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Over-Indebtedness and Consumption Patterns in Digital Society – A Research Review

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credit card fraud detection

fraud detection

support vector machine

cardholder

online auction

credit scoring model

fraud

taobao

data mining

credit score

neural network

online shopping

commerce

payment method

credit evaluation

p2p

search model debit card

seller

clustering online market

classification

credit score

biology acceptance model

trust

transaction

consistency

risk assessment

application resu

credit

Over-Indebtedness and Consumption Patterns in Digital Society

A Research Review

HANNA CARLSSON, STEFAN LARSSON & FREDRIK ÅSTRÖM
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initiative

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recovery

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production

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farmer

poverty

housing borrowing constraint

japan

shock

ton

water electricity

farm

rice

brazil

carbon

crop soil

greenhouse gas emission

biomass



This LUii report presents a research review of the field of over-indebtedness and consumption patterns in digital society, which addresses phenomena such as e-commerce, smart phones and their role in consumption and credit, new methods of payment, debt-incurrence and more. The research review has been produced by researchers at Lund University on behalf of the Swedish Enforcement Authority, why it also is in part using Sweden as a case study. The research was conducted during 2014 and primarily includes three sub-studies of somewhat different approaches to provide as comprehensive and accurate an overview of current research in the field as possible: 1) a bibliometric study, 2) a systematic literature review, and 3) additional searches which also include reports written in Swedish, studies and books.

A general conclusion drawn from all sub-studies is that research on over-indebtedness and research on digital development are often conducted within different disciplines that share little contact. One consequence of this, with regards to the review materials and results, is that research on potential opportunities created by digital technology in the credit and financial markets is not linked to the emergence of problematic financial situations in the individual. The potential links between these areas therefore deserves further scientific examination. For example, the results indicate that international research on debt and consumer behavior in a digital context is largely conducted from a systemic or business-oriented perspective, and deals only to a minor degree with consumer vulnerability and other negative aspects for the individual. This means that the economic/business-oriented perspective dominates in the research on debt incurrence in digital contexts. Furthermore, young adults comprise the population group that is repeatedly mentioned as particularly vulnerable to the implications of digital technology in consumption and debt.

Stefan Larsson, Head of Lund University Internet Institute (LUii), PhD in sociology of law and PhD in spatial planning, has acted as project manager for this research review. Co-researchers for this project were Hanna Carlsson, PhD in information science, and Fredrik Åström, Assoc Prof and bibliometrician.



Over-Indebtedness and Consumption Patterns in Digital Society – A Research Review

Hanna Carlsson, Stefan Larsson & Fredrik Åström



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Over-Indebtedness and Consumption Patterns in Digital Society – A Research Review, by Hanna Carlsson, Stefan Larsson, and Fredrik Åström. This research review has been developed by researchers at Lund University Internet Institute (LUii) and Lund University Economic Security Institute (EconSec), and was funded by the Swedish Enforcement Authority. It has been published in Swedish as *Överskuldssättning och konsumtionsmönster i det digitala samhället – en kunskapsöversikt*, in January 2015.

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Lund University Internet Institute (LUii) is an institute for interdisciplinary research, education and innovation in digital issues. For more information visit: www.luui.lu.se

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Foreword

When I was commissioned by the Swedish Enforcement Authority in December 2013 to conduct a review of research with an emphasis on the implications of digitization for consumption and over-indebtedness, I decided to include more researchers in the project in order to broaden the competence. As is often the case with digital issues, they require a combination of disciplinary competencies for more thorough investigation. Happily, I was able to involve Hanna Carlsson, who holds a doctorate in Information Science at Lund University and Associate Professor Fredrik Åström, a bibliometrician at the Department for Research and Studies Services at the University Library, Lund University. Conducting an extensive literature review is an information-dense process, to say the least, and their combined competence and contributions have been invaluable in developing this knowledge review. This research review can of course, be read as a separate document in itself, but it also provides us with insights that we bring with us into our next research project in the field of "digital consumption and over-indebtedness in young adults", which is conducted during 2015 and reported toward the end of this year.

With regards to this research review, I would especially like to extend thanks to the scientific board of the Swedish Enforcement Authority for the assignment and for the confidence in me to provide the opportunity to research and describe frontier research in such an important and urgent field. I would also like to take this opportunity to commend this broader initiative to fund research, of which this knowledge review is a small part. The Enforcement Authority's overall research project represents a form of preventative work that in the long term may delineate some of the major challenges in the field of over-indebtedness, and ultimately contribute to better management of its more alarming aspects. Here, I would also like to thank the previously mentioned EconSec and Head Manager Lars Persson and Research Manager Anna Angelin for an inspiring network effort, not least within the Advanced Study Group as it is known, formed under the excellent auspices of the Pufendorf Institute. This report was first published in Swedish, in January 2015, why I also extend my gratitude to Mattias Orre for the work with this translation.

March 19, 2015

Stefan Larsson

PhD, JD and Head of Lund University Internet Institute

Project manager for the research review.

Abstract

This review takes its starting point in the digitization of society and describes the state of knowledge within current research on the new consumption-patterns that have ensued as a result, and how these consumption patterns may influence the degree of over-indebtedness within different population groups. The study was conducted during 2014 and mainly covers three sub-studies that use somewhat different approaches, in order to provide as comprehensive and accurate overview of the state of knowledge as possible:

1. A *bibliometric* literature review, which used the Web of Science database (WoS) produced by Thomson Reuters to conduct a quantitative and statistical analysis of a selection of sources of international research literature, primarily published as journal articles in English;
2. A *systematic* literature review, i.e., a compilation of relevant literature within our defined field of study, in which we present a sample based on searches of the Academic Search Complete and Scopus databases, which are relatively comprehensive international and scientific databases and,
3. *Additional searches* that also include reports written in Swedish, studies and monographs.

If we begin by focusing on the keyword "over-indebtedness", which is central to the function of the Swedish Enforcement Authority (funding this review, and also motivating the Swedish focus in sub-study 3), we can conclude that a variety of perspectives on the causes and consequences of over-indebtedness emerge in the materials. Of striking interest within the context of the technology focus of this research review is that few links are made between changes in consumption patterns in digital society and over-indebtedness or problematic indebtedness in individuals. One reason for this could be found in the study's methodological constraints and/or in the absence of empirical foundation, but it is more likely that research in this particular area has not yet caught up with the rapid and recent arrival of some aspects of digitization. Based on the results of the bibliometric study, the more plausible explanation for research on over-indebtedness on one side and research on digital development and its impact on the other side continues to be that they are conducted

in separate disciplines. This understanding is further reinforced by searches that specifically focused on the terms "digital" and "mobile." The results are structured according to content themes included within the material. With regards to specific literature in the field, we refer to the systematic literature review in chapter 3 where the results are categorized, as well as the additional searches presented in Chapter 4.

Summary of Sub-study 1

Within international research on e-commerce, as represented by articles indexed in the WoS databases, some relatively salient characteristics can be noted:

- There is a decidedly stronger focus on system and commerce activities rather than on consumers and consumption patterns, which mean that the economic/business-oriented perspective dominates in the analysis of indebtedness in a digital context.
- An analysis of terminology conducted within the indebtedness analysis in a digital context shows that the research perspective is often partly technical and partly based in commercial and financial aspects, and often concerns, for example, creditworthiness assessment and how to avoid outstanding payments.
- With regards to the bibliometric analysis of consumer cultures and consumer behavior in a digital context, it is striking how much of the research is based in a consumer or user perspective, yet remains largely focused on the potential benefits for e-commerce.

This means that to the extent that it is possible to identify research aimed at consumers and consumer behavior, it addresses the issue of risk behaviour to a relatively large extent. The issues appear to be more concerned with "How do we design systems for e-commerce?" and "How do we avoid not getting paid?", rather than studying the implications of digital access to consumption and potential debt problems related to e-commerce from a consumer perspective.

Summary of Sub-study 2

When studying international research on over-indebtedness and consumption patterns, as represented by articles and conference proceedings indexed in the Academic Search Complete and Scopus, a number of strengths and weaknesses can be identified:

- Over-indebtedness appears to be a relatively well researched phenomenon. However, there remains little knowledge of the possible links between changing consumption patterns in digital society and over-indebtedness and/or problematic indebtedness in individuals.
- Technical aspects of digital consumption and credit, such as online banking, digital processing of loan applications and online payment services, management of credit risk in relation to e-commerce, and mobile payment models and systems also appear to be well researched phenomena. However, there is a lack of more critical perspectives on the impact of e-commerce on the consumer. The perspective is usually that of the business owner, bank or some other creditor.
- Legal research, research on medicine and psychology, and financial literacy are not equally represented in the material. This could be due to the limitations of the databases used in the study.

In summary, the results of sub-study 2 confirm the results of the bibliometric study. Research on over-indebtedness and research on digital development is often conducted within separate disciplines that share few points of contact. One consequence of this, with regards to the sub-study's materials and results, is that research on the potential opportunities created by digital technology in the credit and financial markets is not linked to the emergence of potentially difficult financial situations for the individual. Therefore, the potential links between these areas deserve further scientific investigation.

Summary of Sub-study 3

Several results of interest are to be found in the research on over-indebtedness and consumption patterns, as represented by the articles, reports, and conference proceedings included in the present sub-study:

- We can conclude that some international research has been conducted on the impact of instant loans and consumption credit on both individuals and society, in particular, on the use of consumer credit and instant loans among young adults. The situation for young adults in Sweden, however, is not as well researched, which is clear from the research on budget and debt management counselling. However, regulatory issues on instant loans are covered to a large degree in the Swedish academic literature.
- The materials show that there is some Swedish research on consumption patterns and e-commerce. However, there remains a need for more

knowledge on how consumption patterns change in relation to mobile and digital technology; in particular, since the vulnerability of children and young people as digital consumers deserves additional attention.

- There is also a need for research on financial literacy to show greater awareness of the implications of digital development. Today, we know through previous research that the level of financial literacy has significance for the individual's financial situation. Methods have also been developed to measure financial literacy. However, financial knowledge is often seen as generic and independent of context. Financial literacy needs to be studied as a situated competence in order to highlight the new knowledge needed by the digital consumer.

In other words, the results of sub-study 3 complement the findings on the current state of research in the previous two sub-studies, particularly the state of research within law. However, they also confirm the conclusion that more knowledge is needed on the relationship between the opportunities created by digital technology in the credit and financial markets and the emergence of difficult financial situations for the individual.

In summary, one general conclusion to be drawn from all the sub-studies is that research on over-indebtedness and research on digital development are often conducted within different disciplines that share little contact. One consequence of this, with regards to the materials and results of the review, will be that research on the opportunities created by digital technology in the credit and financial markets will not be linked to the potential emergence of a problematic financial situation in the individual's life. Therefore, the potential links between these areas deserve further scientific scrutiny. For further recommendations, please see the summary and conclusions in Chapter 5.

The Mission

This research review takes its starting point in the consequences of the digitization of society. This includes both individual and structural aspects of the fact that we largely live our lives connected to the Internet, mediated by a series of platforms and digital tools, as well as technical artefacts such as smart phones, laptops and tablets. We are also consumers and borrowers who manage our own private finances, with consequences that have been studied and mapped in some areas but not in others. The mission has been designed in dialogues between the project manager Stefan Larsson, the Swedish Enforcement Authority and the scientific board linked to the Enforcement Authority's research initiatives. The project has been funded by the Swedish Enforcement Authority and conducted at Lund University, primarily at the Internet Institute, LUii, within the framework of the research network organized around the Lund University Economic Security Institute (EconSec).

