Entrepreneurs on their financial literacy: evidence from the Netherlands[1]

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Abstract

Using a representative survey of Dutch entrepreneurs and self-employed we measure their subjective financial knowledge, whether they ask for advice when managing their companies, and whether subjective financial knowledge and demand for advice are related to the firm economic outcomes. We find that respondents feel more comfortable when dealing with accounting subjects than with strategic ones, in which they feel they know the least. Entrepreneurs who report higher financial knowledge are less likely to seek advice and to delegate the financial decisions concerning their firm to someone else. Firms owned by entrepreneurs with higher subjective knowledge are more likely to show a higher gross margin and higher revenue growth. Seeking professional advice does not increase the likelihood that the company shows better performance if the entrepreneur's degree of financial knowledge is lower than the average. Our results suggest that entrepreneurs' subjective financial knowledge is positively related to the performance of their businesses.

Keywords: Subjective financial knowledge; financial advice; firm performance.

JEL Classification: **G41; G20; D14**

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1 Introduction

Micro, small, and medium-sized businesses (MSMEs) give a prominent contribution to the national GDP and employment in many countries. In the OECD area, SMEs are the predominant form of enterprise, accounting for more than 90% of all firms. In most OECD economies small and medium-sized enterprises account for over half of all employment and value added of the business sector (OECD, 2018a). Their success, growth and sustainability depend on various supply side factors, but also on a number of demand side aspects, like having adequate financial knowledge and skills to access finance, make better financial decisions for the business in the short and long run, and manage various sources of financial risk (Cassar 2004; OECD, 2015a; OECD, 2017).

Therefore, it is not surprising that studying the degree of financial literacy of entrepreneurs[5] has become an important priority for policy makers interested in spurring economic diversification, employment and growth in their jurisdictions (OECD, 2015). In 2015, G20 members recognised the importance of financial skills for MSMEs in the G20/OECD High-Level Principles on SME financing, which recall the need to "enhance SME financial skills and strategic vision" (G20/OECD, 2015).

The relevance of the subject notwithstanding, there is surprisingly little evidence on entrepreneurs' level of financial knowledge and skills, and especially so in developed countries.

The present paper tries to fill this gap using a survey conducted in 2016 by the Netherlands Chamber of Commerce among a representative sample of its registered members (Lentz et al. 2016). We look at three aspects. First, we investigate the degree of (self-reported) financial literacy of entrepreneurs across various topics that are relevant for managing the firm. Second, we look at whether their degree of financial knowledge correlates with the demand for financial advice, addressed to both professionals and non-professionals. And finally, we check whether the owner's financial knowledge and the demand for advice correlate with the economic performance of the firm.

The approach to assessing financial literacy used in the 2016 Netherlands Chamber of Commerce questionnaire and in this paper is consistent with the recent advances in the international literature on financial literacy. The OECD/INFE Core competencies framework on financial literacy for MSMEs (OECD, 2018b) define the financial literacy of owners and managers of MSMEs as "the combination of awareness, knowledge, skills, attitudes and behaviour that a potential entrepreneur or an owner or manager of a micro, small or medium sized enterprise should have in order to make effective financial decisions to start a business, run a business, and ultimately ensure its sustainability and growth". The

[5] We use interchangeably the terms 'business owner' and 'entrepreneur' throughout this paper, to indicate the individual directly involved in making the main decisions for the company.

Dutch questionnaire and this paper recognize that the types of knowledge and skills that are important for entrepreneurs in managing the finances of their businesses may overlap to some extent but are not necessarily the same as those needed by consumers and households to manage personal or family finances. Similarly to the OECD/INFE core competencies framework, this questionnaire and the present paper cover various aspects of financial knowledge relevant for MSMEs, which we classify into four main categories: accounting, strategy, financing and taxation. Differently from the OECD definition, this paper focuses on (self-reported) knowledge and understanding.

The questionnaire focuses on a subjective measure of financial literacy, as is the case in part of the literature on financial literacy. In this context some authors report a strong positive relationship between objective (based on tests) and subjective (self-reported) measures of consumers' financial literacy (Van Rooij, Lusardi, Alessie, 2011). Allgood and Walstad (2016) and Bellofatto el al. (2018) suggest that self-reported financial knowledge is strongly related to various aspects of consumers' and investors' financial behaviour, and that perceived measures may be as important as actual measures. A study by the Development Bank of Canada looks at various quiz-based and self-rated measures of financial knowledge and skills among Canadian entrepreneurs and business owners (BDC, 2017).

We find that Dutch entrepreneurs feel the least comfortable when dealing with strategic elements and long-term forecasts, while they consider themselves as most knowledgeable on accounting related topics, such as bookkeeping, reading, understanding and preparing the P&L statement, and the basic investment principles. The overall degree of knowledge of the respondents relates to their main socio-demographic characteristics in a similar way as found by the empirical literature on households' financial knowledge (e.g. Lusardi and Mitchell, 2014) and the very limited literature on entrepreneurs' financial knowledge (BDC, 2017): men consider themselves as more financially literate than women; age, university degree, and entrepreneurial experience are positively related to financial knowledge.

We then look at the relationship between entrepreneurs' subjective financial knowledge and their propensity to ask for advice. More financially literate individuals can be expected to understand when it is appropriate to ask for help and advice and to whom (Calcagno and Monticone, 2015), but those who consider themselves as more knowledgeable in finance may be less likely to seek advice (See et al., 2011) and Kramer, 2016). We observe that entrepreneurs who self-report higher levels of financial knowledge are less likely to seek advice both from non-professionals (e.g., family or partner), and from professionals, such as a certified financial advisors or firm managers (e.g., the CFO of the company). These results may be related to the self-reported nature of our financial knowledge variable, or to a perceived low quality of available sources of advice. As we will see in the following sections, asking for advice is not related to better business performance indicators.

Better reporting capabilities, the use of appropriate financing sources, a more effective financial management and risk coverage can improve the chance of success of MSMEs and ultimately improve their growth and sustainability (Atkinson, 2017). Accordingly, our paper then looks at the relationship between entrepreneurs' degree of subjective financial knowledge and firm performance. We find a positive correlation between the two. This result holds if we measure firm performance by looking at the firm's gross margin in the year preceding the survey (i.e. 2015), revenues in the previous year, and the firm revenue growth rate in the last three years. Entrepreneurs who consider themselves as more knowledgeable are more likely to own larger firms in terms of revenue, report higher gross margin percentage, and higher revenue growth, than those who say they are less financially literate. In addition, the levels of knowledge in the four different topics positively correlate with the firm economic performance, with the partial exception of the owner's knowledge in taxation issues. Perhaps surprisingly, we find that seeking advice does not correlate significantly with a better firm performance, when the firm owner considers himself as less knowledgeable than average. The data do not lend themselves to establishing a causal link between the economic performance and the degree of financial knowledge of the owner and we cannot conclude which of the various dimensions of business practices related to the owner's financial knowledge drive the results. However, these results are quite encouraging about the importance of financial knowledge for entrepreneurs and their business success.

The rest of this paper proceeds as follows. Section 2 reviews the results present in the existing literature. Section 3 details the sample, the descriptive statistics and some initial tests. Section 4 collects all our main results concerning the relations between financial knowledge, the demand for advice and the economic performance of the firm. Section 5 presents some robustness checks and Section 6 concludes. Appendix A collects some additional tables, while the English translation of the original survey (in Dutch) is included in Appendix B.

2 Literature Review

The degree of financial knowledge can be seen as a component of entrepreneurial human capital. Therefore, this paper broadly connects to the literature on the founder/entrepreneur human capital which has been studied in various contexts.

In terms of funding sources, Seghers et al. (2012) analyses how the limited knowledge of the financing alternatives by the entrepreneurs causes suboptimal finance decisions. Hsu (2007) documents how the social characteristics of founders affect the incidence of securing VC funding (also see Bengtsson and Hsu (2010) and Gompers et al. (2016)). In one recent study entrepreneurial human capital has been shown to impact on the success of crowdfunding campaigns (Piva and Rossi-Lamastra 2018).

In terms of firm performance, Chen and Thompson (2015) document a U-shaped relationship between the firm past performance and the likelihood of founder/CEO replacement, when they condition the CEO turnover on the quality of the founder's human capital. The fact that high performing firms end up replacing founders also echoes the strand of literature examining the founder/CEO characteristics and replacement decisions in the VC context (Ewens and Marx 2017). Colombo and Grilli (2005) investigate how founders' human capital affect the growth of new technology-based startups, while Ehrlich et al. (2017) argue that entrepreneurial human capital is an endogenous economic growth driver for all firms.

In a more specific way this paper contributes to the literature on the financial literacy of owners and managers of MSMEs. To the best of our knowledge, only a few studies measure the degree of financial literacy of MSMEs owners and of self-employed, especially in developed countries. Most of the existing studies differ in the way they measure financial literacy and there is currently no internationally recognized questionnaire to measure the financial literacy of MSME owners.[6]

Dahmen and Rodriguez (2014) surveyed the level of financial understanding and the use of financial statements among business owners who requested consulting from the Florida Small Business Development Center at the University of South Florida. Although their sample is too small to draw robust statistical conclusions, they report a clear connection between the lack of financial literacy, the lack of regular monitoring of the financial statements, and the financial difficulties experienced by the business. Trombetta (2016) studies the level of accounting and financial literacy using a sample of self-employed individuals in Spain. Focusing on questions related to the financing and the financial reporting of a business, he finds that the level of entrepreneurs' financial literacy is not significantly different from the one of non-entrepreneurs, which in turn is quite low. A more comprehensive study was run by the Business Development Bank of Canada in collaboration with the Telfer School of Management in 2017 (BDC, 2017). Their survey aimed to better understand Canadian business owners' mind-set regarding finances in general and therefore contains both questions on their degree of financial literacy and on their self-assessment of other management skills. Overall, business owners performed quite well on a financial literacy quiz and were quite confident about their own ability to manage financial aspects of their business. The study also reported important differences when controlling for age, gender, education level and origin of the business owner, as for the size of the company. With respect to these studies, our paper has the advantage of building on a large set of

[6] A questionnaire to measure the financial literacy of MSMEs is being developed by the OECD and is expected to be released in late 2019. Such a questionnaire was not available at the time of drafting this paper.

variables spanning several topics related to business finances, and of encompassing not just knowledge of concepts but also skills and behaviours.

