

Kunst, Katrine

Doctoral Thesis

Electronic Word of Behavior: Transforming Digital Traces of Consumer Behaviors Into Communicative Content in Product Design

PhD Series, No. 46.2018

Provided in Cooperation with:

Copenhagen Business School (CBS)

Suggested Citation: Kunst, Katrine (2018) : Electronic Word of Behavior: Transforming Digital Traces of Consumer Behaviors Into Communicative Content in Product Design, PhD Series, No. 46.2018, ISBN 9788793744394, Copenhagen Business School (CBS), Frederiksberg, <https://hdl.handle.net/10398/9695>

This Version is available at:

<https://hdl.handle.net/10419/209093>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/3.0/>

COPENHAGEN BUSINESS SCHOOL
SOLBJERG PLADS 3
DK-2000 FREDERIKSBERG
DANMARK

WWW.CBS.DK

ISSN 0906-6934

Print ISBN: 978-87-93744-38-7
Online ISBN: 978-87-93744-39-4

ELECTRONIC WORD OF BEHAVIOR: TRANSFORMING DIGITAL TRACES OF CONSUMER
BEHAVIORS INTO COMMUNICATIVE CONTENT IN PRODUCT DESIGN

PhD Series 46-2018

Katrine Kunst

ELECTRONIC WORD OF BEHAVIOR

TRANSFORMING DIGITAL TRACES OF CONSUMER BEHAVIORS
INTO COMMUNICATIVE CONTENT IN PRODUCT DESIGN

Doctoral School of Business and Management

PhD Series 46.2018

CBS  COPENHAGEN BUSINESS SCHOOL
HANDELSHØJSKOLEN

Electronic Word of Behavior

Transforming digital traces of consumer behaviors into
communicative content in product design

Katrine Kunst

Primary supervisor: Professor Ravi Vatrapsu
CBS Centre for Business Data Analytics &
Department of Digitalization, Copenhagen Business School &
Kristiania University College

Secondary supervisor: Professor Torsten Ringberg
Department of Marketing, Copenhagen Business School

Doctoral School of Business & Management
Copenhagen Business School

Katrine Kunst
Electronic Word of Behavior: Transforming
digital traces of consumer behaviors into
communicative content in product design

1st edition 2018
PhD Series 46.2018
Print ISBN: 978-87-93744-38-7
Online ISBN: 978-87-93744-39-4

© Katrine Kunst

ISSN 0906-6934

The Doctoral School of Business and Management is an active national and international research environment at CBS for research degree students who deal with economics and management at business, industry and country level in a theoretical and empirical manner.

All rights reserved.

No parts of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage or retrieval system, without permission in writing from the publisher.

Acknowledgements

A PhD project is rarely a one-(wo)man show, and this work is no exception. A great number of people have been influential in its shaping, and I'd like to take the opportunity to thank them.

First, I would like to express my deep gratitude to my primary supervisor, and Director of the Centre for Business Data Analytics, Professor Ravi Vatrappu. You have the memory of an elephant from which I have greatly benefitted, particularly your unfathomable knowledge of the computational social science field. I appreciate our many good discussions and your ever-optimistic and supportive approach, which has left me energized and self-confident meeting after meeting. I would also like to thank my secondary supervisor, Professor Torsten Ringberg from the Marketing Department at CBS, who has generously provided me with guidance in the qualitative portion of this PhD and helped me position my work in the marketing discipline.

Further, I wish to thank my colleagues at the Department of Digitalization. Especially Janni Nielsen for mentoring and reminding me about the importance of research done from the heart and out of curiosity – you are a true inspiration; Torkil Clemmensen for guiding me through the jungle of the psychology discipline and putting my theoretical choices into a larger perspective; Matthias Trier, Ioanna Constantinou, and Bo Christensen (Department of Marketing) for being excellent opponents in my two Work in Progress seminars, and Nicola Ens for carefully proofreading. Finally, I'd like to thank my colleagues at the Centre for Business Data Analytics, especially Kiran Kumar Kocherla and Abid Hussain for their help in carrying out the experimental study.

I also wish to express my deep gratitude to the anonymous reviewers of the conferences and journals I have submitted my work to. However lengthy and cumbersome the academic peer-review process can seem at times, it can also do wonders. Without my reviewers' critical comments and constructive suggestions my research would not possess the rigor it does today. Special thanks to the reviewers and guest editors of the DOTi special issue of Electronic Markets.

I would also like to highlight a range of collaborators in my industrial partner company, TDC Group, including former MarCom Director Camilla Ramby and former Senior Executive Vice President Anders Jensen, for their generous decision to co-fund this PhD project. Casper Hald

for letting me use Blockbuster.dk as the testbed for my experiment. The TDC Talent Excellence Program, in particular Susanne Nørgaard and Naja Rosenberg, who were instrumental in my change in career path. Further, I have had no less than four different industrial supervisors for this project, each of whom deserves special thanks: Sanne Heier, Martin Rodhe, Mathias Lysholm Faaborg, Michael Moyell. Finally, a big thanks to Marianne Hald for her assistance in varied administrative tasks.

Last, but not least I am deeply grateful to my family and friends for constant encouragement as well as needed distractions. Especially to the two persons in my life probably least aware of my PhD, my children, Alfred and Bertil: you are the shining lights of my life. I hope that you too will follow your curiosity and explore topics that you feel passionate about. Your laughter and joy has kept me grounded on planet earth during these past five years.

Abstract

The widespread digitization of consumers' daily lives creates a plethora of digital traces of consumers' product-related behaviors. These traces have the potential to be turned into meaningful communicative and observable content by the services that possess them. For example, Spotify displays what users' friends are listening to; Hotels.com shows how many other users are currently viewing a particular hotel; and crowdfunding platform Gofundme.com exhibits the names of recent backers for a given cause. As such, digitization has profoundly increased the potential observability of consumers' product-related behaviors. Researchers from both the Information Systems and the Marketing disciplines have taken an interest in investigating the impact of such digitally observable behaviors, and nascent research has found them to have a significant impact on the choices of those exposed to it. However, this dissertation demonstrates that the phenomenon is undertheorized and lacks empirical insights to inform the future design of digital products and services with behavior-based information.

