm has sufficient income to service current debt obligations. Total debt and interest payments of one year. Including lease but excluding subordinated debt payments.

Interest coverage ratio: $\frac{\text{operational result}}{\text{interest payments}}$

It indicates the firm's ability to pay off its interest obligations and moreover how much the operational result can decline without the firm getting into financial trouble. Generally a ratio between 3 and 5 is considered sufficient. Interest payments of one year.

Free cash flow: The free cash flow surplus/deficit is the net profit after tax plus depreciation minus the change in working capital minus capital expenditures. The free cash flow is the cash available to the firm after the financing of projects to maintain or expand the asset base. It measures the cash flow available for distribution to stockholders.

Appendix IV: Credit rating criteria

As an example, this credit rating is filled in for GPC (case study 1). The user must give a score in the green fields in the right outer column. The white fields of the right outer column have been automatically calculated.

Financial Ratios	1	3	5	Entry rating
Solvency	<15%	15-35%	>35%	1
Liquidity: current ratio	< 0,9	0,9-1,5	>1,5	1
Earning capacity: EBITDA(L) (user's judgement)	Depends what good / bad per industry			3
Net debt / EBITDA	>4	3-4	<3	1
Debt service coverage ratio	<1	1-1,25	>1,25	5
Accounts receivable days	> 42	28-42	<28	1
Accounts payable days	>42	28-42	<28	1
Turnover development in relation with market	lower	compliant with market	higher	3
Interest coverage ratio	<3	3-5	>5	1
Topicality of financial statements	max 2014 published	max 2015 published	2016 published + prognosis 2017	4
Score Financial Ratios				2,19
Entrepreneur Qualities	1	3	5	Entry rating
Experience in industry	0 year	1-3 years	>3 years	5
Experience as entrepreneur	<3 year	3-7 year	>7 year	5
Education (user's judgement)	...	...	...	4
Spending habit/wisely economical? (user's judgement)	...	...	...	3
Vision (user's judgement)	...	...	...	4
Company Qualities	1	3	5	Entry rating
Dependency on customers	high	neutral	low	4
Dependency on suppliers	high	neutral	low	4
Quality of management (user's judgement)	...	...	...	2
Dependency on management	high	neutral	low	1
Product portfolio, spread of activities, diversification	<3 products	3-7 products	>7 products	5
Years of existence	0 year	<5 year	>5 year	5
Innovation capacity (user's judgement)	...	...	...	5
Strategy (user's judgement)	...	...	...	4
Quality of business processes (user's judgement)	...	...	...	5
Quality of administrative organization (user's judgement)	...	...	...	5
Which phase is the company in?	start or end phase	growth phase	mature phase	5
Barriers of entry	low	neutral	high	3
Flexibility to deal with changing market conditions and demand	almost not	average	very	3
Score company and entrepreneur qualities combined				3,98
Rating Industry	1	3	5	Entry rating
Sensitivity for tendencies in market?	yes	average	almost not, none	1
Sensitivity for innovations	yes	average	almost not, none	3
General opinion of the industry (user's judgement)	...	...	...	2
Live phase of the industry	end phase	mature	start or growth	3
Performance of industry compared to national average	< average	average	> average	4
Expectations of industry next 3 years	< average	average	> average	1
Score Industry				2,2
MM&C consultant expert judgement of the company				3
Credit Rating Company (financial ratios, entrepreneur & company qualities and industry)				
Score Financial Ratios				2,19
Score Company and Entrepreneur Qualities combined				3,98
Score Industry				2,2
MM&C consultant expert judgement of the company				3
Weighted score (1-5) = credit rating of company				2,87941723
Rating S&P				BB, BBB

Figure 12: Credit rating criteria of the tool. As an example, this credit rating is filled in for GPC (case study 1).

Appendix V: Financial institution data attributes.

Table 13: Example of a financing option with its data attributes in the tool. For each financing option these data attributes have been collected and inserted in the tool.

Private Equity Firms		
Financing amount range	€1m	€25m
Financing period (min, max, until exit)	3 years	7 years
Type of supplied finance	Equity	
Availability of network and advice?	Yes	
Availability in the market/chance of approval	2,5 (out of 5)	
Estimated average duration of application time	6 months	
Collateral demanded	No	
Maximum grace period allowed	N/A	
Cost class	High-cost class. Desired margin >6%	
Power and influence of financier in business	Yes	
Industries particularly financed if explicitly known	Differs per private equity firm	
Industries particularly not financed if explicitly known	Differs per private equity firm	
Relevant extra useful information if necessary for decision-making process of the user	Mainly meant for medium sized companies (so the M of SME). The investment must have high potential gains.	
Names of financial institutions specific for a financing option where MM&C or the SME can apply at.	A list of 73 Dutch private equity firms can be found on the website of the Dutch Association of Private Equity Firms (NVP): http://www.nvp.nl/zoekenmember_list/1/alle/	
Funding goals	Innovation investment > R&D	
	Expansion investment > acquisition, goodwill	
	Expansion investment > property, plant or housing	
	Expansion investment > machines, equipment	
	Expansion investment > transportation vehicles	
	Expansion investment > extra employees, reorganization, process optimization or other	
	Expansion investment > working capital > prefinancing inventory	
	Expansion investment > working capital > other	
	Refinancing > refinancing debt	

Appendix VI: Solvency benchmarks of Huijgens (2016)

Table 14: Solvency benchmarks per industry (Huijgens, 2016).

Industry	Critical	Low	Sufficient	Optimal	Strong	Surplus
Industry/production	15%	25%	35%	50%	60%	70%
Construction	10%	20%	30%	40%	50%	60%
Wholesale	10%	20%	30%	40%	50%	60%
Retail	15%	25%	35%	50%	65%	80%
Automotive B2C	15%	20%	30%	40%	50%	60%
Automotive B2B	15%	25%	35%	50%	60%	70%
Transport and logistics	10%	20%	30%	40%	50%	60%
Passenger transport	15%	20%	30%	40%	50%	60%
Hotel, catering and recreation	15%	25%	35%	50%	60%	70%
Business services	10%	20%	30%	50%	60%	70%
Information and communication	15%	25%	35%	50%	60%	70%
Real estate	5%	15%	30%	40%	50%	60%
Agriculture and fishing	10%	20%	35%	50%	65%	80%
Private healthcare	10%	20%	30%	40%	50%	60%