The empirical evidence on the financial literacy of entrepreneurs in developing countries is somewhat larger, as reviewed in Pandey and Gupta (2018). However, most of these studies measure entrepreneurs' financial literacy by looking at somewhat narrow measures, such as formal bookkeeping (e.g. Barte, 2012; Musah and Ibrahim, 2014), the separation of personal and firm assets and liabilities (e.g. OECD, 2015b), understanding basic financial ratios (Dahmen and Rodriguez, 2014). These studies are typically based on very small and not necessarily representative samples, also due to the large size of the informal sector and difficulty of identifying the target population in such countries.

Within the limited literature on MSMEs' financial literacy, even fewer studies look at the relationship between financial literacy and business performance. The scant existing evidence on this is mostly concentrated in developing countries (Pandey and Gupta 2018). Among the papers on developed countries, Trombetta (2016) argues that in order to organize and use effectively a formal management control system, the entrepreneur needs a high level of financial literacy.[7] He tests this conjecture on a sample of Spanish self-employed individuals, finding that those operating in more mature and more traditional businesses show a lower level of accounting and financial literacy. The highest level of accounting and financial literacy is found in younger businesses moving from the start-up phase to maturity (between 1 and 3 years running), and which are run by entrepreneurs who managed previous ventures with some success. Our paper also contributes to this strand of the literature by investigating the relationship between subjective financial literacy and various measures related to business performance, such as revenues, revenue growth and business gross margin.

As the questionnaire also investigates respondents' personal judgment about their financial skills and their self-reported ability to perform certain tasks related to business finance, this paper is also related to the literature on entrepreneurial self-efficacy. Individual self-efficacy is defined as a person' belief in his or her capability to perform a task (Bandura (1977) and (1997)). A large literature in social learning theory and entrepreneurship has shown that self-efficacy is related to various entrepreneurial behaviours, from the intention to become an entrepreneur (Bird, 1988) to the creation of a new venture (Boyd and Vozikis, 1994). Moreover, reviews of the literature suggest that entrepreneurial self-efficacy is positively related to entrepreneurial performance (Newman et al 2019; Miao et al 2017).

[7] Davila and Foster (2005) indeed provide evidence of a positive relation between the adoption of formal management control systems and the success of entrepreneurial projects.

Our paper finds a very strong correlation between measures of subjective knowledge and self-reported ability on business finance topics.

Advice of professional and reliable sources can be instrumental for business success. Managing the company finances requires the attention of the business owner almost on a daily basis on rather specialized issues, meaning that business owners might need regular, professional help from accountants, book-keepers and business partners. BDC (2017) find that most Canadian entrepreneurs seek financial advice for some topics, especially taxes and regulations, and that they have a high level of trust in professional financial advisors. Therefore, it is possible that professional advice rather substitutes for entrepreneurs' personal ability to deal with daily financial decisions. On the other hand, See et al. (2011) and Kramer (2016) find a negative relationship between self-assessed financial knowledge and the demand of professional financial advice among households, suggesting that confidence may also have a role in explaining entrepreneurs' willingness to seek advice. Our paper contributes to this literature by investigating at the same time business owners' subjective financial knowledge, their demand for advice from various sources, and the performance of their business.

3 Data, descriptive statistics and the distribution of subjective financial knowledge

Our analysis relies on the survey designed by the Chamber of Commerce of the Netherlands conducted among its panel of entrepreneurs in 2016. This panel includes 4,091 registered members and is representative of the Dutch MSMEs (Lentz et al. 2016). All the members were invited to fill in the survey on the same day (May 31st) and 1,681 participants completed it, resulting in a response rate of around 40%.[8]

The survey collects information about the respondent's gender, age, education level, and experience as entrepreneur. It includes also information about the firm, such as its age, the sector of activity, whether it is a one-man business or an employer firm. It asks the respondent to report economic and strategic information about the company, i.e. the sources of business finance, the gross margin in the previous fiscal year (i.e. 2015), the revenue growth rate in the last three years, its current yearly revenue, and the firm strategy for the twelve coming months in terms of development of new products, the intention to innovate, to consolidate the brand or to grow.

It also reports detailed information on the subjective financial literacy of respondents, their attitudes in dealing with financial matters, and their demand for financial advice. In terms of financial literacy, respondents are asked to indicate to what extent they agree with statements on several financial topics on a scale 1-5. Statements are grouped in 16 batteries of 3 statements, for a total of 48 financial literacy-

[8] In Appendix B we report the English translation of the entire survey.

related variables. Within each battery, the first statement refers to awareness and knowledge of a given topic ("I am aware of the basic principles underlying a profit-and-loss statement" or "I know the elements necessary to prepare a demand for a credit line"), while the second and third statements refer to self-reported ability to perform related tasks ("I look and interpret regularly the P&L of my firm" or "As soon as my firm needs additional finance I invest time on this task"). We classify all these statements along four main subjects: accounting, strategy, firm financing and taxation.

The survey also investigates whether the respondent regularly asks for professional or non-professional advice, and in which subjects the respondent feels most the need of external help. We formally define our variables in Table 1 and present the descriptive statistics in Table 2.

[INSERT TABLES 1 & 2 HERE]

The sample is composed mostly by men (77.7%). This suggests that women are less likely to become entrepreneurs also in the Netherlands, as in virtually all industrialized countries (Kelley 2012). The majority of the respondents (58.8%) are self-employed, as in Trombetta (2016) and 63.1% has a university degree, a figure comparable to that of Dutch investors having at least one bank account (Kramer 2016) and much higher than in a representative panel of Dutch households (DHS 2005). The respondents' median age is 54 years old, and 76.4% of them have more than five years of experience as entrepreneurs (related variable is High ent. experience).[9]

The first purpose of our study is to measure the subjective degree of financial knowledge of entrepreneurs. Entrepreneurs report relatively high levels of subjective knowledge overall: their average self-report (*Knowledge*) equals 3.78 on a maximum scale of 5 (the median score is 3.75), similarly to BDC (2017). We notice significant differences between the levels of subjective knowledge in the four different subjects. Respondents feel more comfortable about accounting subjects (4.18) than on strategic ones (3.45), in which they feel they know the least. On issues related to the financing possibilities of the company and tax compliance they judge themselves slightly more knowledgeable than on strategic decisions. The differences are all significant at the 1% level (see Table A1 in Appendix A). Notwithstanding their higher subjective knowledge in these topics, entrepreneurs feel they need help mostly on accounting matters, where almost 50% of the respondents admit they feel they need help (also see Table A3 in Appendix A).[10]

[9] According to Burke et al. (2018) entrepreneurial experience enhances firm performance in employer firms. The prevalence of entrepreneurs with rather long experience in our sample might then bias it towards well performing firms.

[10] In general, the higher the degree of self-assessed knowledge, the lower the respondents feel they need help on a given topic.

Not surprisingly, the degree of self-reported ability largely matches self-reported knowledge. Entrepreneurs consider themselves as more capable to perform a task in accounting (3.99) than in strategy (3.34), with intermediate levels of self-assessed ability for tasks related to the demand of external funding (3.56) and to tax compliance (3.58). Overall, they believe to be able to deal with practical steps related to financial choices to a slightly lesser degree than their own judgment of financial knowledge. Entrepreneurs in our sample therefore seem to be quite coherent when asked to judge their own knowledge and ability to act upon it.[11]

Overall, 49.6% of the respondents take the financial decisions concerning the company asking some form of external advice while 46.2% do it completely on their own. We see a large difference in the behaviours of the self-employed and of MSME owners with employees: about 67% of the latter and only about 39% of the self-employed ask for some help when making financial decisions (see Table A2 in Appendix A). Among respondents who ask for advice, most (27.8%) get advice from professionals (*Advice = 2*). Only 17.7% of them ask for advice to non-professionals (*Advice = 3*). Financial decisions are completely delegated to another person only by 8.4% of the sample (*Advice = 4*).

In terms of activity sectors (see Table 3), the largest quota of firms operates in advising and research (33.6%), while the second largest sector is retail and wholesale (14.7%). Slightly more than a third of the firm (33.9%) earned a revenue smaller than 50,000 EUR in 2015, the year before the survey took place.

[INSERT TABLE 3 HERE]

The vast literature on financial literacy among households has established clear relations between the degree of financial knowledge, both objective and subjective, and some individuals' characteristics such as gender, age, and education (e.g. see Lusardi and Mitchell (2014)). In Table 4 we verify whether these relations hold also in our sample of entrepreneurs.

[INSERT TABLE 4 HERE]

As in the case of households, men show a higher degree of average self-reported financial knowledge than women. Subjective financial knowledge increases with (log) age, education level of the respondent and the revenue of the firm.