The purpose of this knowledge review is to describe the current state of research on new consumption patterns that are emerging in the wake of the digitization of society, and how these consumption patterns may affect the level of indebtedness in different population groups. The review has a partial focus on Sweden as a case (as indicated by sub-study 3), but the main findings are more general than that (as indicated by sub-study 1 and 2).

Preparation of the overview was primarily conducted through 2014, reported in December 2014, and published in Swedish in January 2015. The project team consisted of three researchers at Lund University and was led by Stefan Larsson, PhD in Sociology of Law, PhD in Spatial Planning, and Head of Lund University Internet Institute (LUii), as well as being a researcher with a primary focus on digital issues concerning regulation and behavior. Hanna Carlsson, PhD in Information Science, has been key to maintaining a comprehensive overview of the research review, while Fredrik Åström, Associate Professor and bibliometrician at Lund's University library, has predominantly contributed to the bibliometric sub-study.

Some issues that we approached the project with included e-commerce and the increased online consumption of goods and services, whether this leads to increased risks of problematic indebtedness and to what extent this was being studied, as well as within which discipline. We questioned whether the speed of the medium plays a significant role, whether different age and population groups are affected in different ways, and what role the extremely rapid development of the use of smart phones has played. The questions also explored how relevant research is being conducted and,

perhaps more importantly, within what subject fields. For example, within e-commerce, is the focus on the technological component, service development, or customer behavior? Is there any systems development research that includes over-indebtedness as a parameter? In short, the discipline that the publications can be sourced to has great importance in leading the orientation of the research. Given the rapid and relatively recent emergence of digitization, previous experience in other areas, especially smart phones and tablets, tells us that awareness and research on potential, negative consequences of technology development and services development tends to lag behind.

The present study addresses the interplay between expressions of the structural changes that digitization leads to and more every day, technology-related innovations that we still, to a large extent, need to map in order to understand. For example, lower consumption thresholds mediated through smart phones and tablets; that we continue to be consumers despite not being in traditional consumer environments; and that so-called in-game trading in games and apps have functions within the games that are partially related to purchasing virtual clothing etc., which impacts children and their parents.

From Information Overload to Research Review

Conducting a fair and just research overview of a given area of research requires, to a very high degree, sorting from an overload of information and selecting the most relevant information, a task that can be carried out in several ways. We have chosen to combine quantitative and qualitative methods to motivate our sample as satisfactorily as possible, with regards to the knowledge we set out to report. Often, "knowledge" is described using more qualitative semantics than is "information", which is often described in terms of finding order in chaos. At the same time, it is not always an easy matter to see which knowledge is relevant in specific cases. This is because such judgments must be made in relation to something else, to a context, and science is producing excessive amounts of information – a sort of information overflow (cf. Pelle Snickars' contributions to the anthology *Information som problem*, 2014, [Information as a Problem]).

In this research review, we conduct a series of samples out of necessity, in which the initial goal is to search various sources for information on "scientific knowledge." It becomes clear fairly rapidly that retrieving this deceptively simple sample is no easy task. Generally, we have maintained a pragmatic stance and allowed current knowledge institutions decide the definition – it is considered scientific knowledge after having been published in scientific journals and indexed in some of the most trusted and reputable of the relevant databases. However, this by no means provides a definite solution to the sampling dilemma, and the amount of information continues

to remain vast. But it indicates that what we are searching for has a certain character: It is scientific. To accurately assess the number of scientific papers is a difficult task, because the results depend highly on which calculation method is used, but Birch et al. (2008) have estimated that approximately 1,350,000 articles were published in peer-reviewed scientific journals during 2006, and that there were up to 24,000 scientific journals in 2007. Further, one should take into account the fact that the article format is not the most conventional way to convey research in many scientific disciplines, and the monographs or reports that are produced are therefore not included in these figures. Neither are they indexed in the type of databases that collect scientific articles. Regardless of which approach one takes, when conducting a research review one is faced with sifting through millions of sources, a vast amount of information, and much background noise. The reason we devote some amount of time on the methodology in this research review, and why we adopt three different methods and sub-studies, is that this method is key to finding relevant knowledge – and the description of the method is, in turn, key to determining the extent to which we have obtained relevant knowledge.

The assessment of the current state of research one arrives at is entirely dependent on where and how one searches. Similarly, so must a research review triangulate its path forward. Not necessarily by the exact same methods as us, but also by other, complementary methods, in order to find order in the background noise, in order to find relevant knowledge in vast amounts of information within the scientific community.

Background and the Need for Review

We can conclude that the Sweden's previous government identified over-indebtedness as a growing social and public health problem and commissioned therefore an investigation (Dir. 2012: 31) to design strategies to counteract over-indebtedness. In November 2013, investigator Anna Hedborg reported via SOU 2013: 78 *Överskuldssättning i kreditsamhället?* (Over-indebtedness in credit society?). However, the main reason and motive for this research review is driven by technology-related social change. It could be argued that the effects of digitization are quite overwhelming in many areas and there are also a number of indications that its system-changing nature is quite radically affecting many of the phenomena relevant to indebtedness and individuals' ability to maintain a healthy economy. How we consume, borrow money and use credit, what this entails and what is communicated are some of the things that are undergoing quite rapid technology-related changes.

One important aspect of the need for research in this area relates directly to the pace of this technological change, which can be clearly exemplified by the spread of smart phones and tablets. Although the structural and technical architecture of the

Internet is several decades old, it remains in constant and rapid change and continues to attract an increasing number of users and connected units (cf. Larsson, 2015). In August 2012, a Swedish government investigation on the legal implications of mobile telephony was published. The investigation was named *App to date – Konsumenternas rättsliga ställning när varor eller tjänster betalas via telefonräkningen, m.m.* (App to Date – Consumers’ Legal Rights when Purchasing Goods or Services via Phone Bills, etc. (Ds 2012: 31). The report concluded, among other things:

In conjunction with technological developments, mobile telephony has come to be used for significantly more tasks than simply making and receiving phone calls. Today, mobile phones are used, for example, to surf the Internet, to order various kinds of goods and services, and to make payments and other money transfers (p. 11).

Despite the fact that the statistics for mobile telephony (in Sweden) in the investigation are only three years old, much has happened since then. For example, in three years the tablet has in Sweden spread by 48 per cent points, from 5 to 53 per cent points (Findahl, 2014 p. 5). This is a remarkable entry. On the topic of smart phones or smart mobiles, Olle Findahl expresses the following in the annual study *Svenskarna och Internet, 2014* (Swedes and the Internet 2014):

Starting with almost no one using smart phones on a daily basis in 2010, in the following years smart phones spread at a rapid pace mainly in the age groups between 16 and 45 years. By 2013, smart phones were being used on a daily basis by over 80 per cent of the population between 12 and 35 years – an increase of over 70 per cent points in three years (Findahl, 2014, p. 17).

In other words, although the fact that we are connected online in Sweden has not changed drastically over the last years, *how* we are connected has changed extremely dramatically. This is relevant to a number of digitally-related issues, including consumption behavior, credit managing and indebtedness practices. This means that some parts of digital society have changed extremely rapidly, including various forms of consumption practices, with consequences that we have not yet had time to study or even understand. It is important for the sake of research – but also for the authorities responsible for countering over-indebtedness – to determine which aspects have already been studied by the scientific community and which aspects have not, in order to benefit from verified knowledge. Similarly, we need to focus our future efforts on those areas that are in greatest need of understanding.

In digital issues, the Swedish context must always be related to an international and global context. Much of what could be called the infrastructure of Internet connection and digital commerce is of a transnational character. In part, this is because the trading of imported and exported goods are *de facto* conducted across borders, and in part because many of the actors who build and manage the services and systems we use are actors in an international market. Many of the most

frequently used services, such as Facebook, Twitter and Google's portfolio of services, are international, as are the computers, tablets and smart phones that we connect through. Apple, Microsoft and Samsung could be mentioned as global actors here, for example. How we consume and manage credit depends to a quite high degree on how technical solutions, often of American origins, are built and implemented in a global arena.

In order to discuss some of the details of such recent changes, it can be noted that this "ongoing revolution" (Belk & Llamas, 2013, p. 10) of digital technologies among other things leads to smart phones not just being communication tools, but also replacing a number of functions in our everyday lives, i.e., "wallets, watches and alarm clocks" (Watson, 2010). These changing consumption patterns that have followed as a result also lead to new risks. A report from the Swedish Enforcement Authority's preventative branch (2013a) entitled *Skuldsättning av unga genom e-handel på kredit* (Indebtedness in Young People through E-commerce Credit), for example, found that in the Enforcement Authority's records of outstanding payment orders, young people and women are overrepresented among outstanding orders in e-commerce in comparison to other types of debt. The Enforcement Authority has previously noted (2012) that one of the more common reasons for payment orders concerning people between 18 and 25 years are invoice purchases, and that a large portion of these relate to e-commerce.

These reports indicate some of the tendencies related to digitization and over-indebtedness. This research review maps similar scientific studies from the international research community of how digitally mediated consumption patterns function and what they lead to in terms of over-indebtedness.

The Individual and Structures

Although the relevance of digitization to individuals becomes most obvious at the everyday level – for example, by studying trends in Internet connection or smart phones – there is also a structural dependence that could be said to permeate the majority of societal structures. This means that even people who, for various reasons, attempt to resist digitization by electing to avoid certain types of communication or social media are still affected, or are incorporated into the structural transformation that digital society entails.

How we communicate through text messages, social media such as Facebook and Twitter, how we have come to allow these "circles of friends" provide our news through news-flows, how the media, and how we approach the media, has fundamentally changed over a short period of time. Consumption practices, which are increasingly becoming digitally mediated in e-commerce, can therefore also be positioned within this structural context, supported by a growing series of options for

credit management through WLR connections linked to smart phones (purchased on credit), e-invoices, SMS loans or a number of consumption-simplifying, intermediary solutions such as Apple accounts, Paypal etc., linked to debit or credit cards. This means that credit-based consumption also reaches children relatively seamlessly that use their parents' tablets and who may be consumers within the games they play at home in their playroom.¹ Never before have communication processes made private communication so public, and never before has a traditionally public phenomenon such as consumption been so intimately private. We are consumers, anywhere and anytime. We are borrowers, anywhere and anytime. This is a structural change in society, mediated by the overwhelming capacity of digitization.

From E-commerce to Mobile E-commerce

In recent years, the development of the credit card system and the cashless society has raised discussions on the cashless society (Guttman, 2003). New technology solutions for purchases and payments available on the market (Arvidsson 2013) act as drivers for this development. E-commerce is increasing steadily, and with it follow different payment services. Rapidly expanding mobile e-commerce marches ahead. Here, smart phones have opened up for a new world of technologies for various types of purchases and payment transactions, where the mobile phone is the lowest common denominator. Mobile e-commerce has had a great impact in, for example, the US and has similar potential in Sweden, where more and more actors now choose to develop mobile solutions. Although androids are the dominant smart phone in Sweden, most mobile e-commerce takes place via iPhones. Services and downloads are primarily purchased this way. According to one study of Nordic e-commerce, 28 per cent of all consumers in Stockholm have made purchases via their mobile phone, followed by 13 per cent in other cities and 9 per cent of consumers in rural areas (DIBS E-handelsindex 2012 [DIBS E-Commerce Index 2012]). One Scandinavian in ten who shops online thinks they will complete a purchase via their mobile phone in the coming year. This would mean that the use has doubled in only one year (Post Nord – E-handeln i Norden 2012 [Post Nord – E-commerce in Scandinavia, 2012]).