Through a series of five research papers this dissertation seeks to both conceptually and empirically shed light on this particular type of behavior-based information. The first three papers derive a new theoretical concept capturing the phenomenon of interest - 'Electronic Word of Behavior' (eWOB) - defined as *published accounts of behavior, based on the unobservable digital traces of consumers' behaviors*. Following a grounded theory-inspired methodology eWOB is positioned in relation to neighboring concepts of 'electronic word of mouth' (eWOM) and 'social interactions', and a conceptual framework for eWOB is proposed. The fourth paper, through an online field experiment with the movie-streaming service Blockbuster, empirically explores the impact of incorporating behavior-based information (eWOB), as well as opinion-based information (eWOM), into an online service. The findings demonstrate that online content-based services can benefit from the incorporation of such social information in their interface. Moreover, the findings suggest that product-related user behaviors can be designed to look like user endorsements of the product in question, providing marketing value. The fifth paper empirically explores, how users interpret and act upon behavior-based information within the music streaming service Spotify. Through an interview design, it is demonstrated that users ascribe meaning and use-opportunities to eWOB that go beyond providing information about popularity of content, such as social recognition, relation-building, and social validation of one's choices. Further, it is found that eWOB can satisfy the basic

psychological needs of relatedness and competence. Accordingly, implications for design are offered to guide the future design of eWOB.

This dissertation contributes to the interdisciplinary academic literature surrounding the use of behavior-based information in products and services. The key contribution is the development of the theoretical concept of eWOB, which aggregates dispersed literature forming a unified concept for further exploration and accumulation of knowledge. Secondly, the dissertation provides empirical insights about the impact, interpretation, and use of behavior-based information, and derives implications for design. Third, the dissertation contributes with the development of an IT artefact, the Social Information Integrator Tool (SOCIALIIT), which can serve academics and practitioners alike in the design, development and evaluation of digital products and services with social information provisioning. Finally, from a managerial perspective, this dissertation seeks to provide guidance for the merging of digital product design and marketing through the use of eWOB.

Dansk resumé

Den udbredte digitalisering af forbrugeres dagligdag efterlader en overflod af digitale spor af forbrugeres adfærd. Disse spor kan blive omdannet til meningsfuld kommunikation og gjort til observerbart indhold af de tjenester, som besidder disse data. Spotify viser for eksempel deres brugere, hvad deres venner lytter til; Hotels.com viser hvor mange andre brugere, der lige nu ser på et specifikt hotel; og crowdfunding platformen Gofund.me viser navnene på dem, som for nylig har støttet et givent projekt. På den måde har de seneste års digitalisering kraftigt øget den potentielle observerbarhed af forbrugeres produkt-relaterede adfærd. Forskere fra disciplinerne Information Systems og Marketing har vist interesse i at udforske, hvilken effekt denne observerbare digitale adfærdsbaserede information har på dem, som bliver eksponeret for informationen. Her er det blevet påvist, at adfærdsbaseret information har en signifikant effekt på de valg, som forbrugerne efterfølgende foretager. Denne afhandling påviser dog, at fænomenet er ringe teoretiseret og mangler empiriske indsigter til at lede fremtidigt design af produkter og tjenester med brug af adfærdsbaseret information.

Gennem en serie af fem forskningsartikler søger denne afhandling - konceptuelt såvel som empirisk - at kaste lys på denne særlige type adfærdsbaserede information. De første tre artikler søger at udlede et nyt teoretisk begreb til at omkranse fænomenet, nemlig Electronic Word of Behavior' (eWOB) defineret som *fremvist adfærd, baseret på de ikke-observerbare digitale spor af forbrugeres adfærd*. Gennem en grounded theory-inspireret proces positioneres eWOB i relation til de nært beslægtede begreber 'electronic word of mouth' (eWOM) og 'social interactions' og en konceptuel ramme for eWOB udvikles. Den fjerde artikel udforsker gennem et online eksperiment med film streaming-tjenesten Blockbuster, effekten af at inkorporere adfærdsbaseret information (eWOB) og holdningsbaseret information (eWOM) i en online tjeneste. Resultaterne demonstrerer at indholdsbaserede online tjenester med fordel kan inkorporere disse typer social information i deres brugerflade. Ydermere indikerer resultaterne, at adfærdsbaseret information kan designes til at repræsentere anbefalinger. Den femte artikel udforsker, gennem et interview-studie, hvordan brugerne fortolker og agerer på adfærdsbaseret information i musik streaming-tjenesten Spotify. Resultaterne demonstrerer, at brugerne tilskriver eWOB mening og muligheder for brug, som rækker langt ud over at tilbyde information om indholdets popularitet, eksempelvis social anerkendelse, stimulering af relationer og social validering af ens egne valg. Ydermere viser resultaterne, at eWOB kan

stimulere de basale psykologiske behov for at føle sig socialt forbundet og kompetent. På den baggrund udledes der et sæt implikationer for design, som har til formål at guide fremtidigt design af eWOB.

Denne afhandling bidrager til den interdisciplinære akademiske litteratur om brugen af adfærdsbaseret information i produkter og tjenester. Nøglekontributionen er udviklingen af det teoretiske koncept eWOB, som samler spredt litteratur og former et samlende begreb for den videre udforskning af emnet og akkumulering af viden. Dernæst tilbyder afhandlingen empiriske indsigter om effekten, fortolkningen og brugen af adfærdsbaseret information, som leder til implikationer for design. Ydermere bidrager afhandlingen med udviklingen af en IT-artefakt, Social Information Integrator Tool (SOCIALIIT), som kan anvendes af både forskere og praktikere til design, udvikling og evaluering af digitale produkter og tjenester med social information. Endelig bidrager afhandlingen, set fra et praktisk ledelsesmæssigt perspektiv, med vejledende indsigter for, hvordan produkt design og marketing kan smelte sammen gennem brugen af eWOB.