[11] The ability to realize your own (in)competence is usually defined as a form of metacognition by cognitive psychologists (see for example Kruger and Dunning (2009)). See Section 4.3 for a more thorough analysis of this point.

We observe that having more than five years-experience as entrepreneur is positively correlated with the average level of subjective financial knowledge and this effect is significant at the 1% level. At the same time, the significance of this variable varies across topics, suggesting some form of learning process. The correlations between gender, age and education and self-reported knowledge across the four different subjects are also less clear-cut. For example, the level of subjective knowledge in accounting does not vary with these demographic characteristics in a significant way, while knowledge in strategic issues does. Men and older respondents judge themselves as more knowledgeable when confronted to the possible sources of finance for their company. Gender and age instead are not related to knowledge about tax issues. Up to our knowledge, these results are new. They suggest that entrepreneurs are confronted with different areas of expertise and the degree of knowledge in these different areas varies in a non-homogeneous way.

The self-employed seem to be less knowledgeable on average (significant at 5%) but this effect seems to be driven by the strategy and financing topics (significant at 5% and 1% respectively).[12]

4 Results

In this section we analyse the relation between the self-reported degree of financial knowledge of business owners, their demand for advice in taking business decisions, and the economic performance of the firm.

4.1 Subjective financial knowledge and the demand for advice

The first model in Table 5 (column 1) shows how entrepreneurs' propensity to seek financial advice, both from professionals and from non-professionals, vary with the subjective level of financial knowledge.[13] As in the study on Dutch households of Kramer (2016), entrepreneurs who rate their financial knowledge as high have a significantly lower propensity to demand advice. Given that 50% of the entrepreneurs who take financial decisions by themselves demand some form of advice, the odds ratio estimate of financial knowledge (0.636) implies that a unit increase in subjective financial knowledge assessment reduces the probability of seeking advice reduces by about 11% from the

[12] If we measure financial knowledge in the various sectors of activity of the company, only advising and research shows a level of subjective financial knowledge across all subjects higher than the average, while those who own a business operating in health and well-being are consistently associated to a lower degree of knowledge.

[13] The Logit model (1) illustrated in Table 5 excludes respondents who fully delegate the financial decisions related to their business to another person (e.g. the CFO of the company).

baseline average of 50%.[14] In the same manner, being self-employed correlates negatively and significantly with the demand of advice.

[INSERT TABLE 5 HERE]

The second (2) model in Table 5 distinguishes between the different types of advice sought. Here, we estimate a multinomial logit model where the base case assumes that the entrepreneur takes the financial decisions concerning his business by himself without asking for any advice. Column 2 (respectively, column 3) refers to the case where respondents demand professional (respectively, non-professional advice) advice but ultimately decide by themselves; column 4 refers to the case in which the respondent delegates the financial decisions related to the business to someone else. The results overall confirm those obtained from the first model. A higher level of self-assessed financial knowledge reduces the likelihood to seek advice of any type, both professional and non-professional. The point estimate of the effect of financial knowledge on the demand of professional advice (0.592) indicates that the odds to seek professional advice (category 2) are about 40% lower than the odds to fall in the baseline category (no advice) if we increase the level of self-assessed financial knowledge of the respondent by one unit (on a scale 1-5). Not surprisingly, the magnitude of the effect is lower for non-professional advice (category 3), which we classify as advice from the partner or from other members of the family. Entrepreneurs who consider themselves as more knowledgeable are also less likely to let someone else taking the financial decisions concerning their business. Our results share some similarities with studies over the households' decision to seek advice or to delegate their investment decisions. Georgarakos and Inderst (2011) find that investors rely on professional advice only when their own perceived financial knowledge is sufficiently low, and when their trust in the advisor is high. Using the Dutch Households Survey (DHS), van Rooij et al. (2011) show that people who are less financially literate rely more on informal sources of advice, such as friends and family.

4.2 Subjective financial knowledge, economic performance of the firm, and the role of advice

The question whether financial literacy can improve firm performance by improving entrepreneurs' ability to make good financial decisions remains largely open. Given the limited amount of information over the businesses contained in our data, we can only verify whether higher subjective financial knowledge of the owner correlates with self-reported higher performance of the firm. In order to do so, in Table 6 (respectively Table 7, and Table 8) we run multinomial logit models relating the previous year gross margin of the firm (respectively the growth rate of firm revenue in the last three years, and

[14] As for comparison, in the 2005 DHS representative sample of Dutch households, investors who rate their financial literacy as high are 17.5 percentage point less inclined to seek advice than those who rate their literacy as low (Kramer (2016)).

its yearly revenue) with the self-reported level of financial knowledge of the owner across all subjects. In all the three models we control for entrepreneurs socio-demographics provided by the survey (gender, age, and university education), their experience as entrepreneurs, whether the firm is a one-man-business, firm's current revenues (in Table 6 only) and sector of activity.

Table 6 shows that higher subjective financial knowledge increases the relative likelihood that the company gross margin in 2015 falls into the [16-25%]-[26-35%]-[36-45%]-[45%-more] intervals rather than the base case, i.e. gross margin lower than 5%. This result is statistically significant for all the intervals (except 5-15% one). One can interpret the point estimates as follows. Consider the interval [16-25%] and the estimated odds ratio of 1.445. This suggests that if the entrepreneur's self-reported financial knowledge increases by one unit (on a scale of 5), then the likelihood that the gross margin of the firm falls into the [16-25%] interval is 44.5% higher than the likelihood the gross margin falls into the base case (gross margin <5%).

Entrepreneurs who consider themselves as more financially knowledgeable are significantly less likely not to answer the question about their firm gross margin in 2015 rather than reporting a gross margin lower than 5%. Higher entrepreneurs' age and education level both reduce the relative likelihood the firm earns a higher margin than the base case, although these results are not always statistically significant. The experience of the owner as entrepreneur is always not significant. Firms owned by men are more likely to have a gross margin higher than the base case than firms owned by women, in line with much of the gender literature on entrepreneurship (e.g. see Dilli and Westerhuis (2018)). Overall, the results provide strong evidence that subjective financial knowledge of the owner correlates with a better performance of the firm in terms of gross margin. This result confirms Gibson (1992), who claims that a good knowledge of finance alternatives is the basis for making good financial decisions, which in turn represent a key ingredient for a sound firm performance (Cassar 2004). We do not see a clear relationship between the size of the company, measured by its 2015 revenue, and the gross margin.

[INSERT TABLE 6 HERE]

As an additional measure of firm performance, we consider its revenue growth in the last three years (as of 2016). We run a multinomial logit model where the dependent variable is the revenue yearly growth rate in such period and we consider as the base case a revenue decreases of more than 20% on average per year. We show the results of this analysis in Table 7.

[INSERT TABLE 7 HERE]

An entrepreneur who considers him/herself more financially knowledgeable is relatively more likely to own a firm that experienced an increase in revenue (i.e. the firm revenue growth belongs to the intervals [+1%, +5%], [+6%, +20%], >20%), than one whose revenue decreased by more than 20% per year. This effect is also economically significant. For example, an increase of one unit of the owner's financial knowledge makes 1.68 times more likely that his/her firm showed a revenue growth rate higher than 20% per year rather than a decrease of 20% or more (the base case).

The effect of the other control variables on the firm revenue growth are somewhat similar to the ones illustrated in Tables 6, except for the entrepreneur experience, which now gain some significance in explaining the likelihood of high revenue growth. Firms owned by older entrepreneurs are less likely to show revenue growth, since all the odds ratio are significantly lower than one. The other demographic characteristics of the entrepreneur do not have a significant impact on the relative likelihood of observing a higher growth of revenue relative to the base case. In terms of revenue growth one-man businesses are less likely to perform better than employer firms.

In order to study whether the owner's degree of subjective financial knowledge is linked to the firm size, we run a multinomial logit on the firm 2015 revenue. As the base case of the model, we consider a revenue lower than €50,000. The results are illustrated in Table 8.

[INSERT TABLE 8 HERE]

Increasing the owner's degree of overall financial knowledge significantly increases the likelihood that the firm revenue belongs to any higher revenue category rather than the base case: all the estimated odds ratios are significantly higher than one (except for the revenue category 6). If the firm owner is a man and has experience as entrepreneur the firm is relatively more likely to get a revenue higher than the base case rather than if the owner is a woman or has no entrepreneurial experience. Entrepreneur's age instead reduces significantly the odds ratio of the firm revenue being higher than the base case. One-man businesses are significantly smaller in terms of yearly revenue: the odds ratio of belonging to any interval higher than the base case is significantly lower than one. We also see some significant difference in firm size across different sectors: firms in culture/sport/recreation, accommodation/meal/beverages, education, and in other sectors are likely to earn a lower revenue (results are un-tabulated but available upon request).

From these analyses we conclude that the owner's subjective level of financial knowledge across all topics surveyed in the questionnaire correlates positively with firm performance and its size. Our data do not allow to establish a causal link between the degree of financial knowledge of the entrepreneur

and performance, nor to assess whether the positive correlation we reported is due to the entrepreneur's ability to take more sound financial decisions.

In principle, entrepreneurs are likely to be regularly in contact or to have contractual relationships with experts, such as bookkeepers, accountants, or tax consultants. If this is the case, the latter advise the entrepreneurs' decisions and help them managing the firm in issues related to their expertise. Therefore, financial advice, especially coming from professionals[15] might help entrepreneurs making better investment decisions (as for households, Willis (2008; 2011).[16] This is the reason why we now analyse whether seeking advice together with the owner's level of subjective financial knowledge has an impact on firm performance.