¹ Kids' games that are partially built around making purchases within apps are common. However, the security settings can be set to make it difficult for children to complete the purchase. There have been a series of high-profile cases with negative consequences, see, for example, the Smurf game in which younger children spent relatively large sums on smurf berries within the game, before coming to light (USA Today, 12 September, 2010).

Swedish consumers who have tested online shopping via their mobiles think that they will continue to do so in the future. A full 82 per cent of these consumers think that they will continue or increase their online shopping via mobile phones in the coming year ([DIBS E-handelsindex 2012] DIBS E-Commerce Survey 2012). Note that mobile e-commerce is sometimes separated into:

- Mobile e-commerce (excluding app purchases and in-app-purchases);
- SMS tickets;
- Purchase of apps;
- In-app purchases;
- SMS loans.

One could also point out the consumption associated to certain games, i.e., integrated into the actual game concept. This area has not yet been well researched, although it is occasionally brought up in public debate, particularly concerning children who have consumed through their parents credit card. It is reasonable to expect that various, inherent challenges will have different characteristics depending on the form of consumption that is of topic.

Purpose and Design of the Present Study

As mentioned previously, the purpose of this research review is to describe the state of research of new consumption patterns that digitization of society has led to, and how these new patterns affect the degree of over-indebtedness within various population groups. We have chosen to methodologically break down the task into three sub-studies with somewhat different approaches, in order to provide as comprehensive and accurate a description as possible. This separation is also clearly detailed in the report. For the sake of clarity and functionality, we have chosen to begin with a fairly detailed summary; anyone mainly interested in the most important take-aways should also be able to find these with ease. Generally, *Chapter one* describes the framework for this research review, the mission itself, the background and purpose, and who has done what; *Chapter two* reports on the first bibliometric sub-study; *Chapter three* reports on the systematic literature review, which is the second sub-study; and *Chapter four* reports on the additional searches needed to identify the type of knowledge present in reports written in Swedish, studies and books, not addressed by the other two sub-studies. The closing *chapter (five)* presents a conclusion of the summaries, including some recommendations for future research orientations.

Sub-study 1: Bibliometry

In connection with the systematic literature review of research on indebtedness and other related themes, as presented in the following chapters, a bibliometric analysis of research literature themes related to over-indebtedness in digital contexts was also conducted. Bibliometrics are fundamentally concerned with quantitative and statistical analyses of the characteristics of texts and text collections. However, today bibliometrics are primarily associated with research evaluation using publication statistics, and the extent to which these are cited in other research literature as indicators of scientific productivity and impact.

Bibliometrics can also be used to identify a research field by analyzing various properties of the literature within the research field. By studying statistical relationships between terms used within a specific research field, the various themes covered in the field can be identified. Analysis of the journals in which the research has been published, and of the journals which the articles refer to, indicate which research fields are exploring a given object of study; and to what extent these research fields convey their results to other fields.

In order to conduct these analyses, data that can be gathered in an efficient and structured manner is needed. Different research literature databases contain different types of literature – different types of publications (e.g., journal articles, monographs, chapters from anthologies, conference proceedings) and publications in various languages – as well as large differences in the type of information that is gathered from the research literature. This means that depending on which database is used, different aspects of a field's research literature and different aspects of that literature will be analysed.

For the bibliometric analysis of the literature on over-indebtedness in a digital context, we selected the Web of Science database (WoS), produced by Thomson Reuters. WoS is a database that lists international research literature, in particular literature published in the form of English journal articles. The WoS also has the advantage of gathering content rich information which enables many types of analyses, as well as enabling efficient compilation of data. The disadvantage is that a focus on international journal articles runs the risk of skipping research literature that has been published, for instance, in books that more specifically address a national audience, which is common not least in research within the social sciences and the humanities. The fact that the results of the analyses come from only a portion of the complete corpus of research literature under analysis must therefore be viewed with

this in mind; however, if one wishes to gain an understanding of the different aspects within a research field from an international perspective, the advantages of the WoS database continue to outweigh.

Materials and Methods of the Sub-study

In order to gather literature relevant to over-indebtedness in a digital context, a number of keywords were identified to formulate search strings for the WoS databases (Science Citation Index, Social Science Citation Index and Arts & Humanities Citation Index, as well as the Conference Proceedings Citation Index). The search strings were formulated according to two main themes, and are reported separately:

- 1) Indebtedness in digital contexts
- 2) Consumption culture and consumption behavior in digital contexts

The searches were limited to literature published between 2005 and 2014. The information on the publications identified in the WoS searches was downloaded for further processing and analysis using the software Bibexcel² (a program used for processing data and bibliometric analyses), VOS viewer³ (a program for the visualization of bibliometric analyses, the initials VOS standing for Vicinity Of Similarities), and MS Excel.

Areas of research and citation patterns

In order to map the research fields which study issues concerning indebtedness and consumption culture in a digital context, we studied which journals publish the research as well as which journals the literature refers to. In the former analysis, the object of study is the distribution of articles between various fields of research that WoS invokes to describe the journals that publish the articles. In the latter, the object of study is the cited references that link to the articles being studied. The reference lists (the "Cited Reference" field in the WoS data) for the articles have been limited to the journal names. How often the cited journals appear concurrently in the reference lists of the articles which the analysis is based in is then studied. The analyses are represented as a map where journals that are frequently cited are represented as larger

² <http://www8.umu.se/inforsk/Bibexcel/index.html>

³ <http://www.vosviewer.com/>

units on the map, while journals that are often cited together are placed in close vicinity to each other, thus forming clusters which represent different research fields.

Relevant terms

To identify the themes addressed in research on indebtedness and consumer culture in digital contexts, the terms that appear in the literature were analysed by studying the title, abstract and keywords. The fields in the WoS data that contain such information were compiled in a text file using Bibexcel, and then analyzed in the VOS viewer. Initially, the program uses an algorithm to identify relevant terms (and weed out insignificant words such as "And," "Or" etc. from the title and abstract fields, to minimise the influence of terms that occur in most documents and focus the analysis on groups of more specific terms). Once the relevant terms are identified, how often these terms occur and, not least, how often they occur together is analysed. Similarly to the cited journals, the terms are presented in map form, where frequently occurring terms are marked as larger units on the map, and terms that frequently occur concurrently are placed closer to each other than words that occur together less frequently, which entails that larger collections of terms that frequently occur concurrently form clusters.

Results of Sub-study 1: Bibliometric Analysis

The two themes studied in the bibliometric analysis – indebtedness in digital contexts and consumer culture, and consumer behavior in digital contexts – are presented in separate sections. Search strings are also included in the presentation, as well as other delimitations to the searches.

“Electronic consumption and debt”/Indebtedness in digital contexts

In order to identify research on indebtedness in digital contexts, the following search string was used in the "Topic Search" field in the Web of Science database, which resulted in 1,472 articles that were then downloaded for processing and further analysis:

(debt* OR indebt* OR overindebt* OR loan* OR
borrow* OR lend* OR credit* OR mortgage OR
invoice)

AND

(Digital* OR online* OR electronic* OR cyber* OR internet* OR virtual* OR wired OR mobile OR cell phone OR Iphone OR android OR application* OR app OR smartphone)

AND

(Buy* OR shop* OR consum* OR purchas* OR retail* OR merchandi* OR marketing OR e-shop* OR e-consum* OR e-purchas* OR e-retail* OR e-merchandi* OR e-marketing*)

NOT

librar*

Which fields are the research conducted in?

In order to study which fields research on indebtedness in digital contexts can be identified within, we conducted two different types of analyses. The first analysis focused on which research field the articles were published within and is represented by the topic categories used by WoS to describe journals that publish the articles indexed in the databases (Figure 1). Of the research fields that have published more than 100 articles, two main fields dominate: Computer science – represented by "computer science", "engineering" and "information systems" – and economy and trade, represented by "economics", "management/operations research" and "business/finance." Within the range of roughly 50-100 published articles, the technical perspective recurs in "telecommunications", but we also find "environmental sciences" and "mathematics", the latter probably reflecting a methodological aspect of the research rather than empirical studies of indebtedness in digital contexts. In general, the most prominently featured research fields in the analysis indicate that research on debt in digital contexts – as represented by the WoS databases – focuses on a systemic perspective rather than a consumer or user perspective. The main concern seems to be how to develop systems and business strategies to protect business owners from losses incurred from insolvent consumers, rather than to research consumers who have become indebted due to over-consumption in a digital context and the impact this may have on their lives, which – had this been more visible – would had been represented by, for example, sociology and other research fields with a greater focus on the behavioral-sciences.

Articles/Research Field

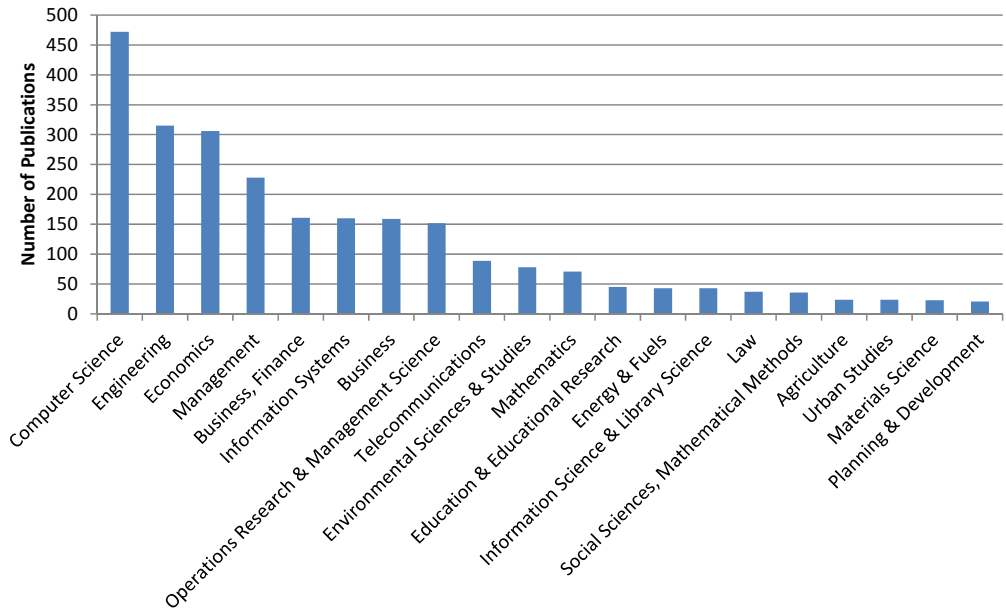


Figure 1. Research fields in which articles on debt in digital contexts have been published, defined as WoS categories of journals. 20 research fields with more than 20 articles (n = 122 WoS categories).

