The Impact of Physical Screening Methods on Microfinancing Approval and Default Risk: A Case Study of Qredits

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Abstract

Microfinance has evolved into an essential financial service provider for individuals with low incomes who lack access to traditional banking services. This study investigates how the approval and default risk of microfinance are influenced by two different physical screening methods: on-site and on-office. This topic has not been extensively addressed in existing literature, creating a gap in understanding how various screening methods impact the outcomes of microfinance. The data used originates from Qredits, the largest microfinance institution in the Netherlands.

Qredits' recent pilot program, which allows for on-office screenings in addition to the traditional on-site screening method, raises the research question: "How do the physical screening methods of microfinance applications influence the approval and default risk of Qredits?" To answer this question, the study employs a mixed-methods approach, combining qualitative and quantitative research methodologies.

Qualitative data is collected through document analysis, interviews, and observations. Quantitative analysis involves examining data on microfinance approval and default risk from Qredits' management information system. The study uses dummy variables for screening methods, microfinance approval, and default risk, employing statistical tests and chi-square analyses to evaluate hypotheses.

The findings indicate that on-office screenings result in fewer microfinance approvals compared with on-site screenings. However, there is no significant difference in default risk between the two methods. The research provides valuable insights for (micro)finance institutions to improve risk assessment methods, potentially reducing default rates and enhancing financial decisions.

Keywords: screening method, finance approval, default risk, microfinance

Acknowledgements

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List of abbreviations

ABS	Association of Business Schools
BIS	Bank for International Settlements
BKR	Credit Registration Office
CCO	Chief commercial officer
CEO	Chief executive officer
CKI	Central Credit Information System
D&B	Dun & Bradstreet
DS	Database search
EMN	European Microfinance Network
EVA	External Referral Application
LO	Loan officer
MFI	Microfinance institution
MIS	Management information system
NVB	Dutch Banking Association
SB	Snowballing
SLR	Systematic literature review
SME	Small and medium-sized enterprises
TC	Total citations
TC/Y	Total citations per year
VFN	Association of Financing Companies in the Netherlands
WoS	Web of Science
χ^2	Chi-square

1 Introduction

Microfinance plays a crucial role for countries by offering financial services to individuals with low incomes. These target customers lack access to banking and related services. Microfinance has garnered substantial scholarly and public interest over approximately four decades, particularly following the recognition of Muhammad Yunus. He was awarded the Nobel Prize in 2006 for his pioneering notion of lending money to the poor (Mermod, 2013). Microfinance's market size then rapidly expanded, both in Europe and in the rest of the world. According to European Microfinance Network (EMN)[1] (2022), there were nearly 300 European microfinance institutions (MFIs) with a combined loan portfolio exceeding 9 trillion euros in 2022.

Qredits[2] is the largest MFI and the largest alternative financier in the Netherlands. The special thing about the company is that it is a foundation and, in addition to microfinance, also offers free tools such as coaching and training to its customers. Qredits uses an internal 'acceptance' score and based on this, in combination with the requested amount, determines whether the screening of applicants should be done in person or whether this can be done via a video call. In the case of an in-person screening, the loan officers almost always used to visit the applicant's home or company. These on-site visits are not very efficient (Siwale & Godfroid, 2022) due to travel time and costs of loan officers (Kumar et al., 2010). That is why MFIs are seeking innovations to make screenings more efficient (Siwale & Godfroid, 2022). For example, Qredits recently initiated a pilot where customers are asked to come to Qredits' office for a personal screening. The question here is whether such an innovation affects microfinance approval and default risk. This leads to the following research question: "How do the physical screening methods of microfinance applications influence the approval and default risk of Qredits?"

To answer the research question, the following four sub-research questions were formulated:

- "What does the application process and default process look like?"
- "How do the physical screening methods work?"
- "What are the differences between the physical screening methods?"

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[1] https://www.european-microfinance.org
[2] https://www.qredits.nl

- "What are the consequences of the differences for approval and default risk?"

There has been little research conducted on this topic in the microfinance or SME (small and medium-sized enterprises) finance literature. However, there is some literature available that discusses on-site screenings. Research by Erdogan (2018) shows that on-site visits can influence the finance decision. Applicants that give a positive impression to the loan officers during the on-site visit have easier access to financing. Bramer (2023) demonstrates that some qualitative characteristics that Qredits' loan officers assess during on-site visits cannot or are less effectively assessed during on-office screenings. These qualitative characteristics can be helpful for predicting borrower defaults (Chen et al., 2015). Therefore, the following hypotheses have been formulated:

- Hypothesis 1: On-office screenings result in fewer microfinance approvals than on-site screenings.
- Hypothesis 2: On-office screenings result in a higher default risk than on-site screenings.

To test the hypotheses, mixed-methods research is used. Regarding qualitative research, document analysis, interviews, and observations are conducted. The interviews are analysed using the Gioia method. For quantitative research, the data from Qredits is examined using various statistical methods such as the chi-squared and the Mann-Whitney U-test.

Understanding the impact of screening methods on microfinance approval and default risk holds practical importance for (micro)finance institutions. This research could aid the institutions in improving their risk assessment methods, leading to better-informed finance decisions and potentially reducing default rates.

This research is structured into various stages, each of which is described in separate chapters. Chapter 2 explores existing literature in the SME finance field. Multiple journal articles are systematically collected. Subsequently, the data is synthesized and analysed. The third chapter guides through the methodological course undertaken to address the research questions. Chapter 4 features a case study of Qredits. The processes, screening methods, and data collection are described. Also, the observation and interview studies are outlined here. The fifth chapter presents the results of the quantitative research and examines the relationships and

correlations between variables. The statistical tests are employed in this analysis. This research concludes with a discussion and conclusion.

2   Literature review

In order to analyse the state of a specific body of literature, it is crucial to employ a comprehensive review methodology (Crossan & Apaydin, 2010). Whenever the researcher aims to offer a critical state-of-the-art understanding of a specific body of literature, a systematic literature review (SLR) is the preferred methodology over other nonstructured review methodologies (Tranfield et al., 2003). SLRs utilize a specific protocol to comprehensively search and critically analyse existing literature and offer several advantages over other nonstructured review methodologies. First of all, they improve the quality of the review methodology and findings by applying a transparent, scientific and replicable procedure (Crossan & Apaydin, 2010; Tranfield et al., 2003; Christofi et al., 2017). Furthermore, they contribute to the enhancement of generalizability by enabling the synthesis and systematic analysis of accumulated knowledge within the given domain (Wang & Chugh, 2014).

In this study, the SLR follows a hybrid search strategy. This strategy refers to a pre-determined approach that combines at least two systematic methods for searching and locating literature (Wohlin et al., 2022). For the first method used, database search, the four steps outlined by Tranfield et al. (2003) are followed: (1) research question formulation, (2) review protocols definition, (3) data analysis and (4) data synthesis. The data synthesis is split up into different themes. In addition, recent business-related SLRs have been used as a practical example (Pascucci et al., 2018; Leonidou et al., 2020; Battisti et al., 2021; Mazzocchini & Lucarelli, 2022). Snowballing will be used as a second method. The guidelines of Wohlin (2014) are adhered to. The resulting data is also analysed and synthesized.

2.1   Database search

SLRs are driven by one (Xiao & Nicholson, 2013) or more (Nguyen et al., 2018) research question(s), which serve(s) as the basis for defining search strings for conducting scientific database searches (De Menezes & Kelliher, 2011). After taking note of a practical problem of Qredits and briefly conducting a preliminary theoretical study, the research question was subsequently defined as: "How do qualitative aspects in the physical screening of loan applications influence the loan approval and default risk of Qredits?"

To answer the research question, the following five sub-questions were formulated:

- "How are loan applications physically screened?"
- "What are the differences between the physical screening methods?"

- "What are the qualitative aspects considered in the physical screening of loan applications?"
- "How well can the qualitative aspects be measured in the physical screening methods?"
- "What is the influence of the measured qualitative aspects on the loan approval and default risk?"

The second step involved formulating a protocol, which entails the establishment of a system of inclusion and exclusion criteria carefully selected to effectively manage the process and minimize any potential bias (Brereton et al., 2007). To ensure a comprehensive search and maximize the effectiveness of the SLR, the decision was made to include literature from more multidisciplinary databases instead of relying on just one (Pascucci et al., 2018). Elsevier's Scopus and Clarivate Analytics' Web of Science (WoS) were selected for their accurate search functions and frequent inclusion in SLR studies (Waltman, 2016).

Next, a broad keyword search criterion was implemented to ensure the inclusion of relevant articles from both databases. The approach involved using a combination of keywords to search titles, keywords and/or abstracts (Leonidou et al., 2020). Based on the problem description and the research question and sub-questions in Chapter 1, the following constructs emerged as keywords: "office visit", "site visit", "loan officer", "qualitative aspects", "loan approval", "default risk". However, there were a few problems with searching these constructs in the databases. First of all, to the best of knowledge, there is virtually no existing literature in the finance field that distinguishes between on-office visits and on-site visits. That is why instead of those constructs just "visit" was taken as a keyword. In addition, there are a number of synonyms and other meaning-related words for the construct qualitative aspects, such as "qualitative characteristics", "qualitative information", "qualitative variables", "qualitative features", "soft aspects", "soft characteristics", "soft information", "soft variables" and "soft features". A meaning-related word for the construct loan approval is "lending decision". To tackle these problems, the Boolean operator "OR" was used. Also, the Boolean operator "AND" was used to construct the following search strings to be entered in the databases:

- "visit" AND loan officer;
- "loan officer" AND ("qualitative aspects" OR "qualitative characteristics" OR "qualitative information" OR "qualitative variables" OR "qualitative features" OR

"soft aspects" OR "soft characteristics" OR "soft information" OR "soft variables" OR "soft features");

- ("qualitative aspects" OR "qualitative characteristics" OR "qualitative information" OR "qualitative variables" OR "qualitative features" OR "soft aspects" OR "soft characteristics" OR "soft information" OR "soft variables" OR "soft features") AND ("loan approval" OR "lending decision");

- ("qualitative aspects" OR "qualitative characteristics" OR "qualitative information" OR "qualitative variables" OR "qualitative features" OR "soft aspects" OR "soft characteristics" OR "soft information" OR "soft variables" OR "soft features") AND "default risk";

- "loan officer" AND "default risk".

Furthermore, the search was not limited to a specific timeframe, which is in line with the provided practices by recent studies in business which also had a time-independent topic (Leonidou et al., 2020; Mazzocchini & Lucarelli, 2022). So, all relevant documents, regardless of the type, were included irrespective of the date of publication. However, the search was limited to just academic peer-reviewed articles as suggested by Tranfield et al. (2003). In addition, only publications written entirely in English were included (Sousa et al., 2008), as it is the dominant language in the academic world (Pascucci et al., 2018). Another criterion is that only SME finance related literature were selected, as it is directly related to the context of this study. The title, keywords and abstract of the results that remained after applying all the previous criteria were then screened. If it could be concluded from the screening that the content did not match the topic, the result was excluded as well. Finally, duplicate results were removed. In contrast to other SLRs (Leonidou et al., 2020; Battisti et al., 2021), no actual criterion has been set for the quality of the journals in which the articles were published in the inclusion and exclusion in this study. This is because, based on the other criteria, too few results from top journals, ranked 4*, 4 or 3 in the Association of Business Schools (ABS) Academic Journal Guide (Vrontis et al., 2020; John & Lawton, 2018), were found to allow a full literature review to be written. It goes without saying that the results from top journals that were found, were the most used in writing the literature review. Figure 1 illustrates the process of selecting literature for the SLR, along with corresponding number of documents (N) at each stage.

Figure 1

Literature selecting process.
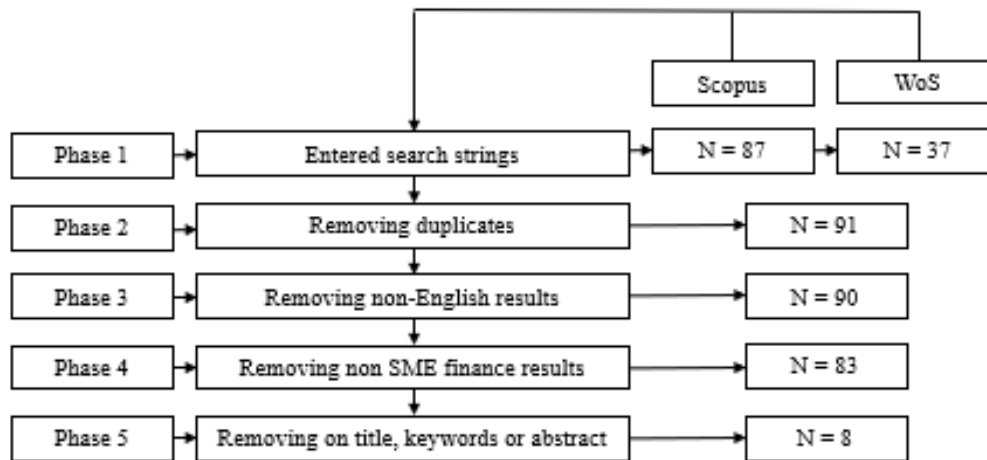
2.2 Snowballing

The snowballing procedure consists of a couple of steps. The first step is identifying an initial set of documents that will serve as the starting point. Once, this initial set is determined, the snowballing process begins, involving both backward and forward snowballing. Backward snowballing starts by examining the reference lists of the documents in the initial set to identify new documents that can be included in the SLR based on the title. Forward snowballing, on the other hand, involves identifying new documents by studying the documents that cite the document being examined (Wohlin, 2014). This study only uses backward snowballing. The documents found during database search were used as a start set. In addition, the inclusion and exclusion criteria of database search were used. This is how eleven results were found in addition to the eight results from the SLR.

2.3 Data analysis

Table 1 provides a summary of the characteristics of the selected 18 results, including the search strategy: database search (DS) or snowballing (SB). To identify what results were most influential, the total citations (TC) were included (Merigò et al., 2015). The information was obtained from Google Scholar, a prominent database for citations (Serenko & Bontis, 2017). The average citations per year (TC/Y) are also included. The relevance of the results can also be determined on the basis of the ranking of the associated journals. It is striking that the results come from a large number of different journals (18). Only the *Journal of Banking Finance* is represented twice with a result. However, this does not matter for relevance, since

the majority of the results (63%), according to Vrontis et al. (2020) and John and Lawton (2018), come from a top journal.

Table 1

Characteristics of the results.