Table of Contents

1	INTRODUCTION.....	1
1.1	PROBLEM MOTIVATION	2
1.2	RESEARCH QUESTIONS	3
1.3	POSITIONING THE RESEARCH & ITS CONTRIBUTIONS.....	4
1.3.1	<i>Disciplinary positioning.....</i>	4
1.3.2	<i>Interdisciplinary positioning</i>	6
1.3.3	<i>Thematic positioning</i>	7
1.4	OVERVIEW OF THE PAPERS	8
1.5	THE INDUSTRY CONTEXT: TDC GROUP.....	11
1.6	OUTLINE OF THE DISSERTATION	13
2	LITERATURE REVIEW & THEORETICAL FOUNDATIONS	13
2.1	ON BEHAVIORS	13
2.1.1	<i>Behaviors & intent</i>	13
2.1.2	<i>Digitization of behaviors.....</i>	14
2.1.3	<i>The importance of behaviors in a digital world</i>	16
2.2	BEHAVIORS IN PRODUCT DESIGN: LITERATURE REVIEW	17
2.2.1	<i>Overview of findings in extant literature</i>	18
2.2.2	<i>Thematic & theoretical approaches of extant literature</i>	20
2.2.3	<i>Current conceptualizations of behavior-based information in products & services</i>	22
2.2.4	<i>Synthesizing the status quo of current literature.....</i>	23
2.3	THEORETICAL FOUNDATIONS.....	24
2.3.1	<i>Social influence theory & observational learning</i>	24
2.3.2	<i>Self-determination theory.....</i>	27
2.4	CHAPTER SUMMARY.....	28
3	METHODOLOGY	29
3.1	RESEARCH PHILOSOPHY	29
3.2	MY ROLE AS RESEARCHER IN TDC GROUP	30
3.3	METHODOLOGICAL APPROACH	31
3.3.1	<i>Methodological choices: deriving the concept of eWOB (RQ1)</i>	33
3.3.2	<i>Methodological choices: Assessing the impact of eWOB (RQ2)</i>	41
3.3.3	<i>Methodological choices: Investigating the interpretations and uses of eWOB (RQ3).....</i>	45
3.4	CHAPTER SUMMARY	53
4	FINDINGS	53
4.1	THE CONCEPT OF ELECTRONIC WORD OF BEHAVIOR (RQ1 / PAPER 1-3)	53
4.1.1	<i>The unique properties of eWOB.....</i>	54
4.1.2	<i>Design dimensions of eWOB.....</i>	55
4.2	THE IMPACT OF SOCIAL INFORMATION (RQ2 / PAPER 4).....	58
4.2.1	<i>Hypothesis testing</i>	60
4.2.2	<i>Qualitative insights.....</i>	65
4.2.3	<i>Reflections on findings.....</i>	66
4.3	USERS' INTERPRETATIONS AND USES OF ELECTRONIC WORD OF BEHAVIOR (RQ3 / PAPER 5)	68
4.3.1	<i>Reflections on findings.....</i>	71
4.4	SUMMARIZING THE FINDINGS & THEIR IMPLICATIONS FOR DESIGN	73
5	DISCUSSION	75
5.1	THE MERGING OF MARKETING COMMUNICATIONS AND PRODUCT DESIGN	75
5.2	BROADENING THE THEORETICAL SCOPE	77
5.3	ON THE DIGITIZATION OF THE INDIVIDUAL.....	78

5.4	THE DARK SIDE OF eWOB	80
5.5	LIMITATIONS & FUTURE RESEARCH	84
6	CONCLUSION.....	87
6.1	CONTRIBUTIONS TO THEORY	88
6.2	CONTRIBUTIONS TO PRACTICE	89
6.3	EPILOGUE.....	90
7	REFERENCES	90
8	APPENDICES	96
8.1	APPENDIX: PAPER 1	97
8.2	APPENDIX: PAPER 2	108
8.3	APPENDIX: PAPER 3	117
8.4	APPENDIX: PAPER 4	144
8.5	APPENDIX: PAPER 5	189
8.6	APPENDIX: SAMPLE OF eWOB DATABASE	223
8.7	APPENDIX: SCREEN DUMPS FROM BLOCKBUSTER EXPERIMENT	234
8.8	APPENDIX: CHECK FOR CONFOUNDING VARIABLES	239
8.9	APPENDIX: INTERVIEW GUIDE USED	241
8.10	APPENDIX: LIST OF LADDERING QUESTIONS USED INTERVIEWS.....	243
8.11	APPENDIX: VISUAL MATERIALS USED IN INTERVIEWS	244
8.12	APPENDIX: EXAMPLES OF MEANS-END CHAIN CODING	245

Figures

Figure 1. Situating the PhD within Information Systems.....	5
Figure 2. Thematic positioning of the research and its contributions.....	8
Figure 3. Building blocks of the dissertation	10
Figure 4. Behavior-based information in the AIS Library.....	14
Figure 5. Behavior-based information in Spotify.....	15
Figure 6. Progression of the PhD	33
Figure 7. Example of contents of database and author notes: AIS Library	34
Figure 8. Example of contents of database and author notes: Music streaming service Last.fm	35
Figure 9. Grounded theory-inspired process of developing the concept of eWOB	37
Figure 10. Example of how TDC Play listening behaviors were disclosed to Facebook in 2014.....	41
Figure 11. Overview of treatments	44
Figure 12. Examples of behavior-based information in Spotify	47
Figure 13. MEC-approach illustrated.....	48
Figure 14. Analysis process for the interviews	50
Figure 15. Conceptual framework for eWOB	54
Figure 16. Example of individual-specific eWOB in Goodreads.....	55
Figure 17. Example of aggregated eWOB on Hotels.com.....	56
Figure 18. Example of individual-specific disclosure at stranger-level on Gofundme.com.....	56
Figure 19. Example of internal disclosure: Spotify listening disclosed within Spotify.....	57
Figure 20. Example of external disclosure: Spotify listening disclosed on Facebook.....	57
Figure 21. Example of external disclosure: Spotify listening disclosed on Last.fm.....	58
Figure 22. Means-end chain map	69

Tables

Table 1. Overview of enclosed papers.....	9
Table 2. Overview of current literature about behavior-based information.....	19
Table 3. Conceptualizations of behavior-based information in extant literature.....	22
Table 4. Overview of experiment groups.....	59
Table 5. Mean scores across treatments	60
Table 6. Descriptive statistics for H1a and H1b	61
Table 7. t-test results for H1a and H1b.....	61
Table 8. Descriptive statistics for H2a, H3a, H4a (DV1)	62
Table 9. Results of factorial ANOVA for DV1 (attitude)	63
Table 10. Descriptive statistics for H2b, H3b, H4b (DV2).....	64
Table 11. Results of factorial ANOVA for DV2 (intention to use).....	64
Table 12. Implications for design.....	74

