Payments

Understanding the use of retail payment service platforms in the era of digitalisation

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In a world that is becoming more and more interconnected by digitalisation, platforms have increased in importance. Payment services in retail are a classical example of a platform, connecting different sides of a market.

Payment methods have changed in their form throughout history, and rapidly so in recent decades. Surprisingly, the treatment of payment in retail research appears detached from its purpose of use: purchasing products and services.

This dissertation aims to understand how and why certain payment methods are used in retail. With five different articles, payment services are explored from both the retailer and consumer perspectives, employing comprehensive empirical material as well as both quantitative and qualitative methods.

It finds that value is formed interdependently in the use of retail payment service platforms, with prolonged and growing ties in the market relationships investigated. Furthermore, it finds that friction can add value to a transaction, challenging the notions of cost-minimisation and seamlessness in the retail imperative.

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Abstract:

This dissertation explores how and why certain payment methods are used in retail.

Payment methods have changed in their form throughout history, and rapidly so in recent decades. Surprisingly, the treatment of payment in retail research appears detached from its purpose of use; i.e. purchasing products and services.

Payment has a role to play in the digitalisation of society and is part of shaping both the retail market and how people carry out purchases in their everyday lives. In this context, individuals are inevitably compelled to engage with the payment methods prevailing in society. In this way, payment constitutes a convention, but more importantly, it is an intermediary that facilitates exchanges and is thus a service. Furthermore, payment services in retail are a classical example of a platform, connecting different sides of a market. In a world that is becoming more and more interconnected by digitalisation, platforms have increased in importance.

In five different articles, this dissertation explores payment services from both the retailer and consumer perspectives employing comprehensive empirical material as well as both quantitative and qualitative methods.

It finds that value is formed interdependently in the use of retail payment service platforms, with prolonged and growing ties in the market relationships investigated. Furthermore, it finds that friction can add value to a transaction, challenging the notions of cost-minimisation and seamlessness in the retail imperative.

Signature   Date 2024-07-15

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Coverphoto by Carin Rehncrona (2016)
Detail of staircase decoration from a staircase balustrade (rampe d'escalier), at The Wallace Collection, London. The staircase was installed in the House of Scottish entrepreneur and financier John Law (founder of the first central bank in France and the first "full-blown" implementation of fiat money in Europe) in 1719 in his house in Paris just before his monetary system crashed.The detail shows a cornucopia of coins and banknotes in reflection of Law's ideas.

Faculty of Social Sciences
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To my mother

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Acknowledgements

This process has, in hindsight, reminded me of an episode of Winnie the Pooh that I watched when I was a kid. It is called "Tigger's Shoes." In the story, Rabbit challenges Tigger to jump up the highest mountain, which he then fails to do. Rabbit offers to help him by giving him shoes that belong to his relative, the "awesome bunny," 'the best bouncer in the world,' a story which he makes up. Rabbit fills the shoes with metal, nuts, and bolts and gives them to Tigger to trick him. Unknowing Tigger is happy for the shoes and starts to try and jump up the mountain with them. He does not get very high, but he improves a little bit with every jump and continues this practice until he is exhausted. Rabbit finally takes back the shoes while Tigger is sleeping to hide the fact that he weighed them down. Tigger then bounces away in his sleep and manages to jump onto the top of the mountain. In the end, all is revealed, and while everyone is upset (Piglet and Winnie) that Rabbit was lying to Tigger, he, in turn, is happy that Rabbit helped him to build up his strength to conquer the mountain and moves on to imagining jumping to the moon.

I would like to thank the environment at Lund University for being the rabbit putting heavy weights in my shoes, making me fit to jump (to the moon?) as I now may remove them from my feet.

This environment is comprised also by people who have greatly contributed to my progress. Firstly, I would like to thank my supervisors, Cecilia Fredriksson and Jerker Holm. Thank you, Cilla, for providing the opportunity for me to pursue a PhD, encouraging me in my ideas, and being positive, imaginative, and supportive in our discussions. You have an exceptional ability to see the larger picture and connect the dots in the grand scheme of things. This perspective has significantly influenced my research and has helped me develop a more comprehensive understanding of my field. Thank you, Jerker. Knowing that you make it a goal each year to undertake something outside your usual routine, I feel lucky that in 2015, becoming my PhD supervisor was that unique endeavour for you. You have a remarkable ability to articulate my sometimes unclear ideas and always provided precise and on-point feedback. Thank you also for letting me keep one foot in the economics realm.

Major thanks to the Centre for Retail Research for giving me the opportunity to take part in numerous research group discussions, seminars, events, and the network of retail researchers. Thank you to Ulf Johansson, Cecilia Fredriksson, Jens Hultman, Annika Olsson, Klas Hjort, Daniel Hellström, Anette Svingstedt, Niklas Jonsson, Pernilla Derwik, and Christian Fuentes for introducing me to the retail research field and your collective efforts in fostering a research environment of open discussion and

collaboration. Special thanks to Jens Hultman for valuable input on my work along the way.

Thanks to the Swedish Retail and Wholesale Council and Helsingborgs Handels-förening for their financial support in completing this dissertation.

Thank you, Su Mi Dahlgaard-Park, for always taking time to ask how I am doing, for introducing me to the service research field, and inviting me to the conference on Quality and Service Sciences in 2017, which gave me insight into the large community of service researchers and the opportunity to present and receive feedback that greatly improved my work. Your positive energy and knowledge have significantly contributed to my progress.

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Thank you to Hervé Corvellec for encouraging and allowing me to organise roundtable discussions and seminars on everything from valuation theory to service research, and for providing a conducive atmosphere for an exchange of intellectual ideas. Thanks also to Erika Andersson Cederholm for valuable discussions and input on my work.

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Thank you to the Marketing, Retail, and Consumption research group for interesting discussions and feedback on my work, especially to Kristina Bäckström and Christian Fuentes for invaluable comments on later drafts. I am truly appreciative of the opportunities to learn from each of you in the group and for the sense of community and humour within the research group.

I would also like to extend my deepest thanks to Katja Lindquist for invaluable encouragement and thorough assessment of my work.

Thanks to the community of past and present doctoral students, especially to Emma Samsioe for your supportive character and perceptive analyses. I have truly enjoyed our getaways of both business, pleasure, and leisure. Great thanks to my contemporary

Abstract

This dissertation explores how and why certain payment methods are used in retail. Payment methods have changed in their form throughout history, and rapidly so in recent decades. Surprisingly, the treatment of payment in retail research appears detached from its purpose of use; i.e. purchasing products and services. Payment has a role to play in the digitalisation of society and is part of shaping both the retail market and how people carry out purchases in their everyday lives. In this context, individuals are inevitably compelled to engage with the payment methods prevailing in society. In this way, payment constitutes a convention, but more importantly, it is an intermediary that facilitates exchanges and is thus a service. Furthermore, payment services in retail are a classical example of a platform, connecting different sides of a market. In a world that is becoming more and more interconnected by digitalisation, platforms have increased in importance. In five different articles, this dissertation explores payment services from both the retailer and consumer perspectives employing comprehensive empirical material as well as both quantitative and qualitative methods.

It finds that value is formed interdependently on retail payment service platforms, with prolonged and growing ties in the market relationships investigated. Furthermore, it finds that friction can add value to a transaction, challenging the notions of cost-minimisation and seamlessness in the retail imperative.

Populärvetenskaplig sammanfattning

De senaste årtiondena har samhället i stort präglats av digitalisering. Så också detaljhandeln, med en växande betydelse av digitala plattformar där människor gör sina vardagsinköp via dator, till alltmer även via mobilen. Avgörande för om människor faktiskt kan genomföra sina köp i detaljhandeln är betalningar. Betalningar har liksom detaljhandeln också blivit mer digitala, med en stadig minskning i kontantanvändande, men också utgjort en möjliggörare för detaljhandelns digitalisering genom nya betalningstjänster och utveckling av finansiell infrastruktur.

Den här avhandlingen undersöker hur värde formeras i beroendeförhållande i exempel betalningstjänster i detaljhandeln och betalningsplattformars betydelse. Tidigare forskning om betalningar återfinns inom en rad olika discipliner och perspektiv. Inom nationalekonomi, psykologi, sociologi och antropologi, men också marknadsföring och systemvetenskap. Den här avhandlingen tar fasta på hur betalningar har studerats inom detaljhandelsforskningen och bygger vidare på teorier från nationalekonomi och tjänstevetenskap för att förstå användandet av och varför vissa betalningstjänster blir rådande på marknaden och i vilken utformning.

Ämnet avhandlas i fem fristående forskningsartiklar/kapitel samt en kappa som sammanfattar och ramar in de olika studierna. Den första är en fokusgruppstudie som behandlar unga konsumenters värderingsprocess för nya betalningstjänster. Resultaten visar att de unga konsumenterna i studien värderar nya betalsätt beroende på användbarhet i en social och ekonomisk kontext, där påtryckningar från umgängeskretsen i viss mån tvingar in dem i vissa betalningsvanor. Den visar vidare att betalningar som går för snabbt och bekvämt kan ge upphov till upplevd osäkerhet och avsaknad av kontroll, men att dessa upplevelser kan minskas genom upprepning, igenkänning av varumärken/företag som man har förtroende för, samt medvetenheten om att andra använder betalsättet.

Den andra artikeln är en dagboksstudie som undersöker hur unga betalar i olika kanaler och situationer. Resultaten visar att betalningssätten generellt varierar med produkt, situation och kanal, och att det även kan finnas en preferens för att inte betala på samma sätt i alla kanaler, vilket utmanar den rådande uppfattningen om kanalintegration där målet är att konsumenten ska röra sig sömlöst mellan försäljningskanaler. Analysen bekräftar vidare att kontantanvändandet är mycket lågt och visar på ett generellt motstånd mot kontanter som ett onödigt ont. Det vanliga kontokortet används absolut mest genomgående i alla tre undersökta kanaler (fysisk, dator och mobil). Det var vanligare att använda mobila betalningar vid köp via mobilen jämfört med i de andra kanalerna och för vissa typer av produkter. Detta tyder på en komplementaritet mellan betalsätt och kanal, att de går hand i hand. Det var även vanligare med fakturaköp i e-

handel och de konsumenter som medverkade i studien uppskattade digitala betalningar för att det underlättade deras möjligheter att ha koll på sin ekonomi. Detta tyder på att det digitala kan upplevas som mer handfast än det fysiska, vilket talar mot tidigare forskning som betonar det digitala som mer immateriellt än det fysiska.

Den tredje artikeln baseras på en enkätundersökning bland större svenska detaljhandelsföretag om de betalningstjänster som de erbjuder till sina kunder. Analysen visar på att det råder olika villkor för detaljhandelsföretagen i den fysiska handeln jämfört med e-handeln. Genom att analysera mottagen volym kontra kostnader för betalsätt indikerar resultaten att det råder en högre konkurrens i e-handeln än i den fysiska handeln. För vissa handlare är det sett till kostnader en förlust att ta emot kontanter i fysisk kanal. Vidare finns det indikationer att faktura är ett måste att erbjuda för att inte förlora kunder i e-handeln. Analysen visar också att större handlare, sett till omsättning, har en fördel när det gäller att förhandla om priser på betalningar, samt har lägre kostnader för betalningar, vilket tyder på en skalfördel.

Den fjärde artikeln bygger på insamlat material från stora e-handelsföretags webbshoppar, om deras betalnings-, frakt- och returtjänsteerbjudande. Resultaten visar att handlare tenderar att erbjuda fri faktura samt fri frakt och retur i kombination. Detta tyder på en komplementaritet mellan betal-och frakttjänster och att detta kan utgöra en strategi som signalerar förtroende till konsument och ger en konkurrensfördel. Vidare visar analysen att detaljhandlarens tjänsteerbjudande skiljer sig åt beroende på produktkategori, där det är vanligare med fria tjänster i konfektionsbranscher, medan branscher med dyrare produkter och skrymmande varor har lägre tendens att erbjuda fria tjänster.

Den femte och sista artikeln behandlar teorier om plattformsekonomi och nätverkseffekter från nationalekonomi och dess vidareutveckling och användning inom andra samhällsvetenskapliga och företagsekonomiska områden. Vidare illustreras detaljhandelns digitala utveckling och tillväxt genom ett resonemang kring "buy-now-pay-later" eller faktura-alternativ och hur det marknadsförs genom exempel från ett e-handelsföretag, där hur presentationen av betalningsalternativen visar hur relationen mellan konsument och handlare förlängs och illustrerar beroendeförhållandet som skapas.

Sammantaget visar studierna på hur det råder ett beroendeförhållande på betalningsmarknaden mellan konsument och handlare för värdeformering. Ett beroendeförhållande som förlängs i tid och rum i och med detaljhandelns digitalisering. Det visar också hur värdeformering står i tätt samband med betalningsplattformar och plattformsekonomi. Vidare visar studierna att det i vissa sammanhang kan finnas värde i friktion, vilket utmanar den rådande föreställningen om kostnadsminimering och sömlösa upplevelser i detaljhandeln.

List of Papers

Paper I

Rehncrona, C. (2018). Young consumers' valuations of new payment services. International Journal of Quality and Service Sciences, 10(4), 384–399. https://doi.org/10.1108/IJQSS-11-2017-0111

Paper II

Rehncrona C. and Thufvesson O. Payment usage in different channels – a diary study among young consumers. (Manuscript unpublished)

Paper III

Rehncrona C. Exploring retailer perspectives on payment services in the online and offline channel - Indications of the 'must-take' element. (Manuscript unpublished)

Paper IV

Rehncrona C. The complementarity of payment and delivery services in online retail.
(Manuscript unpublished)

Paper V

Rehncrona, C. (2022). Payment Systems as a Driver of Platform Growth in E-Commerce. In the Handbook of Research on the Platform Economy and the Evolution of E-Commerce (pp. 299–323). IGI Global. https://doi.org/10.4018/978-1-7998-7545-1.ch013

Author's contribution to the papers

Paper I
Author is sole contributor.

Paper II
Author designed diary survey in dialogue with co-author. Author and co-author jointly transferred data digitally. Author and co-author jointly performed qualitative analysis. Author solely performed quantitative analysis. Synthesis and analysis mutually discussed. Author wrote paper and revised paper in dialogue with co-author.

Paper III
Author is sole contributor.

Paper IV
Author is sole contributor.

Paper V
Author is sole contributor.

Abbreviations

B2B   Business to business

B2C   Business to consumer

P2P   Peer-to-Peer

TAM   Technology acceptance model

TCE   Transaction cost economics

UTAUT   Unified theory of acceptance and use of technology

WOM   Word of mouth

WTP   Willingness to pay

Introduction

> Apple Pay, a payment function launched in the USA, where you just place your mobile at the counter and the payment is made.
>
> That sounds life-threatening.[1]

This quote from one of the focus group discussions conducted for this dissertation, shows how the ease of using this new technology carries an undercurrent of fear. For them, it is unknown how this new payment function works, yet it exists within a device they use every day. The fear of so seamlessly being deprived of one's funds is imminent. The response of 'life-threatening' also contains the thrilling anticipation of use. The emergence of Apple Pay is an example of a service transforming the act of payment, while also symbolising the rapid evolution from tangible coins to intangible digital transactions, encapsulating both the thrill and trepidation of modern retail.

This dissertation explores the use of payment services in the era of retail digitalisation, elucidating why something once perceived as life-threatening can transition into standard use.[2] This exploration begins with a brief glance backward, acknowledging the multifaceted history of transactions, from barter systems to precious metals, and now to digital currencies, underscoring the inherent continuity and adaptation of payment systems.

The proliferation of digital platforms has revolutionised retail, amplifying the role of payment services in enabling transactions, thus reshaping value creation processes. Digital platforms have signified the ongoing transformation of retail. Platforms where several different types of actors can interact, making use of both economies of scale and scope of a magnitude that has not been possible in traditional brick-and-mortar retail before (Hänninen et al., 2019; Mathmann et al., 2017; Reinartz et al., 2019). Here, payment services have played a role in facilitating the digital transformation by enabling

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[1] Focus group conversation from 2015. Four men aged 21, 22, 23 and 29 discussing how they use their mobile phones for shopping.

[2] In Sweden, use of Apple Pay grew from 12 percent in 2019 to 45 percent at 2023 at brick-and-mortar points of sale, and from 0 percent in 2019 to 27 percent in 2023 at online points-of-sale (Statista, 2024).

transactions between actors (Gong et al., 2020; Jin et al., 2014; Roggeveen & Sethuraman, 2020). This digitalisation of retail has given rise to new sources of value creation, including automation, transparency, interaction and control (Reinartz et al., 2019). In this context, furthering our knowledge of crucial customer-interfacing technology, payment service platforms, and how value is formed on payment service platforms, is called for.

Background

The newness of technology brings with it an inherent uncertainty: How are new ways of doing things to be understood? Payment has, for a long time in human history, been associated mainly with physical entities. Since ancient times, there have been complementary payment systems, that have been more or less tangible; i.e. different forms of credit, bookkeeping, favours, commodity exchanges or precious metals, to name a few (Dodd, 2013; Graeber, 2001; Simmel, 2005). While more and more payments are currently moving towards an intangible form. During these times of retail digitalisation, payments have moved more into the foreground, whereby payment services as platforms can also act as retailers, e.g. firms such as Amazon, PayPal and Klarna (Evans & Schmalensee, 2016; Treadgold & Reynolds, 2020).

The site of this dissertation is Sweden's retail payment market, where consumers make their everyday payments. Like the other Nordic countries, Sweden has experienced an exceptional decrease in the use of cash over the past decade. Even though measurement issues exist, researchers have concluded that Sweden may be the most cash-less society in the world (Arvidsson, 2019; Arvidsson et al., 2017).

When this dissertation project was initiated, Sweden was facing its largest replacement of coins and bills up to that point (2015-2017). The objective of this replacement was in order for the new notes and coins to be more efficient and secure, but also environmentally-friendly. One of the main challenges facing this replacement was the low use of cash in Sweden. As the replacement was mainly via retail businesses, the hassle caused more and more businesses to move to a non-cash policy, in turn exacerbating the declining use of cash. Every other year, the Swedish Central Bank (Riksbanken) conducts a survey of the payment habits of the Swedish population. The number of people using cash for their most recent purchases more than halved from 2014 to 2020, from 23 percent to 9 percent. This serves as an indication of the dramatic change in how digitalised Sweden has become, in terms of payment, in a such short time period, with physical money changing from one of the main means of payment into a more peripheral one.