Search strategy	Year	Authors	Article title	Journal title	Ranking	TC	TC/Y
DS	2002	Berger, A. N., & Udell, G.	Small business credit availability and relationship lending: The importance of bank organizational structure	*The Economic Journal*	4	3199	152,3
SB	2002	Stein, J. C.	Information production and capital allocation: Decentralized versus hierarchical firms	*Journal of Finance*	4*	3020	143,8
SB	2019	Liberti, J. M., & Petersen, M. A.	Information: hard and soft	*Review of Corporate Finance Studies*	3	566	141,5
SB	2010	De la Torre, A., Martinez Pería, M. W., & Schmukler, S. L.	Bank involvement with SMEs: Beyond relationship lending	*Journal of Banking and Finance*	3	699	53,8
SB	2009	Liberti, J. M., & Mian, A	Estimating the effect of hierarchies on information use	*Review of Financial Studies*	4*	616	44,0
SB	2017	Suri, T.	Mobile money	*Annual Review of Economics*	3	226	37,7
SB	2005	Grunert, J., Norden, L., & Weber, M.	The role of non-financial factors for internal credit rating	*Journal of Banking and Finance*	3	658	36,6
DS	2012	Uchida, H., Udell, G., & Nobuyoshi, Y.	Loan officer and relationship lending to SME's	*Journal of Financial Intermediation*	4	370	33,6
SB	2004	Elyasiani, E., & Goldberg, L. G.	Relationship lending: a survey of the literature	*Journal of Economics and Business*	1	487	25,6
DS	2015	Chen, Y., Huang, R. J., Tsai, J., & Tzeng, L. Y.	Soft information and small business lending	*Journal of Financial Services Research*	3	60	7,5
DS	2021	Filomeni, S., Udell, G. F., & Zazzaro, A.	Hardening soft information: Does organizational distance matter?	*The European Journal of Finance*	3	13	6,5
DS	2022	Siwale, J., & Godfroid, J.	Digitising microfinance: on the route to losing the traditional 'human face' of microfinance institutions	*Oxford Development Studies*	2	4	4,0
SB	2018	Ashta, A.	News and trends in Fintech and digital microfinance: Why are European MFIs invisible?	*FIIB Business review*	-	14	2,8
SB	2011	Soares, J. O., Pina, J. P., Ribeiro, M. S., & Catalão-Lopes, M.	Quantitative vs. qualitative criteria for credit risk assessment	*Frontiers in Finance and Economics*	-	31	2,6

SB	1996	Beaulieu, P.	A note on the role of memory in commercial loan officers' use of accounting and character information	*Accounting, Organization and Society*	4*	55	2,0
DS	2016	Sahar, L., & Anis, J.	Loan officers and soft information production	*Cogent Business & Management*	-	10	1,4
SB	2013	Elsakit, O., & Worthington, A.	Using environmental and social information on lending decision	*International Journal of Economics and Finance*		11	1,1
DS	2016	Baskara, I. G. K., Salim, U., Djumahir, D., & Djazuli, A.	Borrower characteristics and relationship lending on lending decision making: a survey of literature	Russian Journal of Agricultural and Socio-Economic Sciences		2	0,3
DS	2023	Filomeni, S., Bose, U., Megaritis, A., & Triantafyllou, A.	Can market information outperform hard and soft information in predicting corporate defaults?	International Journal of Finance and Economics	3	0	0,0

Figure 2 shows the number of results per year. The distribution seems to indicate a slightly increasing interest of academic research on the subject over the years. However, this is an increase of not even a handful of results in ranges of 5 years. In conclusion, it does not appear that there is an actual significant increase.

Figure 2

Number of results per year
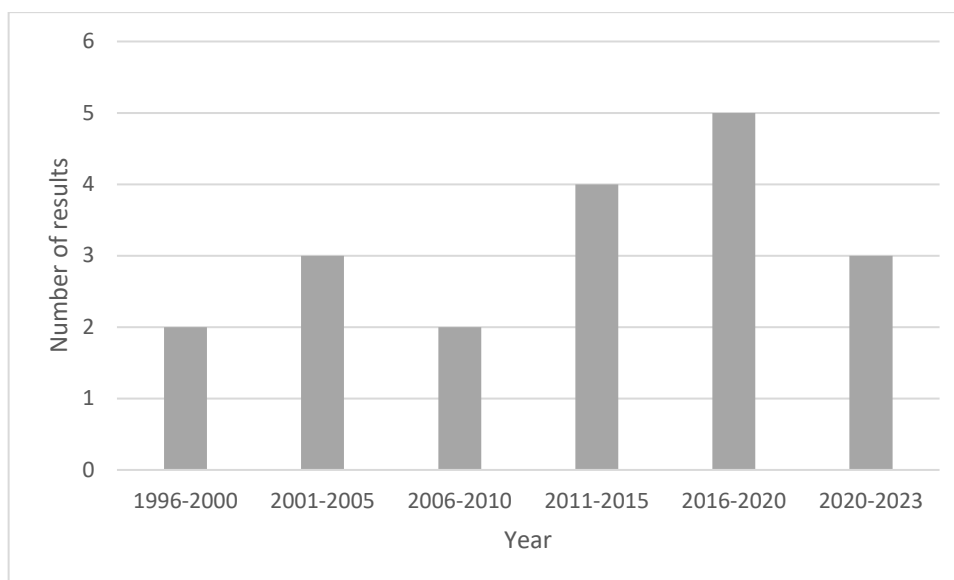
2.4 Lending technologies

In conventional finance literature, the 5c conceptual framework is often mentioned as a tool for analysing loan information and creditworthiness. The framework was introduced by Beaulieu (1996) and consists of five aspects:

- *Character*: borrowers' determination to repay debt.
- *Capacity*: borrowers' ability to operate a business capable of repaying debt.
- *Capital*: the available funds for borrowers to operate a business.
- *Conditions*: the prevailing economic conditions.
- *Collateral*: the availability of alternative sources of repayment.

In the year 2000, the Bank for International Settlements (BIS)[3] published a standard practice that should be followed in the global finance banking analysis and credit monitoring. This practice was called the Basel Accord. It provides that banks should base their lending process on hard (quantitative) and soft (qualitative) information of borrowers (Baskara et al. 2016). Hard information, as per Liberti and Petersen's (2019) definition, refers to information that can be easily summarized using a numeric score. Soft information is obviously the opposite and can therefore be challenging to summarize using a numeric score. Hard information of borrowers involve aspects like financial statements and credit scoring (Berger & Udell, 2006), the soft information of borrowers aspects like personal characteristics (Beaulieu, 1996; Soares et al., 2011), family situation, environment (Elyasiani & Goldberg, 2004; Elsakit & Worthington, 2012), management capability and marketing (Soares et al., 2011; Grunert al., 2005).

In the literature (Berger & Udell, 2002; Sahar & Anis, 2016), lending technologies are commonly classified into two categories: relationship lending that is associated with soft information and transactions lending that is associated with hard information. According to this classification, relationship lending is considered more suitable for borrowers with limited information transparency, while transactional lending is considered more suitable for borrowers who have high information transparency. However, Berger and Udell (2002) argue that it is overly simplistic to classify the lending technologies in just two types. The authors argue that characterization of transactional lending as a single, uniform lending technology is fundamentally flawed. They believe that different types of transactional lending technologies

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[3] https://www.bis.org/

exist, and among them, financial statement lending caters to transparent borrowers, whereas the others are designed for opaque borrowers. In their self-proclaimed more complete conceptual framework for SME finance, they identify eight lending technologies, each distinguished by a blend of the main information source, screening policies/procedures, loan contract structure and monitoring strategies and mechanisms. Only one technology is distinguished that is completely based on soft information:

- Relationship lending. In this technology, the financial institution primarily relies on soft information obtained through ongoing interactions, with the SME, its owner, and the local community to overcome the issue of limited transparency. This information is largely acquired by the loan officer through direct communication with the borrower and by observing the SME's performance across all aspects of their relationship.

2.5   Soft information production

Based on the traditional perspective of relationship lending, defined in Section 2.4, the loan officer generates soft information, which enhances the effectiveness of contracts and improves the borrower's ability to obtain credit. Recent studies on relationship lending (Liberti & Mian, 2009; Stein, 2002) have highlighted the significance of the loan officer-borrower relationship, rather than solely focusing on the bank-borrower relationship. Due to the theoretical importance of the loan officer to relationship lending, empirical research has been done on the role of the loan officer in providing this lending technology. The findings from Uchida et al. (2012) indicate that loan officers have a significant impact on generating soft information. Instances of frequent turnover among loan officers and the absence of a dedicated loan officer result in reduced production of information, while regular contact with borrowers contributes to increased information generation. Research by Sahar and Anis (2016) endorses these findings. They found that the production of soft information is enhanced by the loan officer's specificity, direct interaction with the manager and regular visits to the firm. Conversely, a high turnover rate among loan officers leads to a decrease in the production of soft information.

However, institutional barriers may hinder the quantification and effective communication of the soft information within financial institutions, potentially diluting its substance (Stein, 2002). According to De la Torre et al. (2010), conventional wisdom suggests that large financial institutions face challenges in engaging in relationship lending due to its

personalized and community-based nature. It is argued that such institutions may have relatively less capability to process and quantify soft information and transmit it effectively through the formal communication channels of complex organizations with distant headquarters (De la Torre et al., 2010). As a result, this soft information remains exclusive to the loan officer, as it is not easily observable, verifiable, or shared with others. In contrast, small financial institutions have greater flexibility for credit assessment, as loan officers can rely on techniques primarily based on soft information.

Soft information is an important part of the credit assessment (Beaulieu, 1996; Soares et al., 2011). It is especially important for the credit assessment of small businesses, as there are asymmetric information problems between the lender and borrower. Small businesses lack adequate assets to offer as collateral and their financial statements lack the necessary clarity and transparency. In order to address the challenges posed, MFIs must depend on soft information (Chen et al., 2015).

In the microfinance sector, the lending process and production of soft information has traditionally relied on personal contact between loan officers and customers by face-to-face screenings (Siwale & Godfroid, 2022). However, a shift seems to be underway as digitisation is seen as an essential tool to foster microfinance (Suri, 2017). Digitisation can manifest in different ways within the microfinance industry and holds the potential for great efficiencies. One approach is to provide loan officers with tablets and mobile phones, enabling them to expedite the screening process. Additionally, the implementation of credit scoring systems can completely take over loan-decision making procedures (Ashta, 2018). However, making face-to-face screenings with loan officers unnecessary means that soft information is lost (Uchida et al., 2012; Sahar & Anis, 2016). MFIs thus encounter a trade-off between complete digitisation and the production of soft information (Siwale & Godfroid, 2022).

2.6 Default risk

An additional factor that must be taken into account in the trade-off between digitisation and soft information production is the default risk. Research shows that utilizing soft information significantly enhances the effectiveness of default prediction models (Chen et al., 2015). Three main approaches to predict credit risks have been identified in the default prediction literature, of which only the hybrid methods of credit rating are relevant to this SLR (Filomeni et al., 2023). These methods are the only ones that take soft information into account (Liberti & Petersen, 2019). The methods try to predict defaults by combining hard and 'hardened' soft information about borrowers in their creditworthiness (Filomeni et al., 2023).

Hardening refers to the process of interpreting and coding information into a numeric score (Liberti & Petersen, 2019).

Filomeni et al. (2023) investigates the impact of soft information on predicting corporate defaults by differentiating between two approaches that loan officers can employ to harden soft information: questionnaire and override. A questionnaire captures a specific category of soft information that loan officers are required to consider when assessing the credit risk. It relies on a standardized and codified numerical scale established by the financial institution, which is incorporated into a mandatory qualitative questionnaire as part of the credit assessment. Consequently, the responses, provided by loan officers in this obligatory qualitative questionnaire do not undergo authentication by senior managers at the bank. This type of hardening is referred to as uncodified discretion. An override provides loan officers with the ability to adjust the final credit score assigned to a borrower, either by upgrading or downgrading it. This process is closely monitored by the financial institution's headquarters (Filomeni et al., 2021). This type of hardening is referred to as uncodified discretion. The findings of Filomeni et al. (2023) demonstrate that the incorporation of hardened soft information, manifested through codified and uncodified discretions, has a significant positive impact on the ability to predict borrower defaults when integrated into the lending decision. Moreover, when differentiating between the discretion to upgrade or downgrade a credit rating, it is observed that upgrades made by loan officers have the potential to decrease the predictive probability of borrower default.

Chen et al. (2015) go one step further and identify the actual types of soft information that are helpful for predicting borrower defaults. They distinguish ten soft information scores:

- *Employee:* borrower's employee loyalty and satisfaction.
- *Leadership:* management skills of the borrower's chief executive officer (CEO).
- *Regulation:* impact of government regulations on borrower's prospects.
- *Macro factor:* impact of macroeconomic factors on borrower's prospects.
- *Competitiveness:* borrower's competitiveness.
- *Quality:* borrower's products and services quality
- *Customer:* degree of borrower's sales to long-term customers.
- *Marketing:* borrower's marketing capability.
- *Team:* experience and knowledge of borrower's management team.
- *Public praise:* borrower's reputation.

Only *Employee* and *Customer* have a significant negative impact on borrower defaults. However, the sum of all scores also has this. Another type of scores has also been distinguished in the study: the adjustments of financial ratios by loan officers. The adjustments of leverage and profit have a significant negative impact on borrower defaults as well, while the adjustments of liquidity, turnover and growth have no significant effect. Finally, the sum of all financial ratio adjustments scores has a significant negative impact on borrower defaults.

2.7 Conclusion

In conclusion, loan applications are physically screened using a combination of hard and soft information. The screenings methods can be broadly classified into two categories, of which relationship lending relies heavily on soft information obtained through ongoing interactions with the borrower and the local community, aiming to overcome limited information transparency. Loan officers play an important role in this process. During screenings, they can take several soft aspects into account, which can be important for predicting the default risk. Borrower's employee loyalty and satisfaction and the degree of borrower's sales to long term customers have a significant negative impact on borrower defaults. Additionally, upgrades to final credit scores performed by loan officers have the potential to decrease the predictive probability of a borrower defaulting. However, it can be challenging to measure soft information, as it is often non-numeric.

3   Methodology

This chapter presents the methodology employed for this study, which aims to investigate the research question: "How do the physical screening methods of microfinance applications influence the approval and default risk of Qredits?"

3.1   Research methods

This study employs mixed research methods, combining elements of quantitative and qualitative research. Quantitative research methodology has been one of the most popular approaches in financial research over the past decades (Dewasiri & Weerakoon, 2016). However, this methodology is not always aligned with behavioral reality. Hence, there is room for supplementary approaches in finance (Dewasiri et al., 2018). Burton (2007) emphasized the importance of the qualitative approach in finance, highlighting early financial studies (e.g., Lintner, 1956) based on qualitative data. Dewasiri et al. (2018) argue that confirmation of findings through two different types of approaches or methodologies paves the way for greater completeness, validity, and generalizability of findings than with a single methodology. This is supported by Baker et al. (2011). As an example, Fetters and Freshwater (2015) made an argument that "1 + 1 = 3", signifying that the combination of qualitative and quantitative approaches yields more than the sum of their individual components.

Qualitative elements are employed to identify the screenings methods used by Qredits and the differences among them. Since the screening methods involve processes, they pertain non-numerical data that necessitates qualitative research. Numerical data is available for microfinance approval and default risk. Therefore, quantitative research is applied to delineate the differences between the screening methods concerning microfinance and approval.

3.1.1   *Qualitative research methodologies*

Qualitative data will be collected through document analysis, interviews and observations. Document analysis is a systematic process for examining or assessing documents, both in print and electronic formats (Bowen, 2009). The screening process is documented to some extent within Qredits. Which screening method should be used for a particular application is specified, as well as the topics that should be covered during a screening. However, there are no documents established for the further details of the screening, such as which questions to ask or how long the screening should last. This is all customized. To identify the documented information about the screening methods, relevant guidelines,

policies, reports, and other documents will be analysed (Bowen, 2009). These documents are confidential and therefore cannot be disclosed to the public.