The second analysis of research fields that analyse indebtedness in digital contexts concerns the cited journals, and thereby the scientific context that the authors of the articles place themselves within (Figure 2). In addition to positioning the journals' vicinity based on how often the journals are cited concurrently, these co-citation frequencies are also used to form a statistical cluster analysis, which results are represented by different colors for various clusters. This way, we find a dark blue and a yellow cluster focused on economics and finance in the lower section of the map, represented by journals such as the Journal of Financing ("J Finance") and the American Economic Review ("Am econ rev"). On the right side of the map, we see a green cluster of management, marketing and consumption research journals, such as the Journal of Marketing ("J Marketing"), Management Science ("Manage sci") and the Journal of Consumer Research ("J consum res"). At the top of the map, we see a red cluster of journals that are oriented toward computer science and system development, such as Decision Support Systems ("Decis support syst") and Communications of the Association for Computing Machinery ("Commun ACM"). So far, the analysis corresponds well with the results of the analysis of the dominant journal categories to have published the analysed articles. However, it should be noted

that the presence of journals that focus on consumption research might indicate a more consumer and user oriented research than could be seen in the analysis of journal categories. This perspective is made particularly salient by the two smaller clusters in the co-citation analysis: A purple cluster of sociological journals between the blue economy cluster and the green marketing cluster, and a small orange cluster of psychology oriented journals immediately below the green marketing cluster. Moreover, there is also a light blue cluster representing legal journals in the bottom right corner, which were established to be represented to a lesser degree in the analysis of journal categories.

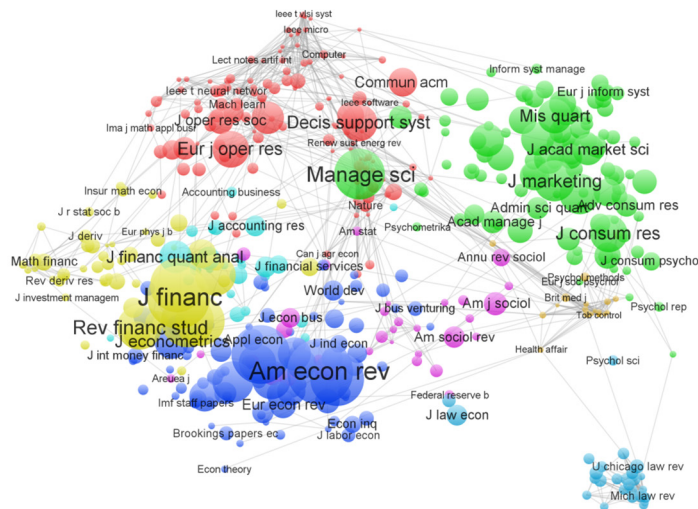


Figure 2. Research fields that the author of the article links her or his research to, represented by cited journals. Co-citation analysis, based on the names of journals in the "Cited Reference" field. 501 journals that have been cited 6 times or more. Lines represent 1,000 individual citation links or more.

What conclusions can be drawn from this? The economic/business-perspective appears to be dominant in both analyses, in conjunction with a more technical, system-oriented perspective. The user or consumer perspective, however, only becomes apparent in the analysis of the journals that are cited together. The question is to what extent this actually involves research from the consumer's perspective, or whether it rather concerns more system or market oriented research that, to an extent, uses findings from consumption and behavior research? To answer this question, it might be useful to more closely study the actual terms used within the research, and

There are two main clusters on the map, both represented by darker red fields. To the left, we find a cluster oriented toward commerce with a quite strong focus on infrastructure, business processes, and technology solutions for commerce and payments in digital contexts (Figure 4). Among other things, one can note that “trust” occupies a relatively large space, but that it largely appears to concern how to create reliable and secure trading systems from a technical perspective, rather than a more comprehensive concept of trust that would include a consumer or user perspective.

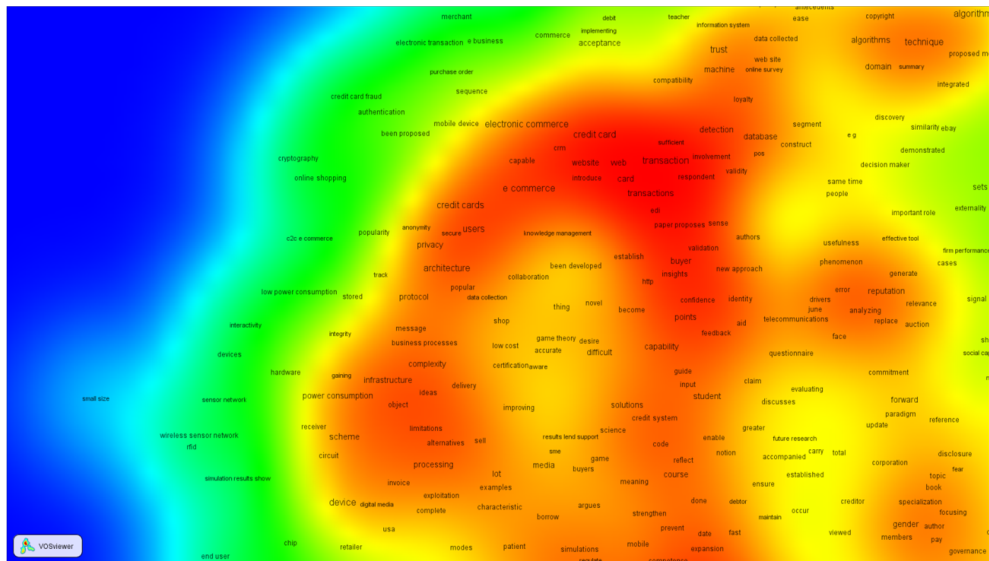


Figure 4. Cluster of terms related to commerce. Detailed zoom in map of terms in Figure 3.

The second cluster on the right side of the map contains terms strongly related to risk assessment and management, not least in regards to credit assessment (Figure 5). Here, too, the focus is largely the business perspective, rather than any sort of user or consumer perspective; i.e., “risk” mainly implies the risk the businessman and the lender runs of not receiving payment, rather than the risk that consumer runs of becoming indebted.

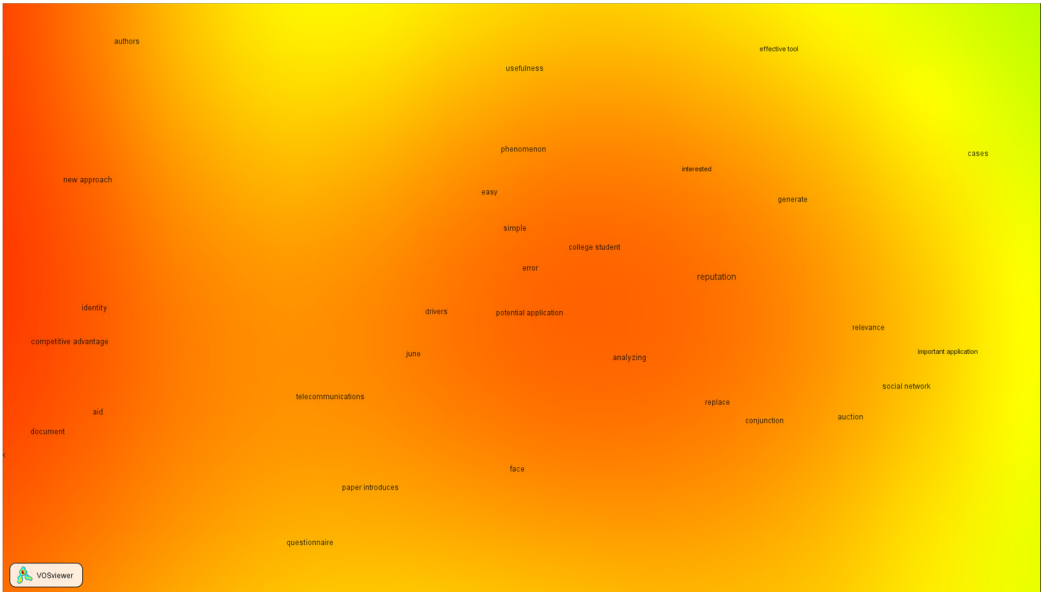


Figure 6. Cluster of terms related to user perspective. Detailed zoom close up displayed in the map of terms in Figure 3.

In other words, analysis of the terms used in research on indebtedness in digital contexts supports the analysis of journal categories as defined by the research fields that conduct such research, rather than trends in the co-citation analysis that appear to point to a more consumer-oriented perspective.

Electronic consumption and consumer culture / Consumer culture and consumer behavior in digital contexts

To identify research on consumer culture and behavior in digital contexts, the same search string used in the "Topic Search" in the Web of Science database was again used, a search that resulted in the download of 3,020 articles for processing and further analysis:

(Digital* OR online* OR electronic* OR cyber* OR internet* OR virtual* OR wired OR mobile OR cell phone OR Iphone OR android OR application* OR app OR smartphone)

AND

(Buy* OR shop* OR consum* OR purchas* OR retail*
OR merchandi* OR marketing OR e-shop* OR e-
consum* OR e-purchas* OR e-retail* OR e-
merchandi* OR e-marketing*)

AND

(consum* NEAR (cult* OR behav*))

NOT

(librar* OR energy*)

This search differed from the previous search for articles on indebtedness in the respect that the previous analysis was based on searches for articles in all the WoS databases, while this search – regarding consumer culture and consumer behaviour – was limited to the Social Science Citation Index (SSCI) and the Arts & Humanities Citation Index (A&HCI) (and their corresponding database conference proceedings: CPCI-SSH), while the Science Citation Index (SCI and CPCI-S) was omitted this time. This is due to initial searches which included results from the SCI resulting in the search string leading to too many irrelevant results, and therefore, a delimitation became necessary.

Which fields is the research conducted within?

Business, management and economic research dominate in over half of all articles (Figure 7) in journals that publish articles on consumer culture and behaviour in the WoS database categorization. Within the span of journals containing between 200 and 400 articles, we mainly find research in psychology, computer science, and library and information science. This is followed by a number of various research fields that vary between everything from education sciences to sociology. However, this can be mainly interpreted to mean that there are three dominant orientations conducting research on consumer culture and behavior:

- 1) Economic and commerce-oriented research;
- 2) Technical research on, and how to use, systems for e-commerce;
- 3) Behavioral research.

Therefore, the general structure is comparable to research on indebtedness in digital contexts, with the exception that behavioral research is more salient than in research on indebtedness.

Articles/Research Field

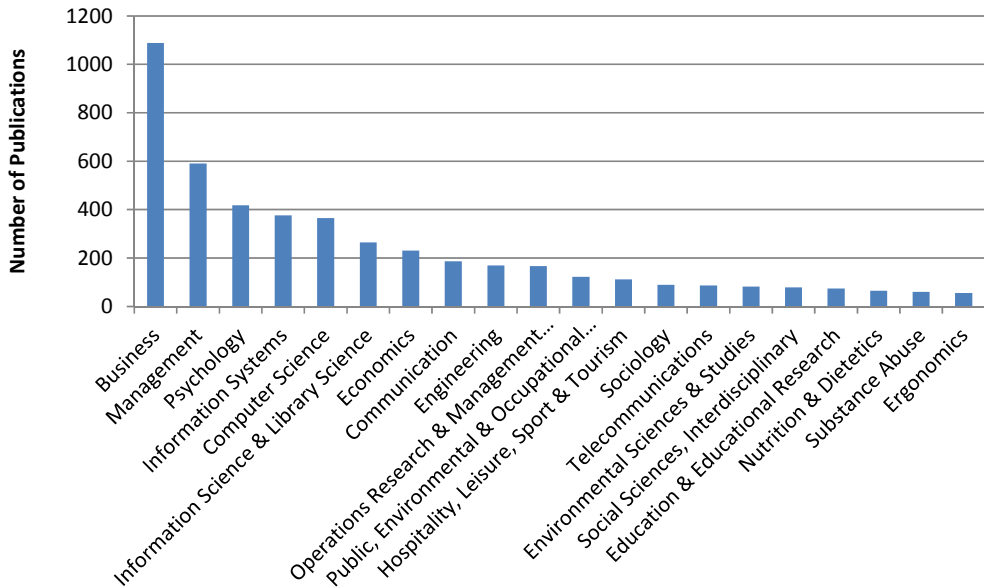


Figure 7. Research fields which publish articles on consumer culture and behavior in digital contexts, defined as WoS categories for journals. 20 research fields containing more than 55 articles (n = 117 WoS categories).

