Orientation in a New World of Technology and Finance Integration

Exploring the Concept of Embedded Lending

Master's thesis in Management and Economics of Innovation

Casper Svensson
Matthias Ydström

Orientation in a New World of Technology and Finance Integration
Exploring the Concept of Embedded Lending

CASPER SVENSSON
MATTHIAS YDSTRÖM

Department of Technology Management and Economics
Division of Entrepreneurship and Strategy
CHALMERS UNIVERSITY OF TECHNOLOGY
Gothenburg, Sweden 2021

Orientation in a New World of Technology and Finance Integration
Exploring the Concept of Embedded Lending
CASPER SVENSSON
MATTHIAS YDSTRÖM

Cover:
Image: Freepik.com, https://www.freepik.com/free-photo/compass-with-variety-coins_1064386.htm

Gothenburg, Sweden 2021

Orientation in a New World of Technology and Finance Integration
Exploring the Concept of Embedded Lending

CASPER SVENSSON
MATTHIAS YDSTRÖM

Department of Technology Management and Economics
Chalmers University of Technology

SUMMARY
The adoption and integration of new technological developments have had major implications for the financial industry. New entrants, commonly referred to as fintechs, relying on technology to develop and distribute their financial services, have created more competition in the market, as firms try to find new ways to offer their products. One recent development is the phenomenon of embedding financial services into other, contextual services. The embedding phenomenon could entail that financial services are no longer distributed through traditional channels but are rather integrated into other services where access to financial products could be convenient. Many financial products can be embedded, and embedded lending refers to various loan products being embedded into other services.

By using a qualitative, inductive research approach, this thesis aims to explore the phenomenon of embedded lending. Specifically, the thesis aims to explore current applications of embedded lending, what the key characteristics and value propositions are, how the services are provided, and what some potential suitable applications of embedded lending are. As the area is novel, the thesis also aims to set an appropriate definition of embedded lending.

The study found five key characteristics that can be divided into application-specific and general characteristics. The application-specific characteristics include the existence of digital interaction points as well as general and unique data for underwriting. Trust and instant processing were found to be general for all applications. Additionally, embedded lending provides customers with increased convenience as well as higher service levels. Platform partners integrating embedding lending were found to gain additional revenue streams, and increased sales and usage of their services. Four distinct models for delivering embedded lending solutions were found, constituting different strategic choices for companies in the value chain. Given this, a framework for evaluating potential applications was developed using two variables: data availability and degree of contextual digital interaction. Two potential applications were found to be suitable in their current state, namely personal finance management applications and business procurement packages. Lastly, a suitable definition of embedded lending was proposed to be: Embedding loans in contextually relevant environments.

Acknowledgments

Contents

1. Introduction

The following chapter provides an introduction to the topic of this thesis: embedded lending. Additionally, the aim of this thesis is presented along with key deliverables and the four research questions to be answered. Lastly, the scope of the research is given.

1.1 Background

The integration of information technology in the financial industry has had major implications for the industry, which has undergone significant changes during the last decades. The consolidation of financial services that took place in the beginning of the millennium was followed by fragmentation and the emergence of new, specialized entrants that carved out new niches for themselves. Fintech is the term that is used to describe these new entrants that use digital technology to provide new financial services (Thakor, 2020). Fintech has, in combination with developments in e.g. machine learning and regulations, helped disintermediate many aspects of the financial industry and opened up for more competition and innovation (Berger, Molyneux & Wilson, 2010).

One recent development within the fintech world is the trend towards embedded solutions. In essence, various services related to finance, e.g. payments, insurance, and banking, are being provided within other services that have traditionally not been involved in finance. Examples of this phenomenon could be seen in e-commerce where payment solutions are offered directly on the website or application, making transactions more seamless (McKee, 2020). Embedded solutions are being facilitated by changes in regulation that open up more data sharing and functionality for fintech companies and other actors to utilize. Specifically, the regulation trend called "Open Banking" aims to open up banking information for third parties, given the user's authorization (Gupta & Tham, 2018). Data unlocked by open banking regulation will in this thesis simply be referred to as "open banking data".

The novelty of the embedded phenomenon contributes to the relative lack of research on the subject and there are multiple different definitions in use. However, embedded finance constitutes a potentially large business opportunity, as the novelty leaves room for innovation and the creation of new markets. This thesis is written for a Swedish fintech company that wants to explore the possibilities and implications of embedded lending. The company (here referred to as "Fintech Company A") is active in consumer lending through a digital platform but is looking to explore other lending solutions and sees embedded solutions as a potentially attractive alternative. Thus, in order for Fintech Company A to make a well-informed, strategic decision, knowledge about the intricacies and potential development of embedded lending is needed.

1.2 Aim and Research Questions

The aim of this thesis is to explore the area of embedded lending. Specifically, the goal is to investigate what types of applications embedded lending has been implemented in, how the services are provided, how the value chains are constructed, and what value propositions are offered to involved actors. The novelty of embedded lending also means there is a need to explore the various definitions in use and set appropriate boundaries to the definitions, which will be another aspect of the thesis. The last point this thesis aims to cover is what new industries or applications embedded lending could be suitable for implementation. In order to find such industries and applications, it will be vital to gain knowledge of

the key factors that determine what constitutes suitability. In this process, a framework for evaluating potential applications will be developed. The thesis will thus provide Fintech Company A with material on the possibilities of embedded lending.

Given the aim of the thesis, the four research questions to be answered are:

1. *What are the key characteristics and value propositions of current embedded lending applications?*
2. *How can embedded lending be defined in order to capture the identified value propositions?*
3. *What current structures and value chains exist for providing embedded lending solutions?*
4. *What new applications could present suitable opportunities for embedded lending given the characteristics of current applications?*

1.3 Scope of Research

Although embedded finance has multiple verticals, including payments, insurance, and lending, this thesis will be limited to focusing purely on the lending vertical. This delimitation is due to Fintech Company A's existing solutions and competencies as well as an ambition to make the research more focused.

A second delimitation to the scope of the thesis is the level of technological granularity. The thesis will be focused on the market opportunities enabled by embedded lending but will not go into depth regarding technical aspects such as e.g. specific programming requirements. Some technical exploration will take place. However, this will be of a high-level type to better understand market opportunities. Similarly, no consideration will be taken regarding underlying infrastructure such as payment infrastructure or local regulations.

2. Theoretical Framework

The theoretical framework used in this thesis is presented in the following chapter and consists mainly of search costs and theory regarding platforms and business ecosystems. Alongside this theory, further theory on both the development of lending and APIs is presented. The theories will be used to contrast the findings in the discussion chapter of this thesis.

2.1 Traditional Lending and Onto Embedded Lending

Today's economy is to a large extent driven by credit to facilitate economic transactions, both for corporations and, increasingly, for consumers (Bullivant, 2016). Various lending products are offered by financial institutions, i.e. banks and other credit institutions, through customer interaction with said organizations. The traditional workflow for a bank when issuing a loan, or any other type of lending product, consists of three main steps: application, evaluation of creditworthiness, and approval or rejection of the customer (Somashekar, 2000). This process is known as loan underwriting (Dou, Ryan, & Zou, 2018). The process starts when a client applies, and the necessary data collection is made to determine how creditworthy the client is and what terms can be offered. The data collection can be fairly extensive and complicated, dependent on who the customer is. For consumers, there exist various organizations that provide an overview of a person's credit history, which often needs to be complemented with income verifications and other measures. For SMEs, the process can be slightly

more complicated. Data requirements for SMEs can be more stringent compared to requirements for consumers. These additional requirements could lead to bank policies to only lend to clients with an existing relationship or demand that new clients need to open an account with the bank before any loans can be offered (Somashekar, 2000). SMEs have also been found to be underserved and thus have limited availability to financing through financial institutions. The gap in funding can be attributed to information asymmetry, as many SMEs have a short operating history and lack complete financial statements, making it difficult for institutions to reliably evaluate the creditworthiness of SMEs (Lu, Song & Yu, 2018).

In traditional channels for lending products, the need for financing is found or created outside of the lending channel, meaning that customers enter the lending channel first after realizing that need. An example of this customer path could be a regular consumer who requires home improvement. Before the consumer can acquire the material needed, they might need to receive financing from their bank in order to pay for the goods. Thus, the consumer needs to realize what material is required, estimate the cost, apply for a loan from the bank, and only then actually purchase the goods. In other words, the consumer needs to go through multiple steps and channels, in this example the loan channel and the building material channel, to complete the transaction. The availability of the lending product and the demand for the product thus occur at different points in time and through different channels.

However, the traditional channels for lending products face increasing competition from fintech firms and other actors that rely more on digital technologies to offer and distribute their products in non-traditional channels (Gupta & Tham, 2018). For example, on the consumer credit side, fintech firms have been able to successfully create an alternative distribution channel of credit by integrating into e-commerce sites and platforms. The development, spearheaded by companies such as Klarna, has meant that consumers are offered credit in the form of a buy-now-pay-later scheme at the point of sale (Olson, 2018). Thus, the point of need for credit coincides with the availability of it. These types of solutions where the points merge can be referred to as embedded lending.

2.2 APIs Enable Greater Modularization of Specialized Functionalities

The abbreviation API stands for *Application Programming Interface* (Brajesh, 2017). In a business network, the APIs define the contracts that make it possible for software applications to share business services, enterprise assets, and data so that it can be consumed by other applications without sharing its codebase (Brajesh, 2017). Brajesh (2017) describes booking a hotel room using an online travel portal as an example of how APIs can be used, here explained in three steps below and illustrated in figure 2.2.1.

1. The online travel portal sends the booking details to the reservation system of the hotel, telling it to block a room for the period desired by the customer.
2. The online travel portal sends the customer's credit card information to a payment application, which in turn interacts with a remote banking application to validate the credit card details and process the payment.
3. In the case of successful payment processing, the online travel portal will once again interact with the hotel's reservation system, but this time it will tell the system to reserve the blocked room. The customer then receives booking details for the hotel room.
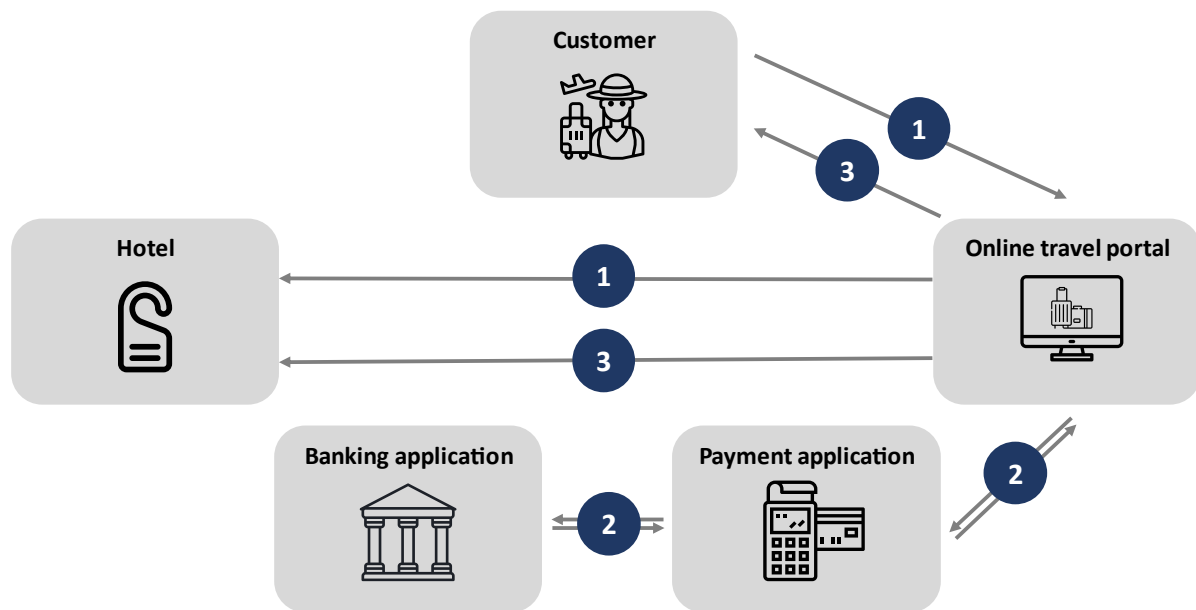
Figure 2.2.1: *Illustration of how APIs can be used to book a hotel room. Numbers indicate process steps described above the figure.*

In the presented example above, APIs enable the online travel portal to interact with both the payment application and the hotel's reservation system. The customer needs only one interaction point, the online travel portal, whereas the processing of the provided information is conducted behind the scenes, enabled by APIs between the other involved actors (Brajesh, 2017).

From a wider perspective, APIs can be used to alter existing business models by facilitating partnerships (Nijim & Pagano, 2014). The value of such partnerships can be achieved by complementing a company's data and services with those of a partner in order to personalize products and services, but also to create new marketing opportunities (Nijim & Pagano, 2014). Murphy & Sloane (2016) describe that the last decade's rise of modular microservices from specialized developers has been enabled by the use of APIs. The development towards modularization enables microservice developers to specialize in providing their own unique functionality. At the same time, modularization enables a higher degree of application complexity as specialized functionalities can be assembled (Murphy & Sloane, 2016).

2.3 Platforms and Networks

Developments in digital technologies have spurred on research of a new research theory known as two-sided markets. Within this field, platforms play an important role (Kim, 2016). Digital platforms can be defined as "*software-based external platforms consisting of the extensible codebase of a software-based system that provides core functionality shared by the modules that interoperate with it and the interfaces through which they interoperate*" (Ghazawneh & Henfridsson, 2015). In other words, digital platforms make up the infrastructure behind an ecosystem of businesses and other participants that interact with each other in a two- or multi sided market. By interacting in an ecosystem, firms can leverage external resources and easier scale their own capabilities. The purpose of the platform then becomes to facilitate participation between the actors involved and reduce any friction that might exist.

The platform sponsor, i.e. the company operating the platform, is further assisted by other companies acting as complementors that increase the value of the platform for all actors involved (Seppänen, Sorri, Still & Valkokari, 2019).

2.4 Search Costs

As consumer and business transactions move online, the ability to compare one company's offering to a competitor's offering increases. To understand consumer behavior in online purchasing or loan application decisions, it is therefore essential to consider what Stigler (1961) refers to as search costs. While literature on search costs primarily considers retail price search, theories on search costs have also been applied to job search, wholesale markets, and service markets for instance (Ellison, 2016). The theories thus have wide applicability and should be relevant also in the case of lending. Stigler (1961) describes search costs as money, energy, and time spent on retrieving information about offered prices in the market. In the case of lending, what Stigler (1961) refers to as information about prices will be abstracted as information about loan terms. Stigler (1961) argues that, in a market for homogenous goods, search costs partly explain price dispersions. As Lindgren (1988) argues that loan products are homogeneous in the sense that consumers are indifferent to whether loans are provided from one bank or another as long as similar loan conditions apply, theories on price search of homogeneous products should be applicable.

While high search costs justify higher prices, most empirical evidence in the literature on online consumer behavior suggests that the increasing use of the internet reduces search costs, which leads to increased search engagement and, in line with Stigler's reasoning, ultimately intensified price competition (Bakos, 1997). Assuming that loan products could be treated as homogeneous products, the intensified price competition could be interpreted as increased pressure on loan terms. While Bailey, Brynjolfsson & Smith (2000) mostly agree that price dispersions will decrease with the increased use of the internet, they argue that still existent price dispersions could be related to retailer heterogeneity in terms of factors such as branding, trust, and efforts from retailers to build customer lock-ins. In relation to the view on retailer heterogeneity presented by Bailey et al. (2000), Brynjolfsson, Dick & Smith (2010) suggest that homogeneous products could be perceived as differentiated as they could be bundled with retailer services that are connected to the product, and therefore justify higher prices. While we, in accordance with Lindgren (1988) stated that loan products can be considered homogeneous, the reasoning by Brynjolfsson et al (2010) about homogeneous products being perceived as differentiated should be applicable for loan products as well, as also loan products can be bundled.

According to Jiang's (2002) proposed model for online price search engagement, a consumer's benefits and costs of engaging in price search depend on: perceived search efficiency, motivation to search, and perceived benefits of search. All three variables have positive effects on online price search engagement. However, the three variables also have sub-drivers, outlined in table 2.4.1. What Jiang refers to as price will in this thesis be interpreted as the interest charged for a loan product.

Table 2.4.1: *Variables that determine online price search engagement. Plus-signs indicate a positive effect on price search engagement and minus-signs indicate a negative effect on price search engagement.* Source: Jiang (2002).

Online price search engagement	(+) Perceived search efficiency	(+) Perceived ease of price search	
		(+) Perceived accuracy of search tools	
		(-) Time per search task	
	(+) Motivation to price search	(+) Need for accumulating price knowledge	
		(+) Need for specific purchase task	
		(+) Need to justify offline purchase decision	
		(+) Perceived benefits of search	(+) Perceived price dispersion
			(-) Information availability of non-price attributes
			(+) Perceived impartiality

Jiang (2002) captures the perceived reduction in time cost in the *perceived search efficiency* variable and illustrates it with the example of using a search engine that compiles price and product information from retailers. The search engine will spare customers the burden of price searching themselves, while customers will need to rely on the accuracy of the search engine's technical functionality. Jiang emphasizes that it is the customers' perception of the ease of price search, and the perceived accuracy of search tools that affect their propensity to engage in online price search, and not the actual ease of search or search tool accuracy.

Further, Jiang (2002) describes the motivation to price search as the customer's desire to make an effort to collect and process information. In this variable, Jiang captures the positive effect of the importance of the good to the consumer and the desire to search for information i.e. engagement in price search. Furthermore, Jiang also sees motivation to price search as a mediator to the perceived benefits of search, as illustrated in table 2.3.1. Jiang describes perceived benefits of price search as perceived outcomes that increase the utility in terms of price, quality, style/appearance, or increased satisfaction with the decision or product.

According to microeconomic theory, customers' expectations on cost and benefits of price search should determine to what extent they engage in price search. In Udell's (1966) studies of buyers of small electrical appliances, he found that buyers' proclivity to visit several stores before purchasing a specific product increased progressively with the price of the item. In accordance with microeconomic theory, Udell's findings mean that buyers saw benefits of price search that could outweigh their search costs. Also, Kiel & Layton (1981), studying automobiles, and Dommermuth (1965), studying apparel, found greater search engagement among customers buying more expensive products. For loan products, the interest of a loan is determined by the face value, the term, and the interest. Hence, since customers price search to a greater extent for more expensive products, loan customers are expected to search for lower interest rates to a greater extent for larger loan sizes.