To obtain a comprehensive process description that includes undocumented information as well, interviews and observations are also used. Initial plans aimed to conduct interviews with five loan officers, representing the five regions into which Qredits has divided the Netherlands. Each region possesses a team of local loan officers. Given the considerable interactions within the teams compared to external teams, variations in working methods can emerge. Furthermore, distinct regions may require different approaches due to significant disparities. Quite stereotypically, performing screenings in the urban environment of Rotterdam differs significantly from the rural setting in the North-East region. To present a thorough and organisation-wide overview, it is essential to include representatives from all teams in the interviews. Consequently, the loan officer from each team with the highest number of on-office screenings, and thus the best ability to assess differences between on-site screenings, was identified and invited to participate. Unfortunately, one loan officer is unable to partake due to workload constraints, and the team cannot spare an additional representative. The four interviews will be audio-recorded with participants' consent and transcribed verbatim for further analysis.

Observations necessitate the researcher's active participation within the culture and context that is studied (Jorgensen, 1993). Therefore, three on-office screenings and three on-site screenings of two loan officers will be attended. So, a total of twelve screenings will be attended.

By using three qualitative research methodologies, an attempt has been made to achieve triangulation, a combination of methodologies in the study of the same phenomenon (Denzin, 1970). According to Yin (1994), a qualitative researcher is expected to draw upon multiple (at least two) sources of evidence to find convergence and corroboration. Triangulating data enhances the credibility of the evidence (Eisner, 1991). Moreover, triangulation serves to mitigate the influence of potential biases that might emerge in a solitary study, providing a safeguard for the researcher against allegations that the study's conclusions merely stem from a singular method, a solitary source, or the partiality of an individual investigator (Patton, 1990).

3.1.2 Quantitative research methodologies

The numerical data from the customized management information system (MIS) of Qredits, MicroNET, and other internal information systems will be analysed to determine the difference in microfinance approval between on-office and on-site screenings. The same will be done for the default risk. The data is tracked by business intelligence specialists in the information systems. However, there was no connection with the screening method within the systems. This connection will be established in this research. Since the data has already been collected, it is considered secondary research (Stewart & Kamins, 1993). In an era where researchers worldwide are collecting and archiving vast amounts of data, the practicality of leveraging existing data for research is increasingly prominent (Smith, 2008).

3.2 Research procedures

This section provides a description of the procedures of the data collection applied in the empirical phase of this study. Firstly, it offers an overview of the chosen research methodologies. Subsequently, the sampling method is explained.

3.2.1 Document analysis

The procedure for document analysis involves finding, selecting, appraising (making sense of), and synthesizing data found in documents (Bowen, 2009). The documents were found by requesting the employees coordinating the on-office screenings to send all documents related to the screening process. Additionally, loan officers were requested to provide all documents related to the application process. Finally, the application process had already been described by Bramer (2023). He mentioned intake, screening, final review and payout as the four steps in the application process. By requesting only relevant documents, the employees have already conducted the selection themselves. Appraising the documents was not very difficult, as the researcher had been involved in the Qredits application process as an employee for four years. After all documents were compared, all the data could be synthesized.

3.2.2 Interviews

In terms of the procedures and methods related to the interviews, this study employs the protocol developed by Lillis (1999) to make interview data accessible for analysis. The protocol establishes a connection between the research question and the chose method, requiring an initial provision of motivation for the research methodology. In the case of this study, the rationale for opting for qualitative research in addressing specific sub-research questions is straightforward, as previously discussed in Section 3.1. However, this choice

aligns with a wide range of methods for data collection and analysis. Consequently, the protocol mandates a justification for the chosen qualitative research type. For this study, semi-structured interviews are selected. This decision is influenced by Erdogan's (2018) demonstration that such interviews revealed the impact of on-site visits on the lending decisions of Turkish Bankers, aligning with the study's objectives.

Semi-structured interviews are always subject to the influence of interviewer bias. This bias can have a significant impact on the credibility of the results. Therefore, an interview guide is designed with the aim of ensuring that each interview provided complete and consistent coverage of the themes under investigation while minimizing researcher intrusion through the specification of neutral questions and probes (Lillis, 1999). The interview guide is designed with an emphasis on formulating powerful questions, drawing inspiration from Vogt et al.'s (2003) study. The interview guide can be found in Appendix I.

3.2.3 Observations

Regarding the observations, this study largely follows the example of Silva (2004), who examined the decision-making process of venture capitalists and the criteria involved in it. The observations method involves collecting data by actively participating in the daily activities of the studied group or organization. This includes observing objects in the situations they typically encounter, engaging in conversations with some or all of the participants in these situations, and uncovering their interpretations of the observed events (Becker, 1958). There are two approaches to accessing the phenomena of interest when employing the observations method. When the researcher openly seeks permission to observe, the approach is termed *overt*. When this is not the case, the approach is termed *covert* (Jorgensen, 1993). In this study, the overt approach has been chosen. The request to attend on-office and on-site screenings was communicated to the chief commercial officer (CCO) with a brief description of the research project. After approval, two loan officers agreed to observe, each spending one day on three on-office screenings and another day on three on-site screenings. Throughout the four days, screenings with applications were observed. After each screening, the loan officers were asked for their feedback on the screening in the broadest sense. During the observations, relevant data was collected quite openly, making notes with a pen and notebook.

3.2.4 Secondary research

Johnston (2014) has outlined a specific process consisting of three steps for secondary research: (1) developing research questions, (2) identifying the dataset, and (3) evaluating the

dataset. The first step is no longer applicable in this study as the research questions have already been defined in Chapter 1. Regarding the second step, it has been discovered that the existing data from MicroNET would adequately address the research questions. This is unsurprising in this study, as MicroNET is the sole data source with information on screening methods, financing approval, and default risk of Qredits.

To determine the appropriate alignment of a dataset with a research investigation and ensure congruence, quality of the primary study, and the resulting dataset during the final step, the researcher must ask the following assessment questions according to Stewart and Kamins (1993):

- What was the aim of the study?
- Who was in charge of gathering the information?
- What information was effectively collected?
- When was the information collected?
- How was the information collected?
- How well does the information collected from one source align with information available from other sources?

The secondary data in this study is primarily collected to support Qredits in achieving its strategic, tactical and operational objectives. Qredits aims to track the number of screenings, approval rate and the number of defaults to monitor expected finance revenues and costs. The information has been recorded by various types of staff and gathered by the business intelligence specialists. It encompasses all possible information related to financing applications and is updated daily. As a result, the secondary data is considered reliable and up-to-date. The specific secondary data that has been collected and how it was done will be described in Section 4.3.

3.3 Measurement

In this study, the impact of physical screening methods on microfinance approval and default risk is examined. That means that the following constructs need to be measured: physical screening methods, microfinance approval, and default risk.

3.3.1 Physical screening methods

As indicated in Chapter 1, there are physical screenings conducted on-office and on-site. Section 4.1.3 will provide further explanation about these specific methods. For now, it is only relevant that the construct physical screening methods can be measured using a dummy

variable *Screening_Method*, because there are only two different methods in this case. The decision was made to use dummy coding, which is often used to test the effects of one group against another (Keppel, 1989). In dummy coding, only 1s and 0s are used as values. In a scenario involving two groups, dummy codes are generated by assigning a value of 1 to one group and 0 to the others (Fox, 1997). In this case, the value of 0 is assigned to on-site screenings and the value of 1 to on-office screenings. The advantage of using numerical values instead of non-numerical ones is that many statistical tests perform better with numerical values (Suits, 1957). Additionally, calculations are more straightforward with numerical values. For instance, the mean of a set of dummy variables coded as 0 and 1 can be easily calculated.

3.3.2   Microfinance approval

For microfinance approval, several variables have been created. Firstly, dummy coding has been used to create the variable *Approval*, taking the value of 0 if a financing application is not approved and 1 if a financing application is approved, which is in line with other finance literature (Scott & Smith, 1986; Blanchard et al., 2008; Zhang et al., 2017)

However, approval does not necessarily lead to disbursement. For instance, the applicant may not sign the agreement after approval. Additionally, there are some recent financing applications in the sample where there has not been enough time to prepare the agreement, sign the agreement or disburse the financing. Despite approval, these applications, may for any reason, ultimately result in a non-disbursement. For Qredits, it is also relevant to consider this in the comparison between the screening methods. Suppose there are significantly more disbursements in on-site screenings than in on-office screenings, but the financing terms, such as amount and duration, are exactly the same for both methods. In that case, the forecasted interest revenue from on-site screenings is higher than that of on-office screenings. Moreover, a larger number of disbursements align better with the social goal of Qredits. Therefore, the number of disbursements should also be considered in this research. A dummy variable *Disbursement* has been created for this purpose by dummy coding, where a value of 0 indicates a non-disbursement, and a value of 1 indicates a disbursement.

As indicated, the disbursed amount also plays a role. Suppose significantly higher amounts are disbursed in on-site screenings than in on-office screenings, but the number of disbursements and the duration are exactly the same for both methods. In that case, the forecasted interest revenue from on-site screenings is higher than that of on-office screenings. Therefore a ratio variable *Disbursed_Amount* for the disbursed amount has also been created. This has also been done in other financial studies (Cziráky et al., 2005; Agier & Szafarz, 2013)

comparing two groups. Since the disbursed amount may differ from the requested amount, similar to the studies of Scott and Smith (1986) and Blumberg and Letterie (2008), an additional variable, *Deviation*, has been created by contrast coding to examine whether a financing is fully or partially disbursed. Contrast coding was developed as an extension of dummy coding (Overall & Spiegel, 1969). This coding method enables the researcher to analyse more than just differences between one group and all other groups (Kaufman & Sweet, 1974). The fundamental principle of this coding framework is that it necessitates the researcher to allocate contrasts in a way that adds up to 0 across all subjects (Keppel, 1989). In this study, the variable takes a value of 0 if the requested amount is disbursed exactly, a value of -1 if less is disbursed than requested, and a value of 1 if more is disbursed than requested.

3.3.3 *Default risk*

In section 4.2, the default process is described. It will become apparent from this description that Qredits assumes that the larger the arrearage, the greater the risk of default. The arrearage must have accumulated significantly for a financing to eventually be considered in default. This study only includes financing applications submitted between April 6 and December 14, 2023. The disbursements resulting from these applications practically may not have incurred a high arrearage substantial enough to be considered in default. The data was last updated on January 8, 2024. Therefore, in this study, a proxy for default risk must be used. Unfortunately, the number of arrearage days cannot serve as this proxy. For instance, financings disbursed in April may have accumulated a larger arrearage than what is possible for financings disbursed, for example, in November. Financings disbursed in December may not have any arrearage at all, as technically no direct debits can take place in the month of disbursement. The debits are executed on the 25th of each month after the month of disbursement. Therefore, the first direct debits for financings disbursed in December will take place on January 25, 2024, which is after the data update date. Hence, these financings are excluded for this variable. For the remaining financings, a dummy variable "Arrearage" has been created, assigning a value of 0 to financings without arrearage and a value of 1 to financings with arrearage, based on Durango-Gutiérrez et al. (2021). Here, dummy coding has been used again.

3.4 Data analysis method

The collected data is analysed depending on the methods used. For document analysis and observations, the data is synthesized and summarized following the example of Bramer

(2023). The Gioia method is employed for the interview data. The statistical tests for quantitative data are described in Chapter 5.

3.4.1 *Gioia method*

The Gioia method will be employed for analysing the interview data. The method follows a three-step coding process that ultimately leads to the creation of a data structure. The three steps encompass first-order analysis, second-order analysis, and the development of aggregate dimensions (Gioia et al., 2013).

The first step involves gathering and organizing qualitative research data. Throughout the analysis, numerous terms and codes emerge from the interviews, giving rise to a multitude of themes that may initially seem overwhelming. As the research progresses, distinctions and similarities between the themes may become apparent, ultimately narrowing down the number of themes to a manageable range, typically between 25 and 30.

Following the categorization of the data, labels or descriptive phrases are assigned to the themes. Subsequently, the array of themes is examined to uncover deeper underlying structures. At this stage, a multi-level perspective is adopted, considering informant terms, codes, and abstract theoretical concepts such as themes, dimensions and the broader narrative. Once the themes are condensed into a workable set of terms and concepts, the second-order analysis is considered complete.

Finally, the potential to further refine second-order terms into aggregate dimensions is explored. Once the full set of first-order themes, second-order terms, and aggregate dimensions is established, the foundation for constructing a data structure is available. This data structure serves as a visual aid that organizes the data and visually represents the progression from raw data to terms and themes during the analysis. It plays a crucial role in demonstrating the rigour of the qualitative research approach (Gioia et al., 2013).

4 Case study

This case study was conducted within Qredits. Therefore, the quantitative data also originates from this organisation. How this data is collected is described in this chapter. To comprehend this, it is also important to understand how the data is generated. Hence, the application process, of which the approval is a part, and the default process within Qredits are described as well.

4.1 Application process

Applicants can submit a microfinance application online on the Qredits website. When they do so, the application is received in MicroNET. The processing of the application takes place in several steps (intake, check, screening, risk management, and administration) from this point.

4.1.1 Intake

The first step is conducted by the employees of the back office. They verify whether the applicant has provided all the necessary information in the application, primarily in the form of documentation. Applicants are generally categorized into three groups for documentation purposes:

- Existing entrepreneurs: applicants who already have a business with a minimum of several months of business activities. Typically required documentation includes a detailed description of business activities, an investment budget, the final or draft financial statements of the most recent fiscal years, and the interim financial statements for the current fiscal year.

- Starting entrepreneurs: applicants who do not yet have a business or have a business with a maximum of several months of business activities. Typically required documentation includes a business plan and financial plan.

- Acquiring entrepreneurs: applicants looking to acquire another business. Typically required documentation includes a business plan, a financial plan, an investment budget, and the final or draft financial statements of the two most recent fiscal years, along with the interim financial statements for the current fiscal year.

If the required information is incomplete, applicants are contacted by the back office via phone and/or e-mail, requesting them to provide the missing information.

4.1.2   Check

Once the necessary information is complete, the application is checked on several aspects by the back office. Firstly, the applicant's data is checked against various external credit bureaus and systems. The Central Credit Information System (CKI) of the Credit Registration Office (BKR)[4] registers all loans and credits above € 250 from financing providers. This allows Qredits to review how many loans an applicant already has and whether they are repaying them on time. The credit information bureau EDR[5] manages a database with positive and negative payment experiences on businesses. Scoring models are developed based on this information. The External Referral Application (EVA) is the joint fraud prevention system of the Dutch Banking Association (NVB)[6] and the Association of Financing Companies in the Netherlands (VFN)[7]. Thus, Qredits uses this system to assess the fraud risk of an applicant.

If, based on the documents in combination with the checks, there are sufficient indications to schedule an appointment, the application is forwarded to a loan officer. Otherwise, the application is rejected.

4.1.3   Screening

There are four different ways to screen applications: video screenings by the back office, video screenings by loan officers, on-office screenings by loan officers and on-site screenings by loan officers. Requests with the lowest risk are screened by the back office through a video call. In the past, applications with medium and high risk were screened on-site by loan officers. In the interest of efficiency, this approach has been modified for these applications. Applications with medium risk are now screened by loan officers on office, unless this is not possible for the applicant due to travel distance or other circumstances. In such cases, loan officers offer a video call screening. This modified approach saves loan officers a significant amount of travel time. Applications with high risk are still screened on-site by loan officers.