If we switch focus to research fields that study consumer culture and behavior using the WoS categorization of the journals that publish the articles, as well as the journals cited by these articles, the results match relatively well with the results of the analysis of journal categories (Figure 8). Management, economy and marketing are found in the middle of the map, represented by a yellow and a green cluster, where the green cluster in the map's lower section represents journals that focus on marketing, while the yellow cluster in the map's upper section has a stronger focus on management and economic research. On the left side of the map we find a cluster that focuses on information systems, which, when compared to the cited journals in the corresponding analysis of debt issues, is more focused on information systems that specialize in management and decision-making functions. And on the right side, we find a red cluster with a strong focus on psychology journals, while the sociological perspective which we found both in the analysis of journal categories on cultural and behavioral issues, as well as in the analysis of cited journals that address debt issues, is absent.

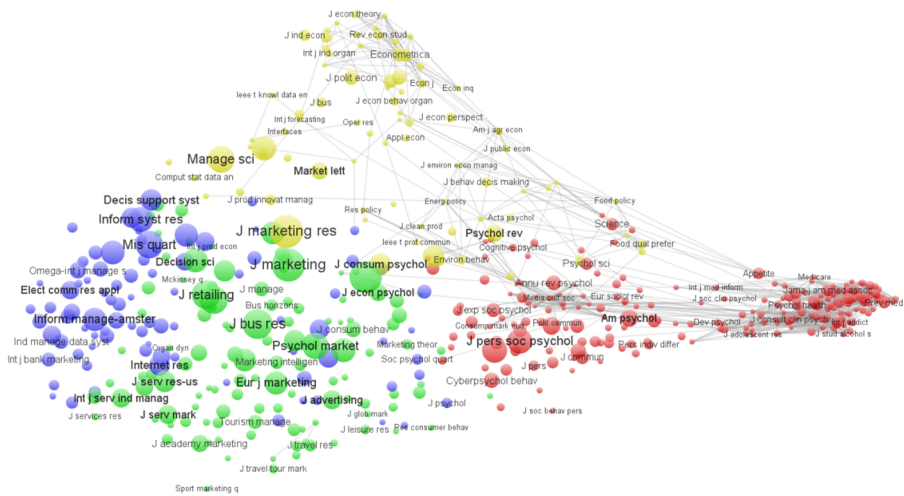


Figure 8. Research that the authors of the article relate their research to, represented by Cited Journals. Co-citation analysis based on the journal name in the "Cited Reference" field. 501 journals were cited at least 18 times. The lines represent 1,000 individual citation links or more.

Similarly to our findings on research on indebtedness in digital contexts, we find clear economic perspectives as well as research on technical aspects within research fields that address issues of consumption behavior and culture. Further, a more apparent behavioral science perspective emerges, and in particular a psychological perspective (based on cited journals).

What is being said?

In order to explore what is actually being said within research on consumption culture and consumer behavior, we again analysed the terms used in the titles, abstracts and keywords of the articles that the analysis is based on (Figure 9). The terminology map that emerges consists mainly of two sides:

- On the left hand side, one which is linked to a systems perspective, with a focus on consumer trust in commerce and technology, as well as issues concerning technology acceptance and consumers' actual use of e-commerce and payment systems.

Summary of Sub-study 1

Studies of international research on e-commerce, as represented by articles indexed in the WoS databases, demonstrate some relatively clear characteristics:

- Much of the focus is on systems and commerce rather than on consumers and consumption patterns, which among other things means that the economic/business-oriented perspective is dominant in the analysis of indebtedness in digital contexts.
- A terminology-analysis within the analysis of debt in digital contexts demonstrates that the research perspective tends to be partly technical and partly based on commercial and financial aspects such as, for example, assessment of creditworthiness and avoidance of outstanding payments.
- The amount of research in the bibliometric analysis of consumer cultures and consumer behavior in digital contexts which assumes a consumer or user perspective, but which largely focuses on the opportunities for a well-functioning electronic commerce, is striking.

This means that to the extent that research on consumers and their behavior can be identified, it generally addresses risk behaviors. The focus appears to be, "How do we design systems for e-commerce?" or "How do we avoid not getting paid?", rather than the implications of digital access to consumption and potential indebtedness issues related to e-commerce from a consumer perspective.

Sub-study 2: Systematic Literature Review

A systematic literature review is a compilation of relevant literature within a specific area of study. The collection method for such a review is based, as the name suggests, in carefully developed and systematic methodology for literature searches. A description of the method follows below, including an explanation of how this was applied to the present study, as well as a description of the materials used. One of the strengths of this sub-study which cannot be placed within the bibliometric study, meaning that they complement each other well, is that it includes a qualitative dimension where we read and evaluate much of the literature we have systematised, albeit this is mainly regarding abstracts. This provides a somewhat deeper understanding of the type of knowledge being published, as well as a good opportunity to highlight significant publications, whether quantitatively representative or not.

Materials and Methods of the Sub-study

In brief, the systematic search method can be described as a three-stage process consisting of searching, screening and analysing. Various databases are selected preferably based on their relevance to the search and/or the literature review. Since the subject of this research review is by nature broad and can be researched within a number of disciplines, we have elected to confine our searches to so-called general databases, rather than discipline-specific databases. Moreover, we have chosen to focus on international scientific databases in this sub-study, since the aim here is to specifically identify the international state of research on consumption and over-indebtedness in digital society. For our search, we chose the Academic Search Complete and Scopus databases. The Academic Search Complete is owned by EBSCO, which is regarded as one of the leading suppliers of digital academic literature. The database indexes approximately 23,000 scientific journals which cover everything from anthropology to engineering and science. Scopus is owned by Elsevier, another leading actor in the digital academic literature market. The database indexes roughly 22,000 scientific journals and also has a broad coverage of fields and

disciplines. The systematic search method has both strengths and weaknesses. One important strength, in particular for the present research review, is the ability to capture the breadth of the research field and provide as comprehensive a description as possible. A further advantage is the repeatability of the search method. Since the search strings are clearly defined, it is possible to repeat the same search at a later time and thereby note any changes within the research field. This approach, however, entails limits which have implications for the sub-study results. When conducting a broader search, the accuracy of a more targeted search is lost to some extent. Furthermore, the selected databases index a specific selection of publications, generally conference proceedings and articles in peer-reviewed journals written in English. Monographs, reports and articles published in Swedish, in Swedish academic journals and other Scandinavian languages, are not included. Publications containing relevant findings of interest for the research review risk thus being excluded from the scope of the search. In order to include these types of publications, additional searches were conducted and are presented in sub-study 3.

The present systematic literature review is based on three search strings which correspond to three additional searches. The first string (hereafter, search 1) was used to capture hits containing the search term “over-indebtedness”, which initially generated 45 hits in the *Academic Search Complete* database and 64 hits in *Scopus*.

overindebt* OR over-indebt* OR (over AND indebt*)

The purpose of this search was to produce a comprehensive overview of the frequency of the term “over-indebtedness” in the scientific publications indexed by the databases, as well as to provide an indication of how the term is used in the publications generated by the search.

The second string (hereafter, search 2) was used to capture hits that combine the main search term “digital” with “consumption” and “indebtedness.” This search initially generated 1,411 hits in the *Academic Search Complete* database and 828 hits in *Scopus*.

(debt* OR overindebt* OR over-indebt* OR loan* OR borrow* OR lend* OR credit* OR mortgage OR invoice) AND (Digital* OR online* OR electronic* OR cyber* OR internet* OR virtual* OR wired OR e-*) NOT Librar* AND (buy* OR shop* OR consum* OR purchas* OR retail* OR merchandi* OR marketing)

The third search (hereafter, search 3) was used to capture hits that combine the main keyword "mobile" with "consumption" and "indebtedness", which initially generated 661 hits in the Academic Search Complete database and 828 hits in Scopus.

(debt* OR overindebt* OR indebt* OR loan* OR lend* OR credit* OR mortgage OR invoice) AND (mobile OR cell phone OR Iphone OR android OR application* OR app OR smartphone) NOT Librar* AND (Buy* OR shop* OR consum* OR purchas* OR retail* OR merchandi* OR marketing)

In all three searches, the time span was delimited to between 2000 and 2014. All results have been saved and systematized in the reference management system Zotero. In the second step of the systematic method, the scanning process, the searches from the respective databases were merged, followed by a screening for any duplicates. Thereafter, the remaining matches were examined manually in order to exclude any that were not of topical relevance. Screened hits might, for example, focus on indebtedness at the state and supranational level, micro-loans in developing countries, or other subjects that were clearly irrelevant to the present research review such as solar research. After the screening, 44 hits were deemed relevant in Search 1; 483 hits in Search 2; and 105 hits in Search 3. After a second screening for duplicates, 166 peer-reviewed publications remained, which form the basis of the analysis in sub-study 2. The third step of the systematic method, the analysis, was conducted via repeated close readings of the abstracts of the publications. Based on close reading, the articles were coded, and the publications were systematised according to the categories in the results section below.

Results of Sub-study 2: Systematic Literature Review

This section presents the results from sub-study 2. The included articles have been divided into eight categories, each of which deals with a research subject that we judge as predominant in the material. The first category "indebtedness" is based solely on Search 1, while the other categories are based on search 2 and 3. A table for each category indicates the number of included publications from each search, as well as the aggregate number of results after having screening for duplicates. This is then followed up by a summary of the category's most prominent research themes with illustrative examples of arguments and results in the included articles.

Over-indebtedness

Search 1

44 results

As mentioned in the methods section, the purpose of a general search for the term "over-indebtedness" was to form a comprehensive understanding of the term's prevalence in the scientific publications indexed by the selected databases. Furthermore, we found the opportunity to obtain an understanding of how, and in which situations, the term is used in the articles and conference proceedings to be of interest. Thereby, our purpose was to gain an understanding of whether, and if so, to what extent, digital development and consumption patterns in digital society are linked to over-indebtedness issues in contemporary international research. Listed below are four search themes that recur in the material: 1. The changing consumer credit market; 2. causes of over-indebtedness; 3. financial literacy; and 4. over-indebtedness and ill health.

The positive and negative impacts of **the changing consumer credit market** on the individual consumer's financial situation is addressed in the majority of the articles. In particular, they address the European markets and EU laws and regulations surrounding consumer credit. Differences between individual EU countries in managing increasing over-indebtedness problems are also highlighted. Ramsay (2012) highlights, among other things, the differences between the responses in the UK and France to what he describes as a marked increase in over-indebted individuals in both countries from the mid-1980s onwards. He notes that the differences in the countries' responses can largely be explained by historical factors, ideological differences and how much influence is allotted to the various interest groups in the problem management process. Over-indebtedness is also depicted from a Finnish perspective (Raijas, Lehtinen & Leskinen, 2010), whose focus is on finding instruments to both prevent and manage over-indebtedness issues.

One issue that pervades these and other publications that address the changes in the consumer credit markets concerns **the causes of over-indebtedness**. In particular, this concerns whether the basic cause for these changes can be found at the micro or macro level, as well as understanding the contextual relationship between the state, the market and the individual. The impact of the financial crisis on the individual's everyday economy is mentioned, as well as the increased responsibility and the increased level of knowledge, with regards to financial literacy, that a deregulated consumer credit market requires of the individual.