List of enclosed papers

- Paper 1 Kunst & Vatrappu (2014). Towards a Theory of Socially Shared Consumption: Literature Review, Taxonomy, And Research Agenda. In *Proceedings of the 22nd European Conference on Information Systems (ECIS) 2014*
- Paper 2 Kunst (2015). Electronic Word of Behavior: The Mediating Role of Social Media in Disclosing Otherwise Non-Observable Product-related Behavior. In *Proceedings of the 44th Annual conference of the European Marketing Academy (EMAC) 2015*
- Paper 3 Katrine Kunst & Vatrappu (2018). Understanding Electronic Word of Behavior: Conceptualization of the Observable Digital Traces of Consumers' Behaviors. *Electronic Markets* (advance online publication). DOI: 10.1007/s12525-018-0301-x
- Paper 4 Kunst, Vatrappu & Hussain (n/d). Exploring Social Product Design: A Field Experiment on the Effect of Infusing Social Information into a Movie Streaming Service. Invited for second round review in *Behaviour & Information Technology*.
- Paper 5 Kunst, Ringberg & Vatrappu (n/d). On the Behaviors of Others. (Not submitted)

1 Introduction

“By drawing on conceptions of behavior portrayed in words and images, observers can transcend the boundaries of their immediate environment” (Bandura, 1986, p. 47)

“Further developments in communication technology will enable people to observe on request almost any desired activity at any time on computer-linked television consoles” (ibid, p. 70)

The above was written by psychologist Albert Bandura over 30 years ago in the mid-1980s. It is truly remarkable how precise Bandura was in foreseeing the future. In the current digital landscape of the 2010s individuals can access real-time digital information about which music their friends listen to, where their friends are and what they are doing, and how many other users have purchased a specific product. The underlying enabler of this is digitization of products and services. Digitization allows a broad range of behaviors, which until recently had low natural observability, to potentially be shared among peers and other users in the digital sphere (Kane, Alavi, Labianca, & Borgatti, 2014; Libai et al., 2010). Drawing on music streaming as an example, Spotify users can not only see which playlists their friends have in their collection (emulating the physical CD rack), but also information about which songs they listened to recently or frequently. Consequently, digitization enables not only a broader observability of user behaviors than the offline world does, but also for much more granular information to be disclosed and observed.

Given that it is widely accepted that humans can influence each other by means of behavior, for designers of information systems, as well as marketers, this increased observability of user behaviors is intriguing and important (Bandura, 1986; Cialdini, 2001). This process has been conceptualized as ‘observational learning’ and is a form of social influence (Bandura, 1986). Following this logic, it is not surprising that several empirical studies have documented a positive impact from the use of behavior-based information in product design in terms of influencing the choices and actions of those exposed to that information (Y. Chen, Wang, & Xie, 2011). This digital trace data is data which is naturally occurring, generated by individuals’ purchase or product usage behavior, and thus represents a rich stream of cost-efficient data with potential for marketing-type of purposes (Aral & Walker, 2011).

1.1 Problem motivation

While scholars have begun empirical enquiry into behavior-based information, and its use in the design of digital products and services, evident from a review of extant literature (cf. Chapter 2) is that the topic of technology-enabled behavior-based information suffers from both a lack of theorization, and a gap in terms of empirical findings to guide design decisions.

Firstly, little attention has been allocated to the conceptual aspects of behavior-based information. The few exceptions that do exist have positioned behavior-based information in the context of ‘social interactions’ (Godes et al., 2005), ‘online social interactions’ (Thies, Wessel, & Benlian, 2016), or ‘customer-to-customer Interactions’ (Libai et al., 2010) ¹. Social interactions take one of two forms: Opinion-based and behavior-based, where the former is consistently referred to as word of mouth (WOM) or electronic word of mouth (eWOM). This concept generally describes instances of consumer opinions shared online, such as reviews. However, while there is rich literature about the concept of eWOM (its definition, types, the dynamics of its impact, and the like) such conceptual aspects of behavior-based information have not been systematically investigated. This absence is surprising given the increased observability of consumer behaviors brought about by digitization, and the extant empirical research which demonstrates the potential of consumer behavior to impact observers’ subsequent choices. The consequence is that knowledge is scattered, empirical results are difficult to compare, the terminology is diverse, and important elements and processes of this empirical phenomenon have thus far been neglected. Building on Gregor’s (2006) view of theory, lack of common ground hinders the accumulation of knowledge at the expense of both scholars and practitioners.

Secondly, the majority of extant empirical findings focus on demonstrating the impact of behavior-based information through aggregated information from unknown users. Little research has been done at the individual-specific level, and in particular about behavior-based information about acquaintances and friends, and the subsequent impacts when this is incorporated into products and services.

Finally, extant research has primarily taken a business-perspective on behavior-based information in products and services, assuming its function as guidance for users in a cluttered

¹ To simplify, I refer to these almost identical concepts as ‘social interactions’

digital world through a provision of subtle cues about the behaviors of other users. However, these a priori assumptions of researchers may not represent the reality of the user (Freelon, 2014). Given the rich literature on the multifaceted meanings and roles of consumption and consumers' product-related behaviors (Belk, 1988; Lehdonvirta, 2009; McCracken, 1990) there is reason to believe that the observation of other users' behaviors might also convey meaning beyond the informational level and facilitate usage beyond that of providing guidance to popular content and products. Accordingly, and following a recent call for more research into the user-interpretation of these observable digital traces of consumer behavior (Freelon, 2014), this dissertation seeks to also uncover the user-perspective of behavior-based information in products and services.

1.2 Research questions

Based on the above, this dissertation aims to answer the following overall research question:

How can the digitization-driven increased observability of consumers' behaviors be conceptualized, and how can such behavior-based information be used strategically as a persuasive element in the design of digital products and services?

This overall research question is further broken down into three sub research questions:

RQ 1: *What are the current practices of digital products and services in terms of transforming behavior-based digital traces into communicative content, and how can this empirical phenomenon be conceptualized and theoretically understood?*

RQ 2: *How does the integration of friend-specific behavior-based and opinion-based information impact potential users' attitude towards an online content-based service and their intentions to use it?*

RQ3: *How is behavior-based information interpreted and acted upon by users of an online content-based service?*

I address these research questions through a mixed-methods approach involving grounded theory-inspired theory development, an online field experiment, and means-and-chain analysis of semi-structured interviews. The outcome is a) the development of the interdisciplinary notion of 'Electronic Word of Behavior' defined as *published accounts of behavior, based on the*

unobservable digital traces of consumers' behaviors and a conceptual framework that outlines its main components and processes to direct further research and managerial efforts b) empirical insights from both a business and a user perspective, leading to a set of design implications, and finally c) the development of an artefact, the Social Information Integrator Tool (SOCIALIIT), that enables seamless infusion of social information into a given digital service.