The level of risk is determined based on an internally calculated acceptance score and the amount requested. Qredits has enlisted the assistance of Dun & Bradstreet (D&B)[8], the global market leader in business decisioning data and analytics, to develop the acceptance

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[4] https://www.bkr.nl/
[5] https://www.edrcreditservices.nl/
[6] https://www.nvb.nl/
[7] https://www.vfn.nl/
[8] https://www.dnb.com/

score. The acceptance score estimates the potential risk of applicants defaulting during the term. The score is determined before the screening and ranges between 1 and 10 (Korynski & Stulen, 2019). The higher the score, the better, and vice versa. In the calculation, ten secret variables are considered.

Figure 3 shows the decision tree for the risk levels. It is important to note that the tree consists of guidelines for the screening methods defined by the management. The back office and loan officers may deviate from the guidelines for various reasons at Qredits. For instance, it is possible that an applicant has been financed by the back office before, but the acceptance score of the new application may not meet the guidelines for rescreening by the back office. Since the back office is already familiar with the customer, a decision may be made to have the back office conduct the screening again. Another reason could be the industry in which the applicant operates. For example, applications from hospitality businesses are more quickly classified as high risk. That is why the guidelines also stipulate that applications from this industry, ranging from € 25.000 to € 50.000 with an acceptance score higher than 5, inherently carry a high risk and thus require an on-site visit. In addition, it has been chosen to minimize the on-office screening of applications from existing customers. These can be more conveniently screened by a videocall, as the loan officer is already familiar with the applicant.

For each screening method, the application is discussed personally with the applicant. If the back office or loan officer is positive about the application after the appointment, a screening report must be written. This report must include, at a minimum, the following aspects: company description, entrepreneur description, market description, investment and financing budget, and financial analysis.

Figure 3

Decision three risk category

Amount requested	Acceptance score	Risk category
	1 - 4	High
<= € 25,000	5	Medium
	6 - 10	Low
	1 - 5	High
€ 25,001 - € 50,000	6	Medium
	7 - 10	Low
> € 50,000	1 - 10	High
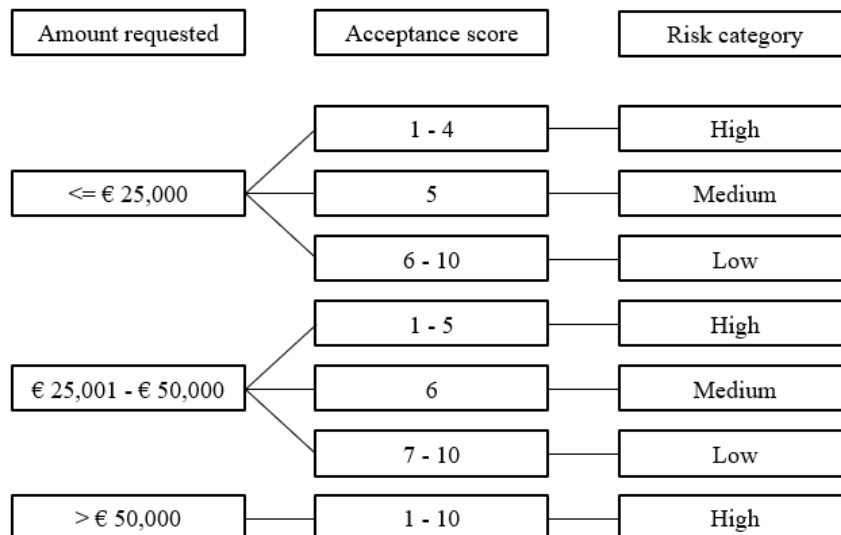
4.1.4 Risk management

The risk department checks the screening reports according to the four-eyes principle, regardless of the screening method. If the risk manager is also positive, the application is approved. If the risk manager is negative, contact is made with the submitter of the report. Based on this contact, the application can still be approved, put on hold or rejected. Risk management is optional in the application process, as not all screening reports are checked. Applications below € 25.000 with an acceptance score higher than 5 from the back office and applications below € 25.000 with an acceptance score higher than 4 from loan officers are not checked if the respective submitter has been granted delegated authority. To obtain this, an employee must have a permanent contract, a certificate for a specific vocational course and approval from the risk management department.

4.1.5 Administration

After the financing has been approved by the risk department, a financing agreement is drafted, outlining the terms. The agreement is sent to the applicant and should be signed in duplicate. Once this is accomplished, the administration department prepares the disbursement. After one of the two authorized signatory directors has signed for the disbursement, the financing is effectively disbursed.

4.2 Default process

When financing is disbursed, a default risk arises. However, a default does not happen just like that. How Qredits tries to prevent this and how financing can ultimately lead to a default is described in this section.

4.2.1 Management

After the financing has been disbursed, the customer is required to make monthly payments of interest and principal. The installment amount is debited from the customer's bank account. If the direct debit fails, the customer automatically receives an e-mail notification. In addition, it is the responsibility of the loan officer to reach out to the customer. This can be done, for example, by visiting the customer, e-mailing, calling, or using WhatsApp[9]. The purpose of the contact is to find a solution to the arrears. In addition, a new direct debit is attempted. These measures apply to arrears of up to 30 days.

If the arrears have exceeded 30 days, additional measures can be implemented. The customer will receive an automatic e-mail after 45 days, announcing that the financing will be registered negatively at BKR if no solution is reached. In addition, loan officers can also inform the guarantors and other responsible parties, such as partners.

If the arrears have exceeded 60 days or no solution has been reached, loan officers can seek assistance from the special management department. If the arrears have reached more than 90 days, the case must be transferred from the loan officer to this department. After a customer has made timely payments for two years, the case is transferred to the regular management department.

4.2.2 Provision

For a finance provider, it is desirable and common practice to establish a provision to reserve an amount to cover the potential default risk of customers who fail to fulfill their financial obligations, either partial or in full. For Qredits, these customers are identified as "doubtful debtors". Within this group, a distinction can be made based on the level of payment arrears. This distinction is taken into account in the provisioning policy by categorizing doubtful debtors into different "buckets":

- If a customer has an arrear of 4-6 months, a provision is made for 70% of the remaining debt and the outstanding interest.
- For customers with arrears of 7-9 months, the provision increases to 80% of the remaining debt and the outstanding interest.
- For those with arrears of 10-12 months, a provision covers 90% of the remaining debt and the outstanding interest.

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[9] https://www.whatsapp.com/

- If a customer's arrears exceed 12 months, the provision includes 100% of the remaining debt and outstanding interest.

4.2.3 *Default*

If it is anticipated that no further payments will be made on a provided financing, the remaining debt and outstanding interest is administratively written off. This is also referred to as taking a default. This is an internal measure where the customer is not externally relieved of its payment obligations. It is entirely dependent on the situation when a financing is taken default. There is no specific moment attached to this.

The decision to take defaults is made in the so-called risk committee. This is a meeting attended by the board of directors, risk managers, a special management employee, the management manager, and the company lawyer.

4.3 Data collection

Given the elucidation of the application process and which applications are screened on-office or on-site, the data for this research can be collected. The exact methodology is described in this section.

4.3.1 *On-office screenings*

The customer service employees schedule the on-office screenings for the loan officers. In doing so, they take into account the availability of the loan officers, which is shared in a schedule in an Excel document. The employees have placed the application number in the schedule for screenings scheduled by themselves starting from August 15, 2023, resulting in 190 numbers.

However, these are not all application numbers for on-office screenings, as there are two problems. Firstly, on-office screenings have been scheduled since April 6, 2023. Secondly, loan officers can also schedule on-office screenings themselves. To address this, all loan officers' agendas were examined, resulting in 138 additional application numbers.

In addition to the schedule in Excel and the agendas of the loan officers, another data source has been used. When the customer service employees schedule an on-office screening, the application number is also added to their agenda. All employees had removed these numbers from their agendas, except the employee who estimated to have scheduled around 70-80% of the on-office screenings by customer service employees. This employee provided 135

numbers that are potentially screened on-office. These numbers were cross-referenced with those in the Excel schedule and loan officers' agendas for validation.

There is obviously overlap between the three data sources. Therefore, all 57 duplicate values have been removed. After this, 406 application numbers remained. However, these also included video screenings. Additionally, these could still include on-site screenings, as loan officers can manually change the screening method if they deem it necessary. Whether an application is processed through a video screening or physical screening must be indicated in MicroNET. However, whether a physical screening is conducted through an on-office or on-site visit is indicated in the comments field and/or logbook in MicroNET. The customer service employees note in their own words how the application is screened. The different wordings make it difficult to filter here. Therefore, the comments field and logbook of all 406 application numbers have been manually checked. This revealed that 272 applications were actually screened on-office.

Of the applications screened on-office, 117 applications did not meet the conditions for on-office screening. These applications had an acceptance score and/or requested amount that, according to the decision tree, categorizes them outside of medium or low risk. The industry played no role in not meeting the criteria, but the type of customer did. In the case of 9 applications, the applicant was already an existing customer. Furthermore, one application has been excluded because it was screened by the back office instead of by a loan officer. Finally, there were 30 applications that ultimately did not result in an approval or rejection. These have also been excluded. All in all, 115 on-office screenings have been selected.

4.3.2 On-site screenings

Based on the data in MicroNET, an attempt was made to create a comparable sample with on-site screenings. The following filters were applied to all financing applications:

- *Compliance with the conditions for on-office screening*. Only financing applications that qualify for on-office screening according to the decision tree have been selected. Compliance with the conditions also means that applications from hospitality businesses and existing customers are excluded.
- *Screening method*. Only financing applications where it is indicated that they are processed through a physical screening have been selected.
- *Visit method*. Only financing applications that do not appear in the on-office screening sample have been selected.

- *Status*. Only approved or rejected financing applications have been selected.
- *Screener*. Only financing applications screened by loan officers have been selected.
- *Date*. Only financing applications submitted between April 6 and December 14, 2023, have been selected.

Based on these filters, 263 financing applications have been selected to form the sample for on-site screenings. These also include screenings that were initially intended to be conducted on-office but, for whatever reasons, could not be carried out on-office. However, this does not affect the data because the samples are structured in such a way that all on-site screenings meet the criteria for on-office screenings, and vice versa.

4.4 Interviews

To answer the research question "What are the differences between the physical screening methods?" interviews were conducted with four loan officers. Each loan officer has been assigned a unique pseudonym. For instance, LO1 corresponds to the first loan officer, LO2 to the second loan officer, and so forth. The interviews can be found in Appendix II – V. Through the analysis and coding of the conducted interviews, aggregate dimensions have been identified. The subsequent narrative, grounded in the data, elucidates the findings across three distinct dimensions: environmental context, interpersonal dynamics and information complexity.

4.4.1 Environmental context

The differences between on-site and on-office screenings are diverse, as evidenced by the statements of the loan officers. According to LO3, on-office screenings take place in a more clinical environment, minimizing external stimuli. This controlled setting enables loan officers to focus solely on the client and the file. On-site screenings, on the other hand, involve many more elements that stand out. For instance, a photo of a dog on-site can prompt a conversation. Additionally, the client's home environment plays a crucial role in the assessment. Loan officers assess the cleanliness on-site, which cannot be done on-office, and LO2 and LO4 even intentionally go to the restroom during on-site screenings to inspect it. Furthermore, LO3 discussed with her supervisor whether she could reject an application solely based on the mess on-site. As a final difference, LO1 mentions that during on-site screenings, a potential partner is more frequently present.

4.4.2   Interpersonal dynamics

The interviews reveal differences between on-office and on-site screenings regarding the interpersonal dynamics between the loan officer and the applicant. These differences become apparent already during the reception. For instance, LO4 emphasizes the importance of how the door is opened and how welcome he feels on-site in his assessment. On the other hand, during on-office screenings, the loan officer is the one responsible for opening the door and welcoming the client. LO3 expresses discomfort with on-office interactions, stating, "there is a very different kind of start. I find it very uncomfortable on-office. I come in with client I am receiving, the client enters, and that's it." Since the client is a guest during on-office screenings, their behavior changes accordingly. On-site, clients might, for example, slump on the couch or nervously move cups back and forth, walking from the kitchen to the room. However, when invited on-office, they only sit in a chair and have limited space to move. As a result, applicants seem to feel less free and more formally treated on-office compared to on-site. Besides that, according to LO1, clients appear more tense on-office, requiring the loan officer to make them comfortable during on-office screenings. Finally, the small talk lasts longer and it's easier to find common ground with the applicant on-site. As a result, establishing a personal connection with the applicant is also more common on-site.

4.4.3   Information complexity

The last significant difference highlighted by the interviewees is related to the challenge of obtaining information. For instance, LO3 takes into account the client's residence in the assessment. In on-office screenings, she cannot precisely see this, requiring her to assess it using Google Maps instead of firsthand observation. Additionally, mapping soft information is more challenging on-office. The cleanliness of the house is a crucial example of soft information that loan officers consider in their assessments. On-office, it takes more time and questions to get the gut feeling about this right. In on-site screenings, it is easier to confirm the gut feeling. Finally, the reliability of some information is easier to verify on-site. LO1 provides an example: "If someone on-office claims to live alone … I have to accept it. However, at someone's home, I can observe more about their living situation." On the other hand, LO3 indicates that the substantive aspects of an application are easier to assess on-office since she has no distractions there.

4.5 Observations

Two observations studies have been performed. During these studies, two loan officers were accompanied. This resulted in three on-office and three on-site screenings per loan officer. Below each observation is summarized in a brief report.

It is worth noting that one attended on-office screening and two attended on-site screenings, falling into the high-risk category according to Figure 3, did not qualify for on-office screening and, therefore, fall outside the scope of this study. Unfortunately, this could not be avoided due to planning constraints related to travel distance and the available number of applications. Despite this, it was decided to include the observations from these screenings since they do provide information about the working methods of loan officers in general.

4.5.1 On-office screenings

On-office screening 1: The first on-office screening was with a lady who had been running a massage parlour for several months and wanted to expand. She wished to move to a new location and needed € 6.000 to make this possible. The acceptance score was a 5 out of 10. Since the lady was not proficient in the language, her husband accompanied her and primarily spoke on her behalf. He held a full-time job with a decent net salary, but also had a small negative BKR-registration.

LO1 was positive about the application, considering the requested amount was low. The risk was also low because the husband with the decent salary would co-sign for the financing. Based on a risk-liability assessment, LO1 found it to be a straightforward application. However, he noted that he would have asked different questions if it were a higher application. In that case, it would have been a concern that only the husband spoke while the lady was the owner of the business.

On-office screening 2: Two friends had started their own clothing online store for their graduation project a few months ago. The clothing was produced and sourced in China and sold in Europe. They had already generated some revenue and wanted to borrow € 25.000 for marketing purposes. The applicants could cover the purchasing costs themselves as they both worked as employees and still lived with their parents. The acceptance score was an 7.

LO1 was also positive about this application, which he did not anticipate beforehand. He found it challenging to assess the feasibility of the budget due to significant competition in the industry, both nationally and internationally. Nevertheless, he believed that the applicants

could repay the financing, regardless of the success of the business. After all, there were two of them, still lived at home and had a job.

On-office screening 3: A painter and plasterer had applied for € 25.000 for a van and tools with an acceptance score of a 5. His business had been active for over two years. Since the man did not speak a word of Dutch, English or German, he had brought along a fellow entrepreneur to act as an interpreter.