The significance of **financial literacy** for the prevention of over-indebtedness is an area that is explored in a number of articles (see, f.ex., Chlouba, Simková & Nemcova 2011; Reifner & Herwig 2003; Tomasková, Mohelská & Nemcová 2011). Financial literacy is defined as the knowledge and skills required of the individual to

actively perform in a market of financial products. A mutual starting point for the articles is the increasing need for this type of knowledge and skills in conjunction with the consumer credit market, as well as the market for private financial solutions in general, having grown increasingly complex. One theme found in the articles that concerns how different e-tools can be used to teach financial literacy online (Chlouba, Simková & Nemcova 2011) is of particular interest for this research review. There are also some articles that adopt a critical perspective to financial literacy (see, f.ex., Walker, 2012). The argument is that this perspective places too much responsibility on the individual, since a lack of knowledge, or problematic consumption patterns, are considered overly simplistic explanations for severe indebtedness (ibid.; Frade 2012). Rather, structural factors, such as the financial crisis and the changing consumer credit market, as well as less value-laden individual factors such as changes in economic situation following death or divorce, should be taken into consideration (Rueger et al., 2011).

Physical and mental ill-health are also noted as causes of over-indebtedness. However, these factors are also mentioned as an effect of a life-style burdened with severe financial problems. For example, Rueger et al. (2013) show links between over-indebtedness and health problems related to increased smoking, Ochsmann et al. (2009) find connections to back pains, while Münster et al. (2009) link over-indebtedness to obesity.

Various perspectives on the causes and consequences of over-indebtedness emerge in the material. No links are made between changing consumption patterns in digital society and over-indebtedness, and/or problematic indebtedness in private individuals, which is of interest to this research review. Explanations for this may, of course, be found in the study's methodological limitations and / or in the absence of actual empirical links. Based on the results of the bibliometric study, a more probable explanation is that research on over-indebtedness and research on digital development and its consequences are both conducted within different disciplines that share few points of contact. This is reinforced by the results of the searches directed specifically towards the terms "digital" and "mobile", as presented below.

Economy, finance and management

Search 2	14 results
Search 3	21 results
Total	20 results

The topics covered in the articles categorized under this heading address online banking, digital processing of loan applications, mobile payment models and management of credit risk in relation to e-commerce. In all cases, the perspective is that of private commerce, banks or other lenders. Although potential customers and debtors are included within the focus of research, consumer terms and status are not the object of study. Articles that address online banking's Internet services do, however, study bank customers' trust in them, as well as factors that influence their choices in purchasing a service or not (see, f.ex., Zhou 2012). However, the main focus is the bank's potential profits from Internet services, which include financial, organizational and marketing aspects. This also applies to the example of research on digital processing of loan applications (Malm, 2005) included in the materials, and management of credit risks in relation to e-commerce (Huang, Chen & Wang 2007; Wang, Li & Lin 2013). In addition to these themes, there are also studies with a more systems development-oriented focus, such as the following example which focuses on whether so-called mobile banking services (f.ex. the bank as a mobile application) can be integrated with existing banking systems (Moloo et al., 2010).

The mobile payment models that are addressed in the category's articles provide one interesting clue that may indicate new directions in research on changing consumption patterns in the wake of digital technology. Polaski et al. (2012) and others explore whether mobile payments can be considered as efficient as cash payments and concludes that they can, in fact. Thair, Luo and Summons (2010) demonstrate that e-commerce consumers accept mobile payment systems to the same extent as traditional online payment systems such as PayPal, while an older article (Herzberg, 2003) identifies the security of mobile payments as high.

Also included in the materials is an article entitled "New Architectures for Financial Services" which provides a more comprehensive overview of the new business opportunities that have been developed as a result of financial and credit market changes. These changes are related to globalization, deregulation and the emergence of new information and communication technology (Kumar 2004). The article primarily discusses the interaction between these changing factors at a more comprehensive structural level. There is a need for more research on the implications this interaction has at a micro level in the individual's everyday life, with a particular focus on changes in consumption and indebtedness patterns.

In summary, the research presented in this category confirms the results of the bibliometric review. Research on the opportunities created by digital technology in the credit and financial market rarely adopts a consumer perspective, neither does it link to the emergence of potential, financially difficult situations for the individual.

Systems development and data management

Search 2	42 results
Search 3	60 results
Total	60 results

The articles categorized in this section address issues that in various ways focus on technical aspects of digital consumption and credit. A significant number of the articles present solutions for online payment services and for various forms of mobile payment and digital money management systems. The web designs of various e-commerce websites are also studied (see, f.ex., Xiaowen & Gavriel, 2003). Constructing systems or designing web sites that project trust and confidence in digital financial services to potential customers (see, f.ex., Chang & Kwon 2009; Antonakis & Sfakianakis 2010) is the topic of a number of articles. In many cases, potential trust and confidence issues are linked to secure data management and secure payment systems for data management. Here, the articles present suggestions for secure systems to counteract fraud (see, f.ex., Chang 2013; Venkataramani & Gopalan 2007; Das, Saxena & Gulati 2005; Wopperer 2002). One suggestion that deserves special attention concerns so called bio-identification, "biometrics" (Gordon & Sankaranarayanan 2010).

Another prominent research theme in the articles categorized in this section is the various opportunities created by digital technology to analyse customer behavior and customer credit. The majority of the authors note that competitive advantages can be created by large-scale analyses of the digital traces consumers leave behind at various sites, so-called "data mining" (see, f.ex., Kruppa et al. 2013; Blake 2006; Hsieh 2004). The massive amount of data generated by their traces, often known as "big-data", is described as a good basis for credit assessments (Huang, Chen & Wang 2007). However, a more critical perspective of this form of data use is sorely lacking. From a privacy perspective, at what level it becomes dubious, and for what type of purposes the data gathering may exploit information that customers are often unaware that they share, can be debated. Little attention is paid to privacy issues; rather, "data-mining" and "big data" are addressed primarily as new opportunities to create competitive advantages and new profit possibilities by mapping customers and/or borrowers' online behavior.

The absence of a more critical perspective of "data-mining" and "big-data" can be explained by the fact that in this category too, the majority of studies clearly adopt the perspective of the businessman, the bank or of some other lender. The stated primary driving force for building secure e-commerce systems and creating attractively designed websites for e-commerce and information architecture is to

increase this form of commerce. The negative effects of increasing digital commerce for the consumer are not focused to the same degree. The term "over-indebtedness" is not found in any of the articles, once again confirming the results of the bibliometric study. Here, too, it is clear that research on over-indebtedness and research on digital development are often conducted in different disciplines with little contact.

Marketing and consumption

Search 2	20 results
Search 3	28 results
Total	28 results

The articles categorized under this heading address new online consumption behaviors in various customer groups. There is also some research on "credit card behavior", i.e., how various consumer groups manage and use credit cards. For example, Fagerström and Hantula (2013) study credit card debt in college students in the United States. In their study, a group of students chose between 1) saving a substantial sum of money to buy a new, more desirable, well known brand of mobile phone, or 2) buying the phone on credit and receiving it directly in-hand, but at a high credit rate (almost 40%). The study demonstrates that students who are more accustomed to credit cards more frequently chose the latter option. However, the researchers conclude that the option to directly gain ownership of a much awaited product was the primary driver for the students to accept credit at a very high interest rate.

Jahankhani (2009) studies how consumers manage various perceived risks in e-commerce situations, such as identity theft and so-called "phishing." The author states, however, that online consumer behavior is still a fairly meagrely researched area which needs additional academic attention. This is also pointed out by Rahman, Rezaul & Hossain (2009), who explore how consumers' trust in e-commerce influences their online purchase and consumption behavior. It should be emphasized that both articles were published in 2009 and therefore cannot be said to provide a precise overview of the current state of the research. The results generated in the present sub-study, however, confirm their findings. Only a few articles included in the material specifically address online consumer behavior, which may, of course, be a result of the study's limitations. For complementary purposes, we therefore chose to conduct additional searches, presented in sub-study 3.

We also see that the results of the bibliometric study are once again confirmed. The concept of over-indebtedness does not appear and neither do issues such as

financial difficulties linked to e-commerce or digital consumption receive attention in any of the included articles.

Law

Search 2	2 results
Search 3	0 results
Total	2 results

The materials contain only two articles that can be said to deal with matters of a legal nature. One possible explanation for this is that research within this field is published through other channels than those indexed in the databases used in the study. "Law" is specified, however, as a specific subject area included within the Academic Search Complete. In order to ensure that legal research was included, we chose to complement with additional searches, which results are presented in sub-study 3. The two articles of a legal nature included in sub-study 2 are briefly presented below.

The first article "Debt Collection in the Information Age: New Technologies and The Fair Debt Collection Practices Act" (Hector 2011) was published by the *California Law Review*. Therefore, it has been written within a North American context and is based on US law. The author notes that mobile technologies and the Internet are increasingly used as tools to collect debts, and also identifies a number of problems that emerge in the wake of this development, including privacy issues and new forms of fraud. One proposed response could be an update of the legislation that regulates debt restructuring, known as the Fair Debt Collection Practices Act. Although the actual proposals are not directly applicable in a Swedish context, and are therefore not reported here, the article demonstrates the problems that may arise when law falls out of pace with technological developments in various debt issues.

The second article "To Be or Not to Be Electronic Money, That's the Question" (Schudelaro 2003) was published by *Information and Communications Technology Law*. The article problematises the definition of electronic money, as defined by The European Electronic Money Directive. The focus of the study is on whether mobile phone credit can be said to constitute electronic money. Since the article was published in 2002, it is possible that this specific directive is no longer applicable; however, the issue of how electronic money should be defined continues to be of interest.

Medicine and psychology

Search 2	2 results
Search 3	6 results
Total	6 results

We have chosen to name this category "Medicine and Psychology"; however, it should be emphasized that the majority of the articles categorized under this heading address issues related to psychology. One interesting example is an article by Xiao et al. (2011), which examines the psychological processes that may explain so-called risky credit behavior in young adults in the United States. Although, the definition of "psychological processes" is somewhat unclear, the conclusion drawn by the authors is that parental norms and socio-economic status are important factors that affect young adults' credit behavior. It is further concluded that subjective financial literacy is a better prevention for risky credit behavior than objective financial literacy. An additional example is demonstrated in another study that explores the relationship between cognitive ability and the ability to make deliberated decisions in one's personal finances (Agarwal & Mazumder 2013). Not surprisingly, the conclusion is that those respondents with higher results on the cognitive tests in the study also made fewer mistakes in their personal finances.

In summary, there are few results to report in this category, and therefore, based in the materials, it is difficult to conclude more general features.

Social work and welfare research

Search 2	2 results
Search 3	3 results
Total	3 results

Only a small number of articles have been placed in this category, which means that it is difficult to describe more general features, here too. One possible explanation for why so few articles were retrieved is that research conducted within these category themes is published through channels that are not indexed by the databases used in the study. Similarly to previous themes, we therefore chose to complement with additional searches, which results are presented in sub-study 3.

The three articles placed in this category address debt settlement or debt counselling (Xiao & Wu 2008), credit card use among tomorrow's elderly (Apostolova & Gehrt 2000), and how information on financial support is searched for online (Doyle 2002). Of particular interest is the article by Xiao and Wu (2008), which examines factors that influence whether a consumer completes a debt settlement or not. Their study shows that the consumer's personal attitude and intentions have great importance to the outcome of the process. A consumer with a positive attitude who intends to complete the process does so to a greater extent than consumers with the opposite attitude. Similarly, they also find indications in the material that the debt counsellor's attitude as well as the consumer's perceived control of the situation also affects the process outcomes.