1.3 Positioning the research & its contributions

The overall aim and contribution of this PhD project is to introduce a new theoretical concept: Electronic Word of Behavior (eWOB). Attempting to make a theoretical contribution is a daunting task, however essential for academic researchers as theory development can be considered the distinguishing factor between academics and practitioners (Gregor, 2006). Theory development is not an exercise in 'theory for the sake of more theory', however is justified in cases where little (or nothing) is known about a certain, relevant phenomenon (Gregor, 2006). If no proper theoretical concept exists to capture a relevant phenomenon, research becomes scattered, and it is difficult to accumulate knowledge and advance our understanding of critical phenomena. Thus at its essence, theory is necessary for the accumulation of knowledge (Gregor, 2006; King, Racherla, & Bush, 2014). In the absence of accumulated academic knowledge, practitioners are left without guidance to approach and work strategically with relevant phenomena. Accordingly, in this research I seek to bring together scattered domains and emerging digital phenomena and introduce what in Gregor's (2006) terminology can be called *a theory for analyzing*, namely the concept of eWOB.

1.3.1 Disciplinary positioning

This dissertation seeks to conceptualize and understand an emerging socio-technical phenomenon. It is not solely about the *technology* aspects that enables a new type of behavior-based digital information. Nor is it solely about the *users* of a given technology, and the social interactions which are facilitated. Rather, it is about how this new type of information comes into existence, how it affects users and how they interpret and make use of it, and how this knowledge can in-turn be leveraged to design more persuasive digital products and services.

Such socio-technical interplay has long been recognized by scholars as an underpinning element of the Information Systems (IS) discipline (Bygstad, Munkvold, & Volkoff, 2016). The socio-technical element has been described as one of the IS discipline's core properties (Sarker,

Chatterjee, & Xiao, 2013), and that research within this discipline must consider both the technical as well as the human aspects, and in particular the interplay between them (Beath, Berente, Gallivan, & Lyytinen, 2013; Bostrom, Gupta, & Thomas, 2009; Hanseth, Aanestad, & Berg, 2004). Based on the domain of this dissertation, situated in the interplay between human and technical, it is reasonable to ground this research in the IS discipline. This raises a further question of where in this discipline is this work situated. As illustrated in Figure 1, various attempts have been made to categorize IS research. Abbasi, Sarker, Chiang, & Lindner (2016) provides a classification consisting of three dominant IS research traditions: the behavioral science, design science, and finally economics of IS. In the light of this classification scheme, I argue that this dissertation contributes to both the behavioral and design traditions of IS research. It contributes to the behavioral tradition through its core pursuit of understanding behaviors and behavioral phenomena - their nature, the digital disclosure of them, and concurrently their impact on those who observe others performing them. It contributes to the design science tradition of IS with a) the development of a concrete artefact, the SOCIAlIT, that can be used for further testing of design configurations (Paper 4) and b) by providing conceptual (Paper 1-3) as well as empirical (Paper 4-5) insights that lead to a set of design implications and thus inform the future practice of designing eWOB elements.

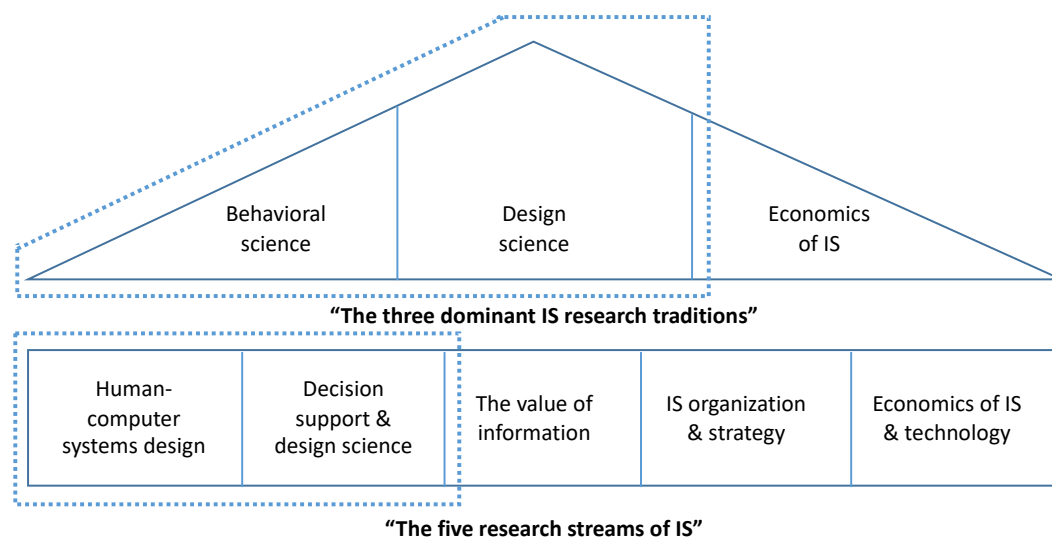


Figure 1. Situating the PhD within Information Systems. Based on Abbasi, Sarker, Chiang, & Lindner (2016) and Banker & Kauffman (2004)

Banker and Kauffman (2004) provide a partially overlapping alternative classification of IS research into "five research streams of IS": 1) human-computer systems design 2) decision

support and design science 3) the value of information 4) IS organization & strategy and 5) economics of information systems and technology. In this classification scheme I argue that this dissertation mainly contributes to the human-computer systems design and the design science research streams. Specifically, the focus of this research will be on how the infusion of behavior-based social information into digital products affects users and how those users interpret and interact with this information. This resonates with the characterization of the Human-Computer Interaction (HCI) domain as consisting of two main components: humans and technology (P. Zhang & Galletta, 2006). The HCI domain is, however, recognized to consist of many schools of thought departing from different academic disciplines, such as psychology, computer science and IS (Grudin, 2006a). According to Zhang and Galletta (2006), the IS perspective on HCI distinguishes itself through a focus on business application and an aim of achieving organizational effectiveness, whereas researchers departing from the psychology and computer science disciplines have been more concerned with the experience of hands-on usage of IT (Grudin, 2006a). However, with the advent of discretionary IT use and the breakthrough of e-Commerce, the aspects of design and marketing have become increasingly important for HCI, exemplified by the topic of how to create sticky website experiences (Grudin, 2006b, 2012). Accordingly, this dissertation's confluence, between understanding the users' interactions with a specific kind of digital information (behavior-based information), and its implications for the future design of digital products and services is positioned in this intersection between the managerial (IS) perspective of HCI and the user-centric perspective of HCI.