Payment as a medium of exchange has constantly been on the move as regards form, meaning, and acceptance, reflecting the dynamics of societies and changing economic needs. Given its changing nature, the most crucial part of when *a payment becomes a payment* is the process of standardisation (Grossman, 2019). This relates to the fundamental premise of this dissertation, which came from a curious interest in why certain payment methods are used. For instance, my own preference for using a payment card hit a roadblock during a trip to Germany in 2014, when sales staff reluctantly had to dig out their payment terminals from some cupboard behind the checkout. Around about the same time, the mobile payment service *Swish* was growing in popularity in Sweden, with its instantaneous person-to-person payment transfers. Online payment service company Klarna was also gaining momentum, with its invoicing alternative for online retail, and was also getting attention in the media, while being criticized for capitalising on debt. This sparked my interest in contemporary payment solutions, as well as what near-future payment solutions would come about as online retail was being portrayed as a threat to physical retail.

This question of why certain payment methods are used, relates to discussions among economists in the 1970s and 80s about what makes certain products become standard products (e.g. Farrell & Saloner, 1985). It also has some bearing on one of the main notions of service research infancy, namely *the value of a service* (e.g. Normann & Ramirez, 1993). These two strands of literature coincide when theorising that products or services are valued higher when they are compatible with other products or services (Katz & Shapiro, 1985). This compatibility is reflected in service research, whereby value is seen as co-produced in service constellations (Ramírez, 1999). Furthermore, measuring, explaining and understanding consumer value is a key topic in retail research (Ha & Stoel, 2012; Leroi-Werelds, 2019; Sweeney & Soutar, 2001). Thus, the central concept of value in this dissertation reflects the interdisciplinary ground of drawing upon theories from economics, retail and services.

The digitalisation of retail is an ongoing process, which has had, and is still having, implications for exchanges in society, including reconfiguring retail space and providing different experience and value (Hagberg et al., 2017). As society becomes more and more digitalised, it is important to further understand how services are used, valued and delineated in order to gain knowledge of how these organise society and how society is organised around them. Here, the example of payments provides some insights by constituting one of the first platform models in societies that we know, as well as being essential, as it impacts all people's everyday lives. It is also one of those areas where digitalisation has been especially prominent.

Payments have often been overlooked in retail research, treated as something peripheral or merely one among several new technologies (e.g., Grewal et al., 2020; Roggeveen &

Sethuraman, 2020; Shankar et al., 2021). Studies that do revolve around payments typically have a strong focus on mobile payments, often in relation to the shopping experience and satisfaction, or consumer behaviour and spending in relation to credit. There is a lack of a more market-oriented perspective on payment service platforms within retail, and the effects of these on retailing, as well as how they affect the relationship between retailer and consumer as mediated by payment.

In contrast, retail practice demonstrates the strategic importance of payments, with companies such as Klarna[3] successfully foregrounding payments, and integrating them into the consumer shopping experience beyond the simple necessary transaction (Relja et al., 2024). Payments can be said to constitute a critical element of a retailer's strategy of staying competitive since consumers that prefer to pay in a certain way will probably choose to purchase from a retailer that can match their preference (Sands et al., 2016). This aspect, regarding which payment service platforms a retailer uses and offers to its customers, can contribute toward an increased understanding of the retail experience.

Furthermore, insights from the retailer side, together with increased knowledge on how and why consumers use payment service platforms, can also contribute toward advancing our understanding of how value is formed in the retail payment marketplace. The rapid pace of digital transformation in the retail industry requires a comprehensive understanding of payment usage, rather than solely focusing on the latest technological innovations. Consequently, research on payments must constantly be updated and further developed (Hokkanen et al., 2021; Talwar et al., 2021).

Aim and research questions

Understanding the use of payment service platforms in retail, and how value is formed in the use of retail payment service platforms, is the aim of this dissertation. The aim is also to bring payments to the foreground in retail research. This contributes toward a growing body of knowledge of how services are used and valued in digitalised retail and society.

Here are the guiding questions for meeting this aim, as represented in each appended paper:

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[3] A payment service company, and later on a bank, founded in Sweden in 2005 with the main business aim of providing credit solutions to online retail. https://www.klarna.com/se/om-oss/, *accessed 2023-10-02.*

RQ1.   How do consumers value retail payment service platforms? (Paper I)

RQ2.   How do consumers use retail payment service platforms across retail channels in the new digital retail landscape? (Paper II)

RQ3.   How are payment services offered by retailers and how do their payment service offerings reflect the conditions of online and offline retail? (Paper III)

RQ4.   How do payment services complement/interrelate with the return and delivery services of online retail? (Paper IV)

RQ5.   How can payments be understood in relation to recent developments in platforms and service ecosystems as concepts? (Paper V)

These questions explore retail payment services on both the empirical and conceptual levels. In the papers included in this dissertation, these questions are addressed using empirical data that informs the discussion on value formation that is relevant to understanding the use of payment service platforms in retail.

Empirically, this dissertation aims to contribute to two main fields; i.e. to *payment research,* by accounting more for the **retail context** in which payments are used, and to *retail research,* by highlighting the role of **payments** in consumer decision-making and retailer strategy.

Theoretically, this dissertation aims to contribute to the platform discussion in retail services marketing (Hänninen, 2019; Hokkanen et al., 2021; Ratchford, Soysal, Zentner, et al., 2022)*,* with an increased understanding of the mechanisms of platform use and the structure of value formation in the case of payment platforms, by using concepts from economics applied to the retail services field.

During recent decades, the platform economy has risen as a prominent form of organising activities enabled by digital technology (Hänninen et al., 2019; Huang et al., 2021; Spulber, 2019). This digitalisation has characterised society as a whole, in particular retail payments with an increased variation in digital payment methods and interconnectedness with retail services (Gawer & Srnicek, 2021; Hänninen et al., 2018). It is important to understand the mechanisms of the retail payment market in this era of digital transformation. Such insights could inform policies on both the

regulation of and accessibility to payment services, as well as the designing of financial infrastructures[4].

This interdisciplinary dissertation is situated in the rapidly developing and converging fields of retailing and service studies. In its exploration of use and value formation on retail payment service platforms, it can impact various fields of research, which can be delineated to some extent, but also share overlapping similarities. These fields of research are shown in Figure 1.
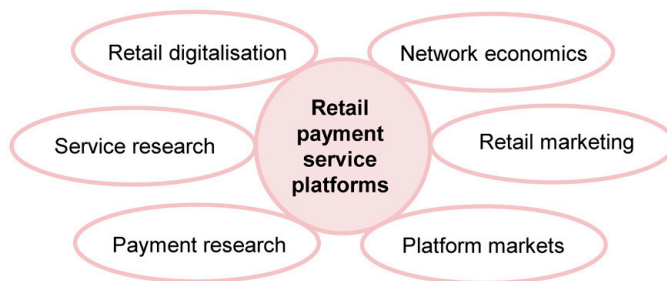
Figure 1.
Research fields informing this dissertation and for which its findings can be of use.

Interdependent value formation on payment service platforms

In the evolving service research field, one of the most important aspects that have been emphasised is the move away from a dyadic approach toward a more systemic and multiple actor approach (Edvardsson, 2022). As such, payment services may have been viewed using a dyadic approach, but they have always been more than a dyad by definition, since they must always involve at least a third component or actor. In this way, a payment service constitutes a platform and, in a sense, it is the archetype of a platform, bringing together wants and enabling transactions to occur (Evans & Schmalensee, 2016).

Value creation takes centre stage in service research, in particular value co-creation; consumers as active co-producers of value together with firms (Echeverri & Skålén, 2011; Ranjan & Read, 2016). There is a multitude of definitions of and perspectives on these concepts, just within service research (Edvardsson, 2022). Not only is value

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[4] This is in line with UN Sustainable Development Goals of financial inclusion and sustainable development, where financial technology plays a role (Arner et al., 2020).

co-produced, it has also been emphasized that value co-creation happens in interactions (Caridà et al., 2019; Ramaswamy & Ozcan, 2018b). This becomes especially evident in regards to digital platforms, where users and entities are connected and interact (Hokkanen et al., 2021). This dissertation argues, and shows using the example of payment service platforms, that there is not necessarily an interaction, but rather an *interdependent* relationship. This interdependent relationship is also what signifies the economics of networks and platforms (Rohlfs, 1974). Network effects concern how the value of a network increases when more actors join (Katz & Shapiro, 1994). Interdependence is also emphasised as a main feature of service ecosystems in terms of technologies and organisations (Jacobides et al., 2018), but not as a source of value formation. In payment services, this interdependency becomes particularly evident, with buyer, seller and provider all needing to play their part in order for a transaction to happen. In this dissertation, it is argued that it is in this interdependent relationship that value can be formed using payment platforms.

Structure of the dissertation

This dissertation consists of an introduction, a comprehensive summary, and five appended papers. The comprehensive summary ties the five papers together, with an overarching context, the integration of the findings, and some discussion on their implications for the field of payment research and retail services marketing.

The comprehensive summary consists of eight chapters. In the first chapter, an overview is presented of the previous literature on payments, with a review of research on payments within retail research in particular, and the relationship between payment and digitalisation research. Subsequently, theoretical points of departure are discussed that build the foundation for understanding payment use in the era of retail digitalisation.

In the era of retail digitalisation, the retailer-consumer relationship becomes partly mediated through the payment service. In this relationship, theories within choice, value and strategy hold the key to understanding why certain payment methods are used in an increasingly digitalised society. This is followed by the research design and methodology used for the studies in the dissertation. The philosophy of science underpinning this dissertation is a pragmatic approach, recognising that payment systems are not only economic tools but also social constructs that evolve with technology and cultural practices. It takes an exploratory approach, using both quantitative and qualitative analysis and integrating findings from several empirical

sources. Finally, a discussion on the findings and the contribution made by the research, as well as future avenues of research, are outlined.

The five papers explore interdependent value formation in retail payment services using perspectives on payments from both the consumer and retailer sides. The first paper explores the consumer valuation process regarding new payment services, while the second paper deepens the understanding of the consumer use of payment services in different channels and situations and the third investigates retailer conditions and strategies for payments in offline and online channels, with the fourth going into greater depth regarding retail payment strategies and the complementarity of services in the online channel. The last paper discusses the relationship between and the translation of concepts pertaining to platform theories from economics, service and retail marketing, in order to situate payments within these concepts. These five entries contribute toward a market understanding of the use of payment services in the digitalisation of retail, and of how value is interdependently formed in retailer-consumer relationships as mediated through payment.

The findings underscore the pivotal role of interdependent value formation within digital payment ecosystems, illustrating how the value derived from payment services is not only contingent upon the technology itself, but also upon the interconnected relationships between consumers, retailers, and service providers, in doing so shaping the adoption and success of digital payment methods in the retail sector.

Previous literature on payments

> Money is not, properly speaking, one of the subjects of commerce; but only the instrument which men have agreed upon to facilitate the exchange of one commodity for another.
>
> David Hume, *Of Money*, 1752

This quote by one of the fathers of economic science, David Hume, illustrates how persistent the description of money has been, and still is today. As an instrument of exchange, and most often placed in the background of commerce. However, money has been a classical track in social science that has contributed to important insights. Among the prominent scholars, that have laid the foundations for much Western modern thought, it is difficult to find one that has *not* assessed, or embarked on, an endeavour to investigate the role or meaning of money.[5] While it is an admirable task to discuss the meaning and value of money, in this dissertation, money is seen both as an overarching term for payment and as a payment method. Money may not be the subject of commerce, but *payments as service platforms* are, as they are crucial when it comes to facilitating exchange, thus being the subject of commerce to a very high degree, contrary to the above quote.

In this chapter, a brief overview is presented of how payments have been studied in social science. The subsequent section offers a review of how payments have been studied in retail research. Lastly, the relationship between retail digitalisation and payments is discussed.

Overview of research on payments

In general, the research field of payments spans several disciplines and strands of literature in social science (Batiz-Lazo & Efthymiou, 2016). Thus, in that sense, there

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[5] See, for example, Dodd, N. (2013). Nietzsche's money. *Journal of Classical Sociology*, 13(1), 47–68.
   This work includes discussions of the scholarly contributions of e.g., Adam Smith, Carl Menger, Karl Marx, Max Weber, Friedrich Hayek, Sigmund Freud and Georg Simmel among others.

is not one single payment research field that can be delineated: instead, there are sub-fields of varying influence in different disciplines and domains. To situate this dissertation, how payments have been studied in selected key areas including, economics, sociology and anthropology, psychology, information systems and technology, as well as business and marketing, is concisely presented.

In economics, payments have mainly been studied within market structures and competition, such as two-sided markets, merchant fees and steering (e.g. T Briglevics & Shy, 2014; Rochet & Tirole, 2008, 2011), but also within macro-trends, consumer payment adoption and demand for cash, the individual and social costs of different payment methods, and financial inclusion (e.g. Alvarez & Lippi, 2017; Koulayev et al., 2016; Rysman & Schuh, 2017; Shy, 2020). Mapping consumer payment use has also been a considerable part of central banks' research output (e.g. Bouhdaoui & Bounie, 2012; Karoubi et al., 2016; van der Cruijsen et al., 2017).

In sociology, the two main streams can be said to emanate from the perspectives of social norms and practices; meanings of different types of payments from perspectives on social norms and practices (Zelizer, 1996, 1997), materiality and the digital divide, societal and market organisation (Dodd, 2011, 2015; Linné, 2008; Swartz, 2018, 2020; Westermeier, 2020b). The anthropological view of payment is related to that of sociology, with similar and slightly different streams, whereas the more classical study of the different physical representations used as money or gift exchange can also be seen as part of payment research (Cellarius, 2000; Malinowski, n.d.), in addition to value and debt as an organising mechanism, there are also systems of exchange (Graeber, 2001, 2011; Hart, 1986). Another area is community money and cryptocurrencies (Caliskan, 2022; Faria, 2022), a focus which can also be discerned within certain marketing literature streams (Belk et al., 2022; Humayun & Belk, 2022)

From a psychological and behavioural perspective, also including an overlap with marketing as regards payments, the main streams can be categorised in terms of mental accounting and pain of payment literature, investigating consumer spending behaviour, and consumption choices based on payment method (Bell et al., 2020; Diels & Müller, 2013; H. H. Liu & Chou, 2020; See-To & Ngai, 2018). The transparency of a payment is predicted to affect spending, whereby less transparent ones like credit, compared to more transparent ones like cash, lead to higher spending (Feinberg, 1986; Soman, 2003; Thaler, 1999). Often, the focus is either on the attributes of payment, and how they affect spending, or on how individuals' spending is affected by the payment attributes. Thus, one approach implicitly assumes that consumers are generally homogenous in their response to payments, while the other assumes that the payment attributes are homogenous across the methods, with their attributes affecting individuals differently.

One disciplinary field which is prominent in research on payments is information systems and technology management. Here, the focus has mainly been on the adoption and use of mobile payment (Dahlberg et al., 2015; K. Staykova & Damsgaard, 2020). Here, the adoption and use of mobile payment is a thoroughly-researched field, most often using theories of technology acceptance, but also bringing perspectives from economics and business marketing (e.g. Kazan et al., 2018; Oliveira et al., 2016; Shao et al., 2019; Staykova & Damsgaard, 2015; Verkijika, 2020). Major findings relate to how different factors have an effect on consumer adoption, but also on system level competition and merchant incentives to adopt (Apanasevic et al., 2016; Arvidsson et al., 2017; Jocevski et al., 2020). A major motivation for studying mobile payments stems from the aspiration to advance toward a cashless society, and supporting the ongoing digital transformation (Arvidsson, 2019; Ng et al., 2021). Mobile payment adoption is also studied in research concerning mobile marketing and mobile shopping (Luceri et al., 2022). As a critical aspect of the purchasing process, payments can turn out to be both a barrier to and an enabler of the use of new applications and devices. For instance, Patsiotis et al., (2020) argue that consumers refrain from using mobile payments in shopping when they do not trust the regulatory security system.

The studies featured in this dissertation have used previous research on payments to explore their different focuses, and what is known about payments from social science perspectives. This has revealed that payment research has often been detached from its retailing context and purpose of use, with the focus being solely on the payment itself. The following section presents a deeper analysis of payments in retail research.

Research on payments within the field of retailing

Part of the research aim of this dissertation is to highlight the role of payments in retail. Therefore, a literature review of how payments have been studied in retail research will follow in order to position this dissertation in relation to past and current discussions on payments in retail.

Unsurprisingly, a simple search for payment in retail reveals it to be highly present in the retail research area. Paying is, after all, a key component of retail, and thus the word payment is likely to appear in retail research texts. However, on closer scrutiny, as the review in the next section will show, payments in retail research have usually been treated in the background, e.g. as one of several technologies in retailing (Grewal et al., 2020; Roggeveen & Sethuraman, 2020; Shankar et al., 2021), or as a source of uncertainty in online retail (JungKun Park et al., 2019; Wu & Chang, 2020). When payment is in focus, this has been, in the majority of studies, in terms of mobile

payment adoption or the intention to use mobile wallets (Chakraborty et al., 2022; Hamzah et al., 2023; Mombeuil & Uhde, 2021), and not in terms of being embedded in a retail context.

Themes emerging from a review of payments in retail research

This review investigates how payments have been studied in retail. For this purpose, a topic search was conducted on payment in the four main retail journals, resulting in 80 articles in Web of Science[6]. Subsequently, after excluding articles using the criterion that they deal with consumer payment instruments, a content analysis of the remaining articles was performed.

A deeper dive into these 80 articles, using the topic of payment, firstly reveals that several are not about payment in the same sense as in this dissertation. They appear in the search with payment as a topic, but not in the sense of consumer and retailer payment during a transaction. They do not deal with consumer payment instruments, services and/or systems. Such studies include *payment equity,* which refers to perceived price fairness (e.g. Evanschitzky et al., 2017; Verhoef et al., 2001), *contract payments* and *value transactions between B2B and franchises* (de Jong et al., 2011; Verhoef et al., 2007), and the classical concept of *willingness to pay* (WTP), which basically studies the highest price a customer is willing to pay for a product or service in different situations and on the basis of different factors, e.g. for more sustainable products (Sandra & Alessandro, 2021), or when paying for a bundle of products or paying for each product separately, referring to these separate situations as "payment method" (Sohn & Ko, 2021), and finally, marketing strategies on social media (Grover & Kumar Kar, 2020). Thus, these studies do not use the word payment, as in the instrument or medium of exchange, such as it is referred to in this dissertation.