3. Methodology

This thesis used an inductive research approach to answer the research questions posed in subchapter 1.2. In this chapter, a walkthrough of the research design and data collection is presented together with motivations for the choice of the research process. In total, 17 interviews were conducted with 11 companies or experts across three interview rounds.

3.1 Research Design and Strategy

According to Easterby-Smith, Thorpe & Jackson (2015), research design specifies the strategy used to carry out research. More specifically, Bell, Bryman & Harley (2019) describe that it provides a framework for data collection and analysis and should reflect priorities between dimensions of the research process. These dimensions could for example be the importance of the ability to generalize to larger groups than those taking part of the investigation, or the importance of causal relations between variables.

The topic idea for this thesis arose from Finntech company A's desire to explore the development of the embedded lending concept as it presents a potential growth route for the company's lending business. Considering that the concept of embedded lending is fairly nascent, an inductive research design was chosen as Edmondson & McManus (2007) suggest inductive research designs when developing concepts and insights about novel phenomena. They also argue that qualitative methods are preferable when prior research on a subject is scarce. As no research specifically targeting embedded lending could be found, we safely assumed that the research field was at least relatively unexplored, and that a qualitative method would be favorable for the purpose of our study.

Additionally, a first contribution that utilizes a qualitative method could be achieved by using a grounded theory framework. Bell et al. (2019) state that grounded theories are preferential when trying to understand "what is going on" in an empirical context. Bell et al. (2019) describe the grounded theory methodology as systematic data collection and analysis that allows for flexibility in choice and application of methods as the study develops. Bell et al. (2019) further emphasize the use of four tools in grounded research: theoretical sampling, coding, theoretical saturation, and constant comparison. The use of these tools will be elaborated in the subchapter 3.2.

3.2 Research Process

Applying the theory of using a qualitative research strategy and an inductive approach through a grounded theory framework, this subchapter aims to introduce the data collection and analysis approach of this thesis. Furthermore, the data collection and analysis methods will be elaborated along with a discussion about research quality.

3.2.1 Method Overview

Glaser & Strauss (1967) explain that theoretical sampling refers to the process of data collection to generate theories. Part of this process is collecting, coding, and analyzing data in parallel, which will guide further data collection and allow theories to emerge throughout the study (Glaser & Strauss, 1967). Also, Corbin & Strauss (1998) highlight that researchers should strive to make comparisons of their collected data to maximize the opportunity to discover variations of concepts and enable more

elaborate descriptions of properties and dimensions of their developed theories. In accordance with the theoretical sampling tool, the process in this project has been iterative, with loops of data collection, coding, and development of categories and concepts. The outcomes have then guided the data collection going forward, as will be further elaborated in the 3.2.2 sampling and data collection subchapter. This approach has been used in the data collection and analysis of structures and value chains of embedded lending, key characteristics for implementation, and identified value propositions, but not for the data collection of embedded lending definitions as illustrated in figure 3.2.1.1.
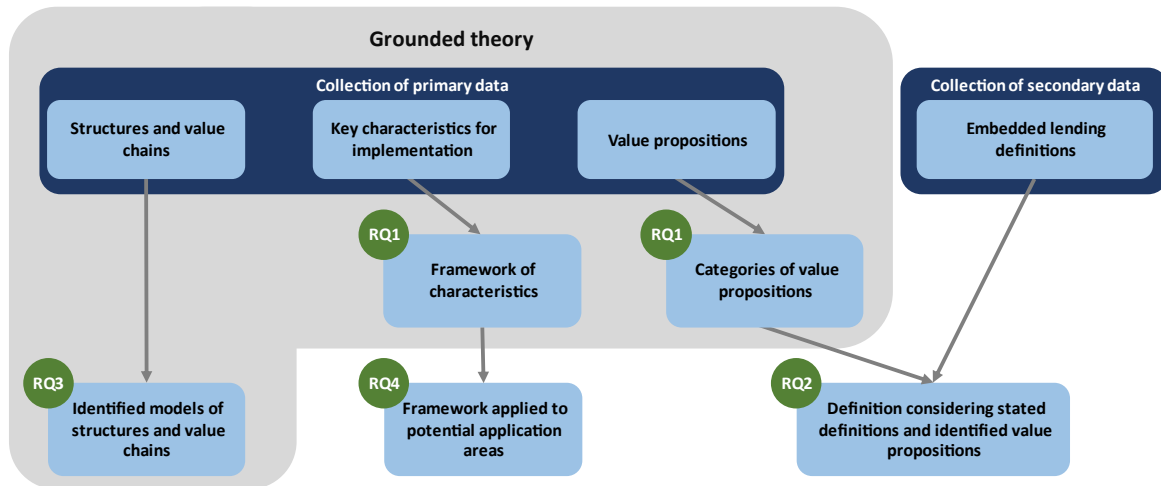
Figure 3.2.1.1: *Overview of the data collection and analysis. The abbreviation RQ stands for research question.*

The data on embedded lending definitions being used in the fintech industry were instead collected through secondary sources, further elaborated in subchapter 3.2.2. The definitions that were identified in this process were then categorized according to differences and similarities in aspects of the definitions. The categories were then contrasted with the current embedded lending applications and categories of value propositions that were identified from the analysis of interview data.

3.2.2 Sampling and Data Collection

The two data sources that have been used in this project are primary sources in the form of interviews and secondary data sources in the form of fintech blogs and articles. However, the grounded theory approach was only applied to the primary sources, as illustrated in figure 3.2.1.1. Thus, only the primary data collection was concerned with the constant development of concepts that guided further data collection. The principal purpose of the secondary data collection was instead to find several definitions of the embedded finance and embedded lending concepts from articles and blogs. Secondary data was also used to find examples of current applications of embedded lending. While the iterative approach to develop concepts and guide further data collection has not been used for both sources of data, coding was used to group both primary and secondary data according to common patterns. The coding and subsequent analysis will be further elaborated in subchapter 3.2.3 coding and concept development.

For the secondary data collection, the collection of embedded lending definitions was made through search engines for articles and blogs on the topics of "embedded finance" and "embedded lending". The authors of the blog posts and articles include journalists writing for fintech focused news websites and

blogs, venture capitalists expressing their views in blogs, independent industry experts in the field etc. No selection of the sources was made. Rather, the secondary data collection aimed to capture a large set of definitions of embedded lending being used more generally in the fintech industry.

For the primary sources of data, the interviewee pool was categorized into three groups: representatives of companies that have implemented embedded lending through partnerships, representatives of companies in which embedded lending has been or could be implemented, and industry experts.

Table 3.2.2.1: *Interviewees according to category, company, and interview rounds.*

Person	Category	Company	Interview rounds
Rinse Jacobs	Implementing company	Solarisbank	1, 2, 3
Ron Leplae	Implementing company	Jaris	1, 2
Roger Vincent	Implementing company	Trade Ledger	1, 2
Fabian Heiss	Implementing company	Banxware	1, 2
Jon Fry	Implementing company	Lendflow	1, 2
[A]	Implementing company	[Company A]	1
Adrian Klee	Industry expert	Ross Republic	3
Lee Schlenker	Industry expert	Business Analytics Institute	3
Olivia Nestius, Fredric Anderberg	Have implemented/could implement	Svea Solar	3
Magnus Hegdal	Have implemented/could implement	Ballingslöv International	3
[B]	Have implemented/could implement	[Company B]	3

The first round of interviews focused primarily on generating insights into the value propositions and key implementation characteristics of embedded lending. Additionally, we wanted to learn about the application in which the value propositions and characteristics were relevant. We therefore wanted to speak to people who were familiar with relevant characteristics and value propositions for all actors in the value chain of providing embedded lending. Consequently, interviewees in round one were senior managers in companies that had implemented embedded lending solutions through partnerships, and could therefore describe the application where embedded lending was implemented, the characteristics of the implementation, and elaborate on value propositions for actors further down the value chain.

In round two, the ambition was to explore the structures and value chains being used to provide embedded lending solutions. To get the most accurate description of how each implementing company works and what actors are part of their value chains, we decided to conduct interviews with the same people as in interview round one. In round three, once concepts had been developed and refined, the concepts were tested during interviews with all categories of interviewees. By testing the concepts on multiple categories of interviewees, we made sure that the developed concepts could be applied also on

other applications than those being used to develop the concepts. Furthermore, testing the concepts with other interviewees addressed the issue that the data being used to develop the concepts might be biased.

In all interview rounds, a semi-structured interview approach was used. This approach means that questions do not strictly follow a predefined structure (Bell et al., 2019). Rather, semi-structured interviews focus on open ended questions that allow interviewers to deviate from the planned structure of the interview as topics that might be relevant for the research are brought up by the interviewee (Bell et al., 2019). Still, Bell et al. emphasize that the interviewers should steer the interview according to predetermined guidelines in order to address relevant topics. The relevant topics in the first interview round revolved around understanding exemplified current applications, exploring the value propositions, as well as understanding characteristics for implementation. As concepts were developed from data in previous interviews, questions that allowed for comparisons against previous interview responses were asked in order to further nuance the established concepts.

In interview round two, our ambition was to gain insights into what typical roles and activities are necessary to implement embedded lending and explore what combinations of roles and activities that are currently used. To explore the roles and activities, also the interviews in this round followed a semi-structured approach. The topics revolved around typical lending activities such as servicing and typical roles such as who provides the balance sheet on which loans are originated. After interviews that concerned the structure had been made, graphic illustrations of connections between roles and activities were created.

In the third interview round, the concepts that had been developed were tested by letting companies that have not implemented embedded lending solutions express their view on value propositions and key characteristics of implementation. Additionally, the data generated from the interviews was also used to further refine the developed concepts by providing nuances and practical examples. As mentioned before, the interviews in this round also followed a semi-structured approach. To find the companies to interview in round three, we used thoughts about potential application areas from the interviewees in round one.

In all interview rounds, what Bell et al. (2019) describe as theoretical saturation was strived towards. Bell et al. explain that theoretical saturation is when sampling carries on until a category has been saturated with data. They argue that this is achieved when no new or relevant data emerge regarding a category and when no variations in properties and dimensions of a category seem to appear. Furthermore, the relationships among categories should be well established and validated at the point of theoretical saturation, Bell et al. argue. In order to abide by these principles, a significant number of interviews were held. However, as many potential interviewees were not able to attend discussions with us, we decided to schedule multiple interviews with the interviewees that we managed to get in touch with. In addition to simply increasing the amount of interview data to provide nuance to our developed concepts, interview round three largely functioned as a round to validate the concepts that had been developed.

3.2.3 Coding and Concept Development

To develop concepts from the collected data in grounded theory, Bell et al. (2019) argue that coding is an essential tool which they refer to as breaking down data and giving names to components. In

grounded theory, they emphasize the use of open coding, which Corbin & Strauss (1998) explain as "*the process of breaking down, examining, comparing, conceptualizing and categorizing data*". In order to facilitate coding, all interviews were recorded and transcribed. By coding the transcripts, analytical categories that represent insights into the relevant topics were identified in accordance with Mays, Pope & Ziebland (2000) who emphasize the development of analytical categories through coding in inductive processes. Additionally, Mays et al. suggest that more than one researcher should be part of the coding and analysis in order to ensure reliability and consistency. In accordance with this suggestion, transcripts were first coded separately by both authors. After the separate coding, both authors discussed and categorized the analytical categories together.

The coding process and discussions between the authors occurred throughout the research project as new interviews had been conducted. As new concepts were established out of the data analysis, searches on relevant literature for the concepts were made. The literature was then discussed in relation to the developed frameworks and contexts of this thesis in the discussion chapter.

3.2.4 Method Discussion

Methodological discussions between the authors of this thesis concerned two main themes: (A) Could other interviewees have provided better descriptions of characteristics needed to be in place and the value propositions they and their customers experience? (B) Was a sufficiently large group of people to capture refined descriptions of the most prominent value propositions and characteristics of current embedded lending applications?

Regarding question A, we believe that the chosen interviewees have knowledge about the value propositions further down in the value chain of embedded lending products. However, we believe that platform partners (the companies in which embedded lending is implemented) for example know their own value propositions better than their suppliers do. Hence, platform partners can probably elaborate more on their value propositions than its suppliers can. Likewise, end customers can probably nuance the value propositions they experience better than any actor higher up the value chain of embedded lending can. However, as this is an exploratory thesis, we argue that value propositions of sufficiently elaborate nature have been reached through interviews with actors further up the value chain.

Regarding question B, no new value propositions or characteristics could be identified in the interviews conducted towards the later stage of the data collection process. Hence, while we cannot exclude that value propositions or characteristics of what is commonly referred to as embedded lending might have been missed, we still feel comfortable that we have managed to bring clarity to the most prominent ones. However, all interviews added insights to the refinement of the developed categories of concepts. Hence, it is questionable whether full theoretical saturation actually has been achieved.

4. Findings

The results presented in this chapter are the key insights found and not the raw data from the interviews and thus some selection of the data has been made. However, the insights and groupings presented in this chapter are not analyzed, rather they are summarized in an as concise and understandable way as possible. As the data is not analyzed, all current applications that interviewees refer to as embedded lending applications will be included in the findings chapter, whereas some of them might not be

considered embedded lending applications according to the definition of embedded lending that is established in the analysis chapter of this thesis. In the last subchapter of the findings chapter, potential embedded lending applications are presented. What differs current applications from potential embedded lending applications is whether embedded lending solutions have penetrated the application to a significant extent. Thus, whereas solutions that could be classified as embedded lending might exist in the presented applications, they are not presented as current applications due to their low penetration rate. The penetration rate is assessed according to subjective indicators such as: interviewees referring to them as potential applications, lack of articles and blog posts mentioning embedded lending applications in the application area.

4.1 Definitions and Approaches to Embedded Lending

Among members of the fintech industry, such as Yusufozdalga (2020), industry experts, and interviewees working for embedded lending companies, embedded lending is seen as a subsegment of the wider concept of embedded finance. As embedded finance presents a larger market opportunity than embedded lending, most articles and blogs do not give explicit definitions of embedded lending, but rather of embedded finance. Hence, to capture a more extensive set of definitions of embedded lending as a concept, scholars' definitions of embedded lending will be complemented with definitions of embedded finance in order to build a bank of definitions to extract data from.

Most embedded finance and embedded lending definitions found in blogs and articles follow a simple structure in the way they are written. For example, Elm (2021) defines embedded finance in the following way: "*Embedded finance is a term for when nonfinancial companies offer financial products and services to their customers while retaining complete control over the customer experience. Essentially, a financial institution (FI) distributes its products through a nonfinancial company*". First off, Elm's (2021) definition describes how embedded finance, and subsequently embedded lending products, are distributed – in this case through nonfinancial companies offering financial products. Secondly, the definition states that the nonfinancial company should retain control over the customer experience, which is a comment about the embeddedness aspect of embedded finance solutions. Hence, embeddedness is another aspect to consider in addition to how embedded lending products are distributed.

While most scholars roughly follow this simple structure for describing their definitions, some scholars provide more narrow definitions of embedded finance or embedded lending. O'Hear (2021) for example, writes; "*The idea of offering financial products where customers are already congregating via white label solutions and APIs*". First off, the definition describes how embedded finance is distributed – through financial products where customers are congregating. As opposed to the embedded finance definition previously stated in this subchapter, O'Hear is more specific on the embeddedness aspect of embedded finance solutions by saying that solutions should be white-labeled and be powered by APIs. Hence, definitions as narrow as the one provided by O'Hear also need to be taken into account. The third and final dimension, exemplified by O'Hear's description, will be classified as a technology aspect of embedded lending. Thus, the three identified dimensions that will be used to categorize definitions are: How or where embedded lending is distributed, what the aspects of embeddedness are, and what role technology has in the embedded lending concept.

Beginning with how embedded lending is distributed, there are four main categories of definitions provided by scholars as can be seen in table 4.1.1. The most common way to look at how embedded finance should be distributed is that non-financial companies should offer financial products and services to their customers. However, some scholars are narrower in their definitions, saying "service provider" instead of just "company", and other scholars are even more narrow, referring to integration "into the act of purchasing". On the other hand, other scholars are broader, saying that financial products should be made available at any time and location according to the customer's requirements.

Table 4.1.1: *How and where embedded lending should be distributed according to various definitions.*

How it is distributed	Examples
Financial products and services through nonfinancial companies or organizations	*"Embedded finance is a term for when nonfinancial companies offer financial products and services to their customers [...] a financial institution (FI) distributes its products through a nonfinancial company."* **(Elm, 2021)** *"The term embedded finance refers to companies that have historically been separate from financial services that now integrate them [...]"* **(Muhn, 2021)** *"Embedded finance empowers non-financial organizations to quickly and seamlessly integrate financial service features into their products and services [...]"* **(Trulioo, 2021)**
Financial products and services through non-financial service businesses	*"Embedded finance is the seamless integration of financial services [...] directly within the products and services of non-financial service businesses"* **(Lusted, 2021)** *"Embedded finance is the amalgamation of a non-financial service provider with a finance service."* **(Saratchandran, 2021)**
Available at any time and place	*"Embedded finance basically refers to financial services accessible according to the customer's terms. It can enable customers for accessing financial services from any location, at any time, according to their requirements."* **(Iredale, 2021)**
Available in the act of purchasing	*"In simple terms, embedded finance allows companies to create innovative financial offerings that are integrated into the act of purchasing a non-financial product or service"* **(Rise, n.d.)**

Rinse Jacobs' view of how embedded lending is distributed is that lending products should be made easily accessible in environments where customers want to interact. Another interviewee, Fabian Heiss, sees two typical applications of embedded lending – one targeting end consumers interacting at point of sale where lending is offered as a payment alternative, and the other application being business loans. Heiss says: "*Because at the end of the day you are just a regular lender and I think there are a lot of online lenders already out there, but I think the key is that you need to bring it into a context of something bigger. This can be platforms, marketplaces, it can be especially when you are looking into the consumer area, this could be any kind of application where a user interacts with*". His definition is thus quite flexible in terms of how embedded lending should be distributed. Though, he emphasizes that lending should be offered in relation to a relevant context.