We consider a multinomial logit model similar to that shown in Tables 6-8, but in which we add as explanatory variables the interaction terms between self-reported knowledge and the demand for advice. For succinctness we only tabulate the interaction terms. As base case we consider entrepreneurs with subjective financial knowledge lower than average (*Low knowledge*) who do not seek advice (*Advice (D,0)*), with firms having a gross margin less than 5% (Panel A). Table 9 reports the results.

[INSERT TABLE 9 HERE]

Asking for advice does not affect significantly the likelihood the firm earns a gross margin higher than the base case if the entrepreneur has a degree of financial knowledge lower than average. Instead, entrepreneurs with subjective knowledge higher than the average own firms which are more likely to earn a gross margin higher than the base case. This is true also if they seek advice. The effect is statistically significant for almost all intervals of gross margin higher than the base case.

Firms owned by men are associated with higher gross margin, as in the model illustrated in Table 6, where we do not control for the demand of advice. The entrepreneur's age and having a university degree both reduce the likelihood that the firm earns a higher gross margin rather than the base case, but this effect is not always statistically significant. The size of the firm, measured by its past year revenue, and its sector of activity do not show a univocal effect on the gross margin.

We repeat the same analysis by considering the firm revenue growth in the last three years (see Panel B) and its yearly revenue (Panel C).

[15] In the robustness checks, we show that the results we obtain here are confirmed if we consider only professional advice.
[16] Even taking into account that advisors might have incentives to provide biased advice, their professional knowledge can be valuable to households when they make investment decisions. The literature on the impact of financial advice on households' investment decisions is quite large by now, but the evidence is rather mixed. See the review of Stolper and Walter (2017) for an exhaustive discussion.

Panel B shows our results if we consider the effect of the owner's self-reported knowledge, advice and their interaction on the firm revenue growth in the last three years. As for the gross margin (in Panel A), the demand for advice does not always increase significantly the likelihood to manage a firm with high revenue growth rather than the base case, if the firm owner has a degree of knowledge lower than average. Entrepreneurs with higher than average financial knowledge are more likely to manage firms with higher revenue growth rather than ones with the base case. This effect is present irrespectively whether they seek or not advice.

Asking for advice increases the likelihood that the firm yearly revenue is higher than the base case if the firm owner has a degree of financial knowledge lower than average: all the odds ratios are significantly higher than one (see Panel C). The magnitude of the effect is quite high: the likelihood to fall into a higher growth rate category is approximately twice the likelihood to fall into the base case when an entrepreneur with low degree of knowledge seeks advice, rather than not doing it. The same is true also for firms whose owners have a degree of financial knowledge higher than average, irrespectively whether they seek or not advice. Demand for advice, not surprisingly, is more likely in larger firms, irrespectively of the entrepreneur's self-reported level of financial knowledge.

Summarizing, the value added of professional advice on the firm performance is questionable, but larger firms rely more on external advice. This is particularly true if we consider firms whose owners have a level of financial knowledge lower than average.

5 Robustness checks

5.1 Relationship between subjective financial knowledge and skills

Individual self-efficacy is defined as a person' belief in his or her capability to perform a task (Bandura (1977) and (1997)). A large literature in social learning theory and entrepreneurship has shown that individual self-efficacy influences various behaviours, from the intention to become an entrepreneur (Bird, 1988), the creation of a new venture (Boyd and Vozikis, 1994), to money attitudes (Engleberg, 2007).[17] The survey we use in this study collects information on the entrepreneurs' belief of being able to deal with practical steps related to the various financial choices. For this purpose, it includes questions asking if the respondent can prepare and interpret the documents necessary to take a business decision related to finance, and if he knows where to find the relevant information when such a

[17] From the General Self-Efficacy Scale developed by Schwarzer and Jerusalem (1995), Iown et al. (2011) propose a financial self-efficacy scale that incorporate specific references to financial management. Statements addressed how respondents manage certain financial problems and how they cope with setbacks.

decision needs to be made. These questions allow us to study whether the respondent's (subjective) degree of knowledge relates to his self-efficacy.

We use a recursive bivariate Probit model[18] in which the first part of the model (first equation) explains the self-reported degree of knowledge using the socio-demographics of the entrepreneur, the firm sector and firm revenue. The second part of the model (second equation) verifies whether the self-reported level of knowledge relates with self-efficacy, controlling for all other characteristics relevant for knowledge obtained from the first equation. We repeat the analysis for each of the four topics in our financial knowledge classification, i.e. accounting, strategy, sources of finance and taxation. Results are shown in Table 10.

[INSERT TABLE 10 HERE]

The degree of knowledge is positively and significantly correlated with self-efficacy. This result holds for the general level of self-reported financial knowledge (Model (1)), but also for all the topics considered separately (see Models (2) – (5) respectively for knowledge in accounting, in strategy, in issues related to the firm funding and taxation). Very few of the other characteristics have explanatory power in addition to the level of financial knowledge for the entrepreneur's self-efficacy. For example, considering the general level of self-efficacy, only the entrepreneur's experience correlates positively with self-efficacy (and these results are significant only at the 10% level). Overall, the self-reported level of knowledge about a given topic explains most of the entrepreneurs' belief to be able to perform a task related to that topic. In this sense, we conclude that respondents are quite coherent in their answers.

5.2 Distinction between the types of advice sought

In Section 4.1 we analysed whether entrepreneurs' propensity to seek financial advice, both from professionals and from non-professionals, vary with their degree of financial knowledge (see Table 5). It is likely that the quality of advice coming from experts is higher than the one provided by family and friends, and therefore professional advice probably plays a more important role improving entrepreneurs' financial decisions. Therefore, we study whether the degree of financial knowledge affects the likelihood that the entrepreneur seeks professional advice only. We also want to verify whether the degrees of knowledge in the different topics (i.e. accounting, strategy, firm financing and taxes) have different impact on the demand for professional advice. In Table 11 we report the results (we omit the effects of all control variables for brevity).

[18] For examples and econometric theory, see Greene, 2011, pp. 778-785.

An increase in the level of financial knowledge of the owner significantly reduces the relative ratio of seeking professional advice. This is true for all four dimensions of financial knowledge, and the magnitude of the effect is quite similar across dimensions. The result confirms that the degree of self-reported financial knowledge is negatively correlated with the demand for professional advice.

[INSERT TABLE 11 HERE]

5.3 Degrees of financial knowledge and performance

In Section 4.2 we reported evidence that the entrepreneur's degree of financial knowledge makes it more likely that the firm performs better, in terms of gross margin (Table 6) and revenue growth (Table 7), and that firms earn a larger revenue (Table 8). The subjective knowledge in the four different topics might have different impact on firm performance. Therefore, we study whether these correlations persist when we consider separately the degree of knowledge in the four main different topics. We run multinomial logit models as in Tables 6-8 analysing the relation between the degree of knowledge of the owner and the firm gross margin (respectively, revenue growth, and revenue).

The different dimensions of knowledge do not show different impact on the likelihood the firm earns a higher gross margin relative to the base case. Only for one category, a gross margin belonging to the [16% - 25%] interval, the effect of knowledge on strategy, sources of firm funding and taxes is lower than the effect of overall knowledge and of knowledge in accounting.

In addition, the general level of knowledge is related to the firm revenue in a similar way as the degree of knowledge across all the different topics, except for the one over taxation issues. The latter has a lower impact on the relative likelihood the firm earns higher revenue than the base case.

Finally, the only knowledge dimension that has a lower effect on the firm revenue growth is the owner's knowledge about taxation issues.

6 Conclusions

We use a survey run in May 2016 on a representative sample of entrepreneurs associated to the Netherlands Chamber of Commerce to study their degree of subjective financial knowledge in various topics: accounting reports, tax-related issues, the possible sources of financing of the company, and strategic analysis. Up to our knowledge, this is one of the first surveys targeting entrepreneurs' degree of financial knowledge in developed countries (for Canada, see BDC (2017)). We find that respondents feel the least knowledgeable when dealing with strategic choices. Instead, they feel quite confident about the basic principles of investment and in accounting related issues. We observe significant differences in the degree of self-reported knowledge across the four different topics.

Entrepreneurs who report higher financial knowledge are less likely to seek advice and to delegate the financial decisions concerning their firm to someone else. This result is stronger when we consider the demand of professional advice rather than non-professional advice. In this respect, our findings confirm the ones reported for households by See et al. (2011) and Kramer (2016).

Firms owned by entrepreneurs with higher subjective financial knowledge are more likely to show a better economic performance and higher growth. The worse performance of firms owned by the least knowledgeable entrepreneurs is not positively affected by the intervention of an advisor. External advice is not related to a better firm performance when the entrepreneur has a degree of knowledge lower than average.

Overall, our results suggest that the owner's financial knowledge may be one of the keys for the economic success of a small business. While providing new insights, this paper also calls for greater efforts to investigate in a more robust way the relationship between the financial literacy of MSMEs owners and managers and the success of their businesses. Future research should i) develop objective measures of the financial literacy of entrepreneurs that would account for the specific nature of business financial literacy (as opposed to consumers' financial literacy) and that would rely on objective tests rather than self-reports, ii) link financial literacy to more objective measures of firm performance, such as for instance those based on administrative data; iii) explore the use of longitudinal data to investigate causal relationships.

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Tables

Table 1. Definitions of the variables.