Excluding papers that did not have any relevance to B2C payments, as exemplified above, the number of papers with payment as a topic was 55. Complementing the search with another database, Scopus, and removing duplicates and non-relevant studies, another 9 references were found, resulting in a total of 64. These articles were divided up according to main focus and/or perspective, and resulted in three main themes; i.e. consumer behaviour and preferences, shopping experience and satisfaction, and technological and societal trends. These themes emerged from eye-balling the title, abstract, introduction and conclusion of the articles, searching for the field of

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[6] A topic search in Web of Science in the following Journals; Journal of Retailing, Journal of Retailing and Consumer Services, International Journal of Retail and Distribution Management, International Review of Retail, Distribution and Consumer Research, between 2000 and 2023. Of course, other journals also contain retail research, but these are expected to show the main strands of the field.

contribution, in the style of a theory-based and structured literature review (Paul & Criado, 2020).

Of these studies, the majority, 35, focused on mobile payment. Thus, it was evident that mobile payment was the most prominent field of payment within retail. The other focus areas, specified in Table 2, were also present within the mobile payment category: However, as mobile payment stands out as a dominating empirical field, it was treated as a separate category in the first level of analysis. In the second level of analysis, mobile payment was divided up into the other focus themes. This shows how dominant mobile payment has been in retail research, but that it also fits into more general discussions.

Table 1.
Primary focus of 64 articles on the topic of payment in retail journals 2000-2023. The second column is mobile payments in a separate category, while in the third column, mobile payments are divided up into the other focus themes.

Focus of study	Number of references	Total number of references including mobile payment
Mobile payment	35	
Consumer behavior and Preferences • Online/multi-omni-channel shopping, security and privacy • Mental accounting and pain of payment • Consumer preferences and choice • Segmentation of consumers	18	41
Shopping experience and satisfaction • Service quality • Consumer shopping value and loyalty	7	15
Technological and societal trends • Retailer service adoption • Point-of-sale patterns • Cashless society	4	8

Mobile payment dominance

In the sample of articles focusing on mobile payment, the majority of the studies concern consumer adoption of, and intention to use, mobile payment. These studies mainly use the theories of the technology acceptance model TAM and extensions such as the Unified Theory of Acceptance and the Use of Technology (UTAUT), Mobile TAM, and technology diffusion theories (Liang et al., 2022; Yan et al., 2021). These theories are operationalized by measuring certain constructs, e.g. ease of use, perceived usefulness, habit, risk perception, expectations on performance and effort, hedonic motivation and facilitating conditions. Subsequently, how they affect the intention to

use the investigated technology in hand. Usually, a dichotomy between two main concepts/variables is presented, i.e. risk and trust, anxiety and social influence, benefit and risk, drivers and barriers.

Two other prevalent theories used in mobile payment research are innovation resistance theory and theory of planned behaviour (TPB). Thus, the majority of the studies are more or less of a quantitative nature. Many of the studies are motivated by the need to test models in different cultural contexts, e.g. Thailand, Oman, Malaysia or Taiwan (Moghavvemi et al., 2021; Sharma et al., 2018).

The theories mentioned above (TAM, UTAUT, technology diffusion and TPB) are widely used in the fields of information systems and technology management, where payment systems research and, especially, mobile payments have been a significant research stream, as mentioned in the preceding overview.

Given that the selection of these sampled articles is limited to the four main retail journals, it is worth noting that the prevailing approach to analysing adoption and intention to use, using the theories mentioned and discussed here, is also confirmed by literature reviews on mobile payments (Dahlberg et al., 2008, 2015; Slade et al., 2013; Verma et al., 2020). Theories that are used in one or more of the articles from the reviewed sample include; Theory of consumption values (TCV), transaction cost economics (TCE), perceived value theory and information system success model and Word-of-mouth (WOM).

Exactly what is meant by mobile payment differs: It can be specific and refer to a mobile self-check-out, a mobile wallet or a mobile payment app. It can also be more generally defined, e.g. "mobile payments are services that use mobile devices to make payments" (Liao & Yang, 2020, p. 1). Thus, there is no clear-cut definition of mobile payments and, given the continuous evolution of technology functions and integrated systems, the term must constantly be adapting itself to a dynamic digital financial landscape.

As seen in Table 1, most of the studies pertain to the category of consumer preference and behaviour: The second category is also attributable to consumers, satisfaction and shopping experience. The lack of research on more general trends, the retail payment market, and the retailer perspective is also evident, as also pointed out by Lee et al., (2019).

Consumer behaviour and preference
Another research field where payment plays a role is online and omni-channel retail. Unlike the majority of studies of mobile payment, this stream does not put payment at the centre. However, it does acknowledge that payment influences consumer behaviour

in online environments. Perceived risk and insecurity, with regard to payment online, emerge as significant concerns within two major fields; consumers' experiences with online retail (Bashir et al., 2018; Kazancoglu & Aydin, 2018) and privacy concerns (Ge, 2023). Similarly, payment is mentioned incidentally as a reason for consumer show-rooming behaviour, where long queues at check-outs in physical stores will make consumers buy products online (Arora et al., 2020). Therefore, in the domain of omni-channel retail consumer behaviour research, payment factors are typically addressed as secondary considerations, albeit influential ones, rather than the main focus of study.

Several articles relate to the literature on mental accounting and the pain of payment, investigating the impact of payment timing and instruments on various aspects of consumption. These include four main areas, i.e. pre-payment preference depending on product type and durability (Patrick & Whan Park, 2006); decoupling between consumption and payment, how it affects the consumption experience or retailer profitability (Pham & Sun, 2020; D. Sharma & Pandey, 2020); how payment instruments affect sellers' setting of their prices (Xu et al., 2020); and how prices are perceived when paid in different currencies (Raghubir et al., 2012).

In the same tradition, perceptions of paying using gift cards, compared to cash gifts, have also been featured (Yao & Chen, 2014), as well as spending elasticity when paying by cash or card and result robustness regarding income (Greenacre & Akbar, 2019). Thus, the implication of such research is double-edged; i.e. how to make consumers either spend more or save more. The interpretation and application of these findings will depend on the normative values and objectives of the respective research discipline.

Other articles attributable to this category, leaning more toward consumer payment preferences, do so in relation to either *situational* or *demographical* factors. Motivations for studying consumer payment preferences include their use as a basis for segmenting or profiling consumers, among other factors. (e.g. Park & Kim, 2018). With regard to situation, consumer payment choice depends on various transaction factors, e.g. purchase amount and product (Świecka et al., 2021; Zielke & Komor, 2020). Related to consumer preferences are studies that investigate factors influencing the adoption, use and perceived usefulness of mobile technology (e.g. Bailey et al., 2017; Liang et al., 2022).

In terms of testing theoretical models, the findings of these studies are mainly confirmational. The more explorative ones point to both homogenous and heterogenous patterns across the demographic factors, transaction factors and situations, paving the way for new theorising. In terms of practical implications, such results can be used by retailers when planning to implement new payment services.

Shopping experience and satisfaction

In this theme, payment services are present as part of a larger context of shopping experience and satisfaction, in turn affecting loyalty and consumer retention. Sethuraman & Parasuraman (2005) conceptualize payment as a service-enhancing technology that can drive customer loyalty. Here, mobile payment transactions have been studied in terms of how they could increase consumer loyalty (Alt & Agárdi, 2023; Ku, 2021), but also different payment options as one of several factors affecting service quality and the continued use of shopping channels (Jain et al., 2021; X. Liu et al., 2008). Here, offering payment methods that cater to consumer needs and preferences is an implicit finding, but it is not further problematized in terms of where satisfaction and preference lie. It is expected that consumers perceive a higher service quality and show a higher loyalty toward retailers when certain payment methods are offered. However, Jain et al. (2021) do show that shipment and payment options are interlinked in terms of consumer satisfaction. This further strengthens the approach of moving away from payment technology as such and focusing more on interlinkages between payment services and other services.

Technological and societal trends

Compared to the consumer perspective on payments, there is a scarcity of research on the retailer side, as well as with regard to the broader macro trends or longitudinal studies of payments within retail research. A few studies highlight the retailer perspective. For instance, retailers may be classified as passive or active when incorporating new services into their service offerings (Vaittinen et al., 2019). This refers to whether retailers simply comply with market demand regarding how customers prefer to use various payment methods, or whether they actively adopt new payment services or not, including the promoting of specific payment services. This ties into the field of technology adoption, which has been prominent on the consumer side and which has motivated research on factors influencing retailer service technology adoption (Aithal et al., 2023; J. Lee et al., 2019; Moghavvemi et al., 2021), in addition to retailer perspectives on the benefits and risks of mobile payments (Taylor, 2016). A slightly more macro-approach can be discerned in Shaw et al., (2022), i.e. factors that lead to the adoption of mobile wallets when comparing different countries. The majority of studies are country-specific, and thus may be difficult to generalise to other countries.

Earlier and seminal work on payments in retail research and its impact

While the above review is limited both to the two most recent decades and to specific retail journals, earlier examples of payments in retail research can still be noted. Interestingly, the influential retail marketing scholar Elisabeth Hirschman, whose work in the early 1980s on hedonic consumption was highly influential (e.g. Hirschman & Holbrook, 1982), wrote two concurrent papers with payments in focus (Hirschman, 1979, 1982). Nevertheless, these did not receive the same level of attention. Perhaps this was due to scholarly disinterest at the time, with other topics being more on-trend: One can only speculate. However, some of her findings had a significant impact and several of the main points made in her papers remain valid today.

In her first paper, she explains the lack of research on consumer payment systems[7], saying that scholars may firstly have assumed that there was no difference between payment systems, and secondly that these would make no difference to consumption behaviour. In this paper, she also discusses payment methods being complementary or competitive: Consumers carry different payment methods with them to find the 'most' suitable one in a purchase situation (complementary) or they are indifferent as regards using one or the other in a purchase situation (competitive). She also hypothesises that credit cards would lead to higher spending levels due to their deferral attribute. Findings confirm that carriers of several payment systems (methods) use these for different purchase situations, and that the more payment systems (methods) carried, the more spending can be noted, controlled for demographical variables (Hirschman, 1979). The finding that there is higher spending using credit cards has since been replicated and discussed, influencing the 'pain of payment' literature (Soman, 2001, 2003), and extending to mobile payments (Y. Liu & Dewitte, 2021). It has also had an impact in other fields, such as neural imaging, where studies have found that credit and novel payment methods activate the reward network of the brain – increasing spending – while it is suggested that cash activates a 'hindrance' network (Banker et al., 2021; Bartra et al., 2013; Kelly et al., 2012). This suggests that there is biological evidence for the occurrence of 'pain of payment'. However, the research path of studying several different payment methods at once, such as it usually occurs in a real-world setting, has not been established.

The second paper also points out that payment systems is an under-researched field, especially in terms of investigating alternative payment systems. The study explores how consumers perceive the attributes of alternate payment methods, including cash, cheque and card. The study confirms that consumers perceive alternate payment

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[7] When using the word 'systems', she is referring to different payment methods like debit or credit cards.

systems differently on the individual level, and have different payment preferences in different situations (Hirschman, 1982). This paper has had a greater impact during more recent years, compared to just after being published. Notably, Hedman et al. (2017) build on the attributes developed in this paper to develop a taxonomy of payments. This reinforces the idea that there are fundamental characteristics of payment systems that remain pertinent in today's more digitized retail landscape.

On the co-operation between financial services and retail, McGoldrick (2002) notes how the store cards and financial services provided by retailers can support sales and build closer relationships with consumers. Furthermore, retail and banking services have historically benefited from each other's digital services development, e.g. ATMs (Automatic Teller Machines), when close to and inside stores, with the possibility of withdrawing cash facilitating purchasing. Similarly, Alexander & Pollard, (2000) find the trend of major retailers (mainly in groceries), of expanding their businesses into the financial markets, a complex and contradictory endeavour, whereby retailers will lose but increased competition may benefit consumers.

Other work can be noted on the development and increased use of card payments and credit in retail by Worthington (1987, 1992, 1995, 1996); Worthington & Hallsworth (1999). These studies mainly concern how retailers market themselves using store, loyalty and affinity cards. These papers are written more in the form of popular science reports rather than research articles.[8] An interesting case here is the early store card, a Scottish case, the *Style Card* from the department store Goldberg's. The card was promoted as a card for shoppers and the unbanked, groups of consumers that would rather deal with retailers as these were perceived as more consumer "friendly" than "cold" bank institutions (Worthington, 1987). Higher interest rates in the 1990s meant a decline in retailer credit cards, and these were more a complementary payment method than a replacement for existing ones. The prediction at the time was that consumers would only carry one card, albeit one with different functionalities, e.g. pay before, pay now and pay later (Worthington, 1992, 1995). This can be compared to online payments, where payment service companies (sometimes evolving into banks) offered all-encompassing payment service packages where consumers choose how to pay (see Paper V of this dissertation and the example of Klarna). The historical trend in credit can also be applied to the analysis of the rise in buy-now-pay-later options in online retail observable over the past decade. Buy-now-pay-later alternatives might potentially follow a decline similar to that of retail credit cards in the 1990s, due to rising interest rates (Humphrey, 2015).

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[8] Since then, the journal which the studies have been published in has evolved, now named the *International Journal of Retail & Distribution Management*, ISSN 0959-0552.

Retail digitalisation and payments

Both retail digitalisation and payment system transformation have evolved in parallel and in conjunction. The evolution of new payment services has been seen as a part of the digitalisation of retail, moving away from cash towards mobile payments, where the popularity of mobile devices is claimed to drive the development of payment applications (Hagberg et al., 2016). Payment is treated as an example of a mobile application that is part of the digitalisation of retail (Hagberg et al., 2017). However, in the context of complex infrastructure developments, such as digitalisation, determining the sequential drivers is proving to be challenging. Hänninen et al. (2018) argue that multi-sided platforms are the main drivers of digitalisation. Payment systems, as platforms, can be considered to contribute to the digitalisation of the retail industry. In this respect, a mobile device simply serves as a means of accessing a payment platform. Thus, the system rather than the device is the main driver of this trend.

Payment platforms and new payment services appear to be an important element of moving from a product-centric to customer-centric view in emerging markets, where, on the one hand, customers are asking for more digital payment options and, on the other, data from the digital payment platforms can be used to analyse consumers (Gupta & Ramachandran, 2021). Payments are thus a central component of privacy concerns as they contain financial information and purchase information that is valuable to companies (Martin et al., 2020; Okazaki et al., 2020). Here artificial intelligence (AI) has been said to improve and make payments more efficient, perhaps at the expense of consumer privacy (Guha et al., 2021). Payments are also thought, based on industry reports, to have played, and to be continuing to play, a major role in reducing friction and increasing efficiency at the check-out. New and more digitalised payment is emphasised as reducing friction and increasing convenience, in particular touchless and mobile payments (Gauri et al., 2021; Grewal et al., 2011; Kumar et al., 2017). Thus, there is a trade-off in accommodating consumer needs by means of improving payment services, but not compromising data privacy. Maintaining privacy is an argument put forward in continuing to use cash (Maurer et al., 2013).

In terms of digitalisation, payment also figures in research on retail innovation and retailer adoption of new technology (Alexander & Kent, 2021; Pantano & Vannucci, 2019). Here, one way of categorising retail innovation in the form of adopting in-store technology is by function, where payment is conceptualized as one of four main functions (information display, shopping experience, information search, and payment technologies). Thus, this research results in a kind of charting of how retailers adapt to new technology, with probable ways forward. For example, in Alexander & Kent (2021), payment is framed as a way for the retailer to optimise the consumer journey

in omnichannel retail in terms of convenience. Faster and more convenient payment is assumed to increase consumer loyalty in omni-channel integration (Savastano et al., 2019): More autonomy in terms of choosing payment method empowers the consumer (Mishra et al., 2022). Managers emphasise that providing simple payment solutions is important in omni-channel integration, in order to facilitate a seamless shopping journey (Solem et al., 2023). Payment is mentioned as an important part of the consumer journey, albeit often without any further elaboration. In the online retail environment, an important element of transaction convenience is easy and flexible payment methods (Zhao et al., 2023) as "the checkout process is not an easy and simple task to complete" (Al Nawas et al., 2021, p. 1256): This is an example of a statement on payment and similar ones appear quite frequently in the literature, with low empirical support.

Hence, the role of payment in the ongoing transformation of retail digitalisation has been acknowledged, but as mentioned above, with laconic treatment and addressed briefly. There is a lack of understanding of how it is manifested in practice, and of its consequences.

Summary of payment in retail research

From this overview of how payment has been studied in retail research, several main conclusions can be drawn. For example, payments embedded in retailing practices have seldom been the main focus of study in retail research. Partly, this could be attributed to the fact that payment is not seen by retailers as an undertaking: It is an infrastructure into which retailers can tap.

However, there are examples of retailers acting as financial institutions, e.g. launching their own store cards or setting up retail banks, with studies showing mixed levels of success in such cases. In such instances, payment is seen as a marketing tool for increasing consumer loyalty. Analyses of unsuccessful cases often find the demise of such cases in lock-in effects: When consumers can only use one card for one particular merchant, there will be too little incentive to carry that payment card. This shows the value of network effects on continuous use.

Research with a specific focus on payments in retail, during recent decades, has mostly studied mobile payment acceptance, intention to use, and continued intention to use, using scenario-based approaches. Other areas in which payments feature prominently is consumer experience, service quality, satisfaction and loyalty, where payments are viewed as one factor that affects the whole customer experience and is a resource for driving sales.

There is a lack of scrutiny regarding why certain payment methods are used, and the implications of their use for retailing, as well as how they organise value formation during service relationships. Investigating this role of payments in retail is especially urgent during times of retail digitalisation, where the possibility to perform exchanges is becoming ubiquitous.

Theoretical points of departure

Theoretical perspectives on choice and payment

This dissertation aims to understand the use of retail payment service platforms. Since use implies that a choice has been made prior to the actual usage, some theoretical underpinnings of choice are outlined here. Studying how and why people make choices is also, as in the case of money, a major subject field within social science (Abend, 2018). Within economics, psychology, political science and sociology, choice has been a key object of study. In economics, rational choice theory (Manski, 2011), bounded rationality (Simon, 2019), choice architecture (Thaler, 2008) have had a major influence on the study of choice. In psychology, ecological theory has been influential in studying context and situational behaviour, with human decision-making being seen here as the result of environment on the micro, meso and macro levels (Bronfenbrenner, 1977).