The application was rejected quite early during the screening. According to LO1, this was due to three reasons. Firstly, he was unwilling to provide financing because there was no possibility of communication with the applicant. Secondly, financing was deemed impossible based on the annual figures. The applicant needed more money personally than what he earned in his business. Finally, data from BKR revealed that the applicant had already obtained financing for a van last year.

On-office screening 4: Two former colleagues wanted to make a fresh start together with the bankrupt company of their former employer. The men were in insulation technology and had accumulated a lot of equipment for the business over the past few years. Additionally, they had already secured signed contracts and both had partners with income from benefits. The only thing they still needed to start was a van and some materials, for which they applied for €40.000. The acceptance score was a 7.

LO2 considered it a good application based on a combination of entrepreneurial competencies, financial feasibility, and personal situations. The men had a solid background and a stable personal situation with owned homes and partners with income. Additionally, according to LO2, they seemed to have a good payment history as they had already saved a significant amount as their own contribution.

On-office screening 5: A roofer with an acceptance score of 5 had been running his own business for 6 years and collaborated closely with another roofer who had been financed by LO2. The company had nearly made a profit of €100.000, but almost all of it had been used for a renovation of the entrepreneur's purchased house, which turned out to be slightly higher than expected. As a result, the roofer initially could not pay his income tax of € 37.000. However, this tax advisor managed to arrange a settlement with the tax authorities, and during the screening, it became evident that no financing was needed anymore.

LO2 thought it was a shame that no financing was needed anymore because she found it to be a very straightforward application. She was very impressed with the profit and had a

positive experience with the roofer with whom the applicant closely collaborated. Finally, LO2 considered the applicant to be very decent.

On-office screening 6: A man who had been self-employed in the construction industry for several years wanted, along with his wife, who had been self-employed in the cleaning industry for a few months, to take over a building and the equipment of a restaurant to start their own Polish restaurant. During the COVID-19 period, two Polish restaurants in the city where the applicants lived were closed, leaving only one direct competitor. The chef and four other staff members from this competitor were hired. The total investment requirement amounted to € 120.000, a significant portion of which was self-financed. Consequently, the financing requirement was only € 50.000. The acceptance score was a 7.

LO2 was positive about the application, despite it being a highly risky financing, as both applicants had no prior experience in the hospitality industry and would heavily rely on the staff they were acquiring. LO2 felt that the man was almost pulling a financing out of her, he was so enthusiastic. Both the man and the woman presented well and spoke Dutch well. Additionally, they had substantial equity in their house, both could continue working in their own businesses after starting the restaurant, and they had a significant personal financial contribution. Finally, the applicants had come to Qredits through an intermediary with whom LO2 had good experiences, giving them the benefit of the doubt.

4.5.2 On-site screenings

On-site screening 1: The first on-site screening had an acceptance score of 7. The applicant was a man looking to start his own Argentine restaurant. In the past, he had already owned a Argentine restaurant but had to close it due to a high lease price. Afterward, the man and his partner had been on welfare for several years. An amount of € 40.000 was requested for the inventory.

LO1 found it to be a challenging application. He had not received financial statements from the closed Argentine restaurant. If these were good, according to LO1, the man should be capable. He thought the man made a good impression overall, with a tidy house and restroom. However, LO1 considered being on welfare for many years to be quite tough, making financing a bit too much, even for half of the amount.

On-site screening 2: An existing customer of LO1 with an acceptance score of 4 had opened his own personal training studio with a microloan form Qredits, amounting to € 40.000. The man had a part-time job at a gym but was suddenly laid off. The personal trainer could not

sustain himself solely through his own business, prompting him to request a bridging loan of € 7.500.

LO1 found the applicant to be a nice guy and wanted to help him. Whether the man would have a debt of € 40.000 or € 47.500 did not matter much. Additionally, the appearance of the studio aligned with what LO1 had discussed during the initial screening on-office. Lastly, a crucial factor in the positive judgement was that the applicant had a Qredits coach who also spoke very positive about the entrepreneur.

On-site screening 3: Two former Qredits customers had started a tennis school together a few months ago. Since then, they had built a customer base of more than 150 adults and children. With the upcoming winter season, the ladies anticipated a decrease in lessons, leading them to apply for a bridge loan of € 25.000. The acceptance score was a 6. Both applicants were single, had completed hotel management school, and had jointly operated a hospitality business.

LO1 found it to be an enjoyable screening because both ladies were articulate. LO1 was pleased that he could approve the application within his delegated authority. He believed that if the tennis school did not succeed, the applicants could easily repay in other ways.

On-site screening 4: A man of African origin had not anticipated the visit from LO2. After discussions, the screening took place in a nearby coffee shop. It was revealed that the applicant worked in a hotel and needed € 8.000 to start his own cleaning business. The acceptance score was a 6.

The applicant was able to explain his plans fluently in English but had a hard time understanding LO2. He was experiencing issues with his ears, making it difficult for him to distinguish the questions from the ambient noise. Consequently, after a few minutes, LO2 terminated the screening and suggested that the applicant come back to the office next day. However, this did not ultimately happen, as the man informed before the on-office screening that he could borrow the money from his family.

On-site screening 5: A young man had started working as a car detailer and polisher in his former employer's garage a year and a half ago, using the materials provided by the employer. The applicant had found a more affordable space to carry out his work and applied for € 8.000 to purchase his own materials. The applicant still lived at home with his parents. The acceptance score was a 5.

LO2 considered the application as solid. She thought the applicant was a well-mannered man whom she could have financed without hesitation. That was because he still lived at home, it involved an existing entrepreneur with reasonable financial statements, and the requested amount was relatively low.

On-site screening 6: The last on-site screening involved a tailor. The applicant had a temporary residence permit and had started his own business three months ago. However, there was hardly any turnover generated so far. The man had personally purchased wedding dresses for € 8.000, which were also sold in the business. He could afford this because he had a night job. He still needed € 15.000 to purchase machines. The acceptance score was a 7.

LO2 had reservations about the application. On one hand, she viewed it positively that the applicant had contributed € 8.000 and had a night job, expecting his payment morality to be sound. On the other hand, she found the turnover to be very low and considered the property and wedding dresses to be shabby. Besides that, communicating in English was hard. After consulting with colleagues, she ultimately rejected the application.

4.5.3   Conclusion

In summary, the factors considered by loan officers during the screenings were diverse and involved a thorough evaluation of the unique circumstances of each applicant. Sometimes loan officers placed more emphasis on hard factors, while at other times, they prioritized soft factors. There was not really a consistent pattern to be found in this regard. What stood out, however, is that during on-site screenings, additional factors were taken into account compared to on-office screenings. For on-site screenings, factors such as the appearance and cleanliness of the house, business property, and/or restroom, as well as the quality of the inventory (wedding dresses), were included in the assessment. These factors were not addressed during on-office screenings because they were not visible. Conversely, there were no factors that were considered during on-office screenings but not during on-site screenings.

5 Results

This chapter presents a comprehensive analysis of the results obtained through various statistical tests, shedding light on the relationships between the physical screening methods and financing approval and arrearages, a proxy for default risk. The hypotheses, as described in Chapter 1, are tested herein.

5.1 Descriptive statistics

Table 2 presents the descriptive statistics for the dependent variables of this study, split by the independent variable *Screening_Method*. Descriptive statistics play a crucial role in research, offering insights into the fundamental characteristics of the data under study. They offer concise summaries of both the sample and the measurements, utilizing measures of central tendency and dispersion to describe quantitative data (Mishra et al., 2019).

The data availability varies across the variables, with some missing cases observed in *Disbursed_Amount*, *Deviation* and *Arrearage*. The sample sizes for each analysis correspond to the number of valid cases explicitly stated, ensuring transparency in the interpretation of results and acknowledging potential limitations. In total, data were collected for this study from 263 on-site screenings and 115 on-office screenings held between April 8th and December 14th, 2023. This corresponds to the mentioned figures in sections 4.3.1 and 4.3.2, respectively. The mean approval rate for on-site screenings is 0.77, indicating that approximately 77% of cases received approval. For on-office screenings, this percentage is 12% lower at 65%. Logically, *Disbursement* shows lower means of 0.74 and 0.64. The mean *Disbursed_Amount* for on-site screenings is € 21,012, with a standard deviation of € 14,454, indicating significant variability in the disbursed amounts. The variability is slightly lower for on-office screenings at € 10,347. However, the mean for on-office screenings is also slightly lower, at € 17,444. *Deviation* demonstrates means of -0.08 and -0.05, implying a slight negative deviation of the disbursed amount compared to the requested amount on average. *Arrearage* has a mean of 0.14 for on-site screenings and 0.19 for on-office screenings, indicating proportionally fewer arrearages exist on disbursed financings when screened on-site. The minimum and maximum values reflect the range of each variable, providing insight into the distribution of the data.

Table 2

Descriptive statistics variables

	Approval		Disbursement		Disbursed_Amount		Deviation		Arrearage	
Screening_Method	0	1	0	1	0	1	0	1	0	1

Valid	263	115	263	115	195	74	195	74	167	72
Missing	0	0	0	0	68	41	68	41	96	43
Mean	0.77	0.65	0.74	0.64	21,012	17,444	-0.08	-0.05	0.14	0.19
Std. Deviation	0.42	0.48	0.44	0.48	14,454	10,347	0.66	0.64	0.35	0.40
Minimum	0.00	0.00	0.00	0.00	3,500	3,000	-1.00	-1.00	0.00	0.00
Maximum	1.00	1.00	1.00	1.00	75,000	50,000	1.00	1.00	1.00	1.00

5.2   Hypothesis 1

Hypothesis 1 entails that on-office screenings result in fewer microfinance approvals than on-site screenings. As described in Section 3.3.2, microfinance approval is measured using the variables *Approval*, *Disbursement*, *Disbursed_Amount*, and *Deviation*. The relationship with the variable *Screening_Method* will be tested in the following sections using various statistical methods.

5.2.1   Chi-square test

The Chi-square (χ^2) test is a statistical method for testing hypotheses when both the independent and dependent variables are nominal, as is the case with *Screening_Method* as the independent variable and *Approval, Disbursement*, and *Deviation* as the dependent variables (McHugh, 2013).

Like any statistical method, the Chi-square test has specific conditions, referred to as "assumptions" that must be met for its appropriate use. The assumptions include:

- The data should represent frequencies or counts of cases.
- The levels or categories of the variables must be mutually exclusive, with each subject assigned to one and only one level for each variable.
- Each subject is allowed to contribute data to only one cell in the χ^2. If subjects are tested over multiple time points, the χ^2 may not be suitable.
- The study groups must be independent.
- Both variables must be measured as categories, typically at the nominal level.
- The expected values of the cells should be 5 or more in at least 80% of the cells, and no cell should have an expected value of less than one. This assumption is more likely to be met when the sample size equals or exceeds the number of cells multiplied by 5 (McHugh, 2013).

The data meets all the conditions. The outcomes of the tests can be presented in contingency tables.

Table 3 is the contingency table that presents the outcomes of the Chi-square test for *Screening_Method* and *Approval*. The table displays the distributions of rejections (0) and approvals (1) across on-site screenings (0) and on-office screenings (1). Regarding on-site screenings, there were 61 rejections and 202 approvals. For on-office screenings, these numbers were 40 and 75, respectively. The observed results suggest that there is a significant relationship at the 0.05 level between the variables ($\chi^2 = 5.488$, df = 1, p = 0.019).

Table 3

Contingency table Approval

	Approval		
Screening_Method	0	1	Total
0	61	202	263
1	40	75	115
Total	101	277	378

With regard to the variable Disbursement, Table 4 shows a small difference in the distribution. Specifically, for on-site screenings, there are 7 approved financings that were not disbursed. For on-office screenings, this number is only 1. However, these small differences have a substantial impact on the significance, as the results suggest that there is no significant relationship between *Screening_Method* and *Disbursement* ($\chi^2 = 3.742$, df = 1, p = 0.053).

Table 4

Contingency table Disbursement

	Disbursement		
Screening_Method	0	1	Total
0	68	195	263
1	41	74	115
Total	109	269	378

Table 5 shows that for approved financing applications, deviations from the requested amount are most often not made, both for on-site and on-office screened applications. For both screening methods, it is also observed that negative deviations from the requested amount occur more frequently than positive deviations in approved financing applications. There is no significant relationship between *Screening_Method* and *Deviation* ($\chi^2 = 0.245$, df = 2, p = 0.885).

Table 5

Contingency table Deviation

	Deviation			
Screening_Method	-1	0	1	Total
0	50	110	35	195
1	17	44	13	74
Total	67	154	48	269

5.2.2 T-test

The variable *Disbursed_Amount* has a ratio measurement level. The mean of ratio variables can be calculated. To test if the mean differs between two groups, an independent sample t-test can be used. A significant difference in the means of two groups would suggest a relationship between the independent and dependent variable (Field, 2009).

Assumptions come also into play when performing the t-test. These include:

- The data should be measured on either a ratio or interval scale.
- The sample must be obtained through a simple random sampling method.
- The distribution of the data should follow a normal distribution.
- The sample size should be adequate.
- Homogeneity of variance among the compared groups is necessary (Field, 2009).

The normality of the data distributions was assessed through the Shapiro-Wilk test, while the homogeneity of variance was examined using Levene's test (Field, 2009). The results of the Shapiro-Wilk test revealed a lack of adherence to a normal distribution for both on-site ($W = 0.859$, $p < 0.001$) and on-office screenings ($W = 0.905$, $p < 0.001$), with p-values falling below the established significance threshold of 0.05. Similarly, the Levene's test yielded a p-value less than 0.05 ($F = 5.816$, $df_1 = 1$, $df_2 = 267$, $p = 0.017$), indicating a lack of homogeneity of variance across the compared groups. Consequently, the assumptions required for the application of the t-test are not satisfied in this context, as elucidated by Field (2009).

In cases where the data distribution is non-normal, transformations of data are employed to enhance the normality of the data and, consequently, improve the validity of the corresponding statistical analyses. Among various transformation methods, the log transformation is widely considered as one of the most popular for addressing skewed data and approximating it to normality. The log transformation of a variable involves taking the natural logarithm of each data point in that variable (Changyong et al., 2014). Because the data of the variable *Disbursed_Amount* has a non-normal distribution, a log transformation was performed for this variable. That is how the new variable *Log_Disbursed_Amount* has been created.

To test whether this new variable meets the assumptions, a subsequent round of analyses involving the Shapiro-Wilk test and Levene's test was conducted. The Levene's test yielded a p-value of 0.193 ($F = 1.700$, $df_1 = 1$, $df_2 = 267$, $p = 0.193$), surpassing the significance level of 0.05. This results suggests the attainment of homogeneity of variance among the groups under comparison. However, despite the implementation of a log transformation, no noticeable changes were observed in the outcomes of the Shapiro-Wilk test for on-site screenings ($W = 0.820$, $p < 0.001$) and on-office screenings ($W = 0.773$, $p < 0.001$). The persistent non-normality in the data prevents meeting the assumptions necessary for the application of an independent sample t-test.