Doyle's article "Playing the Numbers: Searching for Help" is of interest from a digital research perspective. The author explores how searches for financial support in Google conform to as well as depart from authorities' and other organizations' official timelines for applications for financial support. The issue concerning the interaction between access to, and understanding of, online personal financial information and financial literacy could be developed further.

Financial literacy

Search 2	0 results
Search 3	3 results
Total	3 results

The articles categorized in this section have already been mentioned in relation to the research themes discussed above. Therefore, they differ thematically, but share in common that they highlight the importance of financial literacy. Xiao's et al. study (2011) is discussed in the section headed *Medicine and Psychology*. This study examines the psychological processes that could explain so-called risky credit behavior in young adults in the United States. One conclusion the authors draw is that so-called subjective financial knowledge, i.e., knowledge acquired through one's own experiences, is better equipped to prevent risky credit behavior than objective financial knowledge, i.e., knowledge acquired through various training programs. The article by Agarwal and Mazumder (2013) was also mentioned in the section *Medicine and Psychology*, which demonstrates the links between good mathematical knowledge and a higher degree of financial literacy. The section *Over-indebtedness* references Chlouba, Simková & Nemcova (2011). Their article presents a study of digital

interactive training in financial literacy which aims to teach consumers how to act in certain personal financial situations that may arise.

Summary of Sub-study 2

With regards to the international research on over-indebtedness and consumption patterns, as represented by articles and conference proceedings indexed in the Academic Search Complete and Scopus, a number of strengths and weaknesses can be identified:

- Over-indebtedness appears to be a relatively well researched phenomenon. However, there is little research on potential links between changing consumption patterns in digital society and over-indebtedness and/or problematic indebtedness in private individuals.
- Technical aspects of digital consumption and credit, such as online banking, digital management of loan applications, online payment services, management of credit risks in e-commerce and mobile payment models and systems also appear to be well researched. However, more critical perspectives on the impact of e-commerce on the consumer are lacking. The general perspective is usually that of the businessman, bank or other lender.
- Legal research, research in medicine and psychology, and financial literacy do not occur to the same degree in the materials. This could be explained by limitations of the databases used for the search.

In summary, the results of sub-study 2 confirm the results of the bibliometric study. Research on over-indebtedness and research on digital development are often conducted within different disciplines that share few points of contact. One consequence of this, with regards to the study's materials and results, is that research on the opportunities created by digital technology in the credit and financial markets is not linked to the individual's potential, financial difficulties. The potential relationship between these areas, therefore, deserves further scientific study.

Sub-study 3: Additional Searches

This sub-study aims, to the greatest possible extent, to fill the gaps in the remaining material following the bibliometric study and systematic literature review, here with a focus on Sweden. Within this context, this mainly refers to reports, studies and monographs, often written in Swedish, but also scientific articles written in Swedish and English. We wish to emphasize that we do not presume to present an exhaustive material in the present research review; but we do hope to provide as complete an overview as possible of the field of study, in conjunction with the additional searches. The data collection procedure is briefly described below, followed by a presentation of the sub-study's results and summaries.

Materials and Methods of the Sub-study

A series of additional searches were conducted for the final data summary; however, the system used in the other sub-studies was not used this time, since this methodology is not suitable for the databases and other sources used in these searches. The sources used for the searches in sub-study 3 are as follows:

- **SwePub:** This database indexes publications registered in the archives at Swedish universities and colleges, for example, Lund University Publications (LUP) and Uppsala University's DiVA.
- **Google Scholar:** A search engine that focuses on scientific material.
- **www.riksdagen.se** and **www.regeringen.se:** These sites were used to search for relevant public inquiries and similar public publications.
- **The Enforcement Agency** website was used to find relevant reports from that authority
- **The Consumer Agency** website was used to find relevant reports from that authority

In addition, a number of the publications' list of references were studied to find more publications of relevance. Keyword searches were conducted in the SwePub archive in both Swedish and English. The table shows number of hits per term.

SWE PUB	
term	Number of hits
Överskudsättning	8
Overindebt*	2
E-handel	35
"Online shopping"	19
M-handel	1
"Mobile shopping"	2
Sms-lån	2
Snabblån	0
"Payday loan"	0
"Instant loan"	1
Näthandel	0
Online konsumtion	136 (after screening 11)
Digital konsumtion	3 (after screening 1)
Konsumtionslån	0
Konsumtionskrediter	1
"Consumer credit"	8 (after screening 2)
"Finansiell färdighet"	0
"financial literacy"	24

The results of the table provide an indication of the areas of relevance to the research review theme that are being researched at Swedish universities and colleges. However, it should be emphasized that the publication archives indexed by SwePub are not wholly comprehensive. Further, the metadata of the publications is on occasion incomplete, which may entail that relevant publications are not retrieved.

Using the same terms as for the SwePub database search, additional searches were also conducted using the Google Scholar search engine. This search engine often generates many hits, but since there are few opportunities to delimit the search, the dataset often becomes somewhat unmanageable. The accuracy of the searches is also low, resulting in overly many irrelevant hits. Several of the hits found in SwePub reappeared in the Swedish searches conducted in Google Scholar. In addition, the

body of hits was comprised of bachelor essays, and 1 year and 2 year MA theses. Here we have chosen to delimit and only include essays at the postgraduate level.

Searches in public publications were mainly carried out in the Swedish Ministry Publication Series [Departementsserien, Ds] and governmental public inquiries [Statens offentliga utredningar, SOU]. With regards to reports by the Swedish Enforcement Authority and the Swedish Consumer Agency, we chose to limit ourselves to reports from 2010 onwards.

As in sub-study 2, the publication abstracts underwent close reading. In cases where abstracts were not available, the articles were read in their entirety, when possible. The results of the searches were then coded, resulting in a systematization of the publications in the three categories to be found in the results section below.

Results of Sub-study 3: Additional Searches

The results of sub-study 3 are presented below. The included publications have been divided into three categories – consumer credit, loans, and instant loans; digital and mobile consumption patterns, as well as financial literacy – each of which deal with a research theme that we find to be prominent in the materials, and of particular relevance for the research review. Summaries of these categories are presented below, including examples of findings of interest in studies and reports.

Consumer credit, loans and instant loans

This section presents examples of research that in various ways address consumer credit, loans and instant loans. We have also chosen to examine whether digital and mobile consumption patterns, as well as budget and debt counselling, are discussed in the literature that addresses over-indebtedness and debt restructuring.

Credit, loans, and instant loans comprise a broad field. Based on the collected data, there is relatively little Swedish research on consumption and instant loans and their effects on individuals and society, in general. One exception is publications that address instant loans restructuring, often written within the legal field. Torbjörn Ingvarsson (2009) discusses stricter credit assessments, among other things, as a method to improve the situation for instant loan-borrowers. Claes Martinsson (2010), in turn, demonstrates methods of applying current legislation in order to strengthen the borrowers' status in relation to text message loans companies. Both of these publications precede the 2011 reinforcement of the Consumer Credit Act. Following that, creditors were obliged to meet stricter requirements for credit assessments on instant loans before granting loans. The changes also required instant loans marketing to present clearer information on interest rates. Annina H. Persson and Ann-Sofie Henriksson (2014) studied the regulation of instant loans in a later

published article: "Regulation of Instant Loans and Other Credits in Swedish Law." They note that the problems in Swedish credit society are well known, but there is not yet any consensus on how to solve the problems, with little change occurring within Swedish law. Additionally, Persson (2010) has previously identified the various legislative measures that have been implemented to counteract the growing problem that over-indebtedness is considered to be.

Within the international literature, too, various methods of strengthening the rights of text message-loan users are discussed. The article "Protection of Consumer Rights in SMS-loan Agreements" (Saare, Sein & Simovart 2010) studies whether it is possible to protect consumers who have accepted SMS loans with very poor terms and conditions. They conclude that consumer rights are best protected by increasing consumers' knowledge, by increasing the effectiveness of the Consumer Agency's activities, and finally, through a change in legislation. The international literature also addresses the impact of instant loans on credit unions, i.e., credit cooperatives owned by their members which provide them with loans and financial services. A British study (Cato, Myers & Howlett 2013) demonstrates that many financially vulnerable families often choose instant loans rather than borrow from a credit cooperative, despite the latter loans frequently offering much better interest terms. Instant loans tend to both out-compete credit cooperatives and place more families in a difficult financial situation. The authors call for clearer policies to regulate instant loans, an argument we have also noted in Swedish research.

Several publications address young people's and young adults' perception and use of consumer credit and instant loans. A number of studies and reports demonstrate that young adults are a particularly vulnerable category (see Enforcement Authority report in Swedish: Kronofogden, 2012, 2013a, p. 31; SOU 2013:78, pp. 198f.; Hoeve et al. 2014). According to a study by the Enforcement Authority (2012) on the underlying causes of payment orders for people between 18 and 25 years, one of the most common causes is invoice purchase. A large portion of these is related to purchases from e-commerce companies. App purchases and in-app purchases are another trend. The developments in this area have recently led to the government investigating the legal status of private consumers when purchasing apps, premium services (also known as premium services and text message payments), and similar products (App to date, DS 2012:31). In dialogues with the Enforcement Authority's prevention operations, we were provided with a preliminary report on mobile payment services (2013b) which notes that these lead to yet another credit opportunity mainly used by younger people, and which could lead to indebtedness problems (p. 18). The preliminary study calls for a "comprehensive overview of children's use of smart phones" in order to more effectively implement preventive measures in child indebtedness (p. 22). In this case, the contractual situation has been particularly identified as a problem.

A Canadian study (Lachance 2012) explores the general attitudes toward credit in young adults. The study, which includes 980 respondents, demonstrates that the

group is aware of both the benefits and the risks of credit. Further, it also demonstrates that how credit is used in one's social environment (by parents and friends) has an impact on the respondents' attitude. Young adults with parents and friends who frequently use credit also displayed a more positive attitude toward credit use.

A Finnish study (Autio et al., 2009) with a focus on young adults demonstrates that it is more common for single parents and other individuals with a precarious status on the labor market to use instant loans and other consumer credit. The loans are used both to cover basic costs such as food and rent, as well as for entertainment. Several respondents also mentioned that instant loans are often needed to pay interest and earlier loans. For some young adults, instant loans lead to a "vicious circle of debt" that can only be broken by a significant increase in income or a corresponding reduction of costs (Autio et al., 2009, p. 413). The results of the Finnish study indicate that new online credit opportunities and via mobile phones can lead to problematic indebtedness in young adults. In particular, the risk appears to increase for individuals in this group who are already in a vulnerable financial situation. Nord (2013) demonstrates that young adults perceive the available information on instant loans and their terms as unclear, which may provide a further cause for this situation.

The aforementioned studies were conducted in a Finnish context and therefore describe Finnish conditions. The Swedish research focuses on adults to a higher degree and emphasizes that the path leading to indebtedness is a complex one. Often, several factors contribute to the individual finding himself in that difficult a financial situation (Sandvall 2008; 2011). The study *Överskuldssättning i creditsamhället?* (SOU 2013: 78), (Over-indebtedness in the credit society?), however, also identified instant loans, communication debts and invoice payments as risk factors for problematic indebtedness in young adults in Sweden. The publications that we have identified which address budget and debt counselling do not address the situation of young adults, nor the specific role played by instant loans and consumer credit. Methods to reach young adults through budget and debt counselling continue to be an area for research that can be developed further.