Regarding rational-choice theories that separate actions from context, sociologist Granovetter (1999) argues that the explanatory power of models of human action can be strengthened by viewing these actions as embedded within contexts and structures. The interplay between actions, structures and contexts is a dynamic one. Similarly, from an economics point of view, Thaler et al. (2013, p.429) state that "everything matters", emphasising the wide range of factors influencing decisions. Critique of the choice-theory includes a lack of in-depth sociological theories explaining behaviour and reliance on economic institutional theories on norms only reaching so far (Brown, 2012). More recently, broader economic sentiment and narratives, such as downturns or predictions on the impact of new technology, have been recognised within economics as likely affecting how individuals behave (Shiller, 2019). Thus, the use of payments should be seen as embedded in the context in which these are made.

The two dominant normative standpoints on decision-making processes are the 'heuristic-biases' and 'ecological rationality' (Wallin, 2020). Within heuristic-biases, choices are made differently depending on whether they are framed from the perspective of a loss or a gain. This is the main notion within prospect theory, when depicting a set of choices subject to risk framed from a perspective of a loss and a gain, people will make choices to avoid loss (Barberis, 2013). However, in decisions

regarding consumption or savings, loss aversion is largely dependent on expectations (Barberis, 2013). Decision-making in prospect theory is quite independent of an assumption of rationality (Wallin, 2020), and can therefore be said to be more interested in outcomes than whether or not decisions are rational. From this perspective, a payment choice would be based on whether an expected outcome means a loss or a gain, or whether a perceived loss is more or less apparent.

The ecological rationality perspective takes its starting point in recognition: Choices are based on familiarity, i.e. how successful the outcome of a decision is and the resources needed (Wallin, 2020). More information does not necessarily lead to more successful decisions: Sorting information with regard to previous knowledge can sometimes entail a more successful decision. This, however, must be understood in relation to how the environment as regards recognition, familiarity or previous knowledge has come about. Researchers have also acknowledged the role of emotions in decision-making, in terms of shaping the strategies for processing information, referred to as affective reactions and informing the dual-process theory whereby one process is described as more deliberate and calculative and the other as intuitive and automatic (Bruch & Feinberg, 2017). In this view, payment choice is a process during which previous choices play a role and where environment and emotions influence which payment method is chosen.

Both perspectives have been criticised for different reasons, with the most important critique being that choices can seldom be reduced to involve only two options, the other one being that the outcome of a decision must be compared to the expected, *right*, one (Wallin, 2020). For example, Wallin, (2020) describes, when applied to a context of choosing pasta in a store, the normative choice-models as insufficient to account for the diversity of pasta, 80 varieties, which the subject is supposed to choose from. However, research has also shown that consumers value their product more highly when they have chosen it from a larger range (Mathmann et al., 2017). Regarding payment choice, a consumer generally chooses between 2-3 payment methods (Tamás Briglevics & Schuh, 2020), while retailers have been shown to mainly take into account risk and cost when choosing which methods to offer (Bounie et al., 2017b; Lundberg et al., 2014; Van Hove & Karimov, 2016). In this respect, the critique of choice overload cannot be said to apply to payment choice situations to the same extent.

Interest in the underlying choice processes of consumers and organizations has been growing during recent decades in both research and practice, most prominently behavioural economics and policy perspective (Bruch & Feinberg, 2017). However, because of its normative ground, as already described, there has been less interest from the sociological perspective (Bruch & Feinberg, 2017). The main critique, from a sociological perspective, is how the research field of judgement and decision has largely

ignored social context, using laboratory experiments as the main source of its empirical data. Furthermore, focusing on the individual as the main entity during decision-making entails an asocial representation of behaviour (Bruch & Feinberg, 2017). However, in the classical article by Thaler (1985), practical problems observed in reality serve as a basis for proposed explanations of transaction utility, where prices are dependent on context and relationships and utility is perceived in relation to others, and thus the social aspect seems highly present.

The idea of nudging and libertarian paternalism has not had any significant impact on the payment research field. However, it has been proposed as a way to steer people away from using cash (Van Hove, 2016). The path toward a cashless society, as an eligible one, has primarily arisen on the basis of different calculations, mainly on the part of central banks, which have shown that cash is more costly than electronic/digital payments (Bergman et al., 2007; Hayashi & Keeton, 2012) Furthermore, the predominant use of cash in criminal activity, and for tax evasion, has also acted as an argument for phasing out cash (Rogoff, 2017). Calculations have seldom taken into account the benefits of cash. A source of income and control function for Sweden's central bank is the monopolist position for issuing cash (Örstadius, 2023). However, given the very low use of cash in Sweden, this potential source of income and control function has nearly been eradicated. The eagerness to introduce new types of digital payment instruments, making cash usage more complicated (Betalningsrådet, 2018; Vinnefors, 2016) and hastening the trend, might not have been the 'right' direction to go, using libertarian paternalist vocabulary (Brown, 2012). This is the danger of nudging, the fact that, in many cases, no one knows the 'right' answer fully over time, and thus steering as a policy may not be an eligible path.

In summary, choices are made relative to one another and are highly influenced by social, cultural and institutional contexts, which shape what is perceived as the default option or appropriate behaviour, but which can also be affected by scarcity and poverty.

Theoretical perspectives on platform markets

Network effects and multi-sided markets

Network effects signify the phenomenon whereby an agent's value in using a technology is influenced by usage of either the same or a compatible type of technology by other agents, as has been discussed (Katz & Shapiro, 1985; Shy, 2011). This notion is quite intuitive: If only one person had a phone, then it would be a rather useless technology. It is thus reasonable for value to increase with each agent in a network as more join, provided that they are not in direct competition. Rohlfs (1974) shows, in

his theory on interdependent demand, how different situations and conditions change outcomes. The occurrence of several similar or compatible networks at the same time can be explained by consumer heterogeneity and product differentiation (Katz & Shapiro, 1994). The value that each agent experiences, as well as the network itself, becomes more valuable when possibilities of interacting between agents increase. Platforms make use of network effects, serving two or more different groups of agents that increase their value by gaining access to each other (Carbó-Valverde et al., 2012; Farrell & Klemperer, 2007).

Payment platforms serve as a prime example of a two-sided market, and payment card platforms have been thoroughly analysed as such, including strategies, price-skewness, regulation and lock-ins (Mariotto & Verdier, 2018; Rochet & Tirole, 2006a; Schmalensee, 2011; Shy & Wang, 2011; Valverde et al., 2016). The existence of network effects in payment systems, together with the fact that consumers drive merchant acceptance, has been found empirically as well (Bounie et al., 2017a). Both retailers and consumers tend to multi-home when it comes to payment services, patterns as regards why this is the case have proven difficult to interpret (Shy, 2021). However, as stated in the previous section, this can be attributed to consumer heterogeneity and product differentiation. Or, put more simply, the fact that consumers' tastes differ, with firms tending to compete using product differentiation. Since payments have different functions and attributes, a plethora of different payment systems will be observed, as also inferred by Hirschman (1979).

In the classical sense of externality theory, the individual users of a service network benefit uniformly as the network expands (Katz & Shapiro, 1985). However, this notion does not account for people having a varying interest in which users join the network, or it might even be disinterested in some users joining (Rohlfs, 1974). The general start-up problem for a communications network is getting users onboard, when there are no users to begin with (Caillaud & Jullien, 2003). Another problem here is that sets of users might be content with the existing set of users, and thus have no interest in expansion.

This is why studying the adoption of technology, e.g. payment, which is mostly based on the attributes of the technology itself, e.g. convenience and security, is secondary to the network effects. However, this convenience might lie in compatibility with other systems, and in the fact that other people with whom you want to interact have also connected or will do so.

Platforms and payment

From an economics perspective, platforms are seen as an intermediary. An intermediary is classically a transaction cost-reducing entity, enabling exchanges and shifting risks (Berger et al., 1996). More practically, an intermediary is a matchmaker (Caillaud & Jullien, 2003) and a two- or multi-sided market, engaging in price-setting vis-à-vis two or more different markets, where the classical example is a payment card market (Rysman & Wright, 2015). An intermediary can in a sense 'choose' to be a marketplace, or a reseller, but there are also hybrid modes in between (Hagiu & Wright, 2015). Markets are created by intermediaries (Spulber, 1996, 2019), and intermediaries play a major role in forming relationships in online shopping in terms of risk, communication and reciprocity (Kozlenkova et al., 2017). An intermediary can be a physical platform that is distinguished and recognizable: However, it can also be virtual or merely a meeting space. Often, an intermediary is also closely related to developing an infrastructure which supports exchange. In this way, a payment is an intermediary connected to a financial infrastructure mainly upheld by banks, payment service companies and financial institutions (Westermeier, 2020a).

With the surge in digitalisation, and the growth of large retailer ecosystem platforms such as Amazon and the Alibaba Group, and with their ability to reach far beyond traditional retailing, business scholars have turned to platform theories to explain and understand this phenomenon within retailing (Frishammar et al., 2018; Hänninen et al., 2018, 2019). However, in this field, the roots of platform economics thinking are inadequately addressed in certain respects, placing excessive emphasis on platforms as a novel business model (as also pointed out by Evans & Schmalensee, 2016 and in Paper V of this dissertation). The recent interest on the part of marketing scholars in analysing new digital markets has led to misinterpretation and sometimes also to a superficial understanding of the concept of the two-sided market, featuring incorrect terminology such as 'double-sided' and language implying the intention to 'exploit' and 'design' markets (Cochoy et al., 2020), suggesting that it is the theory itself that is used by companies, and not that it is a theory for analysing a market.

Network effects have implications for competition. Incumbent firms using network effects have an advantage by just being large, which increase switching costs for users. In the example of payments, it is more convenient for both consumers and retailers to use the same, or a compatible, payment system. In the increasingly digitalized economy, questions have arisen regarding competition and platforms with great market power due to valuable data access. For instance, Tucker (2019) argues that digitisation and data-driven companies are actually less subject to network effects in a competitive sense than in the traditional software/hardware case, described in Katz & Shapiro (1985): Since data tends to be non-competitive, it is not an 'essential good' (Tucker, 2019). In

the payment industry, the card market in particular has been scrutinized in terms of whether or not interchange fees are anti-competitive (Bourreau & Verdier, 2019; Ding & Wright, 2017). In this area, merchants have been observed steering consumers toward less expensive payment methods, but not to the degree expected (T Briglevics & Shy, 2014). Thus, merchants tend to benefit or derive value from the payment methods that consumers use.

Value creation, formation and service ecosystem

One concept that has been a denominator of research on services is value creation (Edvardsson, 2022). The main point of service research on value creation has been that value is co-produced in exchange (Ramírez, 1999; Ranjan & Read, 2016a). Value co-creation has also been described as an alignment of practices (Skålén et al., 2015). Likewise, actor engagement is what drives value-co-creation (Storbacka et al., 2016).

Interestingly, payments serve as an example in one of the early articles from the field, "From value chain to value constellation: Designing an interactive strategy", where the example of the introduction of ATMs serves to illustrate value creation; moving from in-person cash withdrawals to using a machine is argued to enable the consumer to create more value as it provides more opportunities to withdraw cash, anytime and anywhere (Normann & Ramirez, 1993). Thus, it is contended here that consumer value is positively affected by increased opportunities and the ubiquitous use of technology, much in the same sense as described by increased retail digitalisation and mobile payment use.

In their review, Ramaswamy & Ozcan (2018) find that there is no clear consensus on how to define value co-creation: However, a prominent feature here is that value creation happens during interactions. This idea seems to have sprung from digital platforms where people and constellations can interact, thus creating value in interaction (Ramaswamy & Ozcan, 2018b). This dissertation aligns this view: But, in the economic sense of incentives, value is created during interactions resulting from actors' incentives guided by their preferences. This take also reflects the "importance of consumer usage processes as a source of value" p. 305 (Ranjan & Read, 2016a). In the particular case of payments, it is clear that the value of a payment arises in use, with the party and counterparty to the transaction.

In contrast to the more prevalent view that value is created (Ranjan & Read, 2016b), this dissertation argues, in line with Echeverri & Skålén, 2011, Grönroos, 2012, Luyen et al., 2022, that value is *formed* in relationships. As the word create has connotations that value can only be positive, this word form is thus more neutral, and allows for both

positives and negatives. The view that value is formed therefore resonates well with one of the main theoretical bases for this dissertation, i.e. that of network effects, which can take both positive and negative representations (Katz & Shapiro, 1994, see also paper V of this dissertation). The focus within service research on consumer-facing technology has mostly been on value-creation in *interaction* rather than *interdependence* (e.g. Llewellyn, 2021). In line with Rohlfs (1974), this dissertation argues that, in order for value formation to take place, interdependent ties between actors in a value formation system are more important than interactions. In Adner, (2017), an ecosystem of structure is proposed, formulating ecosystems as arrangements of interdependent value creation, where considering the structure of interdependence is crucial for bringing insights into value creation. Further on, Jacobides et al. (2018) explain interdependent ties as modularity and complementarity. In research and practice, payment systems have also been described as ecosystems, argued to allow an understanding of the complexities as well as how both competition and cooperation dynamics shape the evolution of the mobile payment ecosystem with a particular focus on growth (Hedman & Henningsson, 2015; Jocevski et al., 2020; J. Liu et al., 2015).

This dissertation acknowledges the concept of the ecosystem as a useful tool for imagining and visualizing the interdependence between different actors and activities. However, focused on studying the outcomes of consumers' and retailers' interdependent relationships through payment systems, ecosystem-thinking is present in terms of the concepts of structure, value and interdependence, also to be found in theories of platform market mechanisms such as network effects.

Theoretical perspectives on retail strategies

Product differentiation and complementarity in retail services

Traditionally, staying competitive in a market such as retail, except for price, one of the main focuses has been on how to product-differentiate and create the perfect mix, range, and assortment to attract consumers, which includes both offering a wide variety or moving towards specialisation (Hirschman, 1978; Hollander, 1966; Tokman et al., 2016). A large range can increase consumer satisfaction (Mathmann et al., 2017) and, when subject to competition, retailers will broaden their product ranges, and with some overlap, they will tend to add the products that their competitors offer (Besbes & Sauré, 2016).

The two basic types of product differentiation are vertical and horizontal. Vertical is when a firm offers a variety of products depending on consumers' differing willingness to pay. Horizontal product differentiation is when a firm offers a variety of products

that accommodate consumers' differing tastes. A simple model of horizontal product differentiation was described by Hotelling, (1929). In his seminal paper, he introduces a spatial model whereby different consumers have different distances to shops and thus, due to travel costs and to accommodate the different consumers, the shop owner must adjust his/her prices accordingly to serve a greater share of the market. Distance is used as an illustration and can be modelled in any variation, e.g. product quality or brands. The basic argument here is that the market power of a retailer increases with a larger range of products aimed at serving a larger customer base. This notion is consistent with the concept of the "the big middle" in the retail literature, where it is contended that the most successful retailers are those catering to the broadest customer segment, and offering a wide range of products (Levy et al., 2005). Furthermore, Hotelling's reasoning is that customers shift gradually away from one retailer toward another, when offerings are adjusted independently (Hotelling, 1929). This is echoed in Hollander's "wheel of retailing" (1960), which elucidates the cyclical nature of retail evolution – i.e. retailers often enter the market with low prices and rise over time through service and quality enhancements, paving the way for newer, low-cost entrants and in doing so perpetuating the retail cycle. These expansions provide a more comprehensive understanding of the strategic implications behind product differentiation and the dynamics of retail market evolution, with its implications for the payment market. Accordingly, the expectation would be that larger retailers have a wider service offering. Thus, the service offering of payments would depend on retailer size, whereby major retailers offer a wide range of payment services. In a more servitised or digitalised retail environment, a diverse array of payment methods would be observed.

One expansion of product differentiation is bundling and/or tie-ins. In early work, product bundling has been shown, theoretically under a monopoly, to increase profitability since the firm is then able to practice market segmentation and attract different consumer groups with differing willingness to pay (Adams & Yellen, 1976). Bundling can occur in the case of both substitutes and complements. In the case of complements, there is interdependent demand between products: Theoretically, under a monopoly, it has been shown that bundling complements is not necessarily profit-maximizing (Lewbel, 1985). Service bundling and complementarity are less explored than product bundling, but offering several services in a bundle, and taking advantage of their potential complementarities, can also create increased customer value (Crawford & Yurukoglu, 2012; N. Y. Lee & Kwon, 2011).

Consumer experience and retail channel integration

With digitalisation, and within retail research, the different sales channels and their potential integration have emerged as an important topic. Beck & Rygl (2015) have classified different types of retail sales channels and strategies in terms of multi-, cross- and omni-channel, depending on retailer channel control and the level of consumer interaction. Retailer strategies in moving towards omni-channel retail have been a dominant topic over the last decade (Galipoglu et al., 2018; Risberg, 2022). In omni-channel research, integration between channels, in order to create a seamless experience for customers, has been emphasized as an eligible path for retailers (Asmare & Zewdie, 2022; Huré et al., 2017). However, this has been challenged by the finding that the customer experience can be improved by inconsistencies and unpredictability (Gasparin et al., 2022; Kranzbühler et al., 2018; Siebert et al., 2020). Indeed, Gasparin et al. (2022) find that connectivity (moving seamlessly between touchpoints) and consistency (coherence in retail elements such as price and range across touchpoints) are separate and independent dimensions and not necessary for creating a positive consumer experience. Retailer collaboration with external parties, e.g. payment solution providers in the service ecosystem, is a crucial part of creating seamlessness in omni-channel (Solem et al., 2023).

Mobile payment integration and providing different payment options has been suggested as one aspect of enhancing the consumer experience in omni-channel (Jocevski et al., 2019; Timoumi et al., 2022). However, given that seamlessness is not a necessary condition, and that it is unclear how it enhances the consumer experience, it is important to explore the other avenues that impact the omni-channel experience. This could involve friction points that add value or notable interactions, as well as capitalizing on the distinct advantages of each channel to improve the overall brand experience. It may be the case that strategically-placed inconsistencies not only underscore the uniqueness of each channel, but also contribute to a more engaging and dynamic consumer experience.

Explanations for the use of the different channels can be traced to both the attributes of technology and situational factors (Wagner et al., 2020). Thus, payment choice in the different channels can be inherent to the payment technology at hand, or the situation. As it is difficult to comprehend all the situational features of an event, most studies tend to focus on certain factors. For instance, M. Kim et al., 2023 focus on convenience, control, time pressure, and order complexity in self-service technology. With the objective of studying impulsive buying behaviour, Badgaiyan & Verma, 2015 conceptualise nine situational variables categorised as either personal or in-store; i.e. personal (money availability, economic wellbeing, family influence, time availability,

and credit card use), and in-store (sales promotion, store environment, friendly store employees, and in-store music).