5.2.3 Mann-Whitney U-test

Parametric tests, such as the t-test, come with more assumptions than non-parametric tests. In case that the assumptions of a parametric test cannot be met, a non-parametric test becomes a viable alternative. Although parametric tests are generally considered more accurate, they are less robust than non-parametric tests. In this specific scenario, the unmet assumptions persist even after a log transformation, leaving no resource but to resort to a non-parametric test. The Mann-Whitney U-test is such a non-parametric test. The test is used to determine whether there is a difference between two independent groups (Field, 2009)

The outcome of the Mann-Whitney U-test ($U = 7802.500$, $p = 0.258$) reveals a p-value that surpasses the significance level of 0.05. This implies a lack of substantial evidence to reject the null hypothesis, suggesting no discernible difference in the distributions of the two compared groups. Consequently, the inference drawn is that there exists no statistically significant relationship between *Screening_Method* and *Log_Disbursed_Amount*.

5.3 Hypothesis 2

Hypothesis 2 entails that on-office screenings result in a higher default risk than on-site screenings. As described in Section 3.3.3, default risk is measured by the proxy *Arrearage*. The relationship with the variable *Screening_Method* will be tested by a Chi-square test as both the independent and dependent variable are nominal (McHugh, 2013)

5.3.1 Chi-square test

Table 6 shows that there are 23 financings with arrearages that were screened on-site. For on-office screenings, this number is 14. There is no significant difference between the screening methods in this case ($\chi^2 = 1.237$, $df = 1$, $p = 0.266$).

Table 6

Contingency table Arrearage

Screening_Method	Arrearage		
	0	1	Total
0	144	23	167
1	58	14	72
Total	202	37	239

5.4 Third variables

After identifying a relationship between two variables, researchers often explore the involvement of a third variable in this relationship. There are three types of third variables: a mediator, confounder and moderator (Lazarsfeld, 1995).

For a mediator, the relationship between an independent variable and a dependent variable is dissected into two causal paths (Alwin & Hauser, 1975). One of these paths connects the independent variable directly to the dependent variable (the direct effect), and the other connects the independent variable to the dependent variable through a mediator (the indirect effect). An indirect effect implies that the independent variable causes the mediator, which, in turn, influences the dependent variable (Holland, 1988; Sobel, 1990).

Baron and Kenny (1986) established three criteria to test the presence of a mediator based on the research of Judd and Kenny (1981):

- There must be a significant relationship between the independent variable and the dependent variable.
- There must be a significant relationship between the independent variable and the mediator
- The mediator must be a significant predictor of the outcome variable in an equation that includes both the mediator and the independent variable, with the independent variable no longer being significant at the same time.

A confounder, as defined by Meinert (1986), Robins (1989) and Susser (1973), is a variable that is related to both the independent and dependent, capable of distorting or amplifying their relationship. Confounders can introduce a misleading appearance of a causal relationship or mask a true one (Meinert, 1986).

In contrast, a moderator is a variable that enhances the predictive validity of another variable when included in a regression equation. Predictive validity is evaluated based on the magnitude of the regression coefficient (Conger, 1974). Therefore, if the inclusion of a third

variable leads to an increase in the magnitude of the relationship between an independent and dependent variable, it suggests the presence of a moderator (MacKinnon et al., 2000).

As described in Section 4.1.3, the acceptance score and requested amount are the two key criteria for pre-assessing the risk of an application, based on which the screening method is chosen. Therefore, it is tested whether these key criteria could be a possible third variable in the relationship between *Screening_Method* and the other variables. *Acceptance_Score* is an interval variable and *Requested_Amount* a ratio variable in this context.

5.4.1 Descriptive statistics

Before testing the third variables, it is important to present the descriptive statistics for the key criteria as well. Table 7 displays these statistics. The mean *Acceptante_Score* is approximately 5.25 for on-site screenings and 5.17 for on-office screenings, indicating a central tendency around the lower end of the interval scale. Moving on to the *Requested_Amount*, the mean is approximately € 22,832 for on-site screenings and € 19,535 for on-office screenings The standard deviations are € 14,219 and € 12,169, respectively, indicating a considerable spread in the distribution.

Table 7

Descriptive statistics Acceptance_Score and Requested_Amount

	Acceptance_Score		*Requested_Amount*	
Screening_Method	0	1	0	1
Valid	263	115	263	115
Missing	0	0	0	0
Mean	5.25	5.17	22,832	19,535
Std. Deviation	0.43	0.37	14,219	12,169
Minimum	5.00	5.00	3,000	2,500
Maximum	6.0	6.00	50,000	50,000

5.4.2 Mediator

The first criterion for the mediator (Baron & Kenny, 1986) has already been tested in Section 5.2.1. The outcome demonstrated a significant relationship between the independent variable *Screening_Method* and the dependent variable *Approval*. To meet the second criterion, a significant relationship between *Screening_Method* and the mediators is required. Given that *Screening_Method* comprises two categories, with *Acceptance_Score* possessing an interval measurement level and *Requested_Amount* having a ratio measurement level, a t-test is considered an appropriate statistical method to test compliance with the second criterion, provided that the assumptions outlined in Section 5.2.2 are met. To scrutinize the assumptions

regarding distribution and homogeneity of variance, the Shapiro-Wilk test and Levene's test were employed, respectively.

The results of the Shapiro-Wilk test for *Acceptance_Score* reveal a violation of assumptions for both on-site screenings (W = 0.539, p < 0.001) and on-office screenings (W = 0.447, p < 0.001). Similarly, the results of the Levene's test also indicate a violation (F = 15.560, df_1 = 1, df_2 = 376, p < 0.001). Consequently, the Mann-Whitney U-test was reemployed. The outcomes (U = 16419.000, p = 0.067) indicate a p-value is slightly exceeding the significance level of 0.05. Therefore it can be concluded that *Acceptance_Score* does not function as a mediator for *Approval*.

The outcomes of the Shapiro-Wilk test and Levene's test for *Requested_Amount* reveal a violation of the assumptions pertaining to both the distribution for on-site (W = 0.882, p < 0.001) and on-office screenings (W = 0.901, p < 0.001), as well as the homogeneity of variance (F = 5.390, df1 = 1, df2 = 376, p = 0.021). As *Requested_Amount* is a ratio variable, distinct from the interval-level *Acceptance_Score*, a log transformation can be applied before implementing the Mann-Whitney U-test. The results of the Shapiro-Wilk rest and Levene's test for *Log_Requested_Amount*, the log-transformed variable for *Requested_Amount*, indicate the attainment of homogeneity of variance among the compared groups (F = 0.013, df1 = 1, df2 = 376, p = 0.908). However, despite this improvement, there is still an absence of normal distribution for both on-site (W = 0.951, p < 0.001) and on-office screenings (W = 0.959, p = 0.001). Consequently, the Mann-Whitney U-test is used. The results (U = 16873.000, p = 0.072) suggest a lack of a significant relationship. Therefore, *Log_Requested_Amount* is also not identified as a mediator.

5.4.3 Confounder

As described in Section 5.4, a confounder may occur if there is a relationship with both the independent and the dependent variable (Meinert, 1986; Robins, 1989; Susser, 1973). From Section 5.4.2 it is evident that there is no significant relationship with the independent variable *Screening_Method* for both *Acceptance_Score* and *Requested_Amount*, respectively. Therefore, there cannot be a confounder in this case.

5.4.4 Moderator

Cohen et al. (2003) and Darlington and Hayes (2017) explore the testing of a moderation hypothesis concerning continuous variables, or between continuous and dichotomous variables, utilizing linear regression analysis. This is achieved by incorporating

both the product of the independent variable and the moderating variable and the independent variable and moderating variable themselves into a regression model (Hayes & Montoya, 2017). Table 8 displays the outcome of this model for *Acceptance_Score*. In this, it can be observed that the p-value of the moderator is 0.660. This indicates that there is no significant moderating effect between *Screening_Method* and *Acceptance_Score*. Table 9 displays the outcome of the regression model for *Requested_Amount*. The p-value of the moderator is 0.969. This means that there is also no significant moderating effect between *Screening_Method* and *Requested_Amount*.

Table 8

*Linear regression Screening_Method * Acceptance_Score*

Model		Unstandardized	Standard Error	t	p
H_0	(Intercept)	0.733	0.023	32.155	< .001
H_1	(Intercept)	0.792	0.031	25.308	< .001
	Screening_Method (1)	-0.115	0.055	-2.100	0.036
	Acceptance_Score (6)	-0.095	0.062	-1.520	0.129
	Screening_Method (1) * *Acceptance_Score* (6)	-0.056	0.127	-0.441	0.660

Table 9

*Linear regression Screening_Method * Requested_Amount*

Model		Unstandardized	Standard Error	Standardized[a]	t	p
H_0	(Intercept)	0.733	0.023		32.155	< .001
H_1	(Intercept)	0.849	0.051		16.551	< .001
	Screening_Method (1)	-0.130	0.093		-1.402	0.162
	Requested_Amount	-3.533×10^{-6}	1.907×10^{-6}	-0.109	-1.852	0.065
	Screening_Method (1) * *Requested_Amount*	1.502×10^{-7}	3.880×10^{-6}		0.039	0.969

[a] Standardized coefficients can only be computed for continuous predictors.

5.5 Correlation

The phi coefficient is used to test the strength of the association of the only significant relationship in this study. It concerns the relationship between *Screening_Method* and *Approval*. The phi coefficient is used for contingency tables. In this case, the phi coefficient is -0.120, indicating a weak negative association. This means that one variable is more likely to decrease as the other variable increases. This suggests that when *Screening_Method* changes from 0 to 1, there is tendency for the approval status to change in the opposite direction. This

implies that if *Screening_Method* changes from on-site to on-office, the approval status changes to rejection (Field, 2009). An application subjected to on-site screening thus holds a higher likelihood of approval compared to an identical one screened on-office, creating an uneven playfield for applicants, contrary to Qredits' social mission of advancing financial inclusion.

5.6   Summary

This chapter provides an in-depth analysis of the results obtained from various statistical tests, aiming to investigate the relationships between physical screening methods and microfinance approval and default risk. The chapter begins with descriptive statistics presented in Table 2, providing insights into the characteristics of the data under different screening methods. Notably, the mean approval rate for on-site screenings is 77%, while for on-office screenings, it is slightly lower at 65%. The analysis proceeds to test Hypothesis 1, which posits that on-office screenings result in fewer microfinance approvals than on-site screenings. The Chi-square test in Table 3 indicates a significant relationship between *Screening_Method* and *Approval* (χ^2 = 5.488, df = 1, p = 0.019). Therefore, Hypothesis 1 is supported. However, no significant relationships between *Screening_Method* and the other microfinance approval-related variables are indicated. Regarding Hypothesis 2, which suggests that on-office screenings lead to a higher risk of default than on-site screenings, the Chi-square test in Table 6 shows no significant difference (χ^2 = 1.237, df = 1, p = 0.266). Therefore, Hypothesis 2 is not supported. The chapter also explores third variables, such as *Acceptance_Score* and *Requested_Amount*, as potential mediators, confounders, or moderators. However, analyses reveal that these variables do not have a significant impact on the relationship between *Screening_Method* and *Approval*. The chapter concludes with a discussion of correlations, indicating a weak negative association (phi coefficient = -0.120) between *Screening_Method* and *Approval*.

6 Discussion & Conclusion

The study aimed to explore how two different physical screening methods of microfinance applications influence the approval and default risk at Qredits. The findings shed light on the relationship between the variables. Here, the theoretical contributions, managerial implications, limitations and further research is discussed.

6.1 Theoretical contributions

In this section, an assessment is conducted to determine if the findings presented in Chapter 5 of this study align with the prior research deliberated in Chapter 2. Initially, theoretical contributions are elaborated concerning the sub-research questions, subsequently addressing the main research question. The main theoretical contribution lies in examining how different physical screening methods in microfinance applications affect approval and default risk, offering insights for (micro)finance institutions to refine risk assessment methods and potentially reduce default rates.

6.1.1 Sub-research questions

What does the application process and default process look like?

The application process at Qredits encompasses several stages: intake, check, screening, risk management, and administration. During the intake phase, the back office requests necessary documentation from applicants. If all required information is provided, the check phase involves assessing the applicant's suitability for screening, incorporating external credit bureau checks and fraud prevention systems alongside the submitted documentation. If deemed appropriate for screening, the application undergoes a thorough examination, and the screener engages in a personal discussion with the applicant. Upon the screener's approval of the application, a comprehensive screening report is generated, necessitating approval from the risk management department. Following approval, the application proceeds to the administration stage for the formulation of a financing agreement. Subsequent to signing, the administration facilitates the disbursement of financing.

After providing financing, monthly payments are required and debited from the customers' bank account. Measures are taken for arrears up to 30 days, including contact attempts and a new direct debit. For arrears beyond 30 days, additional measures are implemented, and if the arrears exceed 90 days, the case is transferred to the special management department. If no

payments are expected, the remaining debt and interest are administratively written off, referred to as taking a default, with decision made in a meeting called the risk committee.

How do the physical screening methods work?

There are various methods to screen an application, including two physical methods: on-office screenings and on-site screenings. Both are conducted by loan officers. The method used depends on the requested amount and an internally calculated risk score, the acceptance score. During the physical screening, loan officers conduct a comprehensive assessment of various factors, considering both hard and soft criteria tailored to each applicant's unique circumstances. The evaluation process exhibited no consistent pattern, with loan officers occasionally emphasizing different factors.

What are the differences between the physical screening methods?

The differences between on-site and on-office screenings are multifaceted. In terms of environmental context, on-office screenings create a controlled, clinical environment, minimizing external stimuli and allowing focused attention on the client and the file. In contrast, on-site screenings involve various elements, such as assessing the client's home environment and cleanliness, which are not applicable on-office. Interpersonal dynamics vary, with on-site interactions perceived as more relaxed, fostering a personal connection, while on-office interactions can be formal and somewhat tense. Information complexity differs, with challenges in obtaining precise details during on-office screenings, such as assessing the client's residence, which is more readily observable on-site. The reliability of some information is also easier to verify on-site. An important difference that emerges from the observations is that during on-site screenings, additional soft factors are taken into account in the assessment compared to on-office screenings. These factors include aspects not visible in on-office setting, such as the appearance and cleanliness of the house, business property, and/or restroom, as well as the quality of the inventory.

What are the consequences of the differences for approval and default risk?

The differences between on-office screenings and on-site screenings have visible consequences for approval. The results shows that the approval rate for on-office screenings (65%) is significantly lower than that of on-site screenings (77%). Thus, Hypothesis 1, "On-office screenings result in fewer microfinance approvals than on-site screenings", is supported. However, the number of disbursements, the disbursed amount, and the deviation from the requested amount do not differ significantly. The same applies to the number of financings in

arrears, a proxy for default risk. Therefore, Hypothesis 2, "On-office screenings result in higher default risk than on-site screenings", is not supported.

6.1.2 Main research question

How do the physical screening methods of microfinance applications influence the approval and default risk of Qredits?

The physical screening methods of microfinance applications at Qredits involve two approaches: on-office screenings and on-site screenings, conducted by loan officers. The choice between these methods depends on the requested amount and an internally calculated risk score known as the acceptance score. During on-site screenings, information can be obtained and verified more easily, the interaction with the customer is more personal and informal, the customer is less tense, and additional factors can be assessed compared to on-office screening. This results in a significantly higher approval rate but not to a significant difference in default risk.