Label	Definition
Subjective financial knowledge	The average level of self-reported financial knowledge computed over all subjects (i.e. using all sixteen questions) on a scale 1-5 (from the lowest to the highest level of knowledge).
Subjective financial ability	The average level of self-reported financial ability over all subjects (i.e. using all thirty-two questions), on the same scale as subjective financial knowledge.
High knowledge (D)	Dummy variable equal to one if the individual considers his/her level of financial knowledge as high (Knowledge >= 3.75).
Knowledge of accounting	The average level of self-assessed knowledge over the accounting subject.
Knowledge of strategy	The average level of self-assessed knowledge over the strategy subject.
Knowledge of financing	The average level of self-assessed knowledge over the financing subject.
Knowledge of taxation	The average level of self-assessed knowledge over the taxation subject.
Ability on accounting	The average level of self-assessed efficacy over the accounting subject.
Ability on strategy	The average level of self-assessed efficacy over the strategy subject.
Ability on financing	The average level of self-assessed efficacy over the financing subject.
Ability on taxation	The average level of self-assessed efficacy over the taxation subject.
Need help in […] (D)	Dummy variable equal to one if the respondent indicates that he needs help the most in […] area of decision making. We aggregate these into four subjects above defined (accounting/strategy/financing/taxation).
Advice categories	Categorical variable capturing the dynamics of the advice sought: Advice = 1 - Individual decides on his/her own, Advice = 2 - Individual asks for professional advice, Advice = 3 - Individual asks for non-professional advice, Advice = 4 - Individual does not decide (delegates the decision making).
Advice (D)	Dummy variable equal to one if the respondent is the person making the financial decisions in the company and in doing so (s)he asks for professional or non-professional advice (Advice = 2 or 3).
Revenue categories	Bins that correspond to the answers to the question "What is the yearly revenue of your firm at this moment" (kvkq012): 1 - less than €50k, 2 - between €50k and €100k, 3 - between €100k and €250k, 4 - between €250k and €500k, 5 - more than €500k, 6 - I don't know / I don't want to answer.
Revenue growth categories	The question asking the respondent to indicate the bin corresponding to the answer to the question “How did the revenue of your firm develop in the last 3 years” (kvk011). The bins are: Strong decrease (more than 20% on average per year), Decrease (6%-20% on average per year), Slight decrease (1%-6% on average per year), Stable, Slight increase (1%-6% on average per year), Increase (6%-20% on average per year), Strong increase (more then 20% on average per year).
Gross margin categories	The question asking the respondent to indicate in which bin falls the gross margin earned in 2015 (kvk055). The bins are: [<5%], [5%-15%], [16%-25%], [25%-35%], [36%-45%], [>45%], [“I don’t know”].
Sex (D)	Dummy variable equal to one if the respondent is a male.
Age	Age of the respondent.
High education (D)	Dummy variable equal to one if the respondent holds a university degree.
High ent. experience (D)	Dummy variable indicating high entrepreneurial experience (more than five years).
One-man business (D)	Dummy variable equal to one if the respondent is the self-employed.
Asked for funding (D)	Dummy variable equal to one if the respondent asked for funds for the company in the last three years.
New product (D)	Dummy variable equal to one if the respondent reported developing new products over the last three years.
Export (D)	Dummy variable equal to one if the respondent reported exporting goods abroad.
Innovation (D)	Dummy variable equal to one if the respondent plans to innovate.
Consolidation (D)	Dummy variable equal to one if the respondent plans to consolidate his/her business.
Growth (D)	Dummy variable equal to one if the respondent plans to increase his/her business.

Table 2: Descriptive statistics.

Variable	Min	Mean	Median	Max	SD	N
Subjective financial knowledge	1.250	3.779	3.750	5.000	0.696	1,681
Subjective financial ability	1.344	3.619	3.594	5.000	0.671	1,681
High knowledge (D)	0.000	0.522	1.000	1.000	0.500	1,681
Knowledge of accounting	1.000	4.180	4.200	5.000	0.670	1,681
Knowledge of strategy	1.000	3.452	3.400	5.000	1.002	1,681
Knowledge of financing	1.000	3.598	3.500	5.000	0.952	1,681
Knowledge of taxation	1.000	3.526	3.667	5.000	0.787	1,681
Ability on accounting	1.700	3.989	4.000	5.000	0.686	1,681
Ability on strategy	1.000	3.342	3.300	5.000	0.882	1,681
Ability on financing	1.000	3.557	3.500	5.000	0.857	1,681
Ability on taxation	1.000	3.582	3.667	5.000	0.708	1,681
Need help in accounting (D)	0.000	0.471	0.500	1.000	0.369	1,681
Need help in strategy (D)	0.000	0.150	0.000	1.000	0.272	1,681
Need help in financing (D)	0.000	0.252	0.000	1.000	0.434	1,681
Need help in taxation (D)	0.000	0.417	0.000	1.000	0.493	1,681
Advice (D)	0.000	0.496	0.000	1.000	0.500	1,540
Advice = 1	0.000	0.462	0.000	1.000	0.499	1,681
Advice = 2	0.000	0.278	0.000	1.000	0.448	1,681
Advice = 3	0.000	0.177	0.000	1.000	0.382	1,681
Advice = 4	0.000	0.084	0.000	1.000	0.277	1,681
Revenue category 1	0.000	0.339	0.000	1.000	0.474	1,681
Revenue category 2	0.000	0.167	0.000	1.000	0.373	1,681
Revenue category 3	0.000	0.185	0.000	1.000	0.388	1,681
Revenue category 4	0.000	0.086	0.000	1.000	0.280	1,681
Revenue category 5	0.000	0.131	0.000	1.000	0.338	1,681
Revenue category 6	0.000	0.092	0.000	1.000	0.289	1,681
Sex (D)	0.000	0.777	1.000	1.000	0.416	1,681
Age	17.000	52.953	54.000	104.000	10.970	1,669
High education (D)	0.000	0.631	1.000	1.000	0.483	1,681
High ent. experience (D)	0.000	0.764	1.000	1.000	0.424	1,681
One-man business (D)	0.000	0.588	1.000	1.000	0.492	1,676
Asked for funding (D)	0.000	0.158	0.000	1.000	0.365	1,681
New product (D)	0.000	0.397	0.000	1.000	0.489	1,681
Export (D)	0.000	0.189	0.000	1.000	0.391	1,681
Innovation (D)	0.000	0.159	0.000	1.000	0.366	1,681
Consolidation (D)	0.000	0.565	1.000	1.000	0.496	1,681
Growth (D)	0.000	0.121	0.000	1.000	0.326	1,681

Table 3. Industry composition of the sample.

Industry	Freq.	Percent
Advising & research	565	33.61%
Construction	108	6.42%
Culture & Recreation	136	8.09%
Finacial institutions	40	2.38%
Health	89	5.29%
IT	98	5.83%
Industry	66	3.93%
Other	109	6.48%
Primary sector	50	2.97%
Rental of property	121	7.20%
Retail & Wholesale	247	14.69%
Transport	52	3.09%

Table 4. Baseline correlations.

The table represents the baseline OLS regressions of the average knowledge across five distinct categories (overall, accounting, strategy, financing sources and taxation). The baseline for the revenue category dummies is Revenue category 1. Industry dummies and constant are included in all models but are omitted for succinctness. Robust standard errors are reported in square brackets. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

Dep. Variable – Knowledge	Average	Accounting	Strategy	Financing	Taxes
	(1)	(2)	(3)	(4)	(5)
Sex (D)	0.127***	0.066	0.268***	0.147**	0.039
	[0.042]	[0.043]	[0.060]	[0.060]	[0.050]
Ln(1 + Age)	0.293***	0.120	0.567***	0.480***	0.131
	[0.078]	[0.079]	[0.112]	[0.113]	[0.093]
High education (D)	0.093***	0.057	0.115**	0.059	0.146***
	[0.036]	[0.036]	[0.051]	[0.050]	[0.044]
High ent. experience (D)	0.124***	0.152***	0.118*	0.124**	0.086*
	[0.042]	[0.043]	[0.061]	[0.058]	[0.049]
One-man business (D)	-0.091**	-0.066	-0.122**	-0.177***	-0.05
	[0.042]	[0.042]	[0.060]	[0.059]	[0.049]
Revenue category 2	0.169***	0.159***	0.268***	0.166**	0.046
	[0.050]	[0.049]	[0.072]	[0.068]	[0.057]
Revenue category 3	0.171***	0.167***	0.296***	0.125*	0.002
	[0.049]	[0.048]	[0.072]	[0.073]	[0.057]
Revenue category 4	0.240***	0.227***	0.401***	0.245**	0.006
	[0.066]	[0.066]	[0.094]	[0.097]	[0.081]
Revenue category 5	0.333***	0.319***	0.503***	0.366***	0.104
	[0.062]	[0.061]	[0.089]	[0.086]	[0.075]
Revenue category 6	0.039	0.053	0.112	0.069	-0.097
	[0.060]	[0.062]	[0.083]	[0.086]	[0.071]
Number of observations	1,664	1,664	1,664	1,664	1,664
Adjusted R^2	0.154	0.106	0.166	0.107	0.093

Table 5. Asking for advice.