For the embeddedness aspect of embedded lending offerings, Ron Leplae speaks about two dimensions of embeddedness: being embedded in the experience and being embedded in the cash flow. Leplae

argues that, in order to be fully embedded, embedded lending offerings should be embedded both in the cash flow and the customer experience, although he acknowledges that many successful embedded

Table 4.1.2: *Aspects of embeddedness according to various embedded lending definitions.*

Description of 'embedded'	Examples
Retaining control over customer experience	*"Embedded finance is a term for when nonfinancial companies offer financial products and services to their customers while retaining complete control over the customer experience"* **(Elm, 2021)**
	"Embedded finance is about abstracting banking and insurance functionality into technology and enabling any brand or merchant to rapidly and economically integrate innovative financial services into their offerings and customer experience" **(Torrance, 2020)**
Merging of nonfinancial services and financial services	*"Embedded finance is the amalgamation of a non-financial service provider with a finance service"* **(Saratchandran, 2021)**
	"It is defined as merging a non-financial service provider, such as a retailer or ride-sharing company, with a financial service [...]" **(Unmesh, 2021)**
Seamlessly integrated	*"Embedded finance is the seamless integration of financial services, including payment processing, lending and insurance directly within the products and services of non-financial service businesses"* **(Lusted, 2021)**
	"Embedded finance empowers non-financial organizations to quickly and seamlessly integrate financial service features into their products and services, improving the customer experience, loyalty and profitability" **(Trulioo, 2021)**
Integrated into platform or app	*"The term embedded finance refers to companies that have historically been separate from financial services that now integrate them within a platform or app"* **(Muhn, 2021)**
User should not notice the financial component	*"The end user shouldn't really notice the finance if it's properly embedded; it just becomes a part of the product"* **(Jones, 2020)**
User experience should be media break-free	*"Another area of growth is embedded finance whereby a non-bank player such as a ride-sharing operator, or online retailer can embed financial services, such as payments, directly into their service so that customers no longer need to navigate away from an app to pay"* **(Rosner, 2021)**

lending applications are only embedded into the customer experience. Among scholars providing definitions in articles and blogs, the most common descriptions of being embedded in the experience can be categorized into six different categories as seen in table 4.1.2. As opposed to the descriptions of how embedded lending is distributed, there does not seem to be one single description of embeddedness used more frequently than others. Instead, seamlessness is a common theme considering the three categories: seamlessly integrated, the user should not notice the financial component, and user experience should be media-break free.

Rinse Jacobs emphasizes that the value in embeddedness lies in the seamless integration that aims to create a convenient experience for the customer. Further, he says that; "*Basically any point where you have a chance to lose that customer because you do a media-break, you lose the embeddedness - That's the definition of the word*". Thus, he sees media-break as an especially important factor that affects seamlessness.

While many scholars comment on the embeddedness aspect of embedded lending in general terms, only a few scholars explicitly state that technology should be used to enable embedded lending as can be seen in table 4.1.3.

Table 4.1.3: *Technology aspects according to various embedded lending definitions.*

Description of 'embedded'	Examples
Integration is enabled by APIs	*"Embedded Finance is the use of Banking-as-a-Service and API-driven banking [...]. Brands 'lease' access to tools and services offered by Embedded Finance providers, and use them to build financial products [...]."* (**Treacy, 2021**) *"The idea of offering financial products where customers are already congregating via white label solutions and APIs."* (**O'Hear 2021**)
Enabled by technology	*"Embedded finance is about abstracting banking and insurance functionality into technology and enabling any brand or merchant to integrate innovative financial services into their offerings and customer experiences"* (**Torrance, 2020**)

While only a few scholars include the use of technology or APIs in their definitions of embedded lending, many scholars comment on technology and APIs as enablers of embedded lending. Lusted (2021) for example writes "*[...] the true driving force behind the growth of embedded finance has been a new wave of Fintechs which enable non-financial brands to embed new value in their end user digital experiences*". Furthermore, Townsend (2021) argues that APIs, or digitization, automation, and modularization more broadly, are enablers for embedded lending. Hence, while APIs and other technology aspects are not included in most definitions of embedded finance or embedded lending, they are often referred to as driving forces of growth in embedded finance and embedded lending as concepts.

Apart from how embedded lending is brought to market, what the term embedded means, and whether technology needs to be utilized, another aspect to consider is what scholars consider to be a lending product in the embedded lending concept. Most interviewees and scholars do not exclude any product that usually is considered to be a lending product. They do however often refer to applications offering buy-now-pay-later solutions (Unmesh 2021; Farmilo 2021) for consumers, as well as credit lines and cash advances for businesses, in the loan category of embedded lending (Röhrborn, 2020; Jain, 2020).

4.2 Current Embedded Lending Applications
The interviewees highlighted some of the most common applications of embedded lending currently implemented. The lists are not exhaustive, but include the applications exemplified in secondary sources

and during interviews. Firstly, two broad contexts can be distinguished, namely: corporate or SME lending in a business-to-business-to-business (B2B2B) context and various forms of consumer credit in a business-to-business-to-consumer (B2B2C) context. In both of these contexts, what we in this thesis refer to as an *embedded lender,* provides loans through an intermediary actor that will be referred to as a *platform partner*. The embedded lender could for example be a bank or a fintech company that partners with one or several banks or creditors. A more elaborate description of value chains that embedded lenders use to distribute loans is provided in subchapter 4.3. Platform partners, on the other hand, will be further described in this subchapter.

In all identified applications in the B2B2B context, an embedded lender provides loans through a platform partner so that loans can be accessible for businesses that interact with the platform. The lending products and application processes are thus embedded on some form of platform where other businesses are located or conduct business. Types of platforms, i.e. applications where this has been implemented, include merchant platforms, vertical software as a service (SaaS) platforms, payment processors, and accounting packages. Table 4.2.1 presents an overview of what types of lending products have been implemented in each given application in this context.

What is referred to as merchant platforms are aggregating platforms where individual merchants sell products. Examples of such platforms are Amazon Marketplace and eBay in the retail industry, and food delivery companies connected to restaurants in the case of restaurant businesses. What is referred to as Vertical SaaS platforms are software as a service (SaaS) companies that specifically target various business verticals. Examples of such platforms include project management software companies for the construction industry and software that provide features related to point-of-sale management and other application-specific areas for physical retail stores, e-commerce merchants, or restaurants. When serving e-commerce merchants and restaurants, what differentiates Vertical SaaS platforms from merchant platforms is the fact Vertical SaaS platforms do not function as aggregators of merchants. Rather, the platforms in the case of Vertical SaaS companies are used to facilitate each merchant's separate customer interaction. One of the functionalities commonly provided in Vertical SaaS platforms that target point-of-sale solutions is payment processing. However, other companies provide payment processing as its main functionality. To distinguish such companies from Vertical SaaS companies, these companies will be referred to as payment processors. Common to these three applications is that they, among other lending products, offer merchant cash advances which can be integrated into the cash flow. Ron Leplae explained "*Actually, being in the flow means that we already take money from the merchant before it gets to the bank account. We have a few people that do lending and they will give you money and then they might look at your bank account for underwriting and then you need to give them the money back from your bank account. But what happens if you're in overdraft, if your balance is too negative, the money arrives and you cannot pay because you don't have the money to pay. In our model, we're not running into that issue, we don't have to do collections*".

E-commerce merchant lending was often mentioned during the interviews as a common use case for embedded lending, which could be facilitated through merchant platforms. Term loans, fixed credit lines, and merchant cash advances were found to be offered to merchants that operate on such platforms. Merchant platforms can also include food-delivery services that restaurants connect to. Fabian Heiss explained: "*What they do is they have a couple of thousand restaurants selling their food via their app [...] So I as a restaurant can apply for a loan [...] with the food delivery platform, and they work together*

with us, and basically provide that loan to the restaurant". The integration into the platform means that merchants are presented with lending products directly on the platform and never have to leave it for any part of the loan application process. Merchants can be offered loan terms immediately if the platform collects data continuously, thus pre-approving eligible merchants, or after a short processing time once they apply for the loan through the platform. Fabian Heiss continued: "*Ideally, eligibility data is always continuously checked by our platform partner, for example by the e-commerce platform, and presented to the merchant. Of course there will also be the other way around that he [the merchant] can request this on his own*". Utilizing a continuous data check was described as providing a more seamless experience for the merchant. Additionally, the lending services are white-labeled, allowing the merchant platform to maintain their branding and a uniform experience on the platform.

Similarly, vertical SaaS companies provide platforms on which multiple financing products have been embedded. Table 4.2.1 shows that vertical SaaS companies have provided the broadest range of lending products to be embedded. One particular product that was mentioned to be especially suitable for the application was merchant cash advance. Jon Fry said "*You know in most situations, cash advances are pretty good products. They fit a bit more broadly, they're fast and easy. The downside is that they are more costly, so that's the trade-off*". Like on the merchant platform, the loan application process takes place on the platform, branded in the SaaS company's brand. The loan application process through SaaS companies' platforms was described similarly to that of the merchant platform as well, with both manual loan applications through the platform and immediate offers provided through continuous data checks.

The third identified application for embedded lending in the B2B2B context was payment processors. Similarly, to two cases described above, businesses interact through a payment terminal where incoming and outgoing payments are handled. For example, PayPal operates a payment processing platform for SMEs and allows businesses using the service to apply for merchant cash advances through the platform. However, in some cases, merchants using payment processors need to apply for loans outside of the regular platform interaction. Ron Leplae provided an example related to one of their payment processing partners called Wordline: "*The contact point is on our portal because Wordline did not have the possibility to quickly put it on their portal and not all merchants use their portal*". Furthermore, in this example, data could not be continuously supplied to the embedded lender to pre-approve merchants as opposed to the two previously mentioned applications.

Accounting packages were also found to provide suitable interaction points for companies to apply for loan products through. The size of the companies that can use these services appears however to be limited to SMEs. Specifically, for invoice factoring through accounting platforms, Roger Vincent said: "*And there is where accounting packages have done quite well. They have done what is called single invoice financing [...] But as you grow, as you get more complex there are products called selective invoice finance, which is multiple invoices that you're financing on a full sales ledger. Then you got financing against a whole sales ledger, and if you are doing that the whole sales ledger could be worth 20 million and there could be 20,000 invoices in there*". He continued by commenting on the

Table 4.2.1: *Implemented embedded lending applications and products in B2B2B context.*

Applications	Products offered	Illustrative quotes	Other sources

Merchant platforms	Fixed credit lines Merchant cash advances	*"We are targeting small and medium sized enterprises, so not consumers, which is an important differentiation. And with merchant lending, why we call it merchant lending is - from the concept it is quite close to merchant cash advance [...] we take this concept and provide it in an embedded way so that for example any kind of digital platform or marketplace can offer this kind of solutions to their merchants"* – **Fabian Heiss**	Amazon offers a fixed credit line to merchants through their sellers' portal (Son, 2020).
Vertical SaaS platforms	Fixed credit lines Term loans Invoice factoring Merchant cash advances	*"These guys specialize for example in restaurants. And they offer a fully integrated solution where you can book reservations, you can discount the customer and make a ticket for the table and of course you can accept the payment. In that same GUI, which is on a tablet, you can say 'oh I need money I can take a financing [merchant cash advance]'"* – **Ron Leplae**	Lendflow provides embedded solutions for term loans, invoice factoring, and fixed credit lines for vertical SaaS companies (Lendflow, n.d.).
Payment processors	Merchant cash advances	*"For example what we do in Belgium with Wordline is a little bit less integrated, because they are a big company and they only do payments and they don't go that broad in the value chain"* – **Ron Leplae**	PayPal offers businesses merchant cash advances through their payment processing (PayPal, n.d.).
Accounting packages	Term loans Invoice factoring Merchant cash advances	*"A lot of the accounting packages support what's known as invoice finance. So with invoice finance [i.e. invoice factoring], if you can verify that the invoice is real, you can very quickly advance cash against that invoice because you got a high propensity that it's gonna be repaid, and you know that the invoice is actually being created in a valid way"* – **Roger Vincent**	Accounting platform Xero offers invoice factoring through their platform (Murphy, 2020) as well as term loans and merchant cash advances (Xero, n.d.).

profitability of this segment: "*So the single invoice financing space where most of the accounting platforms are sort of dabbling and fintechs sort of dabble, it's low yield and it's quite a high cost serving area*". Regarding the interaction with customers on the accounting packages, there appears to only be non-white-labeled implementations. Examples of such implementations include Xero, where businesses can choose to install software tools for loan applications from various lenders to be used through the accounting package. The software tools utilize business data available on the accounting platform to underwrite potential loans. This solution thus requires more deliberate actions by the user than in the cases of merchant platforms and Vertical SaaS platforms. The interaction and loan application still take place on the accounting software, and the customer never leaves the accounting portal.

In the B2B2C context, the applications where embedded lending solutions have been implemented mainly consist of some form of digital platform or commerce website where consumers buy goods or services. Table 4.2.2 gives an overview of the identified applications and the respective products offered in each given application.

Table 4.2.2: *Implemented embedded lending applications and products in B2B2C context*

Applications	Products offered	Illustrative quotes	Other sources
Online retail	Credit cards Buy-now-pay-later Installment loans	*"Credit cards are a lending product right. But this is a very different lending product because this allows for daily interaction with the customer obviously [...] It gives you additional revenue because of the interest rate and interchange rate that is being collected. What makes it even more interesting is the additional data points, and respective patterns thereof, that you can collect" – Rinse Jacobs*	Klarna offers buy-now-pay-later solutions to consumers at POS through e-commerce (Klarna A, n.d.). Buy-now-pay-later as well as installment loans are also offered by companies such as Affirm (Affirm, n.d.).
Brick and mortar retail	Buy-now-pay-later Installment loans		Klarna offers buy-now-pay-later and instalment loans to consumers at POS in brick and mortar stores (Klarna B, n.d.).
Online car marketplaces and OEMs	Instalment loans	*"One of the first products that we launched was a consumer loan, and we started with AutoScout, which is an online second-hand car dealership [...] so the customer goes to this second-hand BMW where you see the price and you also see 'oh you can buy it for 500 euros a month for x amount of years'. Customers can click on that offer and then within the app or website of the [platform] partner they go through that whole flow" – Rinse Jacobs*	
Car retailers	Installment loans	*"We distribute our loans via partners and we are completely white-labeled. So inside Tesla model 3 [physically inside] you can buy the car with financing and our solution, so it's embedded in Tesla [...] Tesla works in that way, both Tesla and Apple, we would work with Tesla.com or Apple.com which is used at the dealership" – A*	
Loan comparison websites	Term loans	*"[...] comparison to understand what is the loan, the best rates and so on [...] they have a ton of data on the customers - they know exactly which customers will receive what score, how, and by which bank. So some of these comparison portals said, why don't we sell our own lending product [...] Various comparison portals are keen to build something themselves with a different brand where they can apply their own scoring, and participate on the risk." – Rinse Jacobs*	
Travel and booking sites	Fixed credit lines	*"We saw a lot of support from travel companies, at least back in the pre-covid days. Most major travel websites have an interest in offering either buy now pay later solutions or credit line solutions. This*	

		creates customer stickiness as customers know they have a credit line they can utilize for their next trip" — **Rinse Jacobs**	

Online retail was one of the most frequently mentioned applications in the B2B2C context. For this application, various products are being offered to end-consumers, such as buy-now-pay-later schemes, installment loans, and store-specific credit cards. The buy-now-pay-later solutions and instalment loans are integrated at the point of sale and are presented in the embedded lender's branding, i.e. not white-labeled. The application and usage of these products takes place on the initial interaction point, but once the loan has been taken, the borrower interacts with the lender instead of remaining on the interaction point. In the case of brick and mortar retail, the interaction is also at the point of sale, but the process is done entirely through the lender's platform. The customer can access buy-now-pay-later solutions and instalment loans for goods bought at a physical retail location by for example scanning a QR code through the lender's platform, using their smartphone.

In the case of credit cards, consumers are offered a credit card by an online retailer (usually virtually) to be used wherever the consumer chooses. Rinse Jacobs explained the benefits of credit cards as: "*this is what we see generally on the lending side, where companies, initially, don't really see it as an individual product but more as a feature of their platform or of their check-out process. But because lending doesn't give you a lot of touchpoints with the customers, you typically would want to have a more daily interaction on the financial side as well, just to get some more insight, and this is where a card comes in because you understand where else are they shopping, what time are they shopping, right, so you can build a better profile, better personalized marketing and so on*". Credit cards thus appear to offer more interaction with the customer as well as increased customer understanding through data generation.

Online car marketplaces and OEMs were also described in the interviews as current applications. In these cases, consumers can purchase a vehicle using financing in the form of instalment loans through the marketplace as exemplified by Rinse Jacobs saying "*Customer interaction is then happening of course through the app or the website of our partner*", or through a car OEM's website, as described by A. While the loan application processes are integrated into the car marketplace or OEM's website, the brand of the loan product could either be labeled by the embedded lender, as in the case of the car marketplace exemplified by Rinse Jacobs, or branded in the OEM's brand, as exemplified by A saying that COMPANY A empowers Tesla to provide loans using the Tesla brand.

In the case of physical car retailers, A described a similar customer experience to that of the online case but at the physical dealership. The example of Tesla was described by A, where the consumer visits a retailer and configures their car through the Tesla.com portal accessible either inside the actual car through the infotainment system or through a computer at the dealership. The size of the instalment loan payments is displayed throughout the entire customization process and updates automatically with new selections made by the customer. When the customer is satisfied with the car, the instalment loan is available as an option. If the customer chooses the financing, a quick data collection is made.

Consumer loans in the loan comparison website application refers to traditional consumer loans with set interest rate and term and without any collateral. The comparison website compiles multiple loan offerings on the market from various creditors as well as offering loans themselves, which are embedded directly on the website. For the example of travel and booking websites, a fixed credit line is offered to customers through the site. The credit can only be used on the given site and thus provides incentives for the customer to continue using the site for any travel or booking purposes. In both of these cases, the integration of the lending products is completely white-labeled.

4.3 Current Structures and Value Chains

The structures identified from the interviews are presented in table 4.3.1, which highlights the different structures associated with the financing process. This process was found to be the main differentiator and determinant for the structure of the value chain in an embedded lending context.