Digital and mobile consumption patterns

This theme covers research on consumption patterns and in what way these might potentially interact with digital and mobile technologies. First, we note that there appears to be a need for further knowledge within this area. For example, e-commerce researcher Malin Sundström points out that at this point,

we know little about how people "consume" new services related to mobile/digital technology, and above all, we know little about why they use so-called technological devices. The need for knowledge is vast and we need to learn more, perhaps while

simultaneously taking advantage of existing knowledge on purchasing behavior, purchasing processes and attitudes to new technology (Sundström 2013, s.s.).

However, there are a number of international studies that examine mobile technologies in the borderland between consumer practices and everyday life (see, f.ex., Caron & Caronia 2007; Goggin 2006; Gerard 2009; Silva 2012). This type of research views consumption primarily as a social practice and identity-building process, and its focus is located to explaining the role of new technologies played by mobile phones for, and within, this process. A portion of the research focuses on the relationship between economy and society from a "consumer culture" (cf. Lury 2011) or a "consumer society" (Miller 2012) perspective. However, strictly economic aspects of consumption are rarely touched upon, nor is indebtedness resulting from consumption the focus of this type of research.

The fact that research on so-called m-commerce remains undeveloped can be explained by the fact that the phenomenon is still considered new. Digital consumption in the form of e-commerce continues to be the more established practice, and there are several examples of research in the materials that address consumers' purchasing behavior in e-commerce situations. Sundström et al. (2013) study the emotions that consumers link to impulsive purchases of clothes online and mainly identify positive emotions such as pleasure and reward. There are also studies that compare consumer behavior in e-commerce and mail ordering (Sundström and Nilsson 2010), as well as studies that explore purchasing behavior in the elderly in web-shop contexts (Sundström 2014).

Research on children and young people's consumption (Johansson, 2005; Lundby, 2008, 2011a, 2011b) is a prominent theme in the collected data. A 2011 report from the Swedish Consumer Agency found that many young people (15-17 years) conduct online purchases, primarily, to purchase computer games, music and movies (Lundby, 2011b). In a comparison against the results of the annual report *Svenskarna och Internet, 2014* (Swedes and the Internet, 2014), music and films remain in the lead. However, subscription services such as Spotify and Netflix mainly dominate, which is a payment model that has spread downward through the age groups (Findahl 2014). It is unclear what type of payment model the Consumer Agency report refers to, however. Instead, the selection of goods and, secondly, the price are proposed to be the most common reasons for online shopping. Young people also use the Internet to search for information about various products. Search engines, both general engines and engines that specialize in price comparisons, are used in particular, but social networking services and blogs are also used. Young people appear to actively seek information about various products, but the type of information they find is not well established. For example, the study shows that the official websites of authorities that monitor quality product are only used minimally. The study highlights that there is no clear answer to whether young people are safe and secure online consumers. However, 9% of the study's participants had at some

point bought an item online that they thought was free, which indicates the vulnerability of young people as digital consumers.

Financial literacy

Within economics, some research has been conducted on financial literacy, which can be broadly defined as "the capacity to make informed and effective decisions on the use and management of money" (Schagen & Lines, 1996, p. 91). The developments surrounding the emergence of this concept indicate that if the consumer is to manage their finances in a balanced manner, a certain type of competence or knowledge is required. A mutual starting point for studies that address financial literacy lies in the fact that the individual in the credit society is forced to take increasingly complex decisions concerning their personal finances, which require new types of knowledge and skills. The low level of relevant knowledge among different groups in society is a problem that has been highlighted in several publications (Lusardi et al. 2010; Almenberg & Säve-Söderberg 2011; Varum et al. 2013). The majority of the studies note that the young, unskilled, and women are groups in particular need of financial training (see also SOU 2013: 78). There is some literature that addresses methods of measuring financial literacy (Huston 2010) and which also problematises the definition of the concept, as well as the rhetoric surrounding financial literacy and training (Ohlsson 2012).

The changing conditions of consumption and credit following in the wake of digital and mobile technology can also be presumed to create new needs for financial knowledge and financial literacy. Studies on young people's consumption also demonstrate that the Internet creates new opportunities for young people to become more informed consumers (Lundby 2011). However, the opportunities and requirements for financial literacy that digital and mobile technology demand are not touched upon to any great extent in the publications included in our materials. One exception of interest is a study by Bay et al. (2014), which links financial literacy to the research area "New Literacy Studies." Rather than perceiving financial literacy as a general and generic phenomenon, it is depicted as a practice that is dependent on context and situation. The authors do not specifically address the digital context, but based in their starting point, one could explore whether online loans may require other skills on the part of the borrower compared to taking a traditional loan in a meeting with an official bank clerk at the bank office.

Summary of Sub-study 3

Several results of interest emerge in the research on over-indebtedness and consumption patterns, as represented by the articles, reports and conference proceedings included in the present sub-study.

- We note that there is some international research on the impact of instant loans and consumer credit on individuals and society. In particular, young adults' use of consumer credit and instant loans receives attention. The situation for young adults in Sweden, however, is not as well researched, which also becomes clear in the research on budget and debt counselling. In contrast, instant loans restructuring is addressed to a high degree within the Swedish academic literature.
- The materials demonstrate that currently there is some Swedish research on consumption patterns and e-commerce. However, there is a need for more knowledge on, and how, consumption patterns change in relation to mobile and digital technology. In particular, the vulnerability of children and young people as young digital consumers deserves additional study.
- It would be a benefit for research on financial literacy to show greater consideration to the implications of digital development. Today, we know from past research that the level of financial literacy is of importance to the individual's financial situation.

Methods have also been developed to measure financial literacy. Nevertheless, financial literacy is frequently perceived as generic and independent of context. It would be beneficial to initiate studies that address financial literacy as a situated competence in order to highlight new knowledge needed by the digital consumer. In summary, the findings of sub-study 3 complement the findings of the state of research described in the two previous sub-studies, particularly with regards to law. However, these findings confirm the need for more knowledge of the relationship between the opportunities created by digital technology in the credit and financial markets and the emergence of a potential, financially difficult situation for the individual.

Summary and Conclusions

The purpose of this knowledge review is to describe the current state of research on new consumption patterns that have emerged as a result of the digitization of society, and in what way these consumption patterns affect the level of indebtedness in different population groups. This section concludes the summaries of the three sub-studies on the current state of knowledge. Both knowledge gaps and strong areas emerge in the materials. These are reported in the following section, and a number of recommendations for future research orientations are proposed.

Knowledge Gaps and Strong Areas

Consumption patterns in digital society

The bibliometric and systematic studies both show that the technical aspects of digital consumption and credit, such as online banking, digital management of loan applications and online payment services, credit risk management in relation to e-commerce, and mobile payment models and systems are well researched areas within the international research literature. Exploring trust in relation to e-commerce is greatly emphasised. To a large extent, this entails creating systems for commerce that are reliable and secure from a technical perspective, rather than any sort of broader concept of trust that also includes the consumer, user, or any other possible perspectives (cf. Larsson & Runeson, 2014, on digital trust). Therefore, there is some knowledge on different forms of consumption patterns in digital society, but it is primarily based in the perspective of actors involved in commerce and system development.

There are also some studies on patterns of consumption and e-commerce in the Swedish research literature. However, we note the need for more knowledge on, and how, consumption patterns change in relation to mobile and digital technology (Sundström 2013). Neither is indebtedness as a result of digital consumption explored to any greater extent. In particular, there is a need to investigate the vulnerability of children and adolescents as digital consumers.

Over-indebtedness

Further, the knowledge review shows that fairly extensive research has been conducted on over-indebtedness. It shows, among other things, that there are many paths that lead into this complex financial situation and that over-indebtedness both influences and is influenced by our health. However, there remains little knowledge on how the changes related to digital society affect the conditions of our personal finances. International research on the impact of instant loans and consumer credit on individuals and society which indicates that new online credit opportunities and via the mobile phone can lead to problematic indebtedness in young adults is an exception. In particular, the risks appear to increase for individuals in this group who are already in a precarious financial situation. Simultaneously, instant loans and consumer credit are only a part of the digital credit and consumption ecology. Potential links between changing consumption patterns in digital society and over-indebtedness and/or problematic indebtedness in private individuals, both in Sweden and internationally, need to be more fully investigated.

Consequences for different population groups

Young adults comprise the population group that is repeatedly mentioned as particularly vulnerable to the implications of digital technology in consumption and debt. This is made apparent within the international research literature, but it is also clear in the Swedish research. Young adults are identified as being in need of special financial training and as particularly vulnerable digital consumers. At the same time, young adults are highlighted as a group that can strengthen their consumer via digital development, since they use the new tools to search for information on products and to compare prices. Swedish research on children and young adults as digital consumers, however, could be developed, with regards to both the potential threats and opportunities that technological development entails for this group.

In summary, one general conclusion we can draw from all sub-studies is that research on over-indebtedness and research on digital development are often conducted within different disciplines that share little contact. One consequence of this, with regards to the review materials and results, is that research on potential opportunities created by digital technology in the credit and financial markets is not linked to the emergence of problematic financial situations in the individual. The potential links between these areas therefore deserves further scientific examination.

Recommendations

The work with this knowledge review has raised several questions and thoughts on how to further develop this research area. We choose here to note a few, albeit partly overlapping, recommendations that we consider to be the most important for future research orientations. Based on the results of this knowledge review, we see a need to develop more knowledge in the following areas:

- In general, more knowledge is needed on consumption patterns, and how they are affected by the development of mobile and digital technology. In particular, there is a need to further investigate vulnerability in children and young people as digital consumers. We propose an interdisciplinary approach that has the capacity to broadly approach this development and its consequences from several interacting perspectives to complement previous research.
- Currently, there is a great lack of knowledge on the potential links between changing consumption patterns in digital society and over-indebtedness and/or problematic indebtedness in private individuals, both in Sweden and internationally. Here, too, we propose studies with a more pronounced interdisciplinary and holistic approach to the research area.
- Financial literacy is central to contemporary credit society. We propose studies that also take the digital development into account and investigate the new skills required by the digital consumer in credit society.
- Young adults are a group poised to enter adulthood with all its financial obligations and opportunities. At the same time, they find themselves in the epicentre of technological development. They are continuously connected to potential stores through their smart phones via a technology that has almost become a part of their body. We know from previous research that this group is a particularly vulnerable consumer group, but what is the impact of constant connectivity on the consumption and debt behavior within this age group? What does credit purchase that is accessible through the mobile phone lead to? Is there a contradiction in how the literature views young people that, on the one hand, are seen as being accustomed to technology and possessing a high level of digital literacy while, on the other hand, simultaneously being incapable of planning their personal finances due to weak financial literacy? Here, too, we see a need for research.
- Digitization also entails a tremendous opportunity for tracing the individual and measuring large quantities of data, such as consumption patterns, but

also loan behavior and potential, individual credit circumstances. It enables targeted advertising in ways that are more invasive than ever before. To what extent this leads to increased vulnerability in the already vulnerable, for example, through "predatory lending" by less scrupulous loan institutions, is an area in pressing need of research. Research in the area of digital measurability that relates to over-indebtedness and consumption is predominantly concerned with how useful "Big Data" is for measuring consumer behavior.

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Appendices

1. Included Publications in Sub-study 2

Over-indebtedness

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Financial literacy

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2. Included Publications in Sub-study 3

Consumer credit, loans and instant loans

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