The theoretical contributions of this study lie in its exploration of the impact of different physical screening methods on microfinance approval and default risk, specifically within the context of Qredits, the largest MFI in the Netherlands. While the role of microfinance in providing financial services to individuals with low incomes has been widely acknowledged (Mermod, 2013), limited research has delved into the influence of different screening methods on approval and default risk. Although Erdogan (2018) demonstrated that on-site visits can influence financing decisions and Bramer (2023) highlighted the importance of assessing qualitative characteristics during these visits, some of which, as noted by Chen et al. (2015), have predictive value for default risk, the present research did not distinguish diverse screening methods and their impact on financing outcomes. By formulating hypotheses and conducting a mixed-methods approach, combining both qualitative and quantitative research methodologies, the study offers a comprehensive understanding of how on-site and on-office screenings affect microfinance outcomes. The findings can inform (micro)finance institutions, including Qredits, in refining their risk assessment methods, leading to more informed finance decisions and potentially reducing default rates.

6.2 Managerial implications

For (micro)finance institutions, understanding the impact of screening methods on approval and default risk is crucial. The findings suggest that on-office screenings result in fewer approvals than on-site screenings, highlighting the importance of considering the context

in which screenings take place. However, the study did not find a significant difference in default risk between on-site and on-office screenings. This implies that Qredits can potentially streamline its screening processes without substantially impacting default rates. This information is crucial for Qredits and similar institutions to carefully weigh the trade-off between time efficiency and approval rates when deciding on the screening method. The decision-makers can use these insights to optimize resource allocation, enhance efficiency, and make informed decisions on the screening methods employed.

6.3   Limitations

Despite its contributions, this study has limitations. One of the limitations of the empirical part of the study is its limited generalizability. The sample size of this study is relatively small considering the size of Qredits' customer base. This is because only screenings held between April 6 and December 14, 2024, were included. April 6 marks the initiation of on-office screenings, and December 14 represents the writing date of this study. Unfortunately, there is only an eight-month interval between these dates, while Qredits has been providing microfinancing for over 15 years. The sample size of loan officers involved in the interviews was limited as well due to practical constraints. Additionally, the research focused on a single MFI, Qredits, which may limit the generalizability of the results to other (micro)finance institutions. Another limitation is that a proxy for default risk has been used instead of actual defaulted loan being present in the sample.

6.4   Further research

To enhance the robustness of the findings, future research could involve a larger and more diverse sample of MFIs. Exploring the perspectives of borrowers and analysing the long-term impact of screening methods on the financial health of borrowers could provide additional insights. Furthermore, investigating the role of technology in screening processes, such as virtual assessments, could be an area for future exploration.

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Appendices

Appendix I: Interview guide

Short round of introduction, introduction to research and consent

- Rationale: Since April, Qredits also been conducting screenings on- office. Whereas loan officers used to screen customers on-site, now, for the sake of efficiency, customers are screened on-office so that loan officers, don't have travel time. Bramer's study (2023) shows that soft factors, factors that cannot be measured in numbers, influence how a loan officer evaluates an application. When you visit the customer on-site, for example, you can see how tidy the bathroom and the house are, and if the partner and/or children are at home, you can see how the customer interacts with them. You cannot see that when the customer comes to the office.
- My question is: is there a difference in the approval rate and the default risk when screening on-office compared to on-site?
- Record, transcribe, share
    - Do you agree to participate in the study, understand what the participation involves, understand that all information you provide for this study will be treated confidentially, agree to being audio-recorded, understand that disguised extracts from the interview may be quoted?
    - If I use quotes, I will come back to you. If you want, I can also send you the transcript.
    - Do you have any questions before we start?
    - Start recording.

General questions about interview partner

1. Can you tell me something about your background?
    a. Wat did you study?
    b. Where have you worked?
    c. How long did you work there?
2. Why did you go to Qredits?
3. How long have you been working here now?

Questions about process

4. How does the on-office screening process look like

5. How does the on-site screening process look like?

Questions about factors looked for

6. What do you specifically look for during screenings?

7. Are there differences between screenings on-office and on-site?

    a. If yes, what are these differences?

Questions about assessing factors looked for

8. How do you assess the factors you look for on during screenings?

9. Are there differences between screenings on-office and on-site?

    a. If yes, what are these differences?

Questions about reasons positive outcome

10. What are the main reasons for having a positive outcome after a screening?

11. Are there differences between screenings on-office and on-site?

    a. If yes, what are these differences?

Questions about reasons negative outcome

12. What are the main reasons for having a negative outcome after a screening?

13. Are there differences between screenings on-office and on-site?

    a. If yes, what are these differences?

Conclusion and ending

- So overall, is it correct when I say that … (summarizing the answers)?

- We are now at the end of the interview

- Did I forget to ask something important that you would like to tell me about the topic?

- Thank you for your participation!

Interviewer

Hello LO1, I appreciate that you are willing to participate in this interview as well. I don't need to explain to you what this research is about, as I have already done that during the observations. I suggest we start with the questions promptly. Can you tell me about your academic and professional background?

LO1

I studied economics and public administration at Erasmus University, but ultimately didn't complete the degree. I started working in business lending at ABN AMRO and later moved to the business lending department of ING. Around the same time, I also started volunteering at Qredits. After a brief interval, I joined Qredits six years ago.

Interviewer

Why did you choose to work at Qredits?

LO1

It was a combination of wanting to do good and have a positive impact. I believe it's something I'm good at.

Interviewer

As a loan officer, you conduct screenings. Can you explain the screening process?

LO1

We receive applications, and based on postal codes, they are divided among the team. We focus on two major cities in our portfolio: Rotterdam and The Hague. Postcodes are assigned to colleagues, and each month, someone else allocates applications to team members. Once I have applications assigned to my name, I start making calls to schedule appointments. I prefer meeting clients at their business location or, if they are start-ups without an office, at their homes. If a client insists on not meeting at home, I offer the option to meet at our office, taking advantage of having two offices in Rotterdam and The Hague.

Interviewer

After scheduling appointments, how does the screening process unfold?

LO1

Assuming I visit the client, I usually schedule about three appointments in a day, planning a logical route to visit clients. Upon arriving at the client's location, I engage in small talk, often asking questions about something in their house. With Islamic clients, I'm aware of removing my shoes. Initially, I found it a bit unusual, but I understand it now. If I see many shoes at the door, I always ask if the client prefers me to take off my shoes. It's essential to be aware of such cultural nuances. Then we have a chat, often with the partner present if they're home. I try to find common ground with the client to make them feel comfortable. I notice that clients are generally more tense at the office than at home or their own office. Even though there's still tension in those settings, the comfort level is higher than at our office.

Interviewer

You've explained the on-site process. If the client comes to your office, how does it differ?

LO1

In essence, the core is the same, but when you are on-site and you see a photo of a dog, it's much easier to talk about that to break the ice. In some cases, especially in The Hague where we have two floors to climb, the common ground might be about not needing to go to the gym after climbing all those stairs. This is a bit different than at the office. Finding a personal connection with the client is less common in the office.

Interviewer

Clear. You've outlined how the screening process works. What are the key factors you consider during a screening?

LO1

I focus on both verbal and non-verbal cues. When there are multiple applicants, I pay attention to their interaction and dynamics. I look at how they engage with each other. Also, I observe the client's home environment, considering the industry. For example, if someone cleans sewers, I'm not concerned if their house is messy. But if someone is a restaurant host and doesn't offer coffee during the meeting, it matters to me. I always use the client's bathroom, even if I don't need to, to get an indication.

Interviewer

Are there differences in what you look for between on-site and on-office screenings?

LO1

If someone on- office claims to live alone, and I don't need income tax returns or the returns confirm a single status, I have to accept it. However, at someone's home, I can observe more about their living situation.

Interviewer

Got it. You've mentioned the non-verbal aspect. What does this entail?

LO1

I observe posture, how someone sits, whether they seem tense, and their facial expressions when faced with challenging questions. It's crucial to consider the individual's personality, whether they are extraverted or introverted. I don't judge someone negatively based on introversion, but I do relate it to their business. If someone wants to be a speaker for large companies but struggles to express themselves, it's a different scenario. I also consider cultural aspects, especially with Islamic or Asian clients who might not contradict me directly but may have reservations.

Interviewer

How do you assess these aspects?

LO1

Through keen observation and paying attention. Sometimes, I make positive remarks to elicit responses and check the consistency of information. If I sense tension or nervousness, which can lead to inaccurate statements, I might ask follow-up questions or encourage the client to relax. Some clients explicitly express their nervousness, while others don't, but you can still see it. I aim to make clients comfortable to get honest answers.

Interviewer

Does the location of the screening affect how you assess these aspects?

LO1

I think I need to make people more comfortable on-office because I sense more tension there. Otherwise, there shouldn't be much difference. Regardless of the location, critical questions need to be asked.

Interviewer

Once you've assessed these aspects, what are the main reasons you feel positive about an application?

LO1

It primarily depends on the entrepreneur's responses, both verbal and non-verbal. I also consider their enthusiasm for the business. Some entrepreneurs are proud, which is good, but excessive pride can be a red flag. For instance, if a client insists they know everything and reject coaching, it's a concern. On the flip side, I appreciate existing clients who openly present financial challenges, as it shows transparency and a willingness to address issues.

Interviewer

Are there other factors that heavily influence your assessment?

LO1

Yes, in challenging cases, if the applicant has people in their network willing to provide guarantees, it can be a positive factor.

Interviewer

You mentioned earlier that the reverse is also true. Are there other factors that make you view an application negatively?

LO1

If I suspect a client is not being honest, that's a deal-breaker for me. Thankfully, it's not a common occurrence. More often, the financials may not be viable, or I can't see a scenario where it works for a startup, and failure would lead to severe personal consequences.

Interviewer

So, you first assess the business's financial viability and then consider the personal financial situation?

LO1

Yes, I submitted an application today. The applicant is doing well in activity A but is starting a second activity alongside it. I expressed doubts about the second activity during the conversation. However, if it doesn't work out, and we're lending an additional €18,000, we can recover it because the applicant will continue with activity A. It's linked to having a fallback scenario. If the fallback scenario is acceptable, even if it's not a large amount, it can still work. I don't want to see myself as an expert who knows everything. I may express skepticism, but it's not a guarantee that it won't work. Perhaps the client will surprise me. I want to give the

client a chance because I believe in their positive intentions. If it doesn't work out, we have a backup plan to recover the funds.

Interviewer

Now that we've discussed positive and negative aspects of an application, is there a difference for you between on-site and office screenings?

LO1

Not much. One thing that might vary is the presence of the partner. At the office, partners are not always present, but at home, they are more often. I don't reject many applications directly during the screening. It happens occasionally, but not often. I do set certain expectations during the screening. I won't say that I'll see what I can do if I already know I can't. In that case, I clearly express that I find it very challenging, explain why, mention that I need to discuss it internally, and will get back shortly. If a partner is present, I think it's important that the partner understands this. The likelihood of a partner being present is much higher at home.

Interviewer

We are now at the end of the interview Did I forget to ask something important that you would like to tell me about the topic?

LO1

No, not really.

Interviewer

Thank you for your participation!

Appendix III: Interview LO2

Interviewer

Hello LO2, I'm glad that you are willing to contribute to this interview as well. There's no need for me to reiterate the purpose of this research, as I've already covered that during the observations. I suggest we proceed with the questions promptly. To introduce you in the thesis, I first have a few general questions. Could you start by briefly talking about your background as a loan officer?

LO2

I studied Business Administration with a master's in Finance and Investments. Shortly after graduating, I joined Qredits, and I've been in this role for about 15 years. I initially started with financing applications up to €35,000 and eventually progressed to applications up to €250,000. While I don't have experience as a loan officer at a bank, I have a financial education. Before that, I completed the Higher Economic and Administrative Education (HEAO), also with a focus on finance.

Interviewer

Why did you choose Qredits after your studies?

LO2

That's a good question. I can't really remember. During my time, the job market wasn't great. I applied to banks, but I don't think I even got invited for an interview. I sent an open application to Qredits. They called me for an interview, and I liked the approach, especially the fact that we go to entrepreneurs instead of sitting in an office from 9 to 5, which was common in most banks.

Interviewer

I can understand that. How long have you been working here now?

LO2

Almost 15 years.

Interviewer

That's a long time. Those were the general questions for now to introduce you in the thesis. Now, let's move on to the substantive questions. Can you explain the process of on-office screenings?

In principle, the structure of the interview is the same as on-site screenings, but the small talk lasts a bit longer. Other than that, everything is the same. However, there is a difference in quality between on-site and on-office screenings; on-office screenings are of better quality.

Interviewer

How do you notice that?

LO2

You see it in better entrepreneurs, better business plans, and better financial statements. This is evident from the facts on paper. When assessing business plans and financial statements, if someone has good financials, it doesn't matter much whether you screen on-site or on-office. However, on-site screenings are more enjoyable because you get a better feel for the company. Also, I find it more customer-friendly to visit entrepreneurs.

Interviewer

That makes sense. Besides small talk, are there any other differences between the two screening methods?

LO2

No, not really. I have a fixed structure and set questions that I ask everyone. The method of screening is the same; only the small talk differs.

Interviewer

What do you look for during a screening?

LO2

I look at someone's background, CV, motivation, business activities, customers, suppliers, marketing, competitors, distinctive features, and the market. These are the points mentioned in our business plan template and what I need to incorporate in a screening module.

Interviewer

Clear. Are there any differences in what you look for between the two screening methods?

LO2

No, for me, it's exactly the same. My way of screening on-office and on-site is exactly the same.

Interviewer

Okay, as you mentioned earlier, you have the same questions, but just to clarify: do you spend exactly the same amount of time on each topic during both screenings?

LO2

Yes. What I find easy is screening existing entrepreneurs on-office because you have financial statements. If someone has good financials, it says something about their entrepreneurial competencies. If you ask me what good applications are to screen on-office, I would say existing entrepreneurs. On the other hand, I also think: these are good applications, so it would be more customer-friendly to screen on-site.

Interviewer

Understood. You mentioned several points you look at during an application. How do you gather information on these aspects?

LO2

I simply ask questions. For example, I ask people to tell me about themselves, their education, and work experience. I also look at the kitchen and the surroundings of the house. I check if it's neat.

Interviewer

So, how you gather information and what you look at do not differ based on the screening methods?

LO2

No, but what is different is that mapping soft factors is easier on-site. It takes a bit more time and more questions to get the gut feeling right on-office. On-site, it's just easier because you see how the company or house looks. If it's a nicely kept house or recently renovated, it's easier to form an opinion on the application.

Interviewer

After the screening, what are the main reasons you are positive about an application?

LO2

We've already discussed this. It's about the overall picture and the answers I get to my questions.

Interviewer

Is there a particular factor that stands out in that overall picture for you?

LO2

The most important is the person. Can you see that person doing it? I also think it depends on how long you've been in the job. If you've just started at Qredits and have been doing this job for a year, I think it's quite challenging to do a good on-office screening. How many entrepreneurs have I seen already? Easily a thousand, if not more. So, you just know what to look for, and that makes it easier. I think having some work experience is important to screen on-office.

Interviewer

When is the person viewed positively?

LO2

If someone has generally completed a solid education. If someone has good work experience. If someone has a clear motivation. If someone has clear driving factors. If someone has insight into their strengths and weaknesses.

Interviewer

That's clear. Are these also the main reasons you would reject an application if these aspects are negative? Or are there other aspects in rejecting an application?