The table presents the logit and multinomial logit estimates expressed as odds or relative risk ratios respectively. The baseline for the revenue category dummies is Revenue category 1. Industry dummies and constant are included in all models but are omitted for succinctness. Decide alone, Ask professional, Ask non-professional, and Delegate completely corresponds to the values of Advice = 1, 2, 3, and 4. Standard errors are reported in square brackets. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

Model type	**(1) Logit**		**(2) Multinomial logit**		
	Ask for advice (D)	Decide alone (base)	Ask professional	Ask non-professional	Delegate completely
Subjective financial knowledge	0.636***		0.592***	0.728***	0.583***
	[0.056]		[0.059]	[0.084]	[0.098]
Sex (D)	0.854		1.023	0.693**	0.477***
	[0.123]		[0.175]	[0.126]	[0.129]
Ln(1 + Age)	0.688		1.045	0.37***	1.642
	[0.192]		[0.344]	[0.129]	[0.918]
High education (D)	1.026		1.057	0.974	0.760
	[0.131]		[0.154]	[0.162]	[0.177]
High ent. experience (D)	1.163		1.500**	0.836	1.064
	[0.166]		[0.258]	[0.155]	[0.323]
One-man business (D)	0.495***		0.761	0.269***	0.073***
	[0.073]		[0.131]	[0.052]	[0.023]
Revenue category 2	1.760***		2.061***	1.402	0.842
	[0.284]		[0.388]	[0.310]	[0.354]
Revenue category 3	1.786***		2.302***	1.228	1.343
	[0.305]		[0.454]	[0.285]	[0.484]
Revenue category 4	2.356***		4.180***	1.062	3.097***
	[0.603]		[1.192]	[0.359]	[1.252]
Revenue category 5	4.086***		6.46***	2.183**	3.487***
	[1.073]		[1.897]	[0.700]	[1.443]
Revenue category 6	0.825		1.111	0.516**	0.887
	[0.173]		[0.272]	[0.160]	[0.387]
Number of observations	1,499				1,632
Log-likelihood (model)	-944.723				-1774.161
Log-likelihood (null)	-1038.52				-1989.463

Table 6. Self-assessed financial literacy and entrepreneurial outcomes – gross margin.

The table presents the multinomial logit estimates expressed as relative risk ratios. The baseline bin for the model is the "Lower than 5% margin" answer. The baseline for the revenue category dummies is Revenue category 1. Industry dummies and constant are included in all models but are omitted for succinctness. Standard errors are reported in square brackets. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

Gross margin bins, in %	**5-15%**	**16-25%**	**26-35%**	**36-45%**	**>45%**	**I do not know**
Subjective financial knowledge	1.225	1.445**	1.588**	1.923***	2.775***	0.447***
	[0.212]	[0.257]	[0.297]	[0.427]	[0.481]	[0.072]
Advice (D)	1.357	1.175	1.222	1.763**	0.889	0.948
	[0.302]	[0.269]	[0.291]	[0.495]	[0.199]	[0.197]
Sex (D)	2.052**	1.700*	3.109***	2.077**	1.659*	0.76
	[0.582]	[0.478]	[1.027]	[0.757]	[0.441]	[0.177]
Ln(1 + Age)	0.742	0.605	0.271**	0.346	0.126***	0.138***
	[0.419]	[0.353]	[0.162]	[0.238]	[0.070]	[0.069]
High education (D)	0.622**	0.678	0.785	0.636	0.947	0.525***
	[0.144]	[0.164]	[0.199]	[0.187]	[0.241]	[0.117]
High ent. experience (D)	0.97	1.207	1.415	1.312	1.347	1.151
	[0.260]	[0.339]	[0.425]	[0.463]	[0.368]	[0.277]
One-man business (D)	1.539	1.352	1.509	1.131	2.338***	1.924**
	[0.460]	[0.412]	[0.470]	[0.403]	[0.704]	[0.556]
Revenue category 2	3.411***	3.504***	4.107***	4.518***	5.294***	2.477***
	[1.220]	[1.277]	[1.587]	[1.858]	[1.803]	[0.835]
Revenue category 3	4.873***	4.379***	7.739***	4.01***	7.032***	2.868***
	[1.905]	[1.751]	[3.147]	[1.849]	[2.666]	[1.092]
Revenue category 4	1.982	2.821**	3.077**	1.503	2.083	0.715
	[0.905]	[1.272]	[1.469]	[0.841]	[1.038]	[0.360]
Revenue category 5	2.335**	1.447	1.818	0.901	0.733	0.606
	[0.956]	[0.632]	[0.833]	[0.478]	[0.392]	[0.297]
Revenue category 6	1.610	1.765	3.322***	0.492	1.989	3.715***
	[0.720]	[0.792]	[1.479]	[0.399]	[0.845]	[1.358]
Number of observations						1,499
Log-likelihood (model)						-2432.301
Log-likelihood (null)						-2816.667

Table 7. Self-assessed financial literacy and entrepreneurial outcomes – revenue growth.

The table presents the multinomial logit estimates expressed as relative risk ratios. The baseline bin for the model is the "Declined strongly by more than 20%". Industry dummies and constant are included in all models but are omitted for succinctness. Standard errors are reported in square brackets. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

Revenue growth bins	**Decrease (6-20%)**	**Slight decrease (1-5%)**	**Stable**	**Slight increase (1-5%)**	**Increase (6-20%)**	**Strong increase (>20%)**	**Do not know or Do not answer**
Subjective financial knowledge	1.075	1.356	1.294	1.439**	1.457**	1.68***	0.991
	[0.199]	[0.275]	[0.207]	[0.242]	[0.247]	[0.337]	[0.240]
Advice (D)	1.509	1.030	1.360	1.093	1.523*	1.186	1.106
	[0.385]	[0.283]	[0.299]	[0.252]	[0.353]	[0.320]	[0.360]
Sex (D)	0.539*	0.559	0.673	0.495**	0.734	0.825	0.375**
	[0.190]	[0.205]	[0.212]	[0.158]	[0.240]	[0.304]	[0.151]
Ln(1 + Age)	0.203**	0.068***	0.056***	0.046***	0.018***	0.007***	0.01***
	[0.156]	[0.054]	[0.037]	[0.031]	[0.012]	[0.005]	[0.008]
High education (D)	0.752	1.691*	1.622**	1.145	1.472	1.506	3.051***
	[0.203]	[0.504]	[0.387]	[0.282]	[0.369]	[0.439]	[1.130]
High ent. experience (D)	0.964	2.335*	0.652	0.534*	0.431**	0.209***	0.092***
	[0.379]	[1.160]	[0.211]	[0.177]	[0.142]	[0.074]	[0.038]
One-man business (D)	0.592*	0.445***	0.822	0.562**	0.542**	0.425***	1.261
	[0.169]	[0.134]	[0.207]	[0.146]	[0.141]	[0.129]	[0.558]
Number of observations							1,499
Log-likelihood (model)							-2732.416
Log-likelihood (null)							-2955.989

Table 8. Self-assessed financial literacy and entrepreneurial outcomes – revenue.

The table presents the multinomial logit estimates expressed as relative risk ratios. The baseline bin for the model is the Bin 1 corresponding to the "Less than €50k" answer. Industry dummies and constant are included in all models but are omitted for succinctness. Standard errors are reported in square brackets. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

Revenue bins	**2**	**3**	**4**	**5**	**6**
Subjective financial knowledge	1.504***	1.525***	1.938***	2.474***	0.995
	[0.185]	[0.199]	[0.399]	[0.522]	[0.151]
Advice (D)	1.765***	1.788***	2.412***	4.229***	0.829
	[0.287]	[0.306]	[0.626]	[1.151]	[0.174]
Sex (D)	1.836***	2.807***	3.841***	5.645***	0.892
	[0.371]	[0.637]	[1.445]	[2.333]	[0.206]
Ln(1 + Age)	0.539	0.189***	0.085***	0.148***	0.688
	[0.218]	[0.078]	[0.053]	[0.095]	[0.342]
High education (D)	1.046	1.136	1.033	1.648*	1.039
	[0.192]	[0.221]	[0.285]	[0.451]	[0.238]
High ent. experience (D)	1.914***	2.506***	2.763***	2.966***	1.362
	[0.384]	[0.554]	[0.985]	[1.097]	[0.331]
One-man business (D)	0.370***	0.109***	0.021***	0.004***	0.183***
	[0.084]	[0.023]	[0.007]	[0.002]	[0.046]
Number of observations					1,499
Log-likelihood (model)					-1963.050
Log-likelihood (null)					-2452.039

Table 9. Knowledge and propensity to ask for advice and its effect on firm performance.

The table presents the multinomial logit estimates expressed as relative risk ratios. The baseline bins are: for the Panel A the "Lower than 5%" answer; for the Panel B the "Declined strongly by more than 20%" answer; for the Panel C the "Less than €50k revenue" answer. In all cases the models are estimated using the same controls as in Tables 6-8. The baseline interactions are always in the first row of each panel. Standard errors are omitted for succinctness. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

Panel A: Gross margin bins, in %	**5-15%**	**16-25%**	**26-35%**	**36-45%**	**>45%**	**I do not know**
Low knowledge x Advice (D, 0)	1.000	1.000	1.000	1.000	1.000	1.000
Low knowledge x Advice (D, 1)	1.211	1.561	1.435	1.749	0.995	1.003
High knowledge x Advice (D, 0)	1.088	2.018**	1.912*	2.018	2.897***	0.407***
High knowledge x Advice (D, 1)	1.547	1.841*	1.935*	3.137***	1.995**	0.344***
Log-likelihood (model)						-2459.845
Log-likelihood (null)						-2816.667

Panel B: Revenue growth bins	**−(6-20%)**	**−(1-5%)**	**Stable**	**+(1-5%)**	**+(6-20%)**	**+(>20%)**	**Do not know or Do not answer**
Low knowledge x Advice (D, 0)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Low knowledge x Advice (D, 1)	2.571***	1.499	2.028**	1.419	2.101**	2.283**	1.243
High knowledge x Advice (D, 0)	2.17**	2.545**	2.508***	2.224***	2.501***	4.046***	0.91
High knowledge x Advice (D, 1)	1.879*	1.739	2.227**	1.743*	2.603***	2.407**	1.224
Log-likelihood (model)							-2725.406
Log-likelihood (null)							-2955.989

Panel C: Revenue bins			**2**	**3**	**4**	**5**	**6**
Low knowledge x Advice (D, 0)			1.000	1.000	1.000	1.000	1.000
Low knowledge x Advice (D, 1)			2.013***	2.408***	3.332***	3.103**	0.989
High knowledge x Advice (D, 0)			2.042***	2.728***	3.455***	2.600**	1.092
High knowledge x Advice (D, 1)			3.03***	3.839***	6.254***	10.498***	0.643
Log-likelihood (model)							-1955.338
Log-likelihood (null)							-2452.039

Table 10. Bivariate probit estimations.