1.3.2 Interdisciplinary positioning

No research discipline exists as an island; the IS discipline is broad and hosts many topics that touch borders with other disciplines, such as computer science, psychology, and marketing. In this specific case, there is a strong link to the Marketing discipline. Thus, while I argue that the main contribution lies within the discipline of IS, the findings also make a significant contribution to the Marketing discipline, principally the eWOM literature. Specifically, the conceptual development of eWOB and its accompanying framework provides conceptual clarification of a phenomenon strongly related to eWOM; a concept that originates from the Marketing discipline but is situated within the IS literature as well. As such, this research offers a complementary view on how companies can leverage peer-to-peer influence as well as a framework to clearly distinguish eWOM from eWOB. Moreover, I seek to bridge the gap between the IS and Marketing literatures as well as their respective practitioners. While the

design of IT artefacts and interfaces has traditionally belonged to IS and computer science (in academia) and product managers and engineers (in industry), marketing communications (both academia and industry) has been concerned with attracting consumers to buy and use products and services. In the digital era, these two tasks become more tightly intertwined. eWOB is one example of a mechanism that both serves as a marketing communications vehicle, providing social proof for potential customers and engaging and retaining existing customers, while being dependent on IT product design. It is therefore pivotal that these two disciplines, and their relevant practitioners and academics, begin a dialogue, guiding their future efforts and recognizing that marketing communications can be embedded in the product design, and product design can be a marketing communications vehicle.

1.3.3 Thematic positioning

I have previously illustrated how this PhD dissertation is situated within the IS discipline and how it relates to the Marketing discipline. However, each academic discipline is made up of hundreds, if not thousands, of thematic threads that are often interwoven with neighboring disciplines. These threads – or streams of research – are often the answer to the question of which community you want to contribute to, and the related question of by whom you want your work to be read and to spark discussions. In this case, I position my work in the interdisciplinary intersection between IS and Marketing, and more specifically, the thematic intersection between research on a) the impact of behavior-based information b) eWOM and c) social design. Figure 2 illustrates this thematic intersection found in the disciplinary intersection between IS and Marketing.

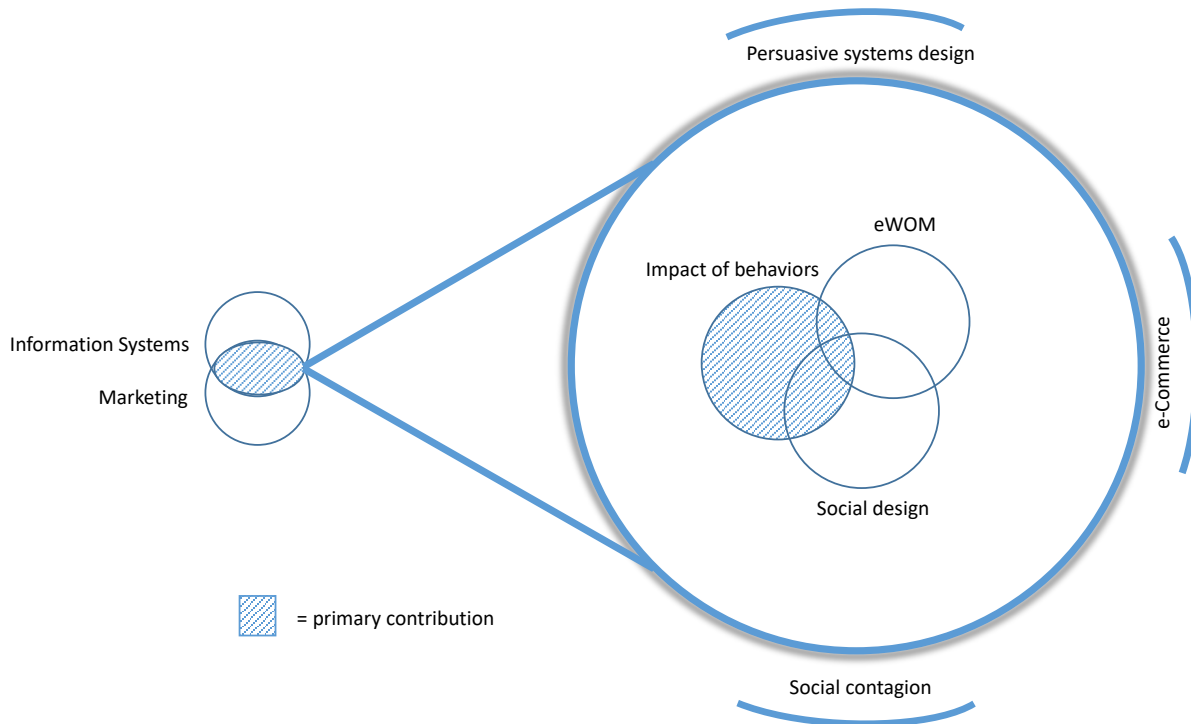


Figure 2. Thematic positioning of the research and its contributions

I primarily seek to contribute to the emerging research field concerned with assessing the impact of behavior-based information when incorporated into digital products and services. Here, I seek to bring conceptual clarity as well as empirical insights that guide the future design of eWOB elements. Scholars in this field depart from varied thematic positions; some from the well-established theme of eWOM (Chen, Wang, & Xie 2011), and others from the emerging theme of social design (Bapna & Umyarov 2015). I argue that even scholars within eWOM and social design that do not specifically address the theme of behavior-based information will benefit from the insights provided by this PhD dissertation. Finally, as can be seen from Figure 2, these central themes are then further related to other research themes for which the findings are relevant. Those themes are the design of e-commerce platforms, as eWOB can be – and is – used in e-commerce (Thies, Wessel, & Benlian 2016), social contagion, as eWOB can spark social contagion (Aral & Walker 2011), and finally persuasive systems design as eWOB can be used strategically as a design element that provides social support (Fogg, 2003; Oinas-Kukkonen & Harjumaa, 2009).