LO2

No, it's mainly about financial feasibility. That is, of course, related to these aspects. If you have little confidence in the person, you often also have less confidence in the financial feasibility.

Interviewer

That covers all the questions then. Do you have something to add to the topic?

LO2

No, I don't.

Interviewer

Hi L03, great that you've taken the time for this. I had already sent you an email with a brief introduction to this research. In essence, it comes down to the following. As you undoubtedly know, since April, Qredits also been conducting screenings on-office. Whereas loan officers used to screen customers on-site, now, for the sake of efficiency, customers are screened on-office so that you, as a loan officer, don't have travel time. My question is: is there a difference in the number of loans we provide when screening on-office compared to if we had done it on-site? The hypothesis is that there is a small difference. This hypothesis arose from the research Bramer (2023) conducted. I believe he also spoke with you for that research. His study shows that soft factors, factors that cannot be measured in numbers, influence how a loan officer evaluates an application. When you visit the customer on-site, for example, you can see how tidy the bathroom and the house are, and if the partner and/or children are at home, you can see how the customer interacts with them. You cannot see that when the customer comes to the office. So, when you visit the customer on-site, you have additional factors that you can assess. If the customer comes to the office, you don't have that. There are no factors that you can measure on-office but not on-site. Additionally, I am also investigating whether the screening method affects the default risk. Now, I would like to start with some general questions. Can you briefly tell me about your background in terms of work and study?

LO3

Yes, I've been working at Qredits for 5.5 years now, and before that, I spent almost 30 years at Rabobank. That's a very long time. So, I would say I'm almost retiring, but that's not the case. I started very young. Along the way, I completed my Higher Economic and Administrative Education (HEAO); I began at 28 and finished at 32. Out of those 30 years at Rabobank, I spent 25 years in the business department. I started as a payment traffic specialist at the counter and gradually developed into the field of financing, working internally as an advisor and later externally.

Interviewer

Why did you move to Qredits?

LO3

My main consideration was that at Rabobank, customer contact was diminishing. We had to start evaluating customers from a fill-in-the-blank exercise. Initially, we used to visit clients, but soon they had to come to the office, and then everything was done through computer sessions. At Qredits, we initially went everywhere. Back then, the back office was still under development. All external advisors handled applications. We gradually reduced that, and the back office started taking over. During the COVID-19 period, we started doing video calls. I hated it. Now, we can go back to meeting clients or having them come to the office.

Interviewer

How does the on-office screening process work for you?

LO3

I prepare just before the conversation. I always do that, even if I have to go to the client; I prepare the conversation an hour before to have it fresh in my mind. I start with the preparation. I print the file, very seriously, still. I don't like carrying a laptop, as I want to be able to write. So, with a printed file, I receive the client here, and then I conduct the conversation.

Interviewer

Is there still a difference in the process for you between an on-office and on-site screening?

LO3

Yes, if I go to the client, there is much more small talk. Then, there is a very different kind of start. I find it very uncomfortable on-office. I come in with the client I am receiving, the client enters, and that's it. Then the conversation begins; you ask if the client wants coffee or not and start.

Interviewer

Are there any other differences between the processes?

LO3

Yes, I finish with a client in the meeting room much earlier.

Interviewer

Is that due to shorter small talk or also in the screening itself?

LO3

It is due to the screening itself as well. You have a very clinical environment, so you only have your client and the file. That's it. I'm not stimulated by various other factors. I'm not stimulated

when a client says, "I want to start here," so I can say, "Oh, is that the street here?" and the client responds, "Oh, no, that's five kilometers away." You don't have those kinds of conversations. So, it becomes a bit shorter.

Interviewer

Now, I'm curious. What do you look for during such a screening?

LO3

I look at the client themselves. How do they present themselves? Are they neat, have they washed their hands? I find that important. I look at whether they feel comfortable or if they are nervous. If I see someone is nervous, I mention it. I ask, "Are you nervous?" or "Do you find it a tense conversation?" or "Does a lot depend on this?" I try to make the client feel at ease. I then introduce myself and Qredits, usually in that order. The rest of the conversation is for the client. So, I give a brief introduction and talk about Qredits. I usually also include the topic of coaching and training. Then I explain that we do offer that. I mention that I have read the plan, know what it's about, and ask the client to explain the plan.

Interviewer

How do you then find the things you're looking for?

LO3

Maybe it's also experience. I've done so many interviews. I've seen so many people in my life that I can quickly see through whether someone feels comfortable or if they think, "Oh, this conversation is a side issue. I'll just talk this advisor under the table, and I'll fix that financing." So, someone can either be comfortable, nervous, arrogant, cheeky, or a combination of all those things, and then I mainly focus on whether they are calm or have a pleasant demeanor. It's really a matter of feeling.

Interviewer

Is that the same for you on-office as on-site?

LO3

No, I think a client on-site feels treated somewhat more formally. At the client's home, you are in their environment. I find that a very important element for evaluating the client themselves.

Interviewer

Do you then look more on-site, for example, at how a client presents themselves than on-office because a client acts more formally and differently on-office?

LO3

Yes.

Interviewer

Okay what do you look more at on-site, for example?

LO3

More at the overall attitude. Does the client feel comfortable? Some people really have sweaty hands or fidget with something. However, some just sit upright

Interviewer

So, you observe how a client presents themselves. How do you perceive that during the conversation?

LO3

Nervousness is evident in the way they look, in their eyes, on their face, in whether or not they move. I see arrogance when I get the feeling that a client is taking me for granted. This is more common with existing entrepreneurs. They tend to feel they know it all. "I've been an entrepreneur for a long time, so you're just going to provide me with that bag of money." Starting entrepreneurs are generally more modest and reserved. Whether there's arrogance or not, I derive more from the text they write.

Interviewer

Is there a difference for you between on-office and on-site screenings in terms of difficulty regarding what you observe?

LO3

In the office, I have fewer elements that stand out. At home, a client can be very different. They might slump on the couch or nervously move cups back and forth, walking from the kitchen to the room. When you invite them to the office, they sit in a chair, get a cup of coffee, and that's their space to move. At home, they can essentially do as they please.

Interviewer

Are there aspects on-site that are easier to assess on-office?

LO3

Yes, the substantive aspects. On-office, it's about the content. I'm not distracted. A client at home can try to lead you astray.

Interviewer

Okay, clear. I'm curious about something related to what we just discussed. What are the main reasons you are positive about an application after a screening?

LO3

It's more of a combination.

Interviewer

A combination of what?

LO3

Of the entrepreneur, how they present themselves and behave, or their intellectual abilities. Is someone smart enough to become an entrepreneur? What I think of the industry is important too. Suppose someone wants to start an ice rink. That's not a good idea because it won't work. Or someone wants to go into retail, which is a challenging sector. In hospitality, for example, the entrepreneurial aspect is much more critical than if they want to start in a booming industry. The home situation is also essential for me. Suppose a client comes to the office. I also check on Google Maps where they live. I know a lot of places. If I have to compare Groningen and Twente, I know what's going on in Groningen and how it is in Twente. Location and home address are, therefore, an important element. Does someone live in a flat in Leeuwarden on the tenth floor, or do they live in a detached house in Borne?

Interviewer

Are there other things that are important to you when screening on-site rather than on-office?

LO3

Yes, that's interesting. I had an appointment this afternoon with my supervisor about a case that was potentially financeable, but the client's home was in such a huge mess. I haven't seen anything like it in my entire career. It's really abnormal. I sat with my supervisor for three-quarters of an hour discussing whether it's a reason to reject, whether we try to reject based on the rest of the analysis, or if we try to finance. Perhaps there's a reason the client has made such a mess. That's a very interesting topic for that specific case, where you can have all sorts of

angles. You can completely tear it down or make it entirely positive. I think the person is essential.

Interviewer

Do you find that more important on-office than on-site?

LO3

Yes.

Interviewer

On-office, you find the content more critical?

LO3

Yes, because a client can go without showering for 360 days a year, and if he suddenly realizes, "Oh, I have to go to Qredits, so I'll take a shower," he's clean and fresh. I won't see through that. I can't tell.

Interviewer

What are the main reasons you are negative about an application?

LO3

It's actually the same as when you're positive about it. The general impression and presentation of how the house looks are very important to me, but also what the applicant has achieved. Have they had a job before and experience in the industry? Do they have a partner, with or without income? What does their credit history look like? There are, therefore, many elements that are not specifically related to soft information.

Appendix V: Interview LO4

Interviewer

Hi L04, great that you've taken the time for this. I had already sent you an email with a brief introduction to this research. In essence, it comes down to the following. As you undoubtedly know, since April, Qredits also been conducting screenings on- office. Whereas loan officers used to screen customers on-site, now, for the sake of efficiency, customers are screened on-office so that you, as a loan officer, don't have travel time. My question is: is there a difference in the number of loans we provide when screening on-office compared to if we had done it on-site? The hypothesis is that there is a small difference. This hypothesis arose from the research Bramer (2023) conducted. I believe he also spoke with you for that research. His study shows that soft factors, factors that cannot be measured in numbers, influence how a loan officer evaluates an application. When you visit the customer on-site, for example, you can see how tidy the bathroom and the house are, and if the partner and/or children are at home, you can see how the customer interacts with them. You cannot see that when the customer comes to the office. So, when you visit the customer on-site, you have additional factors that you can assess. If the customer comes to the office, you don't have that. There are no factors that you can measure on-office but not on-site. Additionally, I am also investigating whether the screening method affects the default risk. Now, I would like to start with some general questions. Could you tell me about your background as a loan officer?

LO4

After completing my bachelor's degree, I started at Rabobank in the small business department. It's somewhat similar to the type of customer that Qredits also has. Then I progressed. I worked at Rabobank for a total of 18 years. After that, I worked for four years in commerce and acquisition at an accounting firm. Now I have been working at Qredits for five years.

Interviewer

Why did you join Qredits?

LO4

Good question. To answer that, I should first explain why I left Rabobank. Rabobank was heading in a direction that didn't suit me. It became less personal and more rigid in

regulations. It felt constricting. Outside the banking world, however, I realized that I still wanted to work in a financing company but definitely not at a bank. That's when Qredits came along. It seemed like a good fit. And it has proven to be so. I really want to help people with financing, and I also like that I can make an impact at Qredits.

Interviewer

Great explanation. Now I can move on to the substantive questions about the screening methods. The first question is: according to you, what does the screening process on-office look like?

LO4

Essentially, it's not very different from on-site screenings. I evaluate the documentation I receive in MicroNET based on content and quality. Then I go into the conversation as open-minded as possible. I try to discern who the customer really is by their attitude, facial expressions, and even the handshake.

Interviewer

Returning to the screening process, you mentioned that you start by assessing the documents. What happens after that preparation?

LO4

If I have a good feeling about the person after the interview, I complete the file afterward. Then I write a screening report.

Interviewer

So, you've actually talked about the outcome of the screening. Are there, in your opinion, any differences between the screening methods during the screening itself?

LO4

I strongly believe that certain things can be hidden. Whether someone has a messy house or not, I cannot see it on-office. However, you cannot hide how you present yourself because that is who you are. So, I focus a lot on how someone talks, looks, and "feels." I think my social instincts are well developed, so it doesn't matter much to me how I screen. On-site just provides more confirmation. If someone opens the door, and I see them, I form expectations about how it looks inside. In most cases, that's accurate.

Interviewer

Okay, so you're saying that you have developed these social instincts, and the confirmation on-site is the only difference between the screening methods?

LO4

Yes, for example, if someone has a webshop, they sell products through the presentation of that webshop. They can wear a tie, but the gaze, posture, and hairstyle are more important. I expect something different from someone who sells compared to someone who is a carpenter. If a carpenter comes to me in a suit, I'm cautious. That doesn't fit. I'd prefer that carpenter to come to me in jeans with stains. I would understand that.

Interviewer

I get it. You've talked a lot about presentation. Are there any other factors you look at?

LO4

The soft information consists of presentation, attitude, and behavior. For other factors, I often look at hard information.

Interviewer

Do you feel any difference in the evaluation of hard information between on-site and on-office screenings?

LO4

No.

Interviewer

I'm curious about the next point. How do you perceive the things you look at during screenings? How do you, for example, assess the presentation of an applicant?

LO4

By looking really closely. That's it. I try to "feel" the applicant. It has to do with how an entrepreneur stands and how they present themselves and provide answers. Are the answers evasive, or are they direct responses to the question? It's a interplay between hard and soft factors. Based on that, I make a final decision. So, there is, of course, a difference for me. However, the first thing I always do is look at attitude and behavior. That is my primary instinct.

Interviewer

Clear. You primarily focus on attitude and behavior. According to you, this can be confirmed on-site, but not on-office. Does this mean that you look at attitude and behavior differently on- office?

LO4

Yes, I think so. I have a recent example. It concerns an application for a larger financing from a young man. The guy opens the door. Then I look at how he looks and how he presents himself. So, it really concerns soft information. When you enter, you suddenly understand things. What I see in someone outside the door and how someone presents themselves, looks, walks, and gives a handshake, is confirmed inside. For example, you see how someone interacts with their children. That is confirmed within 10 seconds.

Interviewer

Was it positive in this case and why or why not?

LO4

No, it was negative. It starts with the way he opened the door and let me in. It was a request for a hospitality business. I look at how welcoming someone opens the door. You have to present yourself as hospitable in the business as well. You should feel welcome as a guest. I didn't feel that right away. He didn't look me straight in the eyes immediately and looked away. While his presentation in clothing was okay, inside it didn't look very tidy. There was mess everywhere. The man tried to apologize for it. I tried to see through that. At the end, I wanted to get confirmation of the feeling I had. I asked if I could use the restroom and was shocked by what I found there. The feeling I had at the door was confirmed inside. I don't want to say that this always holds true because I don't have that ability, but very often it does. It can happen that you miss it once.

Interviewer

In this case, you can then go to the restroom and see the mess inside. I'm curious about how you would have handled this if the applicant had come to the office.

LO4

Then you have fewer stimuli. I have been doing this job for several years. In that time, you rely on what you have learned over the years. You have to listen to your gut feeling, even if it cannot be confirmed. Because I have spoken to so many people in 25 years and have learned to trust my gut feeling, I almost blindly rely on it now.

Interviewer

This is now specifically about this hospitality application. Could you, in a general sense, mention more points where you have had a negative opinion about an application?

LO4

In my preparation, I often look at the annual figures and how they are presented. I assess the quality of the submission. Many of those things are important to me. It starts with the way it is presented. I always let my gut feeling speak. I can't say it any other way. I don't necessarily have to be with people for that. If you were living in a dorm, I could, so to speak, already tell you what impression I would have.

Interviewer

I think I wouldn't be financeable in that case. I'm curious if, in your experience, you also see a difference between existing and starting entrepreneurs. Could you say something about this?

LO4

Not really. Yesterday, I spoke with a courier. We look at the figures, and I notice some peculiarities. I wanted to discuss them briefly. I wanted to feel if the customer understood what was happening or if he was just working hard and not paying attention to his figures. Based on the reaction and letting the entrepreneur talk, you learn a lot of soft information without having to see things. People often feel quite free to talk to me.

Interviewer

Do people feel freer on-site than on- office?

LO4

Yes, and what happens is that you ask more questions and seek more confirmation during on-office screenings.

Interviewer

We have discussed all the questions. Thank you for your time.