Summary of the theoretical foundations for studying retail payment service platform use
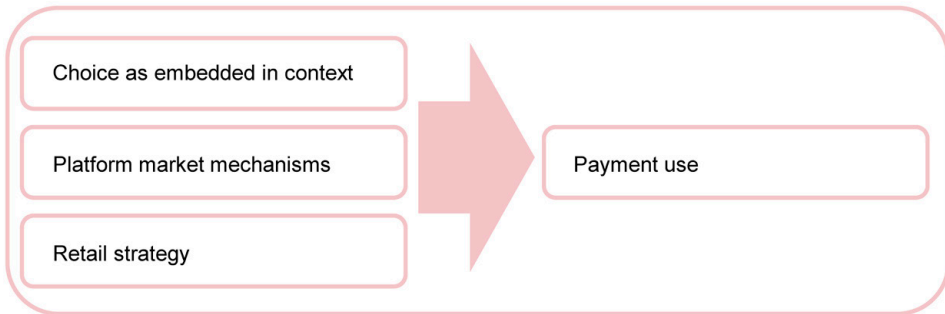
Figure 2.
Theoretical conjectures from these three main areas are used as the foundation for studying, understanding and knowlegde-generating as regards retail payment service use.

Methodology and research process

As many researchers would agree, conducting research from scratch is seldom a smooth sail. It involves criss-crossing, going both back and forth and in circles. As difficult as it is to trace a line of thought, this process must, however, be presented in an understandable and readable format. In this section, the methodology that frames this dissertation is presented. Firstly, the overarching methodology and its ontological and epistemological standpoints are discussed. Secondly, an overview of the research process and data is provided. Thirdly, the research design, data collection, and analysis, as well as the discussion on the generalisability, transferability, and limitations of the studies, with regard to the different papers, are presented and discussed. Lastly, there is an account of the ethical considerations guiding the studies.

Ontological and epistemological standpoints

The philosophy of science view regarding the studies in this dissertation was guided by their respective research objectives and the use of both quantitative and qualitative methods. Thus, this view corresponds to an ontological and epistemological stance using a pragmatist approach (Onwuegbuzie & Leech, 2005). Furthermore, the characteristic of replacing binaries with continua, allowing a range in methods, rather than either/or, is in line with the pragmatist approach of being non-dual (Simpson & den Hond, 2022).

This dissertation also recognises that science can never be completely certain, since the objects of study are both in constant motion and experienced. This standpoint of 'fallibilism' was established for an interdisciplinary worldview using a pragmatic approach (Schabas & Wennerlind, 2011; Simpson & den Hond, 2022). This view resonates well with the fast-moving object of study and the research field of payment services, which are constantly evolving.

I first encountered pragmatism during my first year as a PhD student (2014), when organizing a series of roundtable discussions of 'theories of valuation' at my current department. Among other works, Dewey (1939) was discussed. Later on, in 2016,

during a joint course on institutional theory, actor-network-theory and symbolic interactionism, I gained a deeper understanding of pragmatic philosophy. 'Truth' in particular, as the effect of an act (Muniesa, 2014), resonated well with the notion of payment as an act of value changing hands. Furthermore, a pragmatic approach and valuation theory inspired the framing of Paper I, in which the process of the valuation of new payments was key. In particular, a pragmatic epistemology whereby human purposes are emphasized (Wicks & Freeman, 1998) informed the conceptual model of the consumer valuation process regarding new payment, whereby usage was seen as an outcome of the purpose of using a payment (Rehncrona, 2018).

Throughout my research journey, visualisation has been a part of processing thoughts, including previous literature, positioning, theory and the data material. This was done in both a more and less conscious manner, in terms of using it as a specific methodology (Swedberg, 2016), including numerous sketches, digitally and physically, of two-sided markets, the Swedish retail payment market in particular, and the market as it emerged in the context of the studies in this dissertation. For Paper I, the different codes from the qualitative analysis were cut out in paper and moved around to get a sense of their relationships. This was more straightforward and created more proximity to the data, compared to only working in Nvivo, facilitating the thought process of synthesizing relationships in the data. This corresponds to the pragmatic view, whereby knowledge is constructed in terms of being intertwined with physical interactions with the world, and also iterative exploration (Swedberg, 2016).

A pragmatic approach emphasizes, furthermore, a non-fixed, fluid reality that is shaped and re-shaped by actions and experience (Morgan, 2014). For Paper II, the diary study reflects the pragmatist view of the design of capturing the fluidity and situational choices that consumers make with regard to payment. In Paper III, the study design allows the collecting of retailers' experiences and perspectives on payment, acknowledging that the payment market is shaped by their actions and reactions, thus understanding the retail landscape through the perceptions and experiences of the retailers themselves. In Paper IV, a pragmatist view is present in the focus on practical outcomes, how retailers respond to the uncertainty and competition facing their service offerings. While the data collected represents a certain point in time, it is recognised as an outcome within a dynamic temporal realm of online retailing.

This dissertation has tackled the research problem of how to understand the transformation in and value formation of retail payment services due to rapid digitalisation. Recognizing the fluid dynamic context, the risk of using a pragmatic approach includes succumbing to relativism (Durand, 2002). However, with a delineated empirical material that is analysed using exploratory and pluralistic methods, the problem is analysed from the angle of both the consumer and the retailer. The

knowledge gained is thus the result of shared experiences from a multi-actor perspective. Details of the research design and methods are discussed in the following section.

Research design and methods

At the start of this dissertation, the main questions of interest were: How are payment methods chosen? Why have these in particular been chosen? What is the value of payment in retail? These questions guided the subsequent research design, which then evolved into the research questions presented in the introduction chapter of this dissertation. Building on previous literature from economics, retail and services regarding payments, and the context of where payments are used, decisions on how to collect the data to answer these questions were made. Subsequently, the research questions of each paper evolved during data collection and analysis.
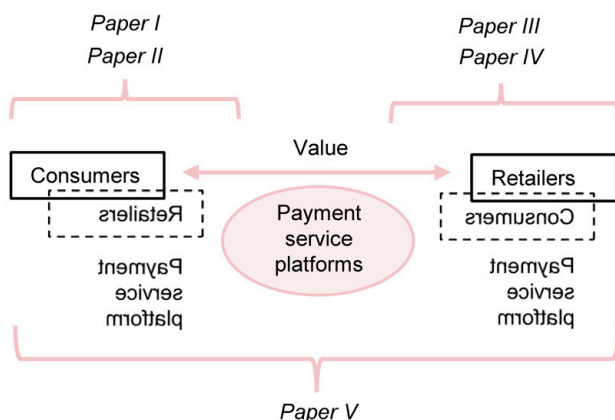
Figure 3.
Illustration of the papers of this dissertation, studying the different sides of the payment market, where each side, including the payment platform, is also reflected in the empirical material from the respective subjects.

The papers included in this dissertation are based on their own empirical data. In Figure 3 an illustration of a payment market, where the different sides are represented is shown. Each paper uses empirical material from the side of the consumers (I, II) or the retailers (III, IV), while paper V takes a more comprehensive market perspective. However, the different sides of the market are reflected in each other, since choices are made interdependently (Manski, 1993, 2003), hence the mirrored texts on each side,

and thus value is formed interdependently. Table 2 below shows an overview of the papers of this dissertation, their research aims, main data and method of analysis.

It is to be noted that material had been gathered that was not included in the analysis of the papers of this thesis. I had the opportunity to gather data through interviews and observations, data that informed the different studies and served as a means of getting more familiar with the empirical field. These are disclosed in the Appendix, where an overview of all the data collected, and at what time, is presented in Table A1. The process of gathering this data involved searching for the methodology and empirical material that best supported the aim of the thesis, as well as gaining an understanding of the field and its context. This began with a broad and flexible approach.

Table 2.
Overview of the papers of this dissertation

	Paper title	Aim/RQ/Focus	Empirical data and data collection	Main methods of analysis
I	Young consumers' valuations of new payment services	Mechanisms playing a role in consumers' decision-making process in adopting a new payment service	Qualitative data from focus group interviews, semi-structured, 55 informants, 9 groups.	Qualitative content analysis, constant comparison, developing themes
II	Payment usage in different channels – a diary study of young consumers	Situational factors' influence on consumer payment use	Quantiative and qualitative data from a diary survey of 121 informants, 8 days with 1,812 transactions in total.	Descriptive statistics, logit regression, qualitative content analysis
III	Exploring retailer perspectives on payment services in the online and offline channels – Indications of the 'must-take' element	What matters to retailer payment acceptance	Quantitative and qualitative data from survey of 95 major retail companies	Descriptive statistics, logit regression, qualitative content analysis
IV	The complementarity of payment and delivery services in online retail	Which service differentiation strategies can be observed and how do payment and delivery services complement each other in online retail	Quantitative data that was 'qualitatively' collected online from 204 retail websites	Descriptive statistics, logit regressions
V	Payment Systems as a Driver of Platform Growth in E-Commerce	Platform economics thinking in research on digitalization	Literature search in WoS and observation of an online retail website	Review of the literature Case example

Is this dissertation a mixed method study?

Yes and no: This dissertation uses an exploratory approach. The studies of this dissertation contain analysis of both quantitative and qualitative data. The different datasets also inform each other and, where due, meta-inferences are drawn. Thus, it bears many similarities with a mixed methods study, while not being one in a strict sense simply because I was not aware of the existence of mixed methods as a research field during my empirical data collection. After the empirical data had been collected, I became aware of the existence of mixed methods and, with a careful reading of mixed methods at different times of analysis, it was ascertained that the mixed methods design is a method in itself, with specific criteria set up by researchers in that particular method field. There are numerous books and several journals in the field, which is quite young and still evolving (Creswell, 2022). With a comprehensive but still not exhaustive reading, the impression here is that there is a constantly ongoing search as regards formulating, agreeing on terminology, and finding strict guidelines as to what qualifies as a mixed methods study (Fetters, 2019; Guetterman et al., 2024; Venkatesh et al., 2016). There are different schools of thought on certain requirements which must be met in order for a study to constitute a mixed methods one. For example, some claim that the data must come from different sources (Davis et al., 2011), while others emphasize the integration of qualitative and quantitative methods in order to increase comprehension, and not necessarily several data sources (Brannen & Moss, 2012). These inconsistencies make mixed methods less useful as a method.

Furthermore, there also seem to be rather strong opinions about how to use terminology, e.g. in Creswell (2022, p. 27), on writing a mixed methods title: 'I recommend neutral language that does not use language related to quantitative research (e.g. variables, determinates, correlates) or related to qualitative research (e.g., explore, the meaning, generate, understand, discover)'. The language being exemplified as regards quantitative research is quite distinct: However the language being exemplified as regards qualitative research, i.e. explore, generate, understand, and discover, is very much in use when it comes to describing quantitative research as well (Anguera et al., 2018). This shows how the actual dichotomies are forcibly being upheld by the mixed methods paradigm, while simultaneously aiming to tear them down.

Nevertheless, the mixed methods field provides great guidance and distinctions for conducting analysis. The studies of this thesis have gained their inspiration from the mixed methods paradigm (Johnson et al., 2007), while, not being classifiable as one in hindsight. Comparing the approach used in the studies of this thesis to lists of definitions of mixed methods, as well as to 'what mixed methods is not' (Creswell, 2022; Creswell & Plano Clark, 2017), the studies of this thesis can neither be said to fit perfectly with any of the described definitions nor to fit with not being a mixed

method study. Thus, it will not be labelled as a mixed method study because it was not designed as such from the outset: It would not make any sense to pin it to such definitions afterwards. The lists and discussions regarding what a mixed method is not have a tendency to become more and more extensive, which is quite inevitable and shows the difficulty of demarcating what it actually is (Flick, 2017). Using different standards, mixed methods as a method runs the risk of inconsistent assessments.

This dissertation's methodology is exploratory, using both quantitative and qualitative methods. The following section will provide detailed descriptions of and discussions on the methods used in each paper, including their purpose and rationale. Data collected for Paper I Studies II and III, and in certain respects also IV, allowed both qualitative and quantitative analysis.

Data collection and analysis

Focus groups (Paper I)

The main research question for Paper I, that guided the study, was how consumers choose and value new payment services in the mobile retail channel. For this purpose, the qualitative approach of focus group study was chosen.

The focus group material used in Paper I (Rehncrona, 2018) of this dissertation was collected together in a research group at a newly-established research centre, the Centre for Retail Research, during December 2014 and January 2015. The research group[9] consisted of several researchers from different backgrounds, where three persons, including me, a professor, and a PhD were involved in data collection. A researcher from another group also took part in formulating the interview guide and the procedures for the focus groups. The PhD was assigned with leading a data collection initiative that would be available to the whole group. Thus, several researchers were involved in designing the interview guide, whereby the overarching theme for the interviews was 'how the informants shop on their smartphones'.[10] The interview guide also contained questions on mobile payments specifically. The participants received a gift card for the cinema as an inducement to take part in the study.

I contributed to data collection for the focus group primarily by proposing the idea of studying how consumers shop *on* their phones. This idea came from the fact that much

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[9] Financed by Swedish Retail and Wholesale Association, through the Centre for Retail Research, Lund University.

[10] The material collected also resulted in the paper by Fuentes & Svingstedt (2017)

of the reviewed literature focused on using mobile devices for in-store shopping, and also as a tool, and thus not so much as a separate retail channel (Spaid & Flint, 2014). Secondly, I contributed to formulating the interview guide by conducting a literature search and collecting relevant research literature on the subject, as well as news articles and trade journals, and including a set of questions on payments. I took part in four of the first seven focus groups, leading one focus group alone one of the focus groups together with the professor, and I was present at and active in two focus groups together with the PhD. Some of the focus groups were conducted simultaneously, and thus required the researchers to divide their time in order to lead them.

I transcribed one of the focus groups, while the rest of the audio files were transcribed by a consultant. The focus group transcribed by me was richer in comparison to the consultant's transcriptions in the sense that it differentiated between who was saying what, and included pauses and expressions. This facilitated the interaction analysis, as regards separating who was saying what. But, whenever necessary, audio files were revisited, in the case of the other groups, to determine the dynamic between the participants. The last two focus groups were comprised only of men and conducted by the PhD. I was not included in discussions about conducting the last two, but I subsequently gained access to the material and included these two focus groups in the analysis in Paper I, they were based on the same interview guide.

Since the interviews were semi-structured, the moderator was important for steering the conversations (Denzin & Lincoln, 2018). Comparing the different focus groups, the fact that the moderator differed between the groups could have had some effect on the group discussions. The only pattern that could be noted was that there were times when the informants explained some of the applications that they used in more detail, when there was a greater age difference between the moderator and the group informants. However, this did not affect the emergent analytical themes.

Table 3 contains a description of the focus groups. The informants were students doing the undergraduate program in retail service management at Lund University. The participants were of similar backgrounds and with an interest in retail, which provided some leeway for discussions without having to explain their different backgrounds to each other, also avoiding the problem of one participant becoming dominant (Kitzinger, 1994; Smithson, 2000). Thus, this was a convenience, but also a rather homogenous sampling. This group of young students were a good sample because they were involved in shopping by phone and were also considered early adopters that could point to trends in how the payment market for mobile commerce was being shaped at the time of the study.

Table 3.
Focus group description

Focus group	Women	Men	Aged between
1	6		20-23
2	5		20-28
3	7		20-23
4	3		21-22
5	7		20-23
6	5	1	19-23
7	8	1	20-25
8		8	19-27
9		4	21-29
Total	41	14	

Analysing the focus group material was a learning curve for me as, at the time, I was not well versed in qualitative analysis from higher education when first encountering the material. Part of the material was analysed as part of a PhD course in qualitative methods, and it was further analysed in a subsequent PhD course on applied qualitative analysis. This moved the analysis forward and strengthened the degree of rigour due to the thoroughness, testing different qualitative methods and settling for what suited the material, but also being able to compare interpretations with other researchers. The analysis was done on paper during course work, and with the transcribed interviews printed. The focus group material was subsequently re-analysed using the Nvivo computer program, with qualitative analysis developing overarching themes and sub-themes by means of a constant comparison method and coding schemes (Schreier, 2012). The Nvivo program allowed a detailed overview and more efficient sorting of the themes and codes, compared to doing it manually on paper. The different codes were also cut out manually, on paper, and moved around in order to visualise the results (Swedberg, 2016). To reduce potential moderator bias, the participant interactions were in focus (Kitzinger, 1994), especially disagreements and agreements, rather than answers to direct questions by the moderator.
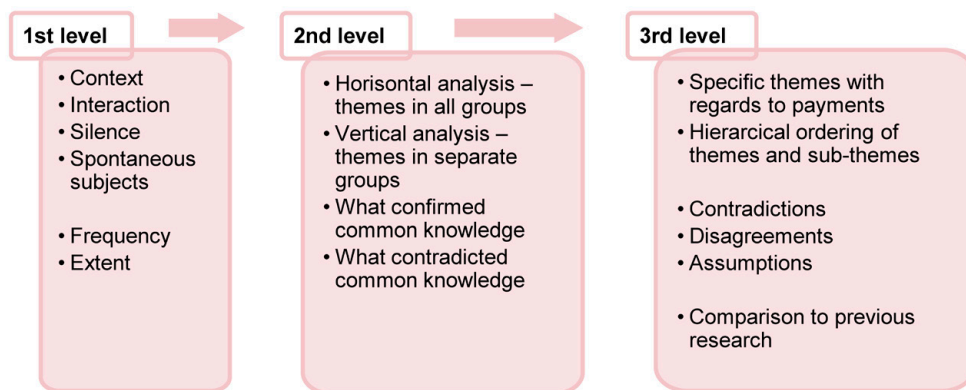
Figure 4.
Process of qualitative analysis in Paper I.

Being part of a research group for this round of data collection had its pros and cons. It was an opportunity to learn from other researchers with different backgrounds. It provided access to more financing for data collection than was otherwise available to PhD students. But it proved challenging to combine the different interests and project ideas. The outcome was a positive one with access to empirical material that would have been time-consuming for a single researcher to conduct, and the discussion topics for the interview guide were fruitfully developed by several researchers.