Table 4.3.1: *Identified structures for the financing process.*

Identified structures	Illustrative quotes
Own banking license *The embedded lender holds its own banking license and originates loans on its own balance sheet*	*"The credit decision can always only be made by Solarisbank because we are the license holder and we cannot outsource that [...] The payout of the loan sits with Solarisbank and that also means that of course it sits on our balance sheet. That means we provide the capital."* – **Rinse Jacobs**
Financing partner *The embedded lender has a partnership with a creditor and originates loans on the partner's balance sheet*	*"In the US, we give loans to merchants and it's not our money, it's money from the bank and we have a deal with the bank that allows us to originate loans on the balance sheet of the bank"* – **Ron Leplae** *"So when we onboard a new bank that wants to work with us we agree with them on OK what is the risk strategy, what are your thresholds, where, what do you accept, what do you not accept. So basically that is part of our onboarding together with the bank, and then configure with our system accordingly"* – **Fabian Heiss**
Network of financing partners *The embedded lender has a network of creditors that underwrite customers handed to them by the embedded lender*	*"So we're going to compile data for underwriting and we're gonna use that to place them with the appropriate lender where they are gonna maximize their pricing the first time"* – **Jon Fry**
Technology to enable banks *The embedded lender provides APIs and technology to enable banks to embed their own products in third party platforms*	*"To a customer, it would look like, let's say Quickbooks and Barclays. But underneath that, Trade Ledger is kind of connecting the whole ecosystem of data and products and fulfillment [...] So we integrate with partners and we integrate with different data sources, but that full end do end value stream is exactly what Trade Ledger does"* – **Roger Vincent**

All interviewed companies embedded lending products in some form of digital interaction point for either customers or businesses. Most often this interaction point was described as some form of platform. For example, Fabian Heiss explained with a hypothetical example: "*imagine you are a seller on Amazon on the Amazon marketplace. So, basically there is an entry point for you which is called seller's central, which is the access point to the Amazon network, so this is where you can post your*

products, define your pricing, set up your communication channels, your fulfillment and everything".
For a full list of identified applications and interaction points, see subchapter 4.2.

In all identified structures, the embedded services are integrated on the interaction point using APIs or widgets. Jon Fry described it as: "*we have embeddable widgets with our custom pre-built apps and servicing dash-board so that they can embed very easily. And they can also display that data all through APIs, so the way that data, the application, is presented, maybe they have a lot of the information already, they can port that over with the API*". Similarly, Ron Leplae said "*we expose APIs, they call our APIs*" when asked to describe the integration method used. These APIs could be white-labeled, depending on the application, as seen in subchapter 4.2.

The customer service was found to be managed either by the platform partner or the embedded lender. In the case of an embedded lender with its own banking license, the interviewees mentioned both examples where the embedded lender handles all customer service as well as examples where the platform partner is responsible. For all other structures found, the platform partner was the one responsible for the customer service. I.e. if a customer (either a consumer or a business) has a question about the loan product, the customer will be directed to representatives from the platform partner first. Only if the question is too specific about the loan will the platform provider contact the embedded lender. Ron Leplae explained: "*all the product questions for support, eligibility, this is either Jaris' business or with the [platform] partner. General questions, the partner is already able to answer it. If it's too technical or too specific they come to us*". This allows the platform partner to keep the interaction with end customers.

In all cases, end customers engage through the platform partner when using its associated services. Thus, the customer journey always starts on the platform provider's platform, where the underwriting process for the embedded lending products begins. Fabian Heiss explained it with the hypothetical Amazon example as "*the merchant then basically says 'OK, this sounds amazing, I want to have this loan', he just hits a button on the seller's central, and then the loan application part begins*". He continues with explaining the data collection made after the initial engagement by the merchant: "*and in this case again, we are using the data that is available already on seller's central at this point in time, the data is shared by Amazon with us [...] Of course, Amazon does not have all the information that is required for us. They have at least some of it. So we pre-populate everything that is available and the business owner needs to provide a couple of more information around his business that is not already available on Amazon*". This underwriting process was found to be different for certain products. Specifically, merchant cash advances can have pre-qualifications, where a continuous data collection is made to offer customers terms immediately. Ron Leplae explained it as: "*we will score the customer, look at his credit rating and some financial checks and, in a positive outcome, we will say to the partner 'yes, the customer is eligible for a loan up to a maximum amount of this, and these are the conditions'. And then what typically happens in the portal of our partner, the merchant he can, the day he needs a loan he can just sign up for a loan, choose the amount he needs for a funding*". For the other products, the underwriting process starts when an application is made by the customer and a data check is made, given the customer's consent.

After the underwriting, the value chains identified become more differentiated, as the structures are based on different financing operations and partnerships. In the first case, the embedded lending

company has its own banking license and uses its own funds to provide capital for the loans. This typically also means the embedded lender will originate the loans on its own balance sheet and be responsible for the credit risk associated with the loans. However, during the interviews it was found that the embedded lender can, in some sense, transfer the credit risk to the platform partner, if the platform partner wishes to use their own scoring. Rinse Jacobs described it: "*we can keep it on our books as a normal asset. And, some partners say, 'I have enough capital [...] and I'm comfortable to do the scoring myself. And of course if they would want to do the scoring completely, then we would say 'ok that's fine but we cannot take that risk on our books because you have done the scoring so you know what you are happy to take a risk on'. That typically means that either we sell it off in a fronting relationship or we say we are still happy to take it on our books but you are commercially taking the risk, which basically means they have a collateral account*". Thus, by either selling off the originated loans or setting up a collateral account for the platform partner, the embedded lender can allow for partners to conduct their own credit scoring. Though, the lender of record (the lender) will always have the sole discretion to decline a customer as the credit decision (which is derived from the credit scoring) sits with the lender.

By using a financing partner, however, the embedded lender does not need to acquire a banking license. Instead, the embedded lender can originate the loans on a financing partner's balance sheet. Usually the embedded lender sets up an agreement with a financing partner (most commonly a bank) that stipulates how the credit scoring should be conducted and what type of customers the embedded lender can lend to, given the credit scoring. Ron Leplae explained it as agreeing on certain "buckets" the loans are allowed to fall into with the financing partner. Specifically, he says: "*we have agreed buckets, and if we stay within the bucket, we can give the loan*". Thus, with an agreement like this, the embedded lender can originate loans on a financing partner's balance sheet, without the need for approval for every new loan.

However, it is also possible to use a network of financing partners rather than a single one. This setup allows the embedded lender to use multiple different partners' balance sheets with their own respective risk profile. Jon Fry explained: "*so we handle the marketing and sales functions, and we compile that data for underwriting. So that is providing a consistent experience across all, for the about 90 lenders and banks across our platform*". In this case, the embedded lender compiles the data of a potential customer, determines the initial credit risk and then hands over the customer to one of the financing partners in the network that has the appropriate risk appetite. The financing partner then originates the loan on their balance sheet after conducting their own underwriting process and determining the customer's credit score. Thus, the initial credit scoring by the embedded lender is only used to classify the risk level of a customer in order to hand over the customer to an appropriate financing partner in the network.

In the last structure identified, a firm provides all the necessary technology and APIs, as described above, but uses these to enable a financing company, most commonly a bank, to embed its products in various platform partners. The firm providing the technology will be referred to as an *embedded enabler*. The embedded enabler thus has no direct say in where and what types of products are integrated. Instead the integration decision is up to the financing company. But this opportunity for the financing company is facilitated by the embedded enabler that provides the necessary technical infrastructure. Roger Vincent gave an example: "*so that value chain kind of works both ways. So you*

take the customer down, or you create the product first, and then you push the product back into the channel that you are extracting from I suppose. So, it's kind of an ecosystem play really".

After the loan has been paid out, the servicing of the loan was found to be largely managed by the debtholder. For example, in the case of a setup with a network of financing partners, Jon Fry explained: "*Once we've coordinated that hand-off with the lender [the hand-off of the customer] they disperse the funds and it is a one-one relationship between the lender and the borrower*". However, one exception can be found in some cases of merchant cash advances. In these cases, the servicing is integrated into the platform partner which takes an agreed upon percentage of the customer's incoming card transactions as reimbursement of the loan. Ron Leplae explained it as "[...] *and then what the [platform] partner will do is of all future payments, they will automatically cut a slice out of his daily payments and send that for us [embedded lender] for the reimbursement of the loan*".

Lastly, regarding fees throughout the process, some insights were gained from the interviews. It was found that fees are connected to the platform partner accessing the necessary APIs from the embedded lender, or a bank accessing the APIs from an embedded lending enabler. In both of these cases, the embedded lender or enabler retains all the intellectual property. In the case of an embedded enabler, Roger Vincent explained it as: "*Typically a subscription model for the provision of the platform, features and limits on user volumes (customer and staff users). The bank licenses the platform from TL [Trade Ledger] (we retain all the intellectual property)*". All structures also have some form of revenue share with the platform partner, i.e. the platform partner gains a share of the interest income of the loans. However, this revenue share does not go through the embedded enabler in the technology to enable banks-case. Instead, this process is handled by the platform partner and bank directly, without any intermediary actions by the embedded enabler.

In the case of using one single financing partner or a network of financing partners, the financing partners pay the embedded lender commission for loans they originate through their system, as mentioned by Jon Fry. Additionally, in the case where the embedded lender has its own banking license, it was described that a setup fee also exists for the platform partner. Rinse Jacobs explained: "*That is on the one hand the setup fee that allows us to, once the term sheet is signed or the contract is signed, to allocate numerous resources to support them with tech, contract development, compliance checks and all these kinds of things*".

4.4 Value Propositions of Embedded Lending

The value propositions mentioned during interviews will in this subchapter be described and presented in two sections: value propositions for platform partners and value propositions for end customers.

Discussions about value propositions of embedded lending solutions for platform partners led to three key aspects, seen in table 4.5.1. The value propositions for platform partners are important since they describe why platform providers would demand the solutions and thus justifies the implementation and development of embedded lending.

Table 4.5.1: *Table of key value propositions for platform partners associated with embedded lending solutions.*

Value proposition for platform partner	How value proposition is facilitated by embedded lending	Illustrative quotes
Increase conversion *Convenience drives increased sales* *More customers are able to purchase products/services*	**Improved UX for end consumer** *Offering lending products at the point of sale/action makes it easily available* Example: Online used-car selling platform: *embedding financing directly on the platform allows customers to quickly access funds and make the purchase*	*"So, at the end of the day, the one who is going to get the car is the one who has the best connections to the bank, right. He needs to go to the branch, have the right paperwork, probably doesn't have the right paperwork, needs to go back. As soon as you know, the week has gone before he has that loan, and then you never know if that [the car] actually is still there [...]"* – **Rinse Jacobs**
Increase customer loyalty and/or stickiness *Convenience drives the rate of customers returning to the platform*	**Incentivizes customer retention** *Smooth experiences could increase customer retention and loan products could contractually bind businesses to continue using the platform* Example: Online merchant platform: *SME loan offerings in a merchant's sell portal incentivizes continued use of the platform*	*"So there is a loyalty aspect to that as well, and what we have seen in the early days is, especially with autoscout, is that we were obviously not the cheapest one in market [...] but people were willing to pay a higher interest rate on their loan because it was a very smooth, and digitally integrated application process."* – **Rinse Jacobs** *"And stickiness is that you have stronger buy-in of your merchant on the platform. The more you provide on the platform the less the merchant is inclined, or the less it is easy for the merchant to go away. Because typically in our contract it is mentioned that as long as the loan is not repaid, the merchant cannot change service"* – **Ron Leplae**
New revenue streams *Offering lending products can provide both interest and commission income for the platform provider*	**Lending products embedded in the service offering** *Embedded lending solutions create an additional source of revenue outside of the platform provider's core business offering* Example: Online merchant platform: *embedded lending products allow platform provider to add complementary products without shifting the business core*	*"Commercially speaking, either they look at lending to say 'I want to integrate this product because it helps me to have a strong conversion on my core business' – selling cars, or high basket sizes in e-commerce, and on the other hand they could say 'well, I want to have an additional revenue stream', which can come out of the lending side"* – **Rinse Jacob** *"What we see is for these digital platform marketplaces, they see embedded lending as a good addition to their core value proposition but they don't want to shift the core"* – **Fabian Heiss**

Embedded lending solutions were said to increase conversion for the platform provider in two main ways. First, the added convenience for customers on the platform to directly access lending products adds value for them which makes them more likely to use the platform. In a market where multiple different platform providers offer a similar product; it becomes increasingly important to differentiate on the experience and offer the most convenient customer journey. Fashion e-commerce companies selling clothes to consumers is an example of such a market that was highlighted during interviews.

Secondly, offering embedded lending products gives customers easier access to financing and can thus contribute to higher conversion of sales on e.g. an e-commerce platform. Rinse Jacobs described an example with an online used-car selling platform. On the platform, customers are offered lending products for the purchase of a car they might be viewing on the platform. This integration of lending solutions helps prospective customers quickly access funds and thus increases the conversion of sales on the platform.

The added convenience of embedded solutions also contributes to increased customer loyalty to the given platform. When customers have discovered a smooth experience, it was additionally said during the interviews that they were more likely to return to that platform. Embedded lending products are also often a new addition to the platform, i.e. the platform has not dealt with financial or lending products previously. This additional functionality was also said to increase repeat usage by customers. Additionally, it was mentioned that having an existing, outstanding loan on a platform also incentivizes continued use of said platform. In the case of embedded merchant cash advances offered by Jaris, it is actually stipulated that the borrower cannot switch platform partner until the debt is repaid.

Lastly, depending on setup, platform partners can also gain additional revenue streams by embedding lending products. By distributing third party lending products on a platform, the provider can gain both commission and interest income from the loan products. This additional income can allow platform partners to be exposed to lending activity, without necessarily having to build up in-house capabilities and facilities for lending. On a similar discussion point with Ron Leplae, he said: "*Another thing is that, you say, 'I'm a payment processor, I know nothing about lending, I would like to get a little bit of revenue', we can share the customer base then we will bring the knowledge about lending but also the necessary funds to finance the operation*". Thus, the core business of the platform partners can remain, and lending income can be gained without the need for major investments.

Embedded lending solutions also create value propositions for the user, i.e. either consumers in the B2B2C context or other businesses in the B2B2B context. Table 4.5.2 gives an overview of the identified value propositions for users.

The increased convenience users gain from embedded financing solutions can be broken down into two key factors: reduced lead times and access at the point of need. Embedded solutions were said during interviews to be faster than the non-embedded counterpart, as the necessary data for underwriting is easily collected and the user does not need to find a lender outside of the environment it sits in. Ron Leplae explained: "*Because imagine how it is. You need money, you go to a bank. OK, you need to fill in 50 forms, you need to wait two weeks, and maybe they will say 'no, you cannot get money'. Here, you push a button and the system says 'you are already pre-qualified, you can get up to that amount, it will cost that much, and the money will be in your bank account tomorrow'. From a customer experience point of view, that is a night and day difference*". As mentioned, the convenience for the user is further enhanced by matching the moment of need for financing with the moment it is offered. As Ron Leplae explained in his example, as soon as a user is in need of financing, the user can simply apply with the press of a button. Rinse Jacobs further added on the convenience for users: "*This is where convenience can make the difference, so not so much about the selection but much more about how you engage with customers and what they are experiencing. Is it a seamless thing, do they have to upload a document or whatever. That's generally what creates stickiness because customers don't have to worry about it*

or go through extra hoops to get things done". However, it was noted that the convenience gained by users is also determined by the relative convenience of other alternatives, such as cash payments. Roger Vincent explained: "*Your product is a combination of all of these things put together, has to be digital enough, or has to match up with the experience that your customers are expecting within the distribution channel or the embedded channel. So if they go to Amazon and it would typically take them 5 minutes to pay for imports or exports of goods, whatever it is, it also needs to be relative to how long it would take for them to pay for credit, right, because lending is an alternative to payments*". The value proposition of embedded lending solutions for users is thus connected to the convenience of other solutions as well.

Table 4.5.2: *Table of key value propositions for the user associated with embedded lending solutions.*

Value proposition for user	How the value proposition is facilitated by embedded lending	Illustrative quotes
Increased convenience *Users are offered lending products at the point of need*	**Lending products embedded in the service offering** *Users consume financing solutions at the point of need without the need to leave the service's environment*	*"It is not as much about real lending, it's more about the convenience of using lending more as a payment functionality than as a real lending functionality [on the topic of instalment payments]"* – **Rinse Jacobs**
Increased availability of financing *Financing solutions become more accessible for users*	**Greater data availability makes more users eligible for lending solutions** *Increased data collection through the platform or third parties lowers the lender's risk outlook for possible customers*	*"So a lot of the banks don't lend to the mid market because they deem it as very risky. And the only reason why they see it as risky is because you can't get the data on the businesses"* – **Roger Vincent** *"In the down [turn], the guy [merchant] loses money, and you know you will get it back when he starts selling in the new season. So that's where we typically are better positioned than a typical financial institution which is risk averse for all good reasons"* – **Ron Leplae**

Embedded lending solutions were said to increase the availability of financing by integrating data collection to reduce the lenders' perceived risk. Roger Vincent gave an example of a traditional bank perspective: "*If you are a large corporate customer they [the bank] will say you will have to have a current account with them, a checking account, before they will lend to you. And the reason they do that is because they will use the data that they see coming through your bank account to judge whether you are creditworthy [...] but that kind of limits the customer base right. That limits the customer base to saying 'well I can lend to people that have a checking account with me and that have their primary cash flow coming through my bank account, but I can't lend to anyone else'*". Roger Vincent continued by stating: "*So it's very simple really, it's data and risk. If you can improve access to data and risk, you can improve the whole kind of origination and servicing capabilities*". By integrating financing into services where users have the necessary data available, more users will be able to access funding.

4.5 Key Characteristics for Implementation of Embedded Lending

During the interviews, discussions were held regarding what characteristics are important for the implementation of embedded lending solutions as well as any fundamental requirements needed to be fulfilled. The characteristics that were identified during the interviews can be categorized into characteristics that are specific to the application and characteristics that, more generally, are needed to deliver the value propositions outlined in subchapter 4.4.

The application-specific characteristics are such characteristics that depend on what type of application area that is being considered for embedded lending. It accounts for similarities and differences between application areas that might explain why some applications are better suited than others for embedded lending. The general characteristics, on the other hand, are important for embedded lending more generally.