The baseline for the revenue category dummies is Revenue category 1. Industry dummies, revenue category dummies, and constant are included in all models but are omitted for succinctness. Standard errors are reported in square brackets. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	High overall knowledge	High overall efficacy	High accounting knowledge	High accounting efficacy	High strategy knowledge	High strategy efficacy	High fin. source knowledge	High fin. source efficacy	High tax knowledge	High tax efficacy
Ln(1 + Age)	0.570***	-0.371	0.194	-0.202	0.512***	0.324	0.279	-0.113	0.069	0.183
	[0.176]	[0.275]	[0.158]	[0.177]	[0.188]	[0.288]	[0.188]	[0.244]	[0.189]	[0.220]
Sex (D)	0.20**	0.001	0.092	0.083	0.267***	-0.02	0.099	0.219*	0.190*	0.149
	[0.090]	[0.145]	[0.081]	[0.093]	[0.098]	[0.146]	[0.097]	[0.130]	[0.099]	[0.120]
High education (D)	0.170**	-0.191	0.072	-0.037	0.185**	-0.184	0.022	0.17	0.136	0.092
	[0.077]	[0.121]	[0.071]	[0.075]	[0.082]	[0.118]	[0.082]	[0.104]	[0.086]	[0.101]
High ent. experience (D)	0.259***	0.333**	0.263***	-0.038	0.212**	0.053	0.307***	0.039	0.323***	0.101
	[0.091]	[0.156]	[0.084]	[0.096]	[0.097]	[0.149]	[0.100]	[0.133]	[0.102]	[0.124]
One-man business (D)	-0.206***		-0.121		-0.138		-0.230**		-0.117	
	[0.090]		[0.080]		[0.095]		[0.098]		[0.097]	
High overall knowledge		3.329***								
		[0.315]								
High accounting knowledge				3.103***						
				[0.079]						
High strategy knowledge						2.628***				
						[0.351]				
High fin. source knowledge								2.887***		
								[0.380]		
High tax knowledge										2.873***
										[0.298]
High ret. Knowledge										
atanh(Correlation)		-0.267		-1.233***		-0.036		-0.305		-0.313
		[0.254]		[0.383]		[0.212]		[0.308]		[0.240]
Number of observations		1,664		1,664		1,664		1,664		1,664
Log-likelihood (model)		-1,339.303		-1,687.735		-1,241.499		-1,259.916		-1,253.810

Table 11. Knowledge and asking for professional advice.

The table presents the logit odds ratio estimates of the impact of various types of self-assessed knowledge on the likelihood to ask for professional advice. Controls, industry dummies and constant are included in all models. Standard errors are reported in square brackets. For the detailed definitions of variables see Table 1. * p<0.10, ** p<0.05, *** p<0.01.

Variable	(1)	(2)	(3)	(4)	(5)
Knowledge	0.682***				
	[0.063]				
Knowledge of accounting		0.778***			
		[0.071]			
Knowledge of strategy			0.798***		
			[0.051]		
Knowledge of financing				0.787***	
				[0.051]	
Knowledge of taxation					0.687***
					[0.054]
Number of observations	1,632		1,632		1,632
Log-likelihood (model)	-904.942		-909.944		-907.402
Log-likelihood (null)	-952.236		-952.236		-952.236

Appendix A: Additional tables

Table A1. T-tests of various types of knowledge.

	Knowledge of accounting	Knowledge of strategy	Knowledge of financing	Knowledge of taxation
Knowledge of accounting				
Knowledge of strategy	t-stat: 43.5847 ***			
Knowledge of financing	t-stat: 30.4488 ***	t-stat: -7.5649 ***		
Knowledge of taxation	t-stat: 40.1865 ***	t-stat: -3.5949 ***	t-stat: 3.5444 ***	

***p < 0.01, **p < 0.05, *p < 0.1

Table A2. Propensity to seek advice

	Sole owner		
Advice	0	1	Margin
0	189	586	775
1	383	378	761
Margin	572	964	1536

Table A3. Types of knowledge and need for help correlations.

The table reports the correlations and descriptive statistics between the types of self-assessed knowledge and the respondents' answer to the question "In which area do you think you need help most". All correlation coefficients are statistically significant at 1% level. * p<0.10, ** p<0.05, *** p<0.01. NHA, NHS, NHF, and NHT are the abbreviations for the need for help in accounting, strategy, financing sources, and taxation respectively. For convenience, we also report the relevant descriptive statistics extracted from Table 2.

Panel A: Correlation between the average knowledge and need for help answers.

	(1)	(2)	(3)	(4)	(5)
(1) Knowledge	1.000				
(2) Need help in accounting	-0.322	1.000			
(3) Need help in strategy	-0.142	0.480	1.000		
(4) Need help in financing sources	-0.102	0.363	0.584	1.000	
(5) Need help in taxation	-0.244	0.586	0.313	0.237	1.000

|

Panel B: Summary statistics for the need for help answers.

	Mean	**Median**	**SD**	**N**
Knowledge of accounting	4.180	4.200	0.670	1681
Need help in accounting (NHA)	0.471	0.500	0.369	1681
Knowledge of strategy	3.452	3.400	1.002	1681
Need help in strategy (NHS)	0.150	0.000	0.272	1681
Knowledge of financing	3.598	3.500	0.952	1681
Need help in financing sources (NHF)	0.252	0.000	0.434	1681
Knowledge of taxation	3.526	3.667	0.787	1681
Need help in taxation (NHT)	0.417	0.000	0.493	1681

Panel C: Correlations between specific types of knowledge and need for help answers.

	NHA	NHS	NHF	NHT
Knowledge of accounting	-0.294***			
Knowledge of strategy		-0.089***		
Knowledge of financing			-0.015	
Knowledge of taxation				-0.256***

Appendix B: the English translation of the complete survey (originally in Dutch)

List of Questions – Netherlands Chamber of Commerce 29-11-2016

Research over money and business matters among entrepreneurs

First part: how do you manage financial issues (problems and decisions) in your firm

This section of the survey covers issues related to money management, financial and administrative decisions taken in your firm.

Question 1: Who is responsible for the treasury, financial and administrative management in your firm?

- Nobody, I take care of this myself
- My partner
- Internal accountant
- External accountant
- Internal auditor
- External auditor
- Shareholders
- Financial advisor
- CFO
- Members of my family
- Other entrepreneurs
- Others (indicate here who):

Question 2: Who takes the financial decisions in your firm in the end?

- Myself **(go to question 2A)**
- CFO
- My partner
- Internal accountant
- External accountant
- Internal auditor
- External auditor
- Shareholders
- Financial advisor
- Members of my family
- Others (indicate here who):

Question 2A: Who is the person giving you the most relevant help in taking the financial decisions concerning your firm?

- Nobody, I decide completely alone
- CFO
- My partner

- Internal accountant
- External accountant
- Internal auditor
- External auditor
- Shareholders
- Financial advisor
- Members of my family
- Others (indicate here who):

Second part: Basic financial knowledge and ability to apply the concepts

You reach now the core of the survey. We propose three claims for each of the next fifteen subjects. Say how much you agree or disagree with each of the claims.

The next three claims concern the **reading and understanding of the profits and loss statement (P&L)**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
3. I am aware of the basic principles underlying a P&L					
4. I look and interpret regularly the P&L of my firm					
5. If one specific entry of the P&L has changed I understand the consequences of this on my business					

The next three claims concern the **preparation of the P&L**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
6. I am aware of the rules that underlie the construction of a P&L					

7. I regularly draft the P&L for my firm on my own					
8. I am able to take appropriate decisions concerning my business operations by looking at the important changes recorded in the P&L					

The next three claims concern the **return forecasts analysis**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
9. I know what elements are necessary to prepare a return forecasts analysis					
10. I am regularly busy determining and adjusting the correct amounts in order to prepare a return forecasts analysis					
11. When business conditions change I know what consequences this has for the preparation of the return forecasts analysis					

The next three claims concern the return forecasts analysis. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
12. I know how a return forecasts analysis is prepared					
13. I regularly draft return forecasts analysis for my firm on my own					

14. I am able to detect abnormal changes in the return forecasts analysis in order to take the appropriate business decisions in time					

The next three claims concern the **possible financial sources**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
15. I know the different sources of funds that my firm has access to					
16. I am able to identify the right financing source					
17. I know what is the effect of obtaining funds at different conditions on my business					

The next claims concern the **preparation of a demand for a credit line**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
18. I know the elements necessary to prepare a demand for a credit line					
19. I prepare by myself the elements necessary to demand a credit line					
20. As soon as my firm needs additional finance I invest time on this task					

The next claims concern **taxation issues**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
21. I know the most important fiscal regulation concerning income taxes					
22. I put aside enough money to pay taxes					
23. I know the effects that important changes in the tax regulation may have on my firm business results (for example, the impact of a change in the regime of deductions)					

The next claims concern value added tax (**VAT)**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
24. I am aware of the most important regulation about VAT					
25. I put aside enough time to fill in a correct VAT declaration for my firm					
26. I identify by myself changes in the VAT laws that apply to my firm business					

The next claims concern your **retirement savings**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree

27. I know that, as a self-entrepreneur, I need to take care of my pension on my own					
28. I regularly putting aside money for my retirement					
29. I check my pension rights every year and in case I feel it is necessary I take further decisions					

The next three claims concern **bookkeeping**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
30. I know what must be recorded in the accounting books and how to do it					
31. My accounting records are kept in a well-organized manner					
32. I can have a clear view of the financial situation of my firm at every moment by looking at the information contained in my accounting records					

The next three claims concern the **timely processing of bills and payables**. Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
33. I am aware of the basic principles underlying the management of credits and debt					

34. I have a precise overview of my unpaid bills and of credits and debts					
35. I am proactive towards the creditors who still need to be paid and the borrowers					

The next three claims concern **cash-flows and cash management**.