In Paper I, there is a sentence: "the context of mobile shopping provided a fertile basis for discussing mobile payments" (p. 388, Rehncrona, 2018). To explain further what this means, the informants were able to discuss their experiences of payment in the context of purchasing products and services. Previous studies within payment research had mostly focused on factors of adoption but less so on payment as a means-to-an-end, recognizing its role in the context of shopping. In the focus group material, payments emerged as a pivotal part of the 'journey' toward making purchases using a smartphone, even before any specific questions on payment had been asked. Thus, analysing payment in the context of shopping in a specific channel, i.e. the mobile, proved to be a successful approach to understanding the consumer process of valuation when using new payment methods, and of the role of network effects in a more qualitative sense.

Diaries (Paper II)

In Paper II, *Payment usage in the new retail environment – a diary study of young consumers*, the idea was to further the insights gained in Paper I, expanding on how consumers pay in different channels. To understand more how individuals pay across

channels, a diary method approach was deemed appropriate. The diary method is able to capture rich data, recording events close to their occurrence and providing the possibility for subjects to reflect on their doings (Bartlett & Milligan, 2015). Previous use of diaries in payment research includes investigating whether, when and how merchants steer their customers toward using certain payment methods (Stavins & Shy, 2015). Using diaries in the study for Paper II provided an opportunity to gain more knowledge of actual payment use on the individual level, chronologically structured in daily lives.

Since the main objective was to gain knowledge of how consumers pay in different channels, it was important for them to fill in which channel they had purchased in. In Figure 5, an example of how a page from the pre-printed diary was laid out is shown. The semi-structured diary was designed to allow both quantitative and qualitative analysis (Alaszewski, 2006). The length of diary was 8 days in order to capture individual patterns and temporal dynamics such as weekday/weekend effects (Bolger et al., 2003), while simultaneously trying not to tire out the informants as too lengthy diary-keeping can prove disengaging (Bolger et al., 2003; Markham & Couldry, 2007). There were examples of what may have been diary fatigue, or just disinterest in the collected data, whereby some informants did not fill in the whole week. However, there were no specific patterns to the missing data, thus all the diaries were used. A few entries were omitted from the analysis, five purchases, i.e. three via a TV, two via a game console and one via an iPad. This is because they did not fit into the main channel categories: This had a negligible impact on the analysis, being so few observations and out of scope as regards the research aim. If the objective had been to find anomalies, or examples of shopping channels not often thought of, these data points would have been very useful. It was thought to be somewhat surprising, though, that the iPad as a device only appeared once in the data.

The sample of participants was a convenience sample, with a higher representation of women rather than men (approximately 30 percent men). This means that there is only a limited possibility of generalising the findings to a larger population. However, given the exploratory nature of the study, the findings provide some insights into how young consumers, i.e. students, make payments in different channels.

22/1 Monday	Purchase 1	Purchase 2	Purchase 3	Purchase 4	Purchase 5	Purchase 6
Amount:						
Payment method:						
Product/service:						
Place of purchase:						
Channel of purchase/device:						
Reflections						

Figure 5.
Example of a diary layout for one day. The original was in Swedish, but is here translated into English.

Since the informants wrote in their own words about what the purchases entailed, to be able to quantify the findings, it was necessary to categorize the entries. Products/services were categorized according to conventional classifications, with a few departures for the sake of analysis. This facilitates future replicability and comparisons. A digital diary version, containing structured alternatives, would have saved time in terms of data work, but would have entailed financial cost in terms of paying for such a service, and perhaps could also have made the informants more concerned about their data privacy, thus reducing the response rate.

The diary data was analysed quantitatively and qualitatively. Descriptive statistic was analysed to reveal patterns, on a general level, regarding how the informants used payment methods for the different product categories, channels, and transaction values. Furthermore, there was also a logit regression, with average marginal effects in order to gain insights into how likely certain payment method use would be, depending on the situation. Here, the situation was proxied from the reported specifics of each purchase, as shown in Figure 5 of the diary. This model was appropriate since it is for discrete choice with binary outcomes (McFadden & Train, 2000). The quantitative analysis gave an overview of how the studied group used payment methods in different situations, as well as the likelihood a certain method would be used depending on the situation.

Several other ways of analysing the material were tried, including creating consumer profiles and the interaction effects of the situational variables. For example, Borzekowski & Kiser (2008) analyse consumer payment choice using a logit model classifying respondents as follows; frequent debit user, infrequent debit user, and non-debit user. The equivalence for the present study was creating 'cash-user' and 'non-cash user'. There was a significant effect of 'cash users' on transaction value, showing that those that used cash were also more likely to purchase higher value products in general,

which was an interesting finding. However, creating consumer profiles was deemed not to be in line with the objective of the study, and thus that analysis is not included in the paper. The interaction regressions aimed to investigate how likely it would be that a given payment method was used for certain products in a certain channel or transaction value (Berry et al., 2010). The interaction variable analysis was too complex for the size of the data material: However, with a larger dataset, sample and observations, this could be a viable way forward as regards explaining how certain situations affect payment use.

Together with the co-author of Paper II, the written reflections in the diaries were analysed using content analysis, developing themes and sub-themes guided by the research question (Kuckartz, 2019). There was some difficulty deciding which way to 'cut' the analysis, the levels and hierarchy of the different themes, whether the main themes should emanate from the object of payment or a described situation. During the second round of analysis, payment method per se was decided to be the main point of interest as regards where other subthemes emerged. Depending on which grid and perspective is used for the content analysis, the outcome will most likely differ (Schreier et al., 2019). Thus, if another researcher with a different research question were to analyse the same data, other results might emerge.

The main benefit of using diaries, that apply to this study, is to capture temporal dynamics and within-person processes (Bolger et al., 2003). Since the research questions sought to find out how payments were used for different products, services and in different channels, the complexities of how consumers navigate in the retail landscape were able to be captured in both a quantitative and qualitative way. The qualitative analysis of the written reflections in the diaries added more insight and understanding to the quantitative analysis of the different patterns of payment use. However, the informants are not always aware of the reasons for their doings, or they construct reasons for them (Charmaz, 2006). Thus, the findings underpinning the meanings and, perhaps, contradictions between what the informants say and do become a vital aspect of the analysis, and it will be necessary to engage with the data (Denzin & Lincoln, 2018). The constant comparative method and iterative coding, in collaboration with another researcher, was prolific as regards creating an understanding of the informants' use of the payment methods.

One feature that became apparent during the writing of this paper was the fact that conducting interviews with informants, once they had filled in their diaries and had more time to reflect on their behaviour, would have added even more depth to the analysis. However, this might affect how the participants reported their purchases, if they had to sit face-to-face with a researcher and discuss things afterwards (Bartlett & Milligan, 2015). With the objective of achieving further insights, and also investigating

COVID-19 pandemic effects, a follow-up was planned for two years after data gathering. Some of the informants were contacted and four focus groups were conducted with those agreeing to participate. During these group discussions, they were asked to reflect on their purchasing behaviour now as compared to two years ago. However, this was deemed to be too detached from the original data collection, and thus not workable to incorporate into the analysis for Paper II, and also not in line with the original aim of the study.

Survey (Paper III)

In Paper III, data from a survey sent to major retailers in Sweden was utilized. This survey was initiated within the same research group as for Paper II. The aim here was to gather a range of questions across different subjects and collect a large body of data that would benefit many of those in the research group, and it was decided to use a market research firm to do the actual data collection. The author had a clear idea of the questions to put to the retailers, i.e. focusing on their payment services. Two other researchers in the group came up with questions on these retailers' practices for obtaining information about their customers, and on customer returns. During a later stage of consultations with the market research firm, with sets of questions on these different themes, it became clear that this would be too complex to manage as it would mean consulting several different people at each company, and the questionnaire was too comprehensive. The solution was to do two separate surveys.

I took a course in survey research design while formulating questions for the survey, which proved helpful as feedback from experienced survey researchers was obtained. It was preceded both by interviews at a major retailer and by a literature search, which informed the research objective. The survey was designed in line with the research objective, i.e. understanding more about retailer conditions and strategies as regards offering payment services, and potential differences between the retailers. This guided the design of the questions for the survey. To facilitate responses and analysis, and to ensure equivalence, the majority of the questions were close-ended. For example, listing different payment methods, where respondents would say yes or no to accepting these, followed by an open question as to whether or not they accepted additional payment methods. This was to ensure that no accepted payment methods would be missed.

The survey was telephone-assisted, entailing that a person from the market research firm called the respondent company asking to speak to whomever was responsible for the company's retail payments. Of 278 companies, 95 agreed to respond, and 89 completed the survey, equalling a response rate of 32 percent, which is acceptable for a telephone-assisted survey (Wolf et al., 2016). A few respondents said that it was difficult

to answer some of the questions off the top of their heads, e.g. how much each payment method would cost them at a given transaction value. The respondents did not provide an answer to all the questions, with some being key variables. This affected the survey's generalisability. One possible solution here would have been to ask the respondent to find out the answer and report back at a later time, or to connect the interviewer with someone at the company with the necessary information. However, the market research firm did not take these steps. In hindsight, it may have been beneficial to make follow-up attempts, or to send a written version of the survey which the respondent would then have been able to answer in his/her own time. On the other hand, this might have meant data collection not taking place at the same time and that the responses possibly changing, which matters as regards the equivalence between the respondents (Groves et al., 2009).

Generally, since the survey included a large proportion of the target population (all Swedish retailers with an annual sales turnover above 50 million SEK), and there was no response bias concerning turnover or retail category, the main findings could be considered fairly representative and generalisable to the larger population of similar-sized Swedish B2C retailers. With that said, there are other forms of potential biases that have not been accounted for. In terms of validity, the questions were quite straightforward, i.e., payment method acceptance, volume of acceptance, and cost of acceptance. Thus, the questions reflect their intended purpose. As regards the question concerning risk of payment, there could, perhaps, be some differing interpretations, but with this question formulated in terms of financial risk to the company, there should be little room for misinterpretation. As regards customer price sensitivity, this variable measures how the respondent estimates the number of customers it would lose when raising its prices by 10 percent. Thus, this variable does not measure the 'true' price sensitivity of the customer, but how the retailer estimates the price sensitivity of the customer. This measure is, nevertheless, in line with the research objective of investigating the retailer perspective, whereby how the retailer perceives its customers would thus influence its choice of payment service offering.

The study has used an exploratory abductive approach, iterating between the empirical data, the theoretical points of departure, and previous research to come up with explanations for the factual situations in the form of hypotheses (Forster, 2014). Summary and descriptive statistics allowed an overview of the data material, gaining an understanding of the general patterns and characteristics of the data. It is important to view the distribution of the main variables and to find a way to model these in order to facilitate analysis so as to meet the objective of the research. For instance, the box-plot graph (Figure 2, Paper III), shows how price sensitivity is distributed with respect to retail category, revealing an intuitively-plausible discrepancy and sufficient variation for

further testing to be done. In contrast, the acceptance of card payments had no variance in the data, i.e. almost all the respondents accepted them, leaving no room for explaining any variation. However, this is an interesting finding in itself, since previous research in other countries sets out to explain card acceptance variation, and this is not an issue in Sweden (Bounie et al., 2017a). The costs and volumes of the different payment methods showed sufficient variation for them to be analysed: However, the number of observations of each payment method was relatively low, bringing low statistical power and a weak ability to make inferences. Thus, the measure of the must-take element should be viewed as a proposed measure which is tested in the context of this survey, and in relation to previous research estimations (Bounie et al., 2016; Bourguignon et al., 2019; Rochet & Tirole, 2011).

The data was further analysed using multivariate-logit regressions. In the model, payment method acceptance, as conditional on retailer characteristics, was tested in the brick-and-mortar and online channel, respectively. The logit model is a discrete choice model, developed to draw statistical inferences from a population of individuals in order to estimate individual choices, whereby the outcome is nonlinear (McFadden, 1973).[11] In the paper, the estimated coefficients are interpreted as an average marginal effect. One advantage of calculating average marginal effects is that you get a straightforward interpretation of what happens to the dependent variable when the independent variable changes by one unit in terms of probability (Uberti, 2022). Furthermore, it also allows comparability between the independent variables, and applicable across observations, making the summary measure representative of the sample more intuitive compared to the log odds ratio (Norton & Dowd, 2018). All in all, it was a suitable model for analysing the data with binary outcomes, in a context of retailer payment method choice: On the downside, there are limitations to the model's ability to capture complexity (Cameron & Trivedi, 2010), i.e. the larger the number of independent variables, the larger the sample size should be. A larger sample size also improves the reliability of the effect size metrics. For many of the regressions, the number of observations is quite low, thus reducing the reliability and generalisability of the effects. However, it can be said that, for the observations included, the effects are reliable, as the summary statistics show: The outcome variables are neither rare nor very common (Uberti, 2022).

The content analysis of the open-ended answers regarding adopting/discontinuing a payment method were coded in accordance with the main reasons stated by the

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[11] Linear regression models assume that the conditional distribution of the dependent variable conditional on independent and variable is normal, which is not the case when the dependent variable is a binary 0/1-variable. This means that the model is a better fit with the data and that estimates will be more efficient (Cameron & Trivedi, 2010).

respondents, and then categorized with respect to internal reasons (company) or external ones (market). The answers, despite being open-ended, were quite short, from one to two sentences, and thus the qualitative material was not rich in the traditional sense: However, it still provided enough insights to enable the conducting of a qualitative analysis (Kuckartz, 2014).

The survey in question targeted major retailers (over 50 million SEK in annual sales), with this limiting the number of retailers in the population as there are actually not that many major B2C retailers in Sweden, with the population being roughly 300 (HUI Research, 2018). Major retailers were chosen since they were assumed to have more influence over the payment market and because several stores could be captured by asking the main organisation. However, it was difficult to get answers from the retailers, and the ones that did answer did not, or could not, respond to all the questions. Therefore, the statistical power of the findings is often weak. Despite the low response rate, the data that was collected is still valuable. The retailers who did respond to the survey run many stores and account for a significant proportion of sales. This means that, while the number of responses may be low, the impact of those who did respond is high, giving weight to the findings on the basis of their market influence. Open-ended questions allowed the respondents to answer in their own words, as opposed to choosing between predefined options. These answers provided qualitative data that gave more context and depth to the quantitative numbers. The insights gained from these open-ended responses were valuable, revealing trends, motivations, and perspectives as regards choosing a payment service offering.

In summary, the survey faced challenges as regards participant engagement and comprehensive responses, thus limiting its statistical significance. Nonetheless, the input provided by the respondents represents a significant market share, also providing qualitative answers that still offer important insights into the Swedish B2C retail landscape.

Collecting data from websites (Papers IV and V)

In the case of Paper IV, the objective was to investigate the complementarity of online retailers' offerings in respect of payment, delivery and return services. To this end, data on which services the online retailers were offering, and under which conditions, was required. The study built on findings from Paper III, whereby one finding was the difference between online and offline payment services. This provided the inspiration for investigating in more depth the conditions of online retailers' payment services. The most important obvious difference between online and offline retail is the distance between retailer and customer, which entails uncertainty. Thus, the conjecture in the

paper was that a combination of payment and delivery services is offered in order to mitigate this uncertainty, and also as a competitive strategy employed by retailers.

A sample of mainly pure-play online retailers was chosen in order to exclude retailers that are mainly brick-and-mortar and also have an online channel, because their business models differ considerably in terms of distribution, customer experience and flexibility (Treadgold & Reynolds, 2020). The sample was selected from an online database listing all Swedish companies, with the first 100 being the ones with the highest sales turnover, and the rest 104 being randomly selected from the same database. This combination of purposive and random sampling ensured the inclusion of the most prominent online retailers, as well as a wider range of online retailers, in order to capture diversity and improve the generalisability of the results. The sample size of 204 was deemed substantial enough to conduct meaningful statistical analyses, and to allow the identification of patterns within the data. The exact population of online retailers in Sweden was difficult to determine, since the companies listed in the database have usually done their own classifications of themselves (leading to misclassification, e.g. one-person consultants selling services and not products), with some not actively operating and others having mainly B2B operations. The raw data in the database amounted to 2,552 companies, but the population is expected to be smaller. In a consultancy report mapping the online retailers with the highest growth rate in 2020, there are 995 of these in the population with a sales turnover above 1 million SEK (Svea Bank, 2021). The sample for this study includes 172 companies with a sales turnover above 1 million SEK, and eight of them below that number: For the remaining 24 companies, the sales turnover numbers were not obtained and thus they were omitted from the regression analysis, but this did not significantly affect the distribution of the sample in terms of retail category or average transaction value. The sample size and method used in this study do not allow an exact representation of the entire population of Swedish online retailers. However, the insights gained from this study are still relevant to the general population of Swedish online retailers.

As described in the paper, the web content analysis demanded a little bit of deeper digging at times to find out which payment methods and delivery services were being offered. In these cases, a fictitious purchase was occasionally necessary. This helped the researcher to get a sense of the check-out services, which contributed toward contextualising the results by seeing the choices that a consumer faces when purchasing, in addition to gaining an understanding of how the services were marketed to the consumer.

The paper considers the services' complementarity by investigating the correlations between retailers' tendency to offer free services; i.e. shipping, returns, invoicing and costly payment methods. It is thus assumed that these services are correlated because

they are offered at the same time as a strategy for increasing consumer-perceived value and decreasing perceived risk in order to increase sales. Further, it is also assumed that this incurs extra cost for the retailer, thus being offered only as a result of competitive conditions. Other reasons for a significant correlation could also be suggested: However, the robustness of competition theories underpins such assumptions.

For Paper V, a web content analysis of an online retailer, using the payment service provider Klarna, was used to illustrate the theoretical discussion on the rationale for providing different payment services in online commerce. This idea sprung jointly from the different papers, where invoicing in online retail emerged as a prominent feature of shopping online.

Ethical considerations

Ethical considerations arise during all stages of research when studying people (Creswell & Plano Clark, 2017). The privacy and anonymity of the research participants was protected during the research process in accordance with scientific principles. Clear information regarding purpose and explicit consent was disclosed to all the participants.

The focus groups were recorded, transcribed, and anonymised, whereby recordings and transcripts were stored on a server belonging to Lund University, managed by the lead data collector, and whereby only the researchers involved were provided with access.

The survey collected by the research firm was stored privately and anonymised to remove specific company names in order to ensure confidentiality.

The diaries were anonymous and written on physical paper. The entries were manually transferred to Excel, where each diary was given a serial number. The entries were extremely unlikely to be traceable back to any specific individual should anyone attempt to do this, and the data was also stored locally on one computer.

Web content analysis. The data collected from retailer online stores was publicly available and accessible. In Paper IV, the results presented do not disclose the identities of any specific retailers.