For the application-specific characteristics presented in table 4.5.1, the factor that was mentioned most frequently as the most important for implementing any form of embedded solution in both B2B2B and B2B2C contexts was the existence of a digital interaction point where customers or businesses interact or fulfill some need, e.g. buying a product. In most cases the interaction point takes the form of a platform and it is on this platform that lending services are integrated. Thus, technology plays an essential role as it enables the integration to take place in the first place. The interaction point can be either completely online or connected to a physical store. This is exemplified in subchapter 4.4 with A's description of how instalment loans for cars can be offered online at an OEM's website or at a physical dealership, using the same system. In the latter case, the transaction is at first physical but is brought into a digital context using either the car's infotainment system or a computer at the dealership. Thus, having a digital interaction point therefore becomes crucial for the implementation.

In order to fulfill the end customers' value proposition of increased convenience, the time it takes from the point when a customer needs a loan until disbursement of the loan takes place, needs to be as short as possible. To shorten the time of this process, interviewees mentioned that it is beneficial to integrate into applications where general underwriting data already exists or is easily complemented. Fabian Heiss said "*So there we would find out if this merchant in general is eligible for a loan with us, and for this check they would use our infrastructure, so they can post a couple of information and they get back from us 'OK, this merchant is eligible or not'. And then, for the merchant, there would be loan options available integrated into the seller's central*". Heiss described that most underwriting data on merchants already is accessible in the platform that they connect to, and that additional underwriting data could easily be complemented through the platform. Another example of data availability is described in the case of Jaris' implementation into the Vertical SaaS platform SpotOn. Ron Leplae described that, as underwriting data is continuously collected, merchants can be pre-qualified and presented with loan options in the platform they operate in every day, which makes for a convenient customer experience, he argued.

The interviewees also described that data collection could be enabled by local regulation in some cases.

Table 4.5.1: *Summary of the three key application-specific characteristics for successful implementation of embedded lending solutions.*

Characteristic	Description	Illustrative quotes
Digital interaction points	Embedded lending needs to be integrated at an appropriate point of interaction where the platform's service is found. Example, SMEs can get cash advances for invoices from their accounting platform. Generally, embedded solutions should be available at the point where the need for lending products arises.	*"So in the form of invoices we connect up to accounting packages, because if you are a business nowadays you use Xero or you use Quickbooks or you use one of the accounting packages. You wouldn't do it on excel. So we just connect into those packages and we say 'OK, well. there is where you raise your invoices and you submit them'."* – **Roger Vincent** *"And the only thing that they need to do is distribution and providing the context of the loan - they have the customer relationship with their sellers, so they market this product to their sellers. And, in the end, we take over all operations."* – **Fabian Heiss**
Availability of general underwriting data	In order to make accurate credit decisions as well as make relevant offers to customers, data is needed on transactions, assets etc. (dependent on application). Platforms that have access to most of this data are in advantage since they can offer more convenient processes. Open banking regulation facilitates sharing of data and can be critical for implementation.	*"So, it's applicable for every kind of industry or every kind of business that somehow does digital transactions."* – **Fabian Heiss**
Availability of unique underwriting data	In order to increase borrowers' eligibility for financing, underwriters could consider data that traditionally has not been considered. The increased eligibility is facilitated by unique, digitally available, and validated data held by platform partners.	*"And for us it doesn't matter, e-commerce, physical it doesn't matter. It's small details, but everything is subject to lending. What we need is like steady growing turnover, and on that turnover we can do ledning."* – ***Ron Leplae*** *"We will pull that data in [from accounting packages], present it to the bank, and the bank says 'OK, that business is no longer risky because I can see the invoices and those invoices can't be tampered with because they sit on Xero, they sit on a Quickbook [accounting packages]'"* – **Roger Vincent**

Specifically, various forms of open banking regulation open up for greater information sharing and enable third parties, such as an embedded lender, to quickly and automatically gather necessary data for underwriting. On the importance of open banking regulation, Roger Vincent said: "*open banking is so critical to this because open banking makes it a whole different, level playing field. It means you can aggregate data from another bank and even if that customer doesn't bank with [you]*". Since collection of data on customers is crucial for embedded lending solutions, the existence of open banking regulation promotes increased competition in the lending space, which opens up for solutions such as embedded lending. While a lot of data has been made easily accessible by open banking regulations, interviewees still emphasize that some data cannot be automatically gathered. Hence, the value of having general underwriting data on a platform still exists.

Conversely, interviewees mentioned that regulations sometimes can hinder the implementation of embedded lending solutions. The continuous data collection in Jaris' business model for SpotOn, described above, has not been possible to implement in Belgium because of GDPR regulation. Ron Leplae said that, instead of continuously collecting and analyzing data, Jaris has to ask for consent every time they need to collect data for underwriting. Leplae said that the inferior convenience in the Belgian case is reflected in significantly lower conversion rates for the solution used in Belgium compared to the case of SpotOn.

Another application-specific characteristic that was mentioned to be important in some applications was availability of unique underwriting data. While data on a business' assets, revenue streams etc. and general consumer data are the basis for which a lending decision can be made and thus needs to be provided, some platforms have access to data that banks or other creditors cannot easily collect. In the B2B2B case, Roger Vincent exemplified the need for validated and digitally available invoice information that could be used for underwriting factoring products. Ron Leplae, on the other hand, emphasized reliable real-time data on the cash flow that runs through a payment terminal as an essential data point for underwriting merchant cash advance products that integrate with payment processors and Vertical SaaS companies. Fabian Heiss agreed that platform specific data is essential, and says "*So, some kind of sales transaction happening - this is most important for us because we base our credit decision of course heavily on these sales transactions that happen on this platform*". As the application that Heiss referred to is a merchant platform rather than a vertical SaaS platform or payment processor, the critical data is the cash flow through the merchant platform that they connect to. To summarize, the availability of unique underwriting data was mentioned as important in all B2B2B applications, whereas it was not mentioned in relation to any B2B2C application.

The first general characteristic identified was instant processing (see table 4.5.2). This characteristic was mentioned to be essential for successful implementation of embedded lending solutions as the convenience a customer experiences is highly related to the speed of the loan process. When data for underwriting has been collected, the speed of processing is not determined by the application area. Rather the speed of the processing is determined by capabilities of the underwriter. When Rinse Jacobs was asked to walk through the process an end customer goes through when applying for a consumer loan in an embedded setting, he said: "*So if he would fill in everything and he has all the information he needs to apply for it at hand, then from him clicking on the first to button to having the money on his account, it is typically within the same day and the scoring and the decision making and all of that happens within the first 5 minutes or so*". This processing time is in sharp contrast to traditional lending channels and banks, which were said to take significantly longer time. SME loans usually take up to 90 days for banks to approve or reject according to Roger Vincent. He emphasized the value of instant processing with an example of Klarna, which he argues has managed to master instant processing: "*[...] when you apply for credit with Klarna, it is almost just as quick as the payment journey. So paying with a card or paying with buy-now-pay-later with Klarna is almost the same amount of time. It's so quick and so easy that it's almost a perfect proposition for embedded lending. It's when you get that mismatch between what the product does and what the customer is expecting within that channel, that actually things start to fall apart*".

The second general characteristic that interviewees emphasized was trust. Adrian Klee drew upon experience from a research project he was involved in where customers were exposed to an unknown

fintech brand in an embedded lending customer journey. When customers did not recognize the brand, they felt confusion and distrust. Klee argued that such issues with trust could be overcome by branding

Table 4.5.2: *Summary of the two key general characteristics for successful implementation of embedded lending solutions.*

Characteristic	Description	Illustrative quotes
Instant processing	For the customer experience to be smooth and truly seamless, available data needs to be processed quickly once it has been collected. This process includes e.g. determining creditworthiness and loan terms.	*"So if they go to Amazon and it would typically take them 5 minutes to pay for imports or exports of goods, whatever it is, it also needs to be relative to how long it would take for them to pay for credit, right, because lending is an alternative to payments"* – **Roger Vincent** *"You have to have instant decision, you have to use the data that is presented to you, you have to keep the customer engaged there and then, and in order to create an embedded financial service product you have to do all of that on a single platform"* – **Roger Vincent** *"[We] make sure that those customers have a media break-free experience, right, so meaning, they don't have to go from one of the websites to another website or go to the branch, but rather, they can stay in that environment, in that same ecosystem, and while they are exploring and browsing for cars, they can basically say 'I want to buy that car - let me go through the lending process.'"* – **Rinse Jacobs**
Trust	Borrowers need to feel trust in the brand providing the loan. In case the platform partner has low trust, it could benefit from not white-labeling loans, but instead letting a recognized and trusted embedded lender brand the loan product.	*"If you are not white-labelling it, then you somehow need to build your brand so that customers know where this is coming from."* – **Adrian Klee** *"If you take a balance sheet lender philosophy, you have to establish your brand and you have to continually work on building trust with your potential customers. A pure fintech could perhaps get around that, but it probably needs to find the partners that can ensure that level of trust and that probably needs to be a process in itself."* – **Lee Schlenker**

embedded lending products with a well-known and trusted brand. Klee exemplified Klarna as an embedded lending company that has managed to build recognition and trust among customers, which platform partners that integrate Klarna's embedded lending solution could benefit from. Lee Schlenker agreed with this view, saying "*A fintech company that doesn't have brand loyalty will have a lot of problems convincing people to borrow from a company when they are not exactly sure who they are dealing with*". While customers need to feel trust, Adrian Klee argued that trust does not necessarily

need to come from the embedded lender. In case the platform partner has high enough trust from customers, it could even be beneficial to white-label the embedded lending solution. Hence, Klee and Schenkler agreed that trust needs to be there, but whether a white-labeled solution or using an embedded lender's brand serves that purpose depends on the level of trust that customers feel with those brands. This is exemplified by A who described how COMPANY A white-label all of their embedded financing solutions for cars in Sweden, where A argued the brand recognition of COMPANY A is low. The same solutions, however, are labeled as COMPANY A in the firm's domestic market of Norway, where the brand recognition and trust are higher.

4.6 Potential Applications of Embedded Lending

During the interviews, discussions about potential, suitable applications for embedded lending were held. Table 4.6.1 provides an overview of the opportunities discussed, for both the B2B2B and B2B2C context. As can be seen in the table, most applications mentioned are within the B2B2C context, focusing on consumer applications.

Various forms of home improvement, including e.g. new kitchens and bathrooms, was mentioned to be a potentially suitable application for embedded lending. The application involves large transactions for consumers, making lending potentially attractive. However, it was mentioned by Magnus Hegdal and B that the interactions consumers have when purchasing e.g. a new kitchen is mostly physical, as consumers want to feel and look at different options before deciding on a purchase. Hegdal also explained that the purchase of a new kitchen is often a project that can take the customer several months to complete, with substantial interaction with sales representatives.

Real estate was a second industry mentioned to be a potential future application. Mortgages were said to be an important product, especially for banks, and that embedding mortgages at the point of purchase for consumers could be beneficial. Again, it was mentioned that the real estate industry is still relying on physical interaction rather than digital. Rinse Jacobs explained: "*I think it might be slightly too early to really have it fully digitized, and that is not only specifically to mortgages but everything connected to secured lending. Because loans which you underwrite with an asset, you need to have some way of evaluating or giving value to that asset*". Jacobs thus also points out a potential complication for mortgages, since the loans use an asset as collateral, in this case a house.

Solar panels were mentioned as another possible application as the size of the transactions would be suitable for lending and the target customers are digitally native. Yet, the process surrounding the purchase of solar panels was said to still be mainly manual, making it potentially difficult to embed lending products. Fredric Anderberg described a typical customer journey in two main steps: initial data collection and inspection. In the first step, information is gathered about the customer's needs, size and angle of the customer's roof, and other variables affecting a possible installation of solar panels. This data collection was said to be digitally first, where the customer fills in a form, and then switches media to a phone call with a sales agent. If the customer proceeds, the second step of the journey is a physical inspection of the customer's property to assess the suitability for solar panels and whether any actions are required for the panels to be installed. Olivia Nestius also mentioned that financing options could be presented to customers, although this would be in the form of links to creditors they partner with.

Table 4.6.1: *Potential new applications for embedded lending in B2B2C and B2B2B contexts.*

Context	Industry	Description	Illustrative quote
B2B2C	**Home improvement**	Offer consumers financing for purchases of e.g. new kitchens through an interface where consumers make customizations and selections	*"You go in there to explore and you maybe book a time slot with an advisor or you just grab one of the computers and start playing around yourself. And once you have your ideal kitchen and you have seen it in a showroom, then it makes a lot of sense to through that computer apply for a loan yourself"* – **Rinse Jacobs**
	Real estate	Offer mortgages to consumers through property viewing or comparing site	*"Somehow get into these platforms that help people find a new home, whether it's buying a house or an apartment, and that you then have the perfect mortgage offer in that interface and on that screen [...] the cash cow is still mortgages so I think from a strategic perspective it's very very important for them [banks] to be at the right point in time when the customers make the buying decision. So I think most buying decisions are made online more and more so I think, I would imagine that this would definitely play a role"* – **Adrian Klee**
	Personal finance management	Aggregate data on a consumer's finances and offer guidance with appropriate lending solutions, given the consumer's cash flow	*"Personal finance management apps, with multiple bank accounts that are aggregated into one app, they [the apps] often take the cash flow analysis or financial advice route. And if you can then say 'it makes sense to take this mortgage because it will cost you a thousand euros a month and you can easily do that with your cash flow' [...] That makes a lot of sense, and then you are guiding that customer creating more trust and making it easier for the customer to make the decision through your platform"* – **Rinse Jacobs**
	Solar panels	Offer consumers financing options digitally at the point of sale	*"It makes a lot of sense to digitize it further but because there is still so many manual processes involved and there is still the delivery of the solar panels, installation, it is all a bit more manual in general."* – **Rinse Jacobs**
B2B2B	**Procurement package**	Businesses are offered invoice factoring through the procurement system when submitting invoices	*"I'm [a business] on the procurement system and they say 'please submit your invoice here for us, we're not gonna pay you for another 60 days', that's another point and I go 'well, okay I can improve my cash-flow here and I can improve my cash position by getting early payment on that invoice', so that's a great use case, but everyone actually has that chance to be interactive in the procurement system"* – **Roger Vincent**

The last potential new industry discussed in the B2B2C context was personal finance management applications that help consumers with their personal finances. The industry was mentioned to be potentially suitable due to the interaction that takes place in the application and would be close to the consumer equivalent of a business accounting platform, an industry that has been proven in the B2B2B context. Products that could fit in this industry include mortgages as well as unsecured consumer loans.

For the B2B2B context, procurement packages where businesses submit invoices were said to offer a potential integration point for embedded lending solutions. Procurement packages would be suitable for invoice factoring, as companies submit invoices through procurement systems and could potentially

identify a cash flow need in that process. Roger Vincent finished by describing where new industries in the B2B2B context can be found: "*And then the list goes on and on and on. You've got to look at the ecosystem of applications that a business might interact with, and that starts at the smaller end with your accounting package, and gets more and more complex as you move into large corporates and kind of mid-market companies*".

5. Analysis

The findings presented in chapter 4 will be analyzed in this chapter. The analysis begins with establishing a definition of embedded lending that takes into account both the definitions found in the secondary data collection and the identified value propositions of embedded lending. After the definition has been stated, the identified value chains to provide embedded lending are presented. Following that, the identified value propositions are analyzed for B2B2B and B2B2C contexts, respectively. In the two last parts of the analysis, a framework of characteristics for implementation is presented along with an analysis of the identified potential embedded lending applications according to the developed framework.

5.1 Definitions

Looking at embedded lending definitions provided in articles, blogs, and interviews with embedded lending company representatives, one can clearly see that there is no single established definition of the concept. The individual definitions vary in their description of how embedded lending is distributed, what the term embedded actually means, and whether technology has to be used. Taking all separate definitions into account, the most general definition of embedded lending that can be stated is *Embedding loans in a non-financial context*. The three questions that arise with this definition are: (1) What is classified as a loan?, (2) What is classified as a non-financial context?, and (3) When is it classified as embedded?

For the first question, most scholars seem to agree that most typical lending products should be included. Included in the loan category is also buy-now-pay-later solutions that otherwise could be seen as an alternative form of payment.

For the question regarding what is classified as a nonfinancial context, opinions among scholars vary to a greater extent. The opinions, illustrated in figure 5.1.1, range from narrow definitions saying that embedded lending only applies to service businesses or the act of purchasing, to the broad definition saying that embedded lending means customers could access lending products at any time or place. When trying to define embedded lending, settling for one of the narrow descriptions of how lending products should be brought to market would exclude applications that deliver the value propositions outlined in subchapter 4.4. For example, settling for the description: *lending products available in the act of purchasing* as the definition of how embedded lending should be brought to market would miss out on loan products provided through accounting platforms, since such loans are not related to purchases. The same logic can be applied if settling for the other narrow description *lending products through service businesses*.
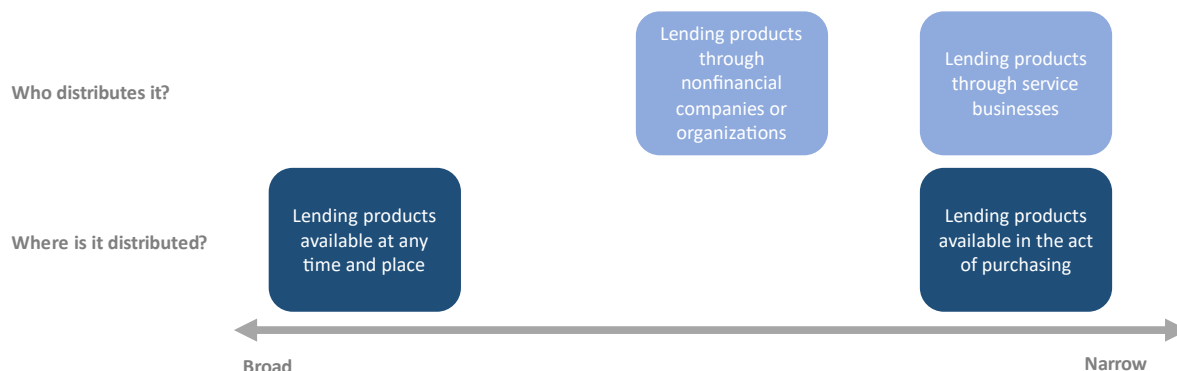
Figure 5.1.1: *Descriptions of how embedded lending is distributed in terms of who/where and broad/narrow descriptions.*

Being too narrow in the description of how embedded lending products should be brought to market certainly comes with drawbacks, but being too broad in the description, for example settling for *lending products available at any time and place*, might be problematic as well. First of all, it does not distinguish distribution of loan products through a bank branch from the typical embedded lending applications outlined in subchapter 4.2. Furthermore, the definition might appear more abstract, and therefore make it harder for laymen to understand what applications the concept typically covers.

While most scholars focus on the question who should distribute loan products in embedded lending and where such loan products should be distributed, Rinse Jacobs and Fabian Heiss emphasize a third alternative - focusing on the context in which loans are distributed. Jacobs described it as "*where customers want to interact*" and Fabian Heiss said: "*bring it to a context of something bigger*". By focusing on *contextually relevant distribution of loans*, both loan products related to purchases and loans through accounting platforms could be covered since both of them are contextually relevant. At the same time, a description that focuses on the relevance of the context eliminates direct bank branch interactions since such interactions are contextually separate from where the need for loan products arise. Hence, a definition that focuses on the context in which the need for a loan arises could serve the purpose of not being so narrow that it excludes embedded lending propositions, nor too abstract for laymen to grasp.

On the other hand, the most common description of how embedded lending should be distributed is *through nonfinancial companies or organizations*. Looking at the current applications in subchapter 4.2, one finds that all applications are in fact provided through nonfinancial companies. On the other hand, similar applications to those described in subchapter 4.2 might be launched through companies that traditionally are classified as financial companies. Consider for example the equivalent to an accounting platform, but for consumers, which could be referred to as a personal finance tool as mentioned in subchapter 4.6. Whether or not such a tool is provided through a *financial company* probably does not affect the convenience or the availability of financing for the end customer. Hence, considering that our ambition is to provide a definition of embedded lending that captures the value propositions that embedded lending brings, we do not exclude embedded lending provided through *financial companies* as long as loans are provided in a contextually relevant environment. By focusing on contextual relevance, however, just as direct bank branch interaction will not be included, so will not loan comparison websites or credit cards either. In both of these cases, loans are provided outside

of the context of the loan, since customers do not realize the need for a loan in the interaction, nor do they have an application area for the loan in the context of the interactions. Instead, customers interact with loan comparison websites or acquire credit cards in the context of applying for a loan or acquire credit.

For the last question, regarding what is classified as being embedded, the two considerations mentioned by Ron Leplae were: (A) Is the loan offering embedded in the experience? (B) Is the loan embedded in the cash flow of the borrower? Considering all the aspects of embeddedness highlighted by experts, as can be seen in table 4.1.2, it is clear that most experts stress consideration A, as many of the definitions deal with *seamlessness* or *customer experience*. While consideration B is not mentioned by most scholars, being embedded in the cash flow could further leverage the benefits of being embedded in the customer experience, as evident by the example of Jaris that managed to increase the stickiness of its platform partners' merchants. On the other hand, consideration B has so far exclusively been achieved in a few B2B2B cases, whereas many example applications that scholars refer to as embedded lending are embedded only in the experience. Hence, we propose that, to be referred to as *embedded*, being embedded in the experience is enough. In order to still acknowledge the fact that being embedded in the cash flow could be beneficial in certain applications, we propose to define such solutions as *fully embedded*. As all scholars stress the seamlessness of embedded lending, applications such as payment processors in the Wordline example described in subchapter 4.2 that do not have an established digital interaction point with its customers will not be included in the definition provided in this thesis. While such applications still provide a value proposition for merchants as they can be more eligible for loans, the value proposition is not dependent on the integration into an interaction point between merchants and platform partners, and therefore is not embedded in the experience. Hence, being in the cash flow while not being embedded in the experience will not be included in the embedded lending definition provided in this thesis.

While all scholars stress that loans should be embedded in the experience, the opinions regarding what this means in practice differ to a great extent as can be seen in figure 5.1.2.

While scholars have different views on what the term *embedded* means, most of them agree that increasing the seamlessness of integration is one of the main values of the concept. However, considering the current applications in subchapter 4.2, most current applications only fulfill parts of the six embeddedness aspects mentioned by scholars. Thus, settling for *retaining control over customer experience* or *user experience is media-break free* would exclude Klarna's buy-now-pay-later solution in online retail and Xero's loan products through its accounting platform, which are two examples of
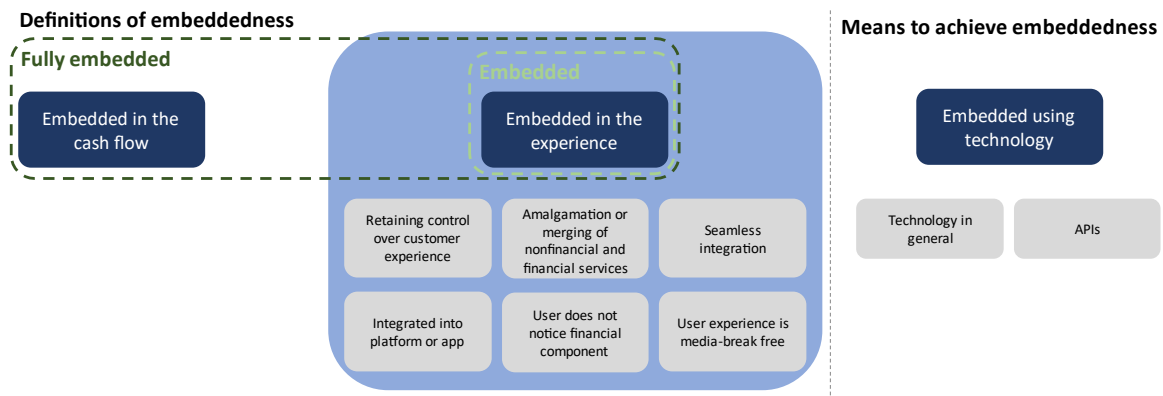
Figure 5.1.2: *Aspects of embeddedness and means to achieve it.*

successful implementations that most scholars argue should be classified as embedded lending. Instead of being specific on how embeddedness should be achieved, we propose that the embedded lending definition should reflect one of the main value propositions for end customers of embedded lending - namely the convenience aspect. At the same time, some scholars specify that technologies and APIs should be part of embedded solutions. While all exemplified current applications in this project have, at least in some way, been enabled by technologies and APIs, we do not include technology aspects in the definition we state. Rather, we see technologies and APIs as means to achieve embeddedness, although we allow for other means to achieve seamless experiences.

Considering the analysis above, a definition that captures the value propositions outlined in subchapter 4.5 could be: *Embedding loans in contextually relevant environments*.

5.2 Value Chain Models

The structures of the financing process described in subchapter 4.3 are illustrated and analyzed in this subchapter. It should be mentioned that the presented models do not make up an exhaustive set of models that are currently being used or that could be used to enable embedded lending. Rather, the models are simplified illustrations of the connection setups that have been encountered during interviews and subsequently described in subchapter 4.3. Furthermore, the models should not be interpreted as exact descriptions of how a company using a certain model operates, but rather as illustrations of what differentiates one way of working from another.

In embedded lending model 1, where the embedded lender has acquired an own banking license, the supply and the demand can be categorized into the three processes described below and seen in figure 5.2.1.

1. **Setup process**: APIs are provided from the embedded lender to the platform → The APIs are embedded into the platform partner's platform, enabling it to offer loans to end customers → The embedded lender collects fees from the platform partner for setup as well as monthly access and updates of APIs.
2. **Underwriting process**: The end customer applies for a loan through the partner's platform (the customer gives consent to share their data) → Customer data is collected by the embedded lender → The embedded lender scores the end customer and underwrites the loan based on its

scoring → A loan offer is presented to the end customer in the platform partner's platform → The end customer accepts the loan by signing a contract with the embedded lender → The embedded lending bank pays out the loan amount to the end customer → The loan is originated on the embedded lender's balance sheet.

3. **Commission payout process**: The embedded lender services the loan for the end customer → As collections are made, the platform partner receives commission.
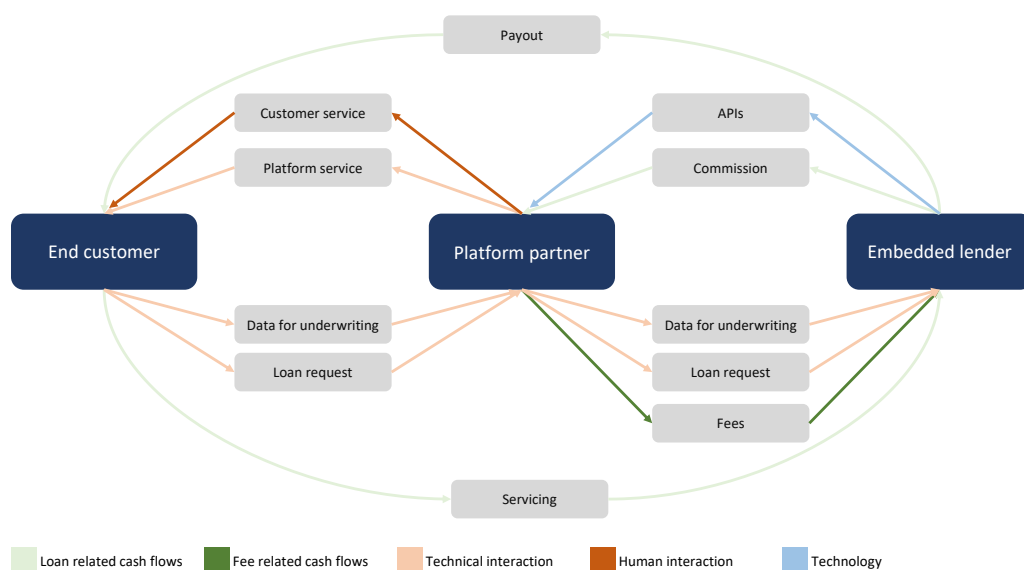

Figure 5.2.1: *Model 1 – Own banking license.*

On the demand side of model 1, consumers are exposed to loan offerings through the platform partner's platform, usually through point of sale integration. The loan offering on the platform is in turn made possible by the APIs that have been supplied by the embedded lending bank.

On the supply side of model 1, there is no external financing partner. Instead, the embedded lender originates loans on its own balance sheet. This is made possible by the fact that the embedded lender holds a bank license. The customer service, regarding the loan products, is handled either by the platform partner as standard or by the embedded lender.

If the platform partner wishes to have greater influence on how customers are scored, a collateral account for the platform partner can be created at the embedded lender. Since the embedded lender is not scoring the customer, they are not prepared to bear the credit risk of the provided loans. To solve this problem, the platform partner is forced to hold a collateral account with the embedded lender. The collateral account is debited in case loans provided through the platform would default.

In model 2, shown in figure 5.3.2, the interactions become slightly more complex as the model builds on the financing process with an external financing partner. The three main processes in this model are described below:

1. **Setup process:** The financing partner sets up funding for the embedded lender with agreed risk categories for underwriting → APIs are provided from the embedded lender to the platform partner → Fees are collected for setup and monthly access and updates of APIs. Commission is earned for originating the loan.

2. **Underwriting process:** The embedded lender offers end customers loan contracts through the platform → Customer accepts loan offer from the embedded lender → The embedded lender underwrites the loan on the terms negotiated with its financing partner → The embedded lender originates the loan on the financing partner's balance sheet without any interaction with the financing partner → Funding is used by the embedded lender to send loan payout to the customer.

3. **Payment and reimbursement process:** The reimbursement is sent from the embedded lender to the financing partner → The embedded lender receives a commission from the financing partner → Revenue share is sent from the embedded lender to the platform partner.
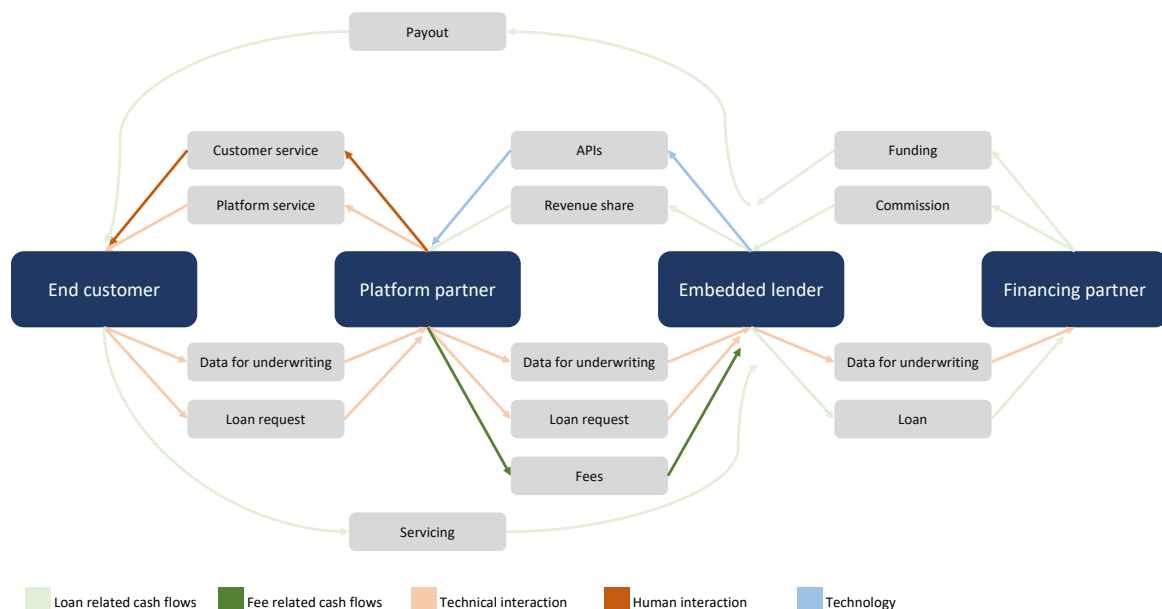

Figure 5.3.2 *Model 2 – Financing partner.*

On the demand side, customers are acquired through the partner's platform. In case of a merchant cash advance, the reimbursement can be integrated into the cash flow of the customer, if the platform provider handles the incoming card payments for the customer. By being integrated into the cash flow of the customer, the platform can achieve greater stickiness of its customers, as the customers have established merchant cash advance contracts with the platform provider. Furthermore, the fact that the cash flow is integrated reduces the need for servicing as opposed to the other models.

On the supply side, as opposed to model 1, the embedded lender is connected to a financing provider through a partnership. By having a financing partner, the embedded lender does not need to hold a bank license but can originate loans directly onto the balance sheet of its financing partner. In this model, the customer service is done exclusively by the platform partner.

In model 3, shown in figure 5.3.3, a network of financing partners is utilized. The loan offerings are once again integrated into the platform partner's platform, but once loans have been originated, the embedded lender has only limited contact with the borrowers. Instead the loan payout and servicing is managed by the financing partner the end customer is matched with.

1. **Setup process platform:** APIs are provided from the embedded lender to the platform → The APIs are embedded into the platform partner's platform, enabling it to offer loans to end customers → The embedded lender collects fees from the platform partner for setup as well as monthly access and updates of APIs.
2. **Underwriting process:** The end customer applies for a loan through the partner's platform (the customer gives consent to share their data) → Customer data is collected by the embedded lender → The embedded lender scores the end customer and assesses the risk category of the end customer → The financing partners that match the risk category of the customer are provided with customer data for underwriting → The relevant financing partners provide loan offers for the customer → If a customer accepts a loan offer with a financing partner, the financing partner pays out the loan and services the loan.
3. **Commission payout process:** The embedded lender receives commission from the financing partner → the embedded lending company pays commission to the platform provider.
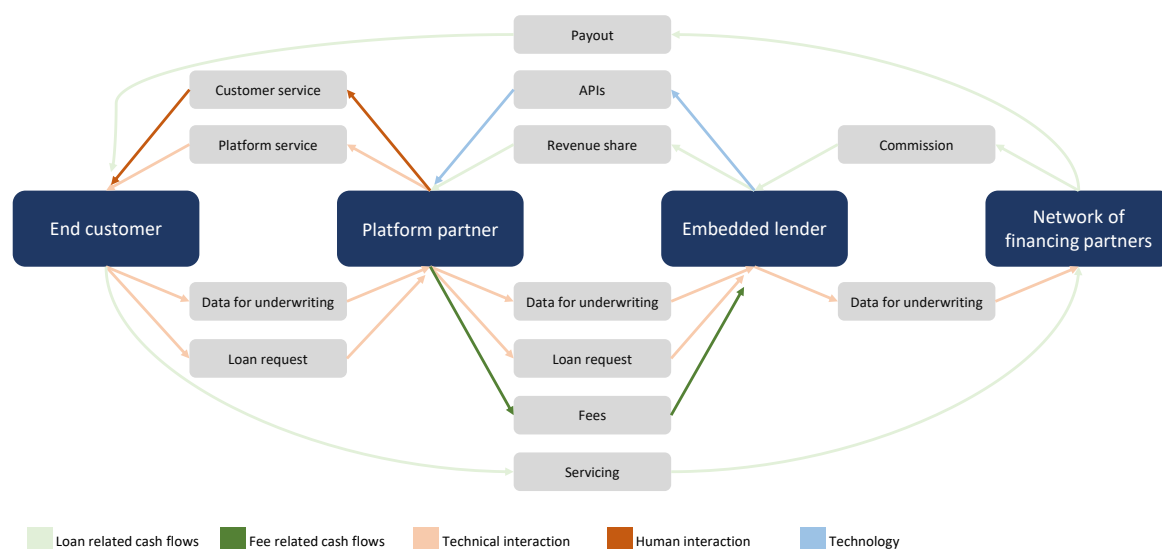

Figure 5.3.3: *Model 3 – Network of financing partners.*

As opposed to the other models, embedded lending model 3 could be categorized as a matching platform since there are multiple borrowers on the demand side and multiple financing partners on the supply side. This enables the embedded lender to take on customers in a wider range of risk categories as financing partners' risk appetite varies.

The final model, embedded lending model 4 shown in figure 5.3.4, differentiates from the other models as the embedded enabler does not take the role of financing partner, nor is it located between the platform partner and the financing partner. Instead, the embedded enabler only interacts with the financing partner, enabling it to provide embedded lending integrations to platforms. The three main processes can be described as:

1. **Setup process platform:** APIs, developed by the embedded enabler, are provided from the bank to the platform → The APIs are embedded into the partner's platform, enabling it to offer loans to end customers → The embedded lending enabler collects fees from the bank for setup as well as monthly access and updates of APIs.
2. **Underwriting process:** The end customer applies for a loan through the partner's platform (the customer gives consent to share their data) → Customer data is collected by the bank → The bank scores the end customer and assesses the risk category of the end customer → Loans are offered to qualified customers → If a customer accepts loan offer, the bank pays out the loan and services the loan
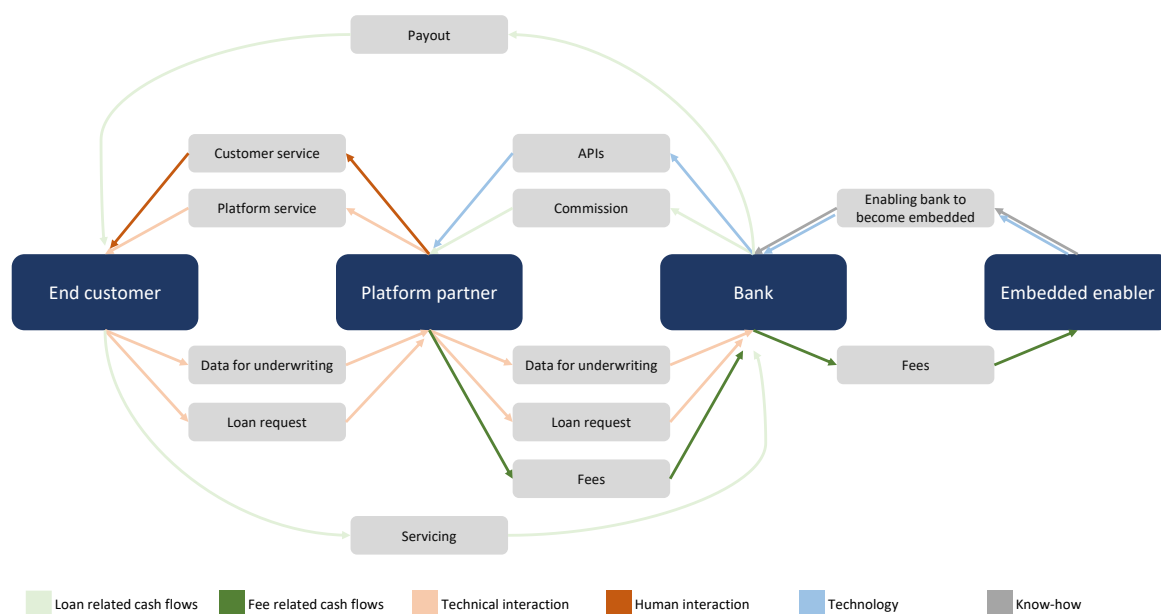3. **Commission payout process:** The platform provider receives commission from the bank

Figure 5.3.4: *Model 4 – Technology to enable banks.*

As the embedded enabler only interacts with the financing company, the embedded enabler is not engaged in loan processes, and thus only receives fees instead of commissions.

Common to all models is that one company, the platform partner, is mainly responsible for the acquisition channels for new borrowers. Another commonality is that one company in each model has the main responsibility to embed the lending integration. The embedding company could either have a banking license, as in model 1, an embedded lender responsible for connecting one or several financing

partners with borrowers as in model 2 and 3, or a company enabling banks to embed solutions, without any direct interaction with the platform provider.

5.3 Value Propositions in Current Applications

In order to create a successful embedded lending solution, two criteria need to be fulfilled: (1) A value proposition for the platform distributing the embedded solution needs to be in place, and (2) A value proposition for the end customer needs to be in place. However, all identified value propositions for embedded lending do not appear to be equally relevant for B2B2B solutions and B2B2C solutions in current applications. In this subchapter, the B2B2B and B2B2C applications will therefore be analyzed separately before comparing and contrasting the current applications in the two contexts.

For B2B2B contexts, the three main settings in which embedded lending has been applied are: Merchant platforms, vertical SaaS platforms, and accounting packages. One factor that unites these applications is the fact that they mainly serve SMEs. As SMEs usually are considered risky borrowers, the requirements on underwriting data in current B2B2B contexts is very high. By using data that banks currently might not have access to, embedded lending propositions can raise the service level of SMEs. As mentioned by Roger Vincent, data could for example concern validation of invoices, or as Fabian Heiss exemplified, unique merchant data that only merchant platforms have access to, which could be used in the underwriting process. Furthermore, as Roger Vincent mentioned, SMEs are not only underserved in terms of high requirements on creditworthiness but also in terms of processing time. By for example using the proposition exemplified by Ron Leplae, the processing time can be vastly shortened as potential borrowers could share their data continuously to avoid a separate credit rating process once a cash need, and subsequently a loan need, arises. By using similar propositions to that explained by Ron Leplae, platform partners could also provide a value proposition in the form of convenience to its customers.

The most important value propositions for platform partners in B2B2B contexts appears to be the increased stickiness and the ability to create an additional revenue stream while maintaining focus on its core business. In order to enjoy these value propositions as a platform partner, not only is a digital interaction point important, but data that could be used in underwriting is also paramount, as will be elaborated in subchapter 5.4.

For B2B2C contexts, the four main applications in which embedded lending has been applied are: online retail, brick and mortar retail, online car marketplaces and OEMs, car retailers, as well as travel and booking sites. The value proposition for the end customers of these applications concerns convenience in terms of seamlessness and quick processing in checkout-processes. Since all identified applications in B2B2C contexts are distributing lending products to consumers that, on average, have not been said to experience the same struggle with creditworthiness as SMEs, the need for new and unique underwriting data is not as critical for consumers as it is for SMEs. Furthermore, considering the fact that all identified applications in B2B2C contexts are selling some kind of product as its business model, merchants do not have access to as valuable and unique underwriting data as an accounting or merchant platform for SMEs might have.

The value for the platform partner in B2B2C contexts appears to primarily be related to increased conversion of the core business. Furthermore, providing embedded lending solutions in a B2B2C

context also creates new revenue streams for the platform partner, but as interviewees primarily emphasized increased conversion, the additional revenue stream is assumed to be only a secondary value proposition for platform partners in B2B2C contexts. Additionally, scholars have mentioned the loyalty component of providing convenient customer experiences.

Table 5.3.1: *Value propositions for platform partners and end customers of current applications in B2B2B and B2B2C contexts.*

Context	Value propositions	
	Platform partner	**End customer**
B2B2B	Create customer loyalty and stickiness Gain additional revenue stream	Receive increased service level Experience higher convenience
B2B2C	Generate increased conversion Gain additional revenue stream Create increased customer loyalty	Experience higher convenience

Comparing the value propositions for the two contexts, seen in table 5.3.1, it appears that increased service level for end customers has only been applicable in B2B2B settings. At the same time, the convenience aspect has been applicable for end customers in both B2B2B and B2B2C contexts. Hence, the relative relevance of end customer convenience has been higher in B2B2C contexts.

For platform partners in B2B2B contexts, the two main value propositions identified in current applications are additional revenue streams and increased loyalty and stickiness. The stickiness that has been created in B2B2B contexts has not been created in B2B2C contexts among the exemplified applications in this thesis. On the other hand, the loyalty component is still an important value proposition for platform partners in B2B2C contexts. Furthermore, the conversion aspect applicable in current B2B2C applications has not been mentioned in B2B2B contexts.

5.4 Framework for Evaluating Potential Applications

The key characteristics identified give insight into what constitutes a suitable application for embedded lending. First off, it is clear that some form of digital interaction point is needed where the implementation can take place. As seen in subchapter 4.2, and as mentioned in the definition of embedded lending, the interaction point should also have a context outside lending itself. In other words, lending products should be brought into a context where they provide value for the user through a digital interaction. This characteristic is thus important to consider when evaluating a potential application.

Continuing, data for underwriting is necessary for offering lending products. The two types of data found in interviews were unique data and general data. Depending on the application, the need for unique types of data may vary. The current applications presented in subchapter 4.2 give examples of applications that do not require anything more than open banking data (e.g. buy-now-pay-later through

online retail) as well as applications that require unique data. Examples of applications requiring unique data include e.g. merchant cash advance through merchant platforms where a business' sales data is utilized to create forecasts and underwrite the cash advance. Thus, different applications have different requirements on the data that needs to be available. However, since all applications require at least general data, applications that already have access to some of this data could provide more convenient customer experiences.

Instant processing was also found to be a key characteristic for embedded lending. The processing of loans is dependent on availability of necessary data and the technical capability of the firm processing the loan. As the availability of data is already covered above, the technical capability remains as a standalone determinant of the processing time. However, the technical capability of a firm is strictly bound to the firm itself, rather than the application. When evaluating a potential application, it thus becomes non-essential to take into account a firm's technical capability, as this may vary from firm to firm, but is not dependent on the application itself.

Similarly, the key characteristic of trust is also only dependent on the firm either offering the embedded loan product or the firm branding it, in the case of a white-labeled solution. As presented in subchapter 4.5, trust is essential when offering an embedded lending product. Yet, the trust a user has for a firm is not dependent on the application, but rather the firm itself. Trust is therefore not relevant when evaluating a potential application on its own.

The result is two main determinants for evaluating an application's suitability for embedded lending solutions, namely: *degree of contextual digital interaction* and *data availability*. Figure 5.4.1 presents a framework for evaluating a potential application suitability for embedded solutions based on these two variables. The degree of contextual digital integration refers to how digital an interaction is within the context of the application under evaluation. In other words, the variable is the answer to the question: is the interaction associated with the application available in a digital context, and to what extent? Applications that are available in a digital context where the customer can interact are said to have a high degree of contextual digital interaction. Conversely, applications that rely on manual, physical processes and with no or limited digital interaction are said to have a low degree of contextual digital interaction.

The second variable, data availability, refers to the ease of obtaining necessary data for underwriting. What constitutes necessary data can vary depending on application and, as mentioned above, can include both general and unique data. The data availability is said to be high if the necessary data for underwriting can be easily collected, either directly through the interaction point or through third parties, such as open banking data for consumers. Equally, if it is difficult to obtain the necessary data or not possible at all, the data availability is said to be low.

As figure 5.4.1 shows, the states the two variables can take give rise to a 2x2 matrix, where each quadrant gives an indication of an application's suitability for embedded lending solutions. The value of variables can vary and should be set in comparison to other applications, not using exact values. If both variables are high, the application is argued to be a good fit in its current state. In the opposite case, where both variables are low, the application under evaluation does not pose a suitable fit for embedded lending. When the data availability is high, but the degree of contextual digital interaction is low, there

is a need for increased digitization for the application to be suitable for embedded lending. Similarly, in the case of low data availability but a high degree of contextual digital interaction, the availability of data or the ease of collection of said data needs to increase for the application to be a good fit.

Degree of contextual digital interaction

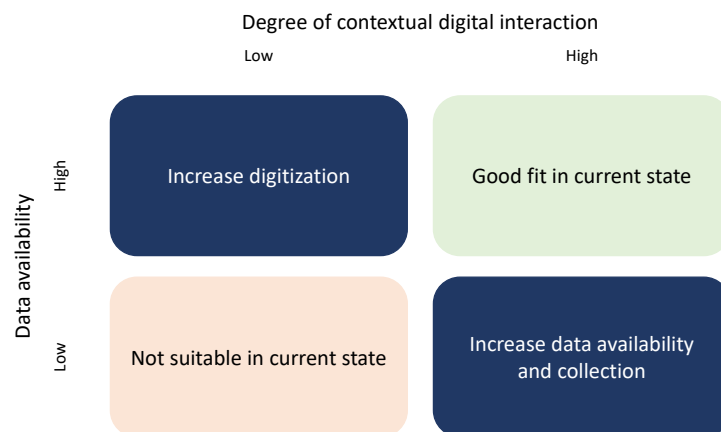|	Low	High
High	Increase digitization	Good fit in current state
Low	Not suitable in current state	Increase data availability and collection

Data availability

Figure 5.4.1: *Framework to assess an application's suitability for embedded lending.*

5.5 Evaluation of Potential New Applications

The interviewees presented five possible new applications where embedded lending could potentially fit, as seen in subchapter 4.6. Using the framework given in subchapter 5.4, the applications' suitability can be analyzed. The first application mentioned was home improvement, where a consumer buys e.g. a new kitchen. To begin with, the availability of necessary data for underwriting can be argued to be similar to that of other consumer applications such as purchasing a car, where open banking data is collected to determine a customer's creditworthiness. The transaction size in the home improvement case is also comparable to the purchase of a car and the data requirements for underwriting should therefore be comparable. It is therefore fair to say that the data availability is high for this application. The second variable is the degree of contextual digital interaction. For home improvement, there are usually many customization options, both in terms of material and finishes but also in terms of measurements and sizes, as the new material needs to fit into a given space. This process appears to be relying on physical interaction with limited digital engagement. As Magnus Hegdal explained, the act of purchasing a new kitchen is seen as a project that can take several months from beginning to end. The degree of contextual digital interaction is therefore assumed to be low in this case. For home improvement to be a suitable application, further digitalization needs to occur to increase the degree of contextual digital interaction.

In the case of real estate, the data necessary for underwriting can be more difficult to obtain easily than in the case of home improvement or other consumer applications since the property itself is often used as collateral in a loan. As Rinse Jacobs pointed out, secured lending requires data on the value of the asset itself, which might be more difficult to collect than other open banking data. The data availability is therefore said to be low in this case. Similarly, the degree of contextual digital interaction is also low. Various property viewing websites provide a suitable context, however, there are still many manual and

physical processes needed to complete the purchase of a property, and thus many media breaks. The context for these websites is thus still viewing, rather than purchasing, eliminating the potential to embed a lending product at a sales moment. Real estate can thus be argued to not be a suitable fit for embedded lending in its current state, as both the data availability and degree of contextual digital interaction need to increase.

Personal finance management applications for consumers are similar to the case of accounting packages for businesses. The data availability could be argued to be high, as a consumer's financial data is aggregated into one application. However, as mentioned above, secured lending, such as mortgages, could still be difficult to implement as the financial management application does not have an obvious collection of data of external assets not owned by the user. Despite this possible drawback, the data availability is still said to be high, as the necessary data for other lending products is easily accessible. The degree of contextual digital interaction could also be argued to be high, as all the interaction would take place through the mobile application and be contextual. Personal finance management applications could therefore currently be a good fit for embedded lending solutions.

The fourth potential application in the consumer context was solar panels. As described in subchapter 4.6, the data collection necessary for installing solar panels is to a large extent manual, since measurements of a customer's roof and other practical checks are needed. However, the data for the actual underwriting when the final offer has been made is similar to that of other consumer applications. The level of data availability can therefore be challenging to determine, but from a pure underwriting perspective, it could be regarded as high. The degree of contextual digital interaction, on the other hand, is low. The amount of manual checks needed for receiving a final offer is substantial and the amount of physical interaction means there is not an obvious digital interaction point. For solar panels to be a suitable application for embedded lending, the process of evaluation needs to be digitalized further.

Lastly, and the only application in the B2B2B context, is procurement packages. The product mentioned in this application was invoice factoring, which has already been embedded in business accounting packages. For a procurement package, the requirements on the data for underwriting are the same as the case of invoice factoring through an accounting package. Since the only difference between the accounting application and a procurement application is where the business interacts with the invoice. By submitting an invoice through a customer's procurement system, the data collection should be similar to that of the accounting case, as the invoices are created by the user and verified by the customer. The data availability is thus said to be high in this application. Similarly, the degree of contextual digital interaction is also comparable to that of the accounting case and therefore also said to be high. Procurement packages could therefore be a suitable application in its current state.

Figure 5.5.1 provides an overview of the analysis above, where the potential applications are mapped out in the framework presented in subchapter 5.4.
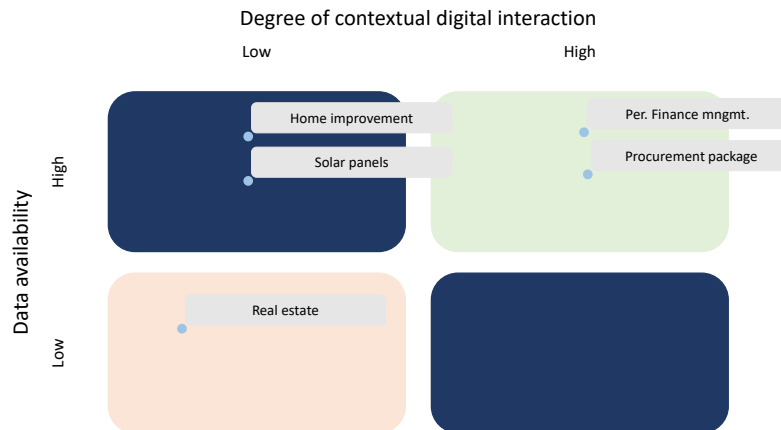
Figure 5.5.1: *Potential applications mapped out according to framework for assessing application's suitability for embedded lending.*

6. Discussion

Embedded lending is a fairly recent development within the financial and other adjacent industries. This thesis has been aimed at exploring the phenomenon and providing an initial foundation for further research. We have seen various applications of what have been described as embedded lending as well as specific definitions of the phenomenon, which also have been broad in their scope and generality. The definition of embedded lending developed in this thesis has been a combination of what industry representatives and other experts view as embedded lending (or embedded finance more broadly) and what the identified value propositions point towards as important aspects of embedded solutions. As such, there is one main aspect disregarded in the definition proposed here that has been common amongst experts, namely the requirement that distribution should go through a non-financial company. Throughout the interviews held with embedded lending company representatives, we have seen applications such as accounting packages for SMEs. In cases like these, it is not entirely clear if the accounting package should be classified as a non-financial actor. However, the context of an accounting software has been proven in the applications discussed as a suitable interaction point for businesses, as cash flow needs are often discovered through the act of accounting. Similarly, personal finance management applications for consumers were also mentioned as a potential application for embedded lending. This type of service could easily be provided by established banks by aggregating data from other finance providers and introducing functionalities for finance management. If this would be implemented, the distributor would be a de-facto traditional financial provider. Some of the stricter definitions presented in this thesis would not label this case as embedded lending. Yet, the context of a personal finance management application could be argued to still make sense, as it provides a natural interaction point for consumers to discover the need for a loan. The value of convenience is closely tied to the contextual aspect, as the lending products are embedded and offered at the point of need. We therefore argue that the important distinction for embedded lending solutions is the existence of a context that is tied to other actions than pure loan application, rather than focusing on implementation by a non-financial provider.