(In the following we refer to overviews of future incomes and costs for which it is clear that the firm has enough money to deal with).

Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
36. I know the basic principles underlying liquidity management					
37. I am constantly informed about my liquidity position to forecast and to avoid liquidity problems					
38. Considering the firm liquidity needs plays an important role in my business decisions					

The next three claims cover **strategic factors** of your firm.

With strategic factors we mean key economic and financial variables that affect the firm profits. For example, sales of products, Earnings Before Interests Taxes Depreciation and Amortizations (EBITDA).

Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree

39. I know the impact of the strategic factors					
40. I regularly check the dynamics of the strategic factors of my firm to analyse firm health					
41. I can explain and interpret the dynamics of the strategic factors and act upon them					

The next three claims concern **periodic reports**.

Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
42. I am aware of the importance of analysing periodic results during the year					
43. Thanks to a regular interpretation of the periodic results of my firm I have a clear picture of its financial condition					
44. I take my decisions based on periodic reports					

The next three claims concern **investment principles**.

Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
45. I know the basic investment principles					
46. I consider many possible alternative opportunities before I invest					

47. I can decide whether for my firm it is profitable to invest immediately or rather to delay the investment					

The next three claims concern **subsidies.**

Say how much you agree or disagree with each of the three claims.

	Totally agree	Agree	Neutral	Disagree	Totally disagree
48. I am aware of the possible subsidies I can obtain for my enterprise					
49. I think there is enough information about subsidies					
50. I understand the information about subsidies that is available					

Third Part: What is your experience with financial management?

The next questions investigate your experience in finance.

Question 51. In your opinion, how important is it to have enough personal knowledge on the following topics:

(Very important Important Neutral Not important Not important at all)

Accounting balance

Profitability analysis

Access to credit

Income and corporate taxation

VAT

Pensions

Accounting statements

Cash flows and liquidity management

Gross return, Quick Ratio, Solvency Ratio

Periodic statements

Investment and Payback period

Question 52. In which of the following area do you think you need professional help?

(Same as above)

Question 53. Please tell us whether one or more than one of the following happened to you in the past 36 months:

- Shortage of cash
- Problems with your firm bank account(s)
- You needed to compensate business losses with your private means
- Lack of funds for investment, or access to credit too expensive
- Delay in payments
- Insolvency on one of your debt
- Suffered a legal procedure due to your delay in repayments
- Could not reimburse a loan
- The bank refused one of your demand of credit
- An investor refused your demand of funds
- Missed income due to the unavailability of proper labour resources
- Missed income due to the loss of an important client
- Missed income due to the impossibility to find new clients
- Costs higher than expected due to the unavailability of proper labour resources
- Costs higher than expected due to the replacement of firm assets
- Costs higher than expected due to high purchase prices
- Others….

Question 54. In the past 36 months did someone tell you that they were concerned about your money or business management?

- Yes → go to question 54A
- No
- Do not know

Question 54A. Who were these people?

- Accountant
- Auditor
- Family
- Friends
- Employees
- Other entrepreneurs
- Clients
- Supplier
- Bank
- Investor
- Tax authority
- Municipality
- Others…

Fourth Part: General Questions

We have reached the last questions of this survey. They concern your own firm.

55. What is the gross margin of your firm in 2015 (earnings before depreciation and taxes but after deducting interests)?

- Less than 5%

- 5-15%

- 16-25%

- 26-35%

- 36-45%

- More than 45%

- I don't know

57. Did you follow some educational programs, courses or practical trainings to acquire additional knowledge in the area of finance?

- Yes, please specify

- No

58. Did you ask for external funds for your firm in the last three years?

- Yes. Go to question 59

- No

59. Did you receive external funds for your firm in the last three years?

- Yes

- No

60. Would you like to acquire more information in which areas of finance?

(Please fill in) _____

CODE	QUESTION	ANSWERS
Kvkq01	I am a:	1- Man
		2- Woman
Kvkq010	In which year your current enterprise was created?	
Kvkq011	How did the revenue of your firm develop in the last 3 years?	
		1 – Strong decrease (more than 20% on average per year)
		2 – Decrease (between 6% and 20% on average per year)
		3 – Slight decrease (between 1% and 6% on av. per year)
		4 – Stable
		5- Slight increase (between 1% and 6% on average per year)
		6 – Increase (between 6% and 20% on average per year)
		7 – Strong increase (more than 20% on average per year)
		8 – I don’t know / refuse to answer
Kvkq012	What is the yearly revenue of your firm at this moment?	
		1 – Less than 50 000 EUR
		2 – Between 50 000 – 100 000 EUR
		3- Between 100 000 – 250 000 EUR
		4- Between 250 000 – 500 000 EUR
		5 – Between 500 000 – 750 000 EUR

6 – Between 750 000 – 1 mln EUR

7 – Between 1 mln – 1.5 mln EUR

8 – Between 1.5 mln – 2.5 mln EUR

9 – Between 2.5 – 4 mln EUR

10 – Between 4 mln – 8 mln EUR

11 – Between 8 mln – 16 mln EUR

12 – Between 16 mln – 32 mln EUR

13 – More than 32 mln EUR

14 - I don't know / refuse to answer

Kvkq014 Do you earn other incomes aside from the one coming from your enterprise?

1 – No, my enterprise is my only income

2 – Next to my enterprise I have a job

3 – Next to my enterprise I have a pension / subsidy

4 – Next to my enterprise I have a rent

5 – Others: indicate in question kvkq014 Others

Kvkq014 Others

Kvkq015 How many hours do you spend per week on average in your enterprise?

Kvkq016 Did your enterprise bring to the market new products / new services in the last three years?

1 – Yes

2 - No

Kvkq016a These products/services were:

1 – New for my firm

2 – New for my firm and for our market/sector

Kvkq016b Who did develop these new products/services?

1 – Mostly my firm

2 – My firm together with other firms or institutions

3 – Mostly other firms/ institutions

Kvkq017 Does your firm export products/ services abroad?

1 – Yes, my firm exports goods abroad

2 – Yes, my firm offers services abroad

3 – Yes, my firm exports good and offers services abroad

4 – No, my firm does not export abroad

Kvkq018 What is the share of export on the total revenue of your firm? [0-100%]

Kvkq019 Does your firm import goods or services from abroad?

1 – Yes, my firm imports goods from abroad

2 – Yes, my firm buys services from abroad

3 – Yes, my firm imports good and buys services from abroad

4 – No, my firm does not import from abroad

Kvkq02 What is your date of birth? [day/month/year]

Kvkq020 Do you regularly work with partners from your own professional network outside your own enterprise?

1 – Yes

2 - No

Kvkq021 Which of the following statements best describes your plans for the coming 12 months?

1 – Innovate: I want to bring new products / new services to the Dutch /foreign market, and to add new models to my firm offer

2 – Consolidate: I want to increase my revenue/ reduce my costs and increase the notoriety of my brand

3 – Growth: I want to increase my firm activity by hiring new employees

4 – None of the above

Kvkq03 What is the highest education degree that you have earned?

1 – Primary school (or less)

2 – Middle school

3 –High school degree and equivalent

4 – Bachelor

5 – Master, PhD

6 – Others (please indicate in kvkq013 others)

Kvkq03 Others

Kvkq04 What are the four digits of your postal code?

Kvkq05 How many people work in your enterprise, including yourself? You can count both full time employees and part-time ones.

1- 1
2- 2-4
3- 5-9
4- 10-19
5- 20-49
6- 50-99
7- 100-249
8- 250 or more
9- Refuse to answer

Kvkq06 How many full-time equivalent people on average were working in your firm in 2015 (including yourself)?

Kvkq07 What is your function?

1 – Owner

2- Partner (in a family sense: husband/wife)

3 – Friend

4 – Controlling partner

5 – Officer

6 – CEO

7 – others (please indicate in kvkq07others)

Kvkq07 Others

Kvkq08 Are you owner (also in part) of more than one enterprise?

1 – Yes

2 – No

Kvkq09 For how long have you been entrepreneur, including your previous enterprises (if any)?

1- Less than one year
2- Between 1 and 2 years
3- Between 2 and 5 years
4- Between 5 and 10 years
5- More than 10 years