Presentation of the appended papers

Introduction to the appended papers

The following section presents summaries of the individual papers, wherein their main findings, contributions and implications are discussed. The papers each contribute to the overall purpose of the thesis, i.e. understanding the use of retail payment service platforms in the era of digitalisation. The first two papers focus on the consumer side of the payment market, whereas the subsequent two papers have a retailer perspective. The first paper contributes toward understanding the valuation process of new payment services and, in particular, when purchasing on mobile phone, and the role of network effects. The second paper goes further and contributes toward understanding how payments are used for different situations, bringing insights into the 'pain of payment' literature and the workings of network effects empirically, and it also confirms multi-homing. The third paper, contributes toward understanding payment use by investigating how retailer characteristics matter to payment acceptance and it also proposes a measure of the 'must-take-element' of multi-channel retail, discussing different conditions in the online and offline channels. The fourth paper goes deeper into the online channel, contributing to how payments can be understood as complementary to other services and showing the different conditions of retailers in the online channel. In the fifth paper, concepts from network and platform economics are discussed with greater scrutiny in relation to the literature streams in retail, services, business and marketing against the backdrop of digitalisation and payments. This contributes toward how the era of digitalisation can be understood in terms of established concepts, network effects in particular, and their translation in the trending topics of service and platform ecosystems.

Paper I. Young consumers' valuation of new payment services.

The ongoing digitalisation has given rise to new retail channels, with the increased use of mobile devices for shopping (Spaid & Flint, 2014). Emergent mobile shopping has highlighted the use of mobile payment as well (Taylor, 2016). The payment situation plays a crucial role in whether a consumer decides to go through with a purchase or

not. Previous studies have shown that payment issues were a prominent reason for consumers not following through on an online purchase (Kannan et al., 2016). Much mobile payment research has focused on the factor of adoption (Dahlberg et al., 2015). Less explored is consumers' reasoning behind their decisions to use a mobile payment service or not in different contexts. In this study, mobile payment service is defined as a monetary transfer between two parties using a mobile device (smartphone), and through an intermediary. Intermediaries, or platforms such as payment, have been theorised as two-sided markets with network effects: Individuals' or groups' value as regards using the platform depends on the quantity and quality of other members and groups, or on other services the platform provides access to.

This study used focus group material consisting of nine groups of 55 consumers aged 19-29, where 41 were women and 14 men. The participants were of a similar background and had an interest in retail since they were all students doing the undergraduate program in retail service management. The interviews were analysed using content analysis, with emergent themes focusing on the participants' interactions in terms of consensus and non-consensus.

The two most important themes that emerged from analysis were *convenience* and *security*. Other sub-themes were control, including lack of control, privacy, knowledge and information, trust, time, effort and cost. Analysis showed that both convenience and security were closely interrelated, whereby a payment process that was too fast was perceived as unsecure due to the perceived lack of control. Mobile phones in themselves were also seen as a risky device for handling payments because of their interconnectedness with different systems, in addition to becoming indispensable in terms of replacing a wallet. Interaction analysis showed that different individuals had higher/lower thresholds regarding the perceived security and convenience trade-off and, in conversation, they tried to convince each other about their differing standpoints. This showed the social aspect of network effects, i.e. how individuals more averse to using technology can be convinced by other users. The convenience-security trade-off was also dependent on the context of use, where it was used, and for what reason. Important to the valuation process, as well as what determined whether a service was used or not, was the end goal of usage being worth the effort involved, i.e. not the benefit of the service itself but its purpose of use.

This paper finds that new payment services are valued in relation to existing services or to those already in use by consumers. A payment service is valued differently depending on the situation, context and goal of the payment. In particular, a new payment service often needs to add an extra sense of security or assurance in order for it to be used as an alternative. This puts it in a predicament since its selling point is most often providing faster payment, where its very speed can be perceived as uncertain. Here, this perceived

uncertainty can be mitigated by network effects, learning and familiarity with the brand. Or also by means of adding friction that does not interfere with convenience or consumer preferences. The process of valuation is illustrated by a scheme involving how different factors play a role in whether or not consumers use a method of payment.
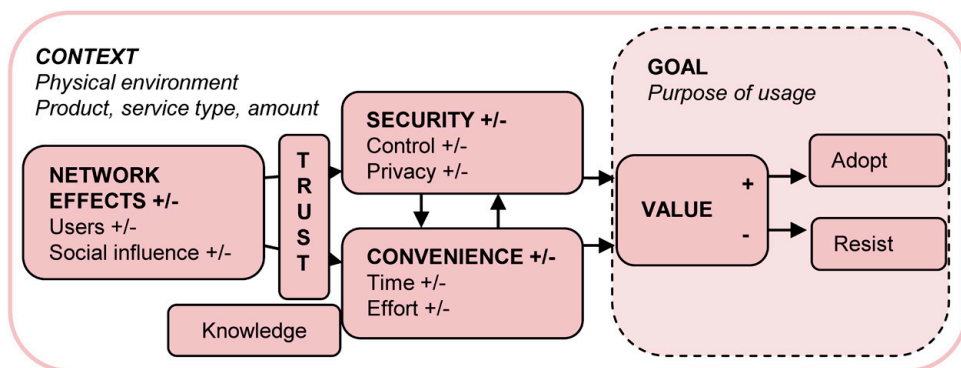
Figure 6.
Valuation process for using a new payment method

The study contributes to research on payment adoption and use by adding nuances to the process of the valuation of new payment services by individuals who are expected to be more disposed to technology adoption and it also shows the relativity and variability of the different factors at play. It adds to the literature on retail shopping channels, highlighting both the importance of and the trade-off between the convenience and security of the payment in order for a purchase to be made. Furthermore, it also expands the concept of network effects into a more social dimension by qualitatively and empirically showing its presence in social interactions within groups during the use of new payment services.

Paper II. Payment usage in the new retail environment – a diary study of young consumers

The development of retail during recent decades has been marked by digitalisation, which has led to a more ubiquitous retail environment (Helm et al., 2020; Manss et al., 2020). As a result, consumers now face more choices than ever before when it comes to purchasing and payment methods. A prevailing theme within retail research is the move towards omni-channel retailing, and the providing of a seamless experience to consumers (Gasparin et al., 2022; Roggeveen & Sethuraman, 2020): Here, payment has been acknowledged as a facilitator, but seldom been the focus of analysis. The role

of payments in how consumers navigate this new environment is less understood, with a significant gap in the literature regarding how individuals choose payment methods across the different channels, especially given the complexity of modern retail ecosystems. While much of the existing research has focused on factors influencing mobile payment adoption, the nuanced behaviours of consumers, when selecting payment methods for in-store versus online purchases, remain largely unexplored.

To increase understanding of how certain situations and channels matter to payment service use, a diary study was conducted in which young consumers recorded their everyday purchases. The resulting data consisted of 121 consumers aged between 20 and 26 years who recorded a total of 1,812 transactions, with 67 also writing their reflections on their purchases. The data was analysed using descriptive statistics to gain an overview of payment patterns: Furthermore, a logit model with average marginal effects was run to investigate whether or not there were any significant relationships between payment and situational factors. The data, consisting of consumers' reflections, was analysed using content analysis and the constant comparison method. Subsequently, the patterns from the quantitative analysis were compared to the findings from the qualitative analysis.

The study found that use of a payment service varied with the situation. Cards were the most dominant payment method across all the channels and types of purchase, but to varying degrees. This variation can be understood in terms of convenience and security, while convenience is often connected to the network effects and complementarity of the payment method in relation to the situation. It is convenient to use payment methods which are accepted and available in a wide variety of establishments, which increases their usability. In addition, consumer attitudes and preferences regarding payment are also an outcome of the specific payment service characteristic and the purpose of the purchase. Therefore, this study adds to the studies challenging the omni-channel integration imperative by finding arguments against full-channel integration.

Analysis showed that there was a general ambivalence among the informants as regards wanting convenience, smoothness and fast payment, while simultaneously sensing the weight, or friction, of making a purchase, which involves both an understanding of and ability to keep track of their expenditure. This ties in with the 'pain of payment' literature, which investigates consumers' propensity to spend when using different payment media, where credit cards have been found to increase spending when compared to cash and debit cards due to the less transparent character of cash. However, younger consumers who are less used to cash might find it less transparent than card payments. In using card payments, they can keep track of their expenditure via their bank accounts, easily accessed on their mobile phones or computers, while cash is less known to them.

The study contributes toward understanding how payments are used during a certain period of the digital transformation of the retail environment, and toward how payments are valued in that particular environment. It also adds to payment research using diary surveys, by enriching the data with individual consumer reflections. The patterns provide potential directions regarding which paths the digital trend might take. This study can usefully be extended in terms of its scale whereby the reasoning behind the choices can point to how network effects and interdependencies influence choices.

Paper III. Exploring retailer perspectives on payment services in the online and offline channels - Indications of the 'must-take' element

As digitalisation transforms the retail landscape, new sales channels and innovative payment solutions evolve in tandem. Retailers are traditionally unused to bringing innovations to market, instead adjusting their offerings according to market needs (Hristov & Reynolds, 2015; Pantano, 2014). With retail digitalisation, faster adoption, due to the increased competition and shrinking margins, makes faster adaptation inevitable (Ratchford, Soysal, & Zentner, 2022).

The payment market has been studied as a two-sided platform market, with the retailer on the one side and the consumer on the other, and with the intermediary payment service in the middle. In this configuration, retailers may have to offer certain payment methods in order not to lose sales, even though these methods are costly; the must-take argument, which emphasizes their interdependent relationship with their consumers (Rochet & Tirole, 2011). It is difficult, however, to empirically establish when this is the case (Bounie et al., 2017b). Also, little data is openly available, on retailers' costs, regarding the different payment methods, thus inhibiting investigation of the 'must-take cards' element. Furthermore, explanations of payment method acceptance, on the retailer side compared to the consumer side, are lacking (Van Hove & Karimov, 2016). This limits us in understanding how retailer characteristics influence payment method acceptance, and how interdependent the relationship is. Hänninen (2019) suggests that more empirical, exploratory, and survey-based research is needed in order to gain an increased understanding of digital transaction platforms.

This study draws upon data from a survey of 95 major retailers based in Sweden. Hypotheses are formulated regarding how different retail characteristics, including which channel, may influence payment method acceptance. Using descriptive statistics, patterns of the volume and cost of the different payment methods are discerned. One proposed measure of the must-take element is the correlation between the volume accepted and the payment method's cost for the different channels. Subsequently, a logit model with average marginal effects was run to understand more about how

payment acceptance is influenced by the retail characteristics (here, sales turnover, product category, company age, and perceived consumer characteristics) of the different channels. Finally, content analysis and the categorization of open-ended responses regarding why retailers have adopted or discontinued payment methods.

The findings show that higher sales volumes mean a lower cost of payment on the general level among the respondents. In the bricks-and-mortar channel, cash was reported to be the most costly payment method by individual retailers: However, on average, it was relatively similar in cost to the other payment methods investigated. There were indications that, for some retailers, cash was a must-take in the bricks-and-mortar channel. In the online channel, there were indications that invoice was a must-take payment method as it was ranked as high-risk and high-cost. However, it was also listed as a preferred payment method by relatively many respondents, which suggests the benefits of accepting invoicing.

This paper shows how conditions in retail payment services differ between online and offline settings. The findings indicate that retailers are more able to steer their customers toward less costly payment methods than in the online channel, reflecting a combination of the online environment being more competitive, and from a customer perspective, associated with higher risk, with more uncertainty regarding product quality and delivery (Grüschow et al., 2016).

For retailer characteristics' effect on accepting payment methods, the analysis showed that sales turnover did not matter to the acceptance of costly payment methods. However, age of company was, with older companies being more likely to accept American Express and Diners than younger ones. This could imply that older retailers stay with established relationships with service providers, thus being less prone to innovating (Pantano, 2014). The retail sector generally had little effect on payment method acceptance. Except for the sector of personal goods, in the bricks-and-mortar channel, it was less likely for a retailer to accept invoicing, while online retailers in household goods were less likely to accept PayPal. In the case of more price-sensitive customers, it was more likely for a retailer to accept a higher-than-average number of payment methods, as well as invoicing in the online channel. This shows that, in those cases, greater competition could have the effect that retailers have to broaden their service offering, in line with differentiation theory.

The paper shows a snapshot of retailers' acceptance, costs and volume regarding the different payment methods in multi-channel retail. It discusses the different strategies and restrictions that retailers face in the marketplace, as well as how payment services bring value. It also proposes how to measure the must-take-element and suggests that the benefits of payment methods should be further investigated. This discussion brings

insights into the workings of a two-sided market in practice, and the role of payments in retailers' service offerings in both the offline and online channels. This contributes to research on retail channel operations, finding indications that retailers face greater competition in the online channel than in the bricks-and-mortar channel, driving them to yield margins to payment service providers. Analysis of the open-ended responses shows that the retailers, on average, tend to broaden their payment service offerings by adding more payment methods rather than by discontinuing them, driven by consumer demand rather than market innovation. Previous research, including this study, has focused on the costs of accepting payment methods. Since this study also finds that there may be unspecified benefits to accepting payment methods, future studies could usefully further investigate these.

Paper IV. The complementarity of payment and delivery services in online retail

The online retail channel carries with it an inherent uncertainty for both retailer and consumer as they are separated in time and space. Taking this reasoning to its extreme, the consumer is unable to check whether or not the retailer is trustworthy or to inspect the product, while the retailer cannot be certain whether or not the consumer is trustworthy as regards handling products or has the ability to pay for the products he/she has ordered (Li et al., 2019; Ma et al., 2020). This uncertainty lies in delivery, return and payment on both sides of the market. Therefore, one strategy allowing retailers to mitigate uncertainty and signal trustworthiness is by offering these services for free (Kozlenkova et al., 2017; Oghazi et al., 2018). Bundling services can also be a necessary competitive strategy in online retail (H. Kim & Rao, 2023).

This paper discusses how payment, delivery and return services interrelate and constitute a complementarity strategy for retailers. It deepens understanding of how platforms "solve" uncertainty problems by investigating payment services in the online setting. In investigates whether service bundling and service complementarity in online retail can be observed as a phenomenon, as well as how, in this case, it varies among online retailers depending on the situation.

From 204 online retailer websites hosted in Sweden, data was collected on payment, delivery and return policies, and pricing. Further, data on the value of the retailers' best-selling goods and product category/retail sector was also collected. The data was mainly collected by manually researching the companies' websites; i.e. terms and conditions, frequently asked questions, and/or performing fictitious purchases. In some cases, where policies were not clear, an email was sent to the company's customer service

department. The data was subsequently analysed using descriptive statistics, correlation tables and a logit regression with average marginal effects.

This paper shows empirically that it can indeed be observed that online retail service provision depends on retailer characteristics or shopping situations. The paper finds that the studied retailers offering buy-now-pay-later services also tend to offer free shipping and return services, suggesting the complementary nature of these services, and/or service provision as a differentiation strategy. The results imply that retailers face different conditions depending on size, types of products and transaction value, where major online retailers offer more services, and for free, than do smaller ones.

Further research is needed to discern the main reasons for retailers offering many costly services for free, this being necessary in order to mitigate uncertainty or to find out if/when it is a necessary premium for consumers in a competitive marketplace.

Paper V. Payment Systems as a Driver of Platform Growth in E-Commerce: Network Effects and Business Models

With the increasing presence and use of digital platforms, concepts from network economics have travelled across disciplinary perspectives. This chapter revisits some of the concepts from network economics and discusses how they have been used more recently in both service and ecosystems and in platform retail research. The text also discusses how to theoretically conceptualise payments, putting forward the concept of how payment systems play a role in enabling e-commerce platforms to grow.

Over the last few years (c. 2016-2020), digital payment platforms have experienced remarkable growth, especially buy-now-pay-later (BNPL) alternatives. For instance, in the US, the top four applications that offer credit options increased by over 180 percent in terms of monthly active users in September 2020 compared to September 2019 (Chan, 2020). More and more scholars are occupied with describing and explaining the increased use of digital platforms, where payments can be said to constitute both platform and platform-within-platform.

In economic theory, platform growth or communication network expansion have found an explanation in the concept of network effects and/or network externalities. The term network effects tends to be used more generally than network externalities, but is often used interchangeably in the literature, whilst some scholars tease out their different meanings (Economides, 1996; Liebowitz & Margolis, 1994; Rochet & Tirole, 2006a). The gist of the concept is that the more users a platform has, the more valuable it becomes to other users. But the value does not only lie in the number of users, it also lies in the platform's ability to coordinate wants and decrease transaction costs (Evans

& Schmalensee, 2010, 2016). Furthermore, users' quality, in terms of how much they need and desire to interact with each other, contributes toward an increase in valuation complexity (McIntyre & Srinivasan, 2017). Network effects have further been operationalized as an attribute and also as something that can be perceived by users, such as reliability (J. Lee et al., 2019; Methlie & Pedersen, 2007)

Online shopping has greatly been enabled by digital transaction platforms, and payment services have changed from being mere intermediaries to entering the domains of traditional banks and retailers (Hagberg et al., 2016; Treadgold & Reynolds, 2020; Wang & Ben, 2021). Research on both platforms and payments has increased and has developed in parallel during recent years. In search of a theoretical ground, concepts and theories from industrial organization, network economics and systems competition have been revisited, revitalised, referenced and translated, but also at times overlooked within service, retail and marketing research.

Platforms, including payments, have been analysed as a two-sided market. One main challenge that has been highlighted here is building up demand for a platform where different groups would have an interest in connecting or interacting, and getting the 'two sides onboard' (Rochet & Tirole, 2003), also referred to as the 'chicken-and-egg problem' (Caillaud & Jullien, 2003). Here platforms can apply different strategies in order to provide incentives for users to join (Evans & Schmalensee, 2016). A related and subsequent challenge is getting enough users for platform growth to become self-sustained, reaching 'critical mass', (Evans & Schmalensee, 2010).

In the infancy of e-commerce, what today is framed as the digitalisation of retail was framed similarly and differently in the research fields of information economics and retail marketing; *informational intermediation*, *new commerce*, *disintermediation* and *reintermediation* (Balasubramanian et al., 2002; Burt & Sparks, 2003; Caillaud & Jullien, 2003). Platforms tend to be framed as a new phenomenon in business and marketing research (Hagberg & Kjellberg, 2020; Jacobides et al., 2018), while economists emphasise multi-sided platforms ancient existing roots, but recognise that it has not been attended to theoretically enough, foreshadowed by a firm-market-centric view (Evans & Schmalensee, 2016; Hagiu, 2007).