This thesis has also demonstrated the existence of multiple different structures and value chains for providing embedded lending solutions. The identified models reveal insights of how embedded lending solutions are distributed and how value chains can be structured. One common thread among these structures is the existence of some form of platform in the value chain. In most applications the integration point is the platform actor. However, as seen in model 3 presented as figure 5.3.3, the embedded lender could also have a network of financing partners backend, providing the funding. In this case, it could be argued that two distinct business platforms integrate with each other, one being the integration point and one being the embedded lender with its own network of financing partners.

The insights about the various value chains also suggest value propositions for the creditor or bank, in the cases where one or several financing partners are involved, as well as for the platform partner. By establishing a partnership with an embedded lender, financing companies can gain exposure to new distribution channels of lending products, by allowing them to be integrated in a contextual setting. Similarly, the platform partner gains the ability to integrate financing solutions onto its service offering without the need of acquiring the competencies and relationships themselves. For a platform partner, embedded lenders can be argued to provide a set of complements to the platform. The value propositions outlined in subchapter 4.4 can thus be gained by a platform provider, without the need to develop and build the solutions themselves. Depending on the structure behind the embedded lender, an entirely new business ecosystem could be built, where financing companies create relationships with embedded lenders who integrate solutions and open up new distribution channels for lending products. The common thread seen here is the development of various business networks interacting through one or multiple platforms. This development towards increased specialization and cooperation between businesses is in line with Kim's (2016) prediction that platforms will increase usage and drive innovation. The development could be facilitated by the increased usage of APIs, since it allows for greater specialization for businesses, as argued by Nijim and Pagano (2014). It could therefore be possible that this trend continues as embedded solutions become more prevalent.

The different value chains identified do not only give insights about the future importance of platforms, but also about the strategic considerations companies face when implementing embedded lending solutions. Strategic choices exist both for platform partners and financing partners. The identified value chains point to the varying degree platform partners need to acquire their own competencies or build other infrastructure to facilitate the integration of lending products. For example, the customer service can be done either by the platform partner itself or be outsourced to the embedded lender. Equally, the integration can also be white-labeled to various degrees, as seen in subchapter 4.3. The platform partner thus has to make a strategic decision about how much of the process it wants to own and control and how much it is willing to outsource.

Financing companies also face several strategic decisions. The four models described showcase that it is possible for companies with a banking license to either develop and implement embedded lending solutions by themselves (as in model 1) acquire necessary technology and then implement themselves (as in model 4), or accept a role of a partner with a balance sheet and regulatory framework and outsource the entire implementation (as in model 2 and 3). Again, it will be crucial for financing companies to consider the strategic aspects of the position they might hold in the value chain. What the best strategy is for a platform partner or financing company is outside of the scope of this thesis. Instead, this is a case for future research. Specifically, we suggest further research to look at the detailed

implications of the strategic decisions companies in the embedded value chain face and how best to position oneself in such a network.

Regarding the value propositions for platform partners, it was said that customer loyalty, or stickiness, is greater in the B2B2B context. All applications in the B2B2B context presented in this thesis have been some form of service that businesses either subscribe to or use on a continuous basis. It could therefore be argued that the addition of embedded lending solutions through said service act as complements, adding to the total value perceived by users and increasing the switching costs associated with switching to another service provider. However, these switching costs would most likely be dependent on the functionality of other services, as the existence of services with similar or comparable solutions would decrease the relative benefit. Of course, as seen in subchapter 4.4, products such as merchant cash advance through vertical SaaS companies and payment processors can contractually bind customers to a service until the loan is fully reimbursed. In cases like this, the lock-in effects are very real for customers. The fact that the applications in the B2B2B context consist of services raises the question whether the value propositions are bound to the application itself, rather than the context. It is possible that subscription services in the consumer space could also become stickier if embedded solutions are introduced. Thus, the value proposition for the platform partner might be more dependent on the specific application rather than the context it operates in. For end-users, however, the experienced value is most likely different and dependent on the context. Since end-users consist of either businesses or consumers, they face different challenges and could be argued to value propositions differently from each other. The relative lack of access to funding described in the SME space, for example, has not been mentioned to the same degree in the consumer space. The topic of value propositions related to embedded lending solutions could be a topic for future research. We suggest further research on the topic to focus on the specific value embedded lending solutions can bring on an application level.

The framework for assessing a potential application's suitability for embedded lending presented in subchapter 5.4 is based on the key characteristics identified during the interviews. As mentioned during the analysis, the two main factors found to affect an application's potential suitability are the data availability and the degree of contextual digital interaction. However, for any given application, it is possible that more variables affect the outcome. For example, the size of a typical transaction for a specific application might outweigh any search cost associated with it, meaning the added convenience of an embedded solution is weaker. Another aspect could be regulatory constraints. As seen in the case of Wordline in Belgium outlined in subchapter 4.5, local regulation can have a significant impact on the feasibility of embedded solutions. However, as a general rule, the two main variables in this thesis' framework should cover the most basic and critical aspects of an application's suitability for embedded lending. We argue for these two variables since they: (1) capture the aspect of data requirements for underwriting, and (2) evaluate the context where the actual lending integration will take place and how this fit in with the application's customer journey. Adding more variables to the framework, e.g. regulatory circumstances or transaction sizes, could potentially make a commercial evaluation of an application in a given market more accurate. Still, we argue for a simpler framework with the two variables described, as the focus is purely on the application itself and if embedded solutions could be suitable, not considering all possible commercial variables in a particular market. Further research about the impact of search costs for the viability of an embedded lending solution is welcomed, especially evaluating different transaction sizes' impact on the value of added convenience.

7. Conclusions

Embedding lending services is a novel way of distributing loans outside of traditional lending channels. Current applications of embedded lending point to five key characteristics which can be divided into two categories: general characteristics for successful implementation and application specific characteristics. Trust and instant processing were found to be important for all implementation and thus general. Application specific characteristics include the existence of digital interaction points and general and unique data for underwriting. The applications also bring value propositions to both platform partners and end-users (both consumers and businesses). For platform partners, embedded lending is an opportunity to create new revenue streams, in the form of interest and commission, and drive sales and usage of their service. Equally, end-users can experience both increased convenience and higher service levels with embedded lending solutions.

Four distinct models were found for structuring the value chains associated with realizing embedded lending solutions. Each structure has a different approach for the financing structure, creating strategic considerations for each actor in the value chain to consider. Companies looking to implement embedded lending solutions can either acquire their own banking license, set up a partnership with a financing partner, set up a network of financing partners, or focus on the technology and enable other actors to implement their own services.

Lastly, the characteristics identified in this thesis lead to a framework for evaluating a potential application's suitability for embedded lending. The two main variables that determine an applications suitability revolve around necessary data collection and the digitalization of the application in question. Specifically, the two variables are data availability and the degree of contextual digital interaction. Given this framework, two potential applications were found to be suitable in their current state for embedded lending: personal finance management applications and business procurement packages. Similarly, the key characteristics and value propositions found gave insights into appropriate boundaries for a definition of embedded lending. We propose embedded lending to be defined as: *Embedding loans in contextually relevant environments*.

References

Affirm. (n.d.). Flexible payments for your customers. Lasting demand for your business. Affirm.com. Retrieved on April 2, 2021 from https://www.affirm.com/business/home-lifestyle

Bakos, J. Y. (1997). Reducing Buyer Search Costs: Implications for Electronic Marketplaces. *Management Science*, *43*(12), 1676–1692.

Bell, E., Bryman, A., & Harley, B. (2019). *BUSINESS RESEARCH METHODS 5E* (5th ed.). Oxford University Press.

Berger, A. N., Molyneux, P., & Wilson, J. O. S. (Eds.). (2010). The oxford handbook of banking. ProQuest Ebook Central https://ebookcentral.proquest.com

Brajesh, D. (2017). *API Management: An Architect's Guide to Developing and Managing APIs for Your Organization*. Apress, Berkeley, CA. https://doi-org.proxy.lib.chalmers.se/10.1007/978-1-4842-1305-6_1

Bailey, J.,Brynjolfsson, E. & Smith, M. D. (2000). Understanding Digital Markets: Review and Assessment. In E. Brynjolfsson & B. Kahin (eds.), *Understanding the digital economy: Data, tools, and research.* 99-136. MIT Press.

Brynjolfsson, E., Dick, A., & Smith, M. (2010). A nearly perfect market? *Quantitative Marketing & Economics, 8*(1), 1–33.

Bullivant, G. (Ed.). (2016). *Credit management*. ProQuest Ebook Central. https://ebookcentral.proquest.com

Corbin, J. M. & Straus, A. (1998). Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. Thousand Oaks, CA: Sage.

Dommermuth, W. P. (1965). The Shopping Matrix and Marketing Strategy. *Journal of Marketing Research (JMR)*, *2*(2), 128–132.

Dou, Y., Ryan, S. G., & Zou, Y. (2018). The Effect of Credit Competition on Banks' Loan-Loss Provisions. *Journal of Financial & Quantitative Analysis, 53*(3), 1195–1226. https://doi.org/10.1017/S0022109018000054

Easterby-Smith, M., Jackson, P. & Thorpe, R.(2015). *Management & Business Research, 5th Edition.* Sage Publications, London.

Edmondson, A. & McManus, S. (2007). Methodological fit in management field research. *Academy of Management Review 32*(4), 1155–1179.

Ellison, S. (2016) Price search and obfuscation: an overview of the theory and empirics. *Handbook on the Economics of Retailing and Distribution* (pp. 287-305). Edward Elgar Publishing. https://economics.mit.edu/files/12719

Elm, M. (2021). The Embedded Finance Explainer: Nonfinancial companies are increasingly looking to offer financial products via their platforms-here's how innovative FIs can partner with them to capture a $7 trillion opportunity. *Business Insider*. Retrieved from https://www.businessinsider.com/embedded-finance-explainer?r=US&IR=T

Farmilo, S. (2021). Embedded B2B Finance: The Potential For Suppliers & Merchants. *Simon Farmilo.* Retrieved from https://www.simonfarmilo.com/embedded-b2b-finance-the-potential-for-suppliers-merchants-8c0a4553c98f

Ghazawneh, A., & Henfridsson, O. (2015). A paradigmatic analysis of digital application marketplaces. *Journal of Information Technology, 30*(3), 198-208.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory : strategies for qualitative research*. Aldine de Gruyter.

Gupta, P., & Tham, T. M. (2018). *Fintech : The new dna of financial services*. ProQuest Ebook Central https://ebookcentral.proquest.com

Iredale, G. (2021). Blockchain and the Rise of Embedded Finance. *101Blockchains*. Retrieved from https://101blockchains.com/embedded-finance-in-blockchain/

Jain, A. (2020). Embedded Lending-Next Disruption in Fintech. *Medium.* Retrieved from https://medium.com/the-innovation/embedded-lending-next-disruption-in-fintech-25eb678b67d1

Jiang, P. (2002). A model of price search behavior in electronic marketplace. *Internet Research*, *12*(2), 181–190.

Jones, F. (2020, November 23). What is embedded finance? *11:FS*. Retrieved from https://11fs.com/article/what-is-embedded-finance

Kiel, G. C., & Layton, R. A. (1981). Dimensions of Consumer Information Seeking Behavior. *Journal of Marketing Research (JMR)*, *18*(2), 233–239.

Kim, J. (2016). The Platform Business Model and Business Ecosystem: Quality Management and Revenue Structures. *European Planning Studies, 24*(12), 2113–2132. http://dx.doi.org/10.1080/09654313.2016.1251882

Klarna A. (n.d.). Buy now, pay later. Klarna.com. Retrieved on April 2, 2021 from https://www.klarna.com/us/what-is-klarna/

Klarna B. (n.d.). Erbjud flexibla sätt att betala IRL. Klarna.com. Retrieved on April 7, 2021 from

https://www.klarna.com/se/foretag/produkter/in-store/

Lendflow. (n.d.). A fully integrated lending platform. Lendflow.io. Retrieved on April 1, 2021 from https://www.lendflow.io/

Lindgren, H. (1988). Banking group investments in Swedish industry : on the emergence of banks and associated holding companies exercising shareholder influence on Swedish industry in the first half of the 20th century. *Uppsala Papers in Economic History. No. 15*. Retrieved from http://www.diva-portal.se/smash/get/diva2:128519/FULLTEXT01.pdf

Lu, Q., Song, H., & Yu, K. (2018). Financial service providers and banks' role in helping SMEs to access finance. *International Journal of Physical Distribution and Logistics Management, 48*(1), 69–92. Retrieved from https://doi.org/10.1108/IJPDLM-11-2016-0315

Lusted, M. (2021, March 1). Embedded Finance: Threat or opportunity for incumbents? *Mortgage Introducer.* Retrieved from https://www.mortgageintroducer.com/embedded-finance-threat-or-opportunity-for-incumbents/

Mays, N., Pope, C. & Ziebland, S. (2000). Qualitative research in health care. Analysing qualitative data. *BMJ (Clinical research ed.), 320*(7227), 114–116. Retrieved from https://doi.org/10.1136/bmj.320.7227.114

McKee, J. (2020). Embedded Finance: A Beginner's Guide To The Growing Intersection Of Tech And Financial Services. *Forbes*. Retrieved from https://www.forbes.com/sites/jordanmckee/2020/12/16/embedded-finance-a-beginners-guide-to-the-growing-intersection-of-tech-and-financial-services/?sh=381fbdca24af

Muhn, J. (2021, January 27). How Embedded Finance Trends Are Transforming These 3 Industries. *Finovate Blog*. Retrieved from https://finovate.com/how-embedded-finance-trends-are-transforming-these-3-industries/

Murphy, B. & Sloane, S. (2016). The rise of APIs. *Techcrunch.* Retrieved from https://techcrunch.com/2016/05/21/the-rise-of-apis/

Murphy, I. (2020). Xero acquires invoice financing company Waddle. *Enterprise Times*. Retrieved from https://www.enterprisetimes.co.uk/2020/08/26/xero-acquires-invoice-financing-company-waddle/

Nijim, S., Pagano, B. (2014). *APIs for Dummies*. John Wiley & Sons. https://cloud.google.com/files/apigee/apigee-apis-for-dummies-ebook.pdf

O'Hear, S. (2021). Embedded finance startup Banxware raises €4M seed. *Techcrunch*. Retrieved from https://techcrunch.com/2021/02/03/banxware/

Olson, P. (2018). How Klarna CEO Sebastian Siemiatkowski Went From Flipping Burgers To Building A $2.5 Billion Business. *Forbes*. Retrieved from

https://www.forbes.com/sites/parmyolson/2018/09/07/how-klarna-ceo-sebastien-siemiakowski-went-from-flipping-burgers-to-building-a-25-billion-business/?sh=885c3c015492

PayPal. (n.d.). PayPal working capital. *Paypal.com*. Retrieved on April 7, 2021 from https://www.paypal.com/gb/workingcapital/faq

Rise. (n.d.). *Rise Fintech Insights embedded finance*. Retrieved from https://rise.barclays/content/dam/thinkrise-com/documents/Rise-FinTech-Insights-Embedded-Finance-DIGITAL.pdf

Rosner, E. (2021, May 9). Accelerating digital transformation: Value in a platform-based approach. *Bobsguide*. Retrieved from https://www.bobsguide.com/guide/news/2021/Mar/2/accelerating-digital-transformation-value-in-a-platform-based-approach/

Röhrborn, J. (2020). Embedded financial services – a disruptive threat or a competitive opportunity for traditional banks? *The Paypers.* Retrieved from https://thepaypers.com/expert-opinion/embedded-financial-services-a-disruptive-threat-or-a-competitive-opportunity-for-traditional-banks--1245888

Saratchandran, V. (2021, February 5). How Embedded Finance will Transform the FinTech Landscape in 2021. *Fingent*. Retrieved from https://www.fingent.com/blog/how-embedded-finance-will-transform-the-fintech-landscape-in-2021/

Somashekar, N. (2000). *Banking*. ProQuest Ebook Central https://ebookcentral.proquest.com

Son, H. (2020). Amazon unveils small business credit line with Goldman in latest tie-up between tech and Wall Street. *CNBC*. Retrieved from https://www.cnbc.com/2020/06/10/amazon-and-goldman-sachs-unveils-small-business-credit-lines-up-to-1-million.html

Seppänen, M., Sorri, K., Still, K. & Valkokari, K. (2019). Business Model Innovation with Platform Canvas. *Journal of Business Models, 7*(2), 1-13.

Stigler, G. (1961). The Economics of Information. *Journal of Political Economy, 69*(3), 213-225. Retrieved from http://www.jstor.org/stable/1829263

Thakor, A. (2020). Fintech and Banking: What Do We Know? *Journal of Financial Intermediation, Volume 43, July 2020, Pages 100858*. https://doi.org/10.1016/j.jfi.2019.100833

Torrance, S. (2020, August 21). Embedded finance: A game-changing opportunity for incumbents. *Fintech Futures.* Retrieved from https://www.fintechfutures.com/2020/08/embedded-finance-a-game-changing-opportunity-for-incumbents/

Townsend, Z. (2021, March 1). What the embedded-finance and banking-as-a-service trends mean for financial services. *Mckinsey*. Retrieved from https://www.mckinsey.com/industries/financial-services/our-insights/banking-matters/what-the-embedded-finance-and-banking-as-a-service-trends-mean-for-financial-services

Treacy, M. (2021, January 15). What is Embedded Finance? *Open Payd.* Retrieved from
https://www.openpayd.com/blog/what-is-embedded-finance/

Trulioo. (2021, January 26). *Embedded finance - the path to frictionless financial services*. Retrieved
from https://www.trulioo.com/blog/embedded-finance
Udell, J. G. (1966). Prepurchase Behavior of Buyers of Small Electrical Appliances. *Journal of
Marketing, 30*(4), 50–52.

Unmesh, P (2021, March 2). Why embedded finance is the future of lending and how businesses can
capitalize on it. *Oracle: Financial Services Blog.* Retrieved from
https://blogs.oracle.com/financialservices/post/why-embedded-finance-is-the-future-of-lending-and-
how-businesses-can-capitalize-on-it

Xero. (n.d.). Financial services. Apps.xero.com. Retrieved on April 2, 2021 from
https://apps.xero.com/uk/function/financial-services?orderBy=LISTING_FEATURES

Yusufozdalga. (2020, September 01). Embedded Lending. *Yusof's Blog.* Retrieved from
https://yusufs.blog/2020/09/01/embedded-lending/

CHALMERS
UNIVERSITY OF TECHNOLOGY