1.4 Overview of the papers

This dissertation is article-based, beyond the cover chapter it consists of five articles: two published conference papers, one published journal article, one journal article under review

(invited for second round), and one unpublished article to be submitted later this year. Table 1 provides an overview of the papers. The purpose of this cover chapter is to synthesize the findings from the individual papers, providing the common thread, as well as complementary insight where needed.

Table 1. Overview of enclosed papers

Paper no.	Authors & Title	Outlet
1	Kunst & Vatrpu (2014). Towards a Theory of Socially Shared Consumption: Literature Review, Taxonomy, and Research Agenda	In <i>Proceedings of the 22nd European Conference on Information Systems (ECIS) 2014</i>
2	Kunst (2015). Electronic Word of Behavior: The Mediating Role of Social Media in Disclosing Otherwise Non-Observable Product-related Behavior	In <i>Proceedings of the 44th Annual Conference of the European Marketing Academy (EMAC) 2015</i>
3	Katrine Kunst & Vatrpu (2018) Understanding Electronic Word of Behavior: Conceptualization of the Observable Digital Traces of Consumers' Behaviors	Published online. Will feature in the 'Digitization of the Individual' forthcoming special issue of <i>Electronic Markets</i>
4	Kunst, Vatrpu & Hussain (n/d). Exploring Social Product Design: A Field Experiment on the Effect of Infusing Social Information into a Movie Streaming Service	Submitted October 5, 2017 to <i>Behaviour & Information Technology</i> . Reviews received (revise & resubmit) on June 13th 2018. (enclosed version is an updated version that take into account some of the reviewers' comments)
5	Kunst, Ringberg & Vatrpu (n/d). On the Behaviors of Others	Outlet TBD

The reader should note that Paper 3 is a more mature and extended version of Paper 1 and 2. However, in order to provide deeper insights into the conceptual development process I have chosen to include these two papers, although overlaps should be expected. Further, the inclusion of Paper 2 satisfies the requirement to enclose a sole-authored paper. In the following I will outline how the papers interrelate with one another and how they pertain to the research questions. As can be seen from Figure 3, the center of this dissertation is the design of eWOB elements. All three of the dissertation's building blocks, the conceptual understanding of the phenomenon and the two empirical studies, contribute to the creation of a foundation of knowledge from which mindful eWOB design can depart. With mindful I refer to design that takes into account both the business goals and the user needs.

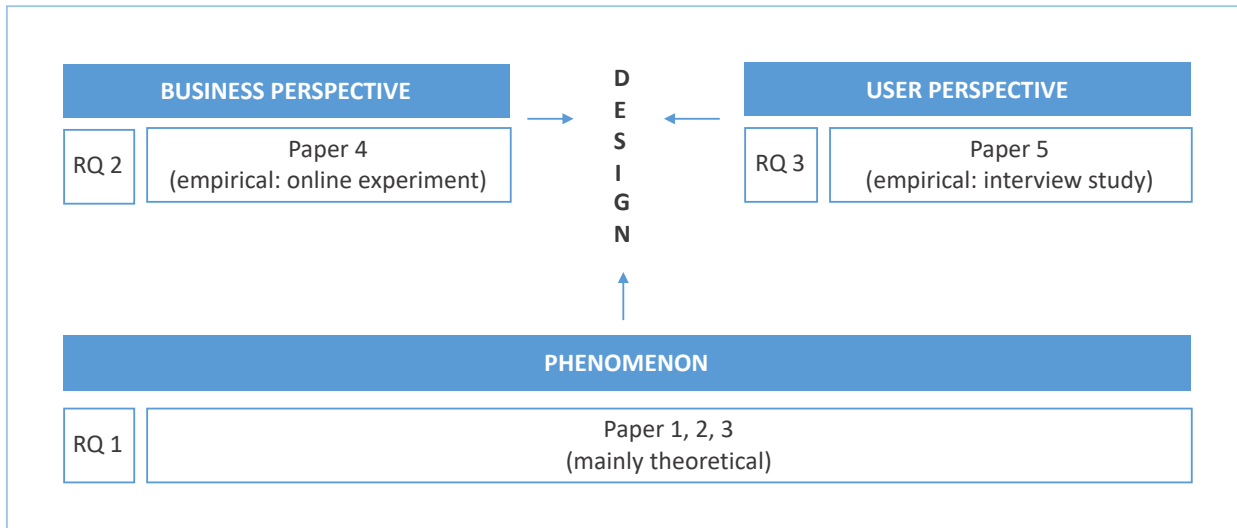


Figure 3. Building blocks of the dissertation

Paper 1-3 forms the foundation of the dissertation. It is through this series of papers that the concept of eWOB evolves and matures. Together these papers create an overview of the concept, its main components and processes, and the design space.

In Paper 1 a review of literature related to users' sharing of consumption experiences through social media was performed. This led to the development of a taxonomy of 'socially shared consumption', which can be considered a predecessor of eWOB, in the sense that this concept also included users' *active* sharing of consumption experiences, and in that it focused solely on sharing through social media.

In Paper 2, the concept of eWOB was conceived, and the prior use of 'consumption' as a central construct was narrowed down to product-related behaviors, which led to the theoretical anchoring in observational learning theory. Also, a separation between opinions (eWOM) and behaviors (eWOB) was introduced, and a brief review of how the two concepts differ was performed. Finally, a matrix framework outlining further avenues of research for these two concepts was developed.

In Paper 3, the findings from Paper 2 were further distilled. Through a literature review of eWOM and constant comparison with the literature's empirical examples of behavior-based information in products and services, eWOB was narrowed to solely concern digital traces of behavior. This constructed a clearer line between eWOM and eWOB, firmly placing eWOB as a

digitization-driven phenomenon, which is entirely dependent on product design, but which is not confined to sharing on social media. With departure in an existing conceptual framework of the impact of eWOM, a conceptual framework was developed outlining the unique characteristics of eWOB, as well as three design dimensions to be considered when designing for eWOB.

Paper 4 quantitatively demonstrates the possible business value of infusing information about users' behaviors (eWOB) as well as opinions (eWOM) (together referred to as 'social information') in the interface of a digital content-based service. Specifically, the type of information investigated was at the friend-specific level, utilizing access to Facebook friends lists through an app built on the Facebook API for this purpose. Additionally, the study compares various types of social information (behavior-based versus opinion-based) and various ways these can be presented, such as from few versus many friends, and from random versus influential friends. Paper 4 thus sheds light on the business rationale for designing for eWOB at the friend-specific level, and empirically assesses different design dimensions.

Finally, following Freelon's (2014) call for more research into the user interpretation of digital trace data, Paper 5 takes the user perspective to ensure that the design of eWOB elements are done in a manner that satisfies user needs and addresses user concerns. Through a qualitative study among users of the music streaming service Spotify it is uncovered how behavior-based information is interpreted and acted upon by users, and which basic psychological needs it satisfies as well as thwarts. These insights are used to derive design implications and avenues for future research.

1.5 The industry context: TDC Group

Despite the sound theoretical rationale for conducting this PhD research it should not be underplayed that this dissertation is simultaneously motivated and shaped by my affiliation with TDC Group during the years 2009-2018. In 2012 TDC Group generously decided to co-fund my PhD project, which was formally accepted by the Danish Industrial PhD program in early 2013, and I subsequently started the project in April 2013. It was while working at TDC Group, as head of the social media & digital marketing department, that the first ideas for this project were conceived. Here, my colleagues and I had experienced first-hand the challenges associated with incorporating social information into the products. Seen from a marketing perspective it was frustrating to see Spotify – a then brand-new music streaming service –

surpassing our own incumbent free music streaming service TDC Play within just a few months. We suspected that the highly social nature of Spotify had a decisive role in the fast diffusion of it. Spotify had made the radical decision to force users to sign up with their Facebook account, automatically posting their usage behaviors to users' timelines, displayed in the so-called 'ticker' of Facebook (a right-hand side activity bar). In effect, they had turned all of their users into marketers of the service through the display of their behavior. From the perspective of the TDC product management team, it must have been frustrating to have the marketing team on their back, trying to convince them of the virtues of incorporating such marketing-type mechanics into 'their' product. It interfered with their conceptions of a winning music streaming service, including a wide music selection, good sound quality, stable performance, and free access for all existing customers in TDC Group.

However, as good as their product was, it neglected that at a basic level, as Aristotle said, "man is by nature a social animal" (Aristotle, 2000). Furthermore, humans tend to seek social proof in their surroundings to minimize their own risk when making choices (Cialdini, 2001). This tendency to *herd* is a well-known phenomenon, which has been both theoretically (Bikhchandani, Hirshleifer, & Welch, 1998) as well as empirically examined (Huang & Chen, 2006; Liu, Brass, Lu, & Chen, 2015; Salganik & Watts, 2008). Suddenly, the competitive game was no longer only about a novel and well-functioning product, it was now also a matter of marketing the product through the behaviors of the users and their social networks, somewhat akin to the relational view of the firm (Dyer & Singh, 1998).

Moreover, I was curious about this new type of sharing one's product-related behaviors in highly automated ways. Suddenly, people were communicating with their peers, both intentionally and unintentionally, not only what they *liked* but what they were actually *doing*: what music they were listening to, which restaurants they had just visited, and which newspaper article they were reading. All of this behavior-sharing was done in highly automated manners, raising the question of who the sender actually was and what weight such communicative elements carried among the recipients. Should they be regarded as actual recommendations? And did consumers even have the competencies to decipher what such behavioral elements meant? Those were some of the curiosities that inspired this PhD project.

1.6 Outline of the dissertation

The remainder of this cover chapter is structured as follows: In Chapter 2 I introduce the relevant literatures, the research gap is identified, and the theoretical foundations of this research are presented. In Chapter 3 I provide an overview of the research design and methods applied. In Chapter 4 the findings of the five research papers are synthesized. In Chapter 5 these findings are discussed, and the limitations and wider implications of this research are addressed, as well as areas for future research. Finally, Chapter 6 concludes and summarizes this dissertation's contributions to theory and practice.

2 Literature review & theoretical foundations

In this chapter I provide the conceptual foundation for my PhD dissertation. I start out by elaborating on the phenomenology of the key concept of 'behaviors' and its relevance in the current digital landscape. I then provide a review of extant literature about the use of behavior-based information in products and services and identify knowledge gaps and the consequences hereof. Finally, I introduce the reader to the central theories of this dissertation, of observational learning theory and self-determination theory.

2.1 On behaviors

Given that this dissertation surrounds behavior-based information it is essential to elaborate the concept of 'behavior' and clarify what is meant in the context of this research, as well as expand on how digitization has significantly changed the observability of behaviors.

2.1.1 Behaviors & intent

The Merriam-Webster Dictionary provides two classes of definitions, one where behavior concerns conducting oneself, and one where behavior is described as an action or set of actions. Drawing on the latter, the Merriam-Webster Dictionary details behavior as "anything that an organism does involving action and response to stimulation" and "the response of an individual, group, or species to its environment". While these definitions contain the word 'action' in various forms, some scholars have tried to separate the concepts of 'behavior' and 'action', arguing that behaviors are physical movements without knowing the intention or the social context of the behavior, whereas actions are behaviors with intention (Collins & Kusch, 1999). For example, the movement of a hand with a pencil above a piece of paper is a behavior.

But that behavior could have multiple intentions and thus could represent multiple actions, signing a contract for a new job, writing notes, or just drawing. Only once we know the intention behind the behavior does it become an action. Although this distinction does bear some renewed relevance in light of digitization, an observation I will later elaborate, scholars generally use the concept of behavior and action interchangeably as they prove difficult to disentangle (e.g. Bandura, 1986; Cheung, Xiao, & Liu, 2014; Zimbardo & Leippe, 1991). It is rare that we truly know the intention behind any given action; in the example above, one can peel off several layers of intention. For example, signing a new contract could be the result of getting laid-off and having to take a new job. Or it could be the result of an extensive pursuit of achieving the right work-life balance resulting in signing a part-time contract. Thus, in this dissertation I will not make the strict distinction between knowing the intention behind a behavior or not. Behaviors are about humans doing something - whether observers know to some degree the intention behind that something or not.

2.1.2 Digitization of behaviors

Following up on the distinction made by Collins and Kusch (1999), I will argue that digitization of products and services has enabled a much more widespread observability of so-called pure behaviors; that is behaviors whose context and/or intention are unknown to the observer. For example, on the electronic library website of the Association for Information Systems (AIS) one is presented with a world map which dynamically shows the recent downloads of academic papers from the library, illustrated in Figure 4.