Mechanisms, definitions, pricing, and regulation are focused on by scholars from economics, with differing views of what constitutes a two-/multi-sided market. One approach emphasizes solving coordination problems and facilitating value-creation between two or more user groups (e.g. Evans & Schmalensee, 2013), while others highlight the price structure, where different prices are charged to different user groups exploiting the fact that user groups are unable to interact without an intermediary (Carlton, 2020; Rochet & Tirole, 2006b). In marketing and business, the mechanisms

or definitions are being set aside more, describing multi-sided markets or platforms as a new business model, changing the logic for incumbent businesses (Hänninen et al., 2018), and understanding their success factors and future development is key (Cenamor et al., 2016; Gandia & Parmentier, 2017; Zhu & Iansiti, 2012), even if issues of power asymmetries are raised (Hagberg & Kjellberg, 2020).

Platforms as ecosystems and the ecosystems of platforms are two approaches occurring in the service-dominant-logic (SDL) literature stream, where platforms are seen as an example of a type of market, cocreating value by integrating resources (Akaka et al., 2012; Vargo & Lusch, 2011) and where network effects take different forms of value (Storbacka, 2019). Criticisms of the research on ecosystem services include not recognizing the negative effects or aspects of service ecosystems (Mustak & Plé, 2020).

In the chapter, arguments are put forward with regard to it being unclear how the analysis of ecosystems and platforms in the SDL literature brings new insights compared to the theories of network effects from economics. It also finds it curious that the business and marketing literature overly emphasizes the newness of platforms as business models whilst referring to two-sided market and systems research, which contends they are ancient.

Ecosystems, platforms, and networks are related concepts which all describe a market where individual users, groups of users or enterprises interact. Network effects are crucial when it comes to explaining their growth and the interdependence between users can be organised by the platform owner to form value, as well as give rise to power asymmetries. With digitalisation, the growth of platforms is being sped up and their reach is becoming expanded (Evans & Schmalensee, 2016).

The chapter further argues that payment services have become more integrated into commerce, with the example of Klarna illustrating how the payment platform mitigates the uncertainty of BNPL-payment options and prolongs the relationship between consumer and retailer, strengthening the interdependence of the actors in the ecosystem.

Discussion and contribution

The overall research aim of this dissertation was to understand the use of payment service platforms in retail and how value is formed in their use. This has brought payments to the foreground in a retail research context. It has contributed to the growing body of knowledge of how services are used and valued in both digitalised retail and society.

The research questions guiding the fulfilment of this aim were:

RQ1.   How do consumers value retail payment service platforms? (Paper I)

RQ2.   How do consumers use retail payment service platforms across retail channels in the new digital retail landscape? (Paper II)

RQ3.   How are payment services offered by retailers and how do their payment service offerings reflect the conditions of online and offline retail? (Paper III)

RQ4.   How do payment services complement/interrelate with the return and delivery services of online retail? (Paper IV)

RQ5.   How can payments be understood in relation to recent developments in platforms and service ecosystems as concepts? (Paper V)

These questions explored retail payment services on both the empirical and conceptual levels. They were addressed in the different papers using empirical data and informed the discussion on value formation in order to understand the role of payment services in retail. This contributes to the social science field of retailing by illuminating the role of network effects in the interdependent value formation of payment services.

Valuation of new payment services

The study in Paper I finds that new payment services are valued in relation to existing services or services already being used by consumers. A payment service is valued differently depending on the situation, context and goal of the payment. Within retail

research, payments are emphasized as a means of reducing friction and increasing convenience at the purchasing stage (Gauri et al., 2021). The findings from Paper I add another layer of complexity to these notions as new payment services perceived as 'too' convenient will also be perceived as not secure enough, or they will give rise to a sense of lack of control. However, this sense can be mitigated by network effects (social pressure and lack of alternatives), brand familiarity, and learning (trust), and/or added friction which does not interfere with convenience or consumer preferences.

The findings shed further light on the fact that the transition and transformation of the digital retail landscape do take time, even though the development of new technology use in retail is framed as rapid and disruptive (Inman & Nikolova, 2017; Pantano & Vannucci, 2019).

Habits can fast become established, and getting used to doing something can change outcomes. For example, Marriott & Williams, (2018) emphasize that consumers find mobile shopping inherently risky, and are thus reluctant to shop on their mobile phones; a finding that is also confirmed in Paper I of this dissertation. However, the widespread use of mobile shopping shows how the perceived risk has decreased. As is also to be found in Paper II, among the informants, the concept of risk did not emerge as a significant concern as regards making purchases on mobile phones, indicating a prevailing sense of trust and confidence in the mobile payment system. This is also in line with the finding that the credit card effect, i.e. increased spending, from earlier work in the mental accounting literature, has become harder to find (Y. Liu & Dewitte, 2021). This indicates that the aspect of novelty influences how devices, systems, and technologies are perceived, but the temporal aspect of this influence is still not adequately considered in research. The valuation process scheme in Paper I shows that new payments are valued in relation to the ones used by a consumer, thus transparency or tangibility is relative. For consumers not familiar with cash in everyday use, the transparency or tangibility might not be perceived in the same way as with older generations. As found in Paper II, the tangibility of the debit card can be perceived as stronger than that of cash, due to the digital track record of purchases being easily accessible.

Strategic choices and use of payment services

The study in Paper II deepens understanding of how payments are used for different situations. It found that the variation in consumer payment use is tied to retailer characteristics, perceived convenience, consumer attitudes and preferences regarding payment. The traditional debit card was the most dominant payment method across all the channels and types of purchases, albeit to a varying degree, while mobile payment

services were more likely to be used in the mobile shopping channel, thus showing the presence of network effects between channel and payment. The variation in using payment in a complementary manner, using different ones for different channels and products, implies that seamlessness is not being striven for from a consumer perspective. Therefore, the study adds to studies challenging the omni-channel integration imperative, by finding arguments against full channel integration. At the same time, the standard use of and reflections on debit cards show that it is convenient to use payment methods which are accepted and available at a wide variety of establishments, increasing their usability. There was, furthermore, a general ambivalence among the informants as regards wanting convenience, smoothness and fast payments, while simultaneously sensing the weight or friction of making a purchase, which involves an understanding of, and an ability to keep track of, expenditure. This confirms the findings from Paper I as regards how friction is positively valued in certain respects.

The findings from Paper III indicated that retailers had a greater ability to steer their customers toward lower cost payment methods in the bricks-and-mortar channel than in the online channel. A higher sales volume was an advantage as it meant a lower cost of payment generally among the respondents, as well as an improved ability to negotiate with payment service providers. In the bricks-and-mortar channel, cash was reported to be the costliest payment method among individual retailers: However, on average, it was relatively similar in cost compared to the other payment methods investigated. The study proposed a measure for the must-take-element of payment methods, the notion that retailers have to accept a method, even though it is relatively costly, in order not to lose customers. There were indications that, for some retailers, cash was a must-take in the bricks-and -mortar channel. In the online channel, there were indications that invoicing was a must-take payment method as it was ranked as high-risk and high-cost. However, it was also listed as a preferred payment method by relatively many respondents, which suggests there are benefits to accepting invoicing.

Sales turnover and retail sector did not have any significant impact on acceptance of payment method, indicating that retailer characteristics did not matter to any great extent as to which payments were accepted. There was, however, a significant difference in accepting invoicing, where it was less likely within sectors such as clothing and accessories compared to sectors such as furniture or electronics in brick-and-mortar. Among retailers assessing their customers as price sensitive, it was more likely that these accepted a higher number of payment methods than those assessing their customers as less price sensitive. Thus, this could indicate that retailers facing greater competition have to 'hedge' themselves to a larger extent by catering to varying consumer preferences. This confirms standard differentiation theory, while also showing the varying competitive conditions occurring in online retail across the product sectors.

The complementarity of payment services

Paper IV explores the complementarity of payment of delivery services in the online channel and aims to deepen understanding of online retailers' service provision. Empirically, the paper finds that it can indeed be observed that online retail service provision depends on retailer characteristics or shopping situations. The paper finds that the studied retailers offering buy-now-pay-later services also tend to offer free shipping and return services, suggesting the complementary nature of these services, and/or service provision as a differentiation strategy. The results imply that retailers face different conditions depending on size, type of product and transaction value, where major online retailers offer more services, and for free, compared to smaller ones. The interdependence that previous research has highlighted, between technology, organisations and activities (Adner, 2017; Jacobides et al., 2018), can also be noted as a feature of consumer choice regarding service provision and retailers' tendency to offer services that complement each other.

In Paper V, the discussion contends that the concepts of ecosystems, platforms, and networks are closely related, and that they all describe a market from the perspective of where individual users, groups of users or enterprises interact. Network effects have been an important concept in explaining the dynamics and mechanisms of such markets. The theories regarding two-sided markets explain how platforms, e.g. payment systems, gain growth and how interdependence between users can be exploited by the platform owner to gain value, and to bring about power asymmetries. This interdependence and complementarity feature of platforms has not been recognized fully within retail services research. The focus has been more on the newness of platforms as a business model and the consequences of this. Less attention has been paid to their mechanisms. Understanding these mechanisms has implications for regulation, policy and how markets are formed.

Paper V further argues that payment services have become more integrated with retail and commerce, whereby the example of Klarna illustrates how the payment platform mitigates uncertainty using buy-now-pay-later payment options and, in doing so, prolonging the relationship between consumer and retailer and enforcing the interdependence between actors and services within the retail ecosystem.

Interdependent value formation in retail payment services

The studies in this dissertation show that value is formed interdependently when using payment services within the digitalised retail ecosystem. A payment service is valued by consumers based on its ability to fulfil the purpose of using the service. This includes the number of possibilities for interaction and transaction, thus the number of other users on the other side of the market for which consumers have some demand. Likewise for retailers, the value of accepting a payment service depends on how many of their potential customers are connected to that service. Thus, the quality aspect of the service, in terms of how each side of a payment network values the need for the other side, becomes important. The mutual dependence of actors in a payment service manifests itself in consumers' reluctance to use new payment services, while still doing so because of the lack of alternatives or the risk being an outcast within a group, as shown in Paper I. On the other side of the market, this dependence is indicated by retailers' 'must-take' adoption of certain payment methods even though these are costly and/or risky. This triadic mutual dependence, whereby consumers, retailers and payment services depend on each other to achieve the intended outcome, is a source of value formation. While not directly addressing interdependence, value formation, in the sense of co-creation and co-destruction as in Echeverri & Skålén (2011), underscores the fact that each party's behaviour and practice can significantly impact the other's value experience. This points toward their interdependence and not their interaction. This interdependent value formation can also be noted in payment services and delivery services in online retail, where uncertainty gives rise to consumer demand for buy-now-pay-later services, with free delivery and free return services, thus affecting the retailer service offering. Interdependency between consumers and technology is also enforced by payments in social relations, in the case of the mobile payment service Swish, discussed in Paper I, where it becomes difficult to function in society without it as more and more people and organisations are getting connected.

The different conditions in retail are reflected in the need for retail payment to contain different attributes. There is a notion, in both practice and research, to move toward standards, channel integration and seamlessness in retail. The findings of this dissertation show that standards are changing continuously, with the co-existence of multiple standards.

There are many sources of friction in payment services whereby interdependence between users not only gives rise to seamless purchases, it also adds friction. Whether this friction constitutes a negative or a positive value is contingent on which perspective and preference is in focus. Interdependence forms a positive value in payment services between actors when there is uncertainty, when they are willing to distribute risks and pay extra for an intermediary to handle risk or signal trustworthiness.

Summary of contributions

Contribution to the retail research field

This dissertation has highlighted the importance of payments in the retail industry, in particular how payment plays a role in consumer and retailer decision-making and its centrality to ongoing retail transformation. It has therefore contributed toward opening up the field of retailing in order to zoom in on a particular point along the consumer journey, which has often been overlooked or taken for granted.

Contribution to theory

The studies (Papers I, II, III, IV and V) of this dissertation show, in an exploratory way, that value is interdependently formed on retail payment service platforms, something which has become more evident during the era of retail digitalisation. Thus, it contributes to problematising value formation in services by deepening understanding of how value is formed. While value formation and creation have previously emphasized the co-creation of value during interaction, this dissertation highlights the *interdependence* of value formation; whereby one actor is dependent on the other. It also contributes toward expanding the use of theories of network effects, as applied to a retail services context.

Furthermore, this dissertation also challenges the prevailing notion that intermediaries exist to reduce friction, which leads to market emergence (Jacobides et al., 2018) and contends that intermediaries may also serve to introduce or increase friction in market relationships, which can also play a part in the creation of new markets. As shown in these studies, in certain situations, friction is valued positively by consumers.

In summary, the studies of this dissertation take a step forward in value creation and interactive value formation theories, toward *interdependent* value formation. The studies jointly contend that, in retail payment service platforms:

- Value is formed in a state of interdependence
- Choices are made interdependently and in context
- Platforms are not only transaction cost minimising in the traditional sense, but can add value by increasing friction

Implications and future research

Implications

Interdependence in payment services creates strong lock-in effects for both consumers and retailers. There is little leeway as regards being able to use alternative systems. The self-sustainment of platforms that causes them to ignite can also reduce the spiral, e.g. cash, where young people are unable to recognise or point out their national currency because they never or rarely see or use it. This interdependence implies that there are important and strong arguments for maintaining governmental oversight and influence/control over retail payments. Allowing market forces alone to shape such a critical component of a functioning and stable economic component can lead to significant vulnerabilities and inequalities.

The study of retail payment services in this dissertation has highlighted the role of interdependence in value formation. The level and structure of interdependence in different types of services remain to be explored further.

Recommendations for future research

This dissertation has shown how value is formed interdependently in retail payment service relationships. Future research could benefit from expanding on this knowledge by investigating the weaknesses and strengths of this interdependence subject to different factors and contexts. Furthermore, this dissertation has also identified that there is a certain value in friction: While friction has predominately been seen as something to be eliminated, additional friction can, in some cases, form positive value. This notion can be explored further in the realms of payments, retail and services in general.

Concluding remarks

While waving a bank card around, a professor of economics rudely asked: "Is this money?" when a dissertation on the topic was being defended. As questions are usually more interesting, this anecdote from the early 2000s was not accompanied by an answer. However, in relation to this dissertation, the answer would be no. It is not money: The card is part of a payment service and constitutes a means of payment in its role of being connected to a system. However, it does serve as money when all the components connected to the system are working as expected. Thus, the value formation of card payments is interdependent. Without this interdependence, it is not money.

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Appendix

Table A1.
Overview of collected empirical data

Source	Date
Exclusive data	
Interview with founder of a start-up company for mobile payments in Zimbabwe	6.10.2014
Interview with founder of start-up in payments using novel identification technology	10.10.2014
Interview with small retailer	20.12.2014
Focus groups of 55 consumers	December 2014-January 2015
Interview with manager at a payment service company	17.12.2014
Interview with manager at global retailer	31.03.2015
Interview with manager at global retailer (telephone)	18.05.2015
Interview with manager at global retailer	22.05.2015
Interview with manager at global retailer	24.05.2015
Interview with two top managers at global retailer	30.06.2015
Interview with manager at bank and payments company	28.08.2015
Survey to sample of 276 retailers	06.04.2016-11.05.2016
In-store observation shadowing a cashier	October 2016
Payment diaries	Jan-Feb 2020
Data collection web observation online retailers	April-June 2020
Focus group interviews with 16 consumers that had filled in consumer diaries	March 2022
Non-exclusive sources	
Presentation by manager from Swedbank about Swish	13.05.2014
Presentation by CEO of SEQR	14.05.2014
Seminar on mobile payments hosted by SEQR	30.06.2014
Seminar by Swedish Bankers' Association on the future of payments	30.06.2014
Presentation by payments lobbyist from the Swedish Trade Association	11.11.2015
RBTE Payments conference. Presentations and panel discussions on payments.	09.03.2016-10.03.2016
Presentation by Nets at IRCS	08.04.2016
Seminar on the future of payments, Dibs and Nordea	20.06.2016

Avhandlingar vid Institutionen för tjänstevetenskap, Lunds universitet.

Dissertations at the Department of Service Studies, Lund University

1. Fuentes, Christian *Green Retailing: A socio-material analysis* (2011)
2. Wengelin, Mattias *Service, Regulations, and Ports: An Actor-Network perspective on the social dimension of Service-Dominant Logic* (2012)
3. Svingstedt, Anette *Servicemötets praktik: på en tingsrätt, ett äldreboende och ett hotell* (2012)
4. Eksell, Jörgen *Värdeskapande gästfrihet: Hur gästfrihet som värde ramas in, etableras och förhandlas i hotellbranschen* (2013)
5. Månsson, Maria *Mediatized tourism: The convergence of media and tourism performances* (2015)
6. Nilsson, Tomas *Rhetorical business: A study of marketing work in the spirit of contradiction* (2015)
7. Raissova, Alma *Servicescapes seen by visually impaired travellers: Time-geography approach to servicescape research* (2017)
8. Samsioe, Emma *Consumer Contextual Learning: The Case of Fast Fashion Consumption* (2017)
9. Kronen, Manuela *Tales of uniqueness: Value creation in rural tourism development* (2018)
10. Lainpelto, Jack *Ämnade för restaurangarbete? Om politisk styrning och lågutbildade ungdomars väg fram till arbetsmarknadens tröskel* (2018)
11. de Wit Sandström, Ida *Kärleksaffären: Kvinnor och köpenskap i kustens kommers* (2018)
12. Andersson, Malin *Kustnära yrkesfiske i förändring: Från mångsysslare till entreprenör* (2019)
13. Östrup Backe, Josefine *Enacting "the local" in culinary tourism: A study of culinary actors and their practices* (2020)
14. Aslan, Devrim. Umut *Praxitopia: How shopping makes a street vibrant* (2021)
15. Reid, Stuart *Touring Tourism Enterprising: Mundane Practices of Tourism Development* (2022)
16. Mieli, Mieli S*martphoned Tourists in the Phygital Tourist Experience* (2022)
17. Spitzkat, Anna *Understanding Social Media Shopping: Instagram and the reconfiguration of the practice of shopping* (2022)
18. Liu, Rui *Tinkered care: Assembling Medicine Consumption in Grey Zones* (2023)
19. Rehncrona, Carin *Payments: Understanding the use of retail payment service platforms in the era of digitalisation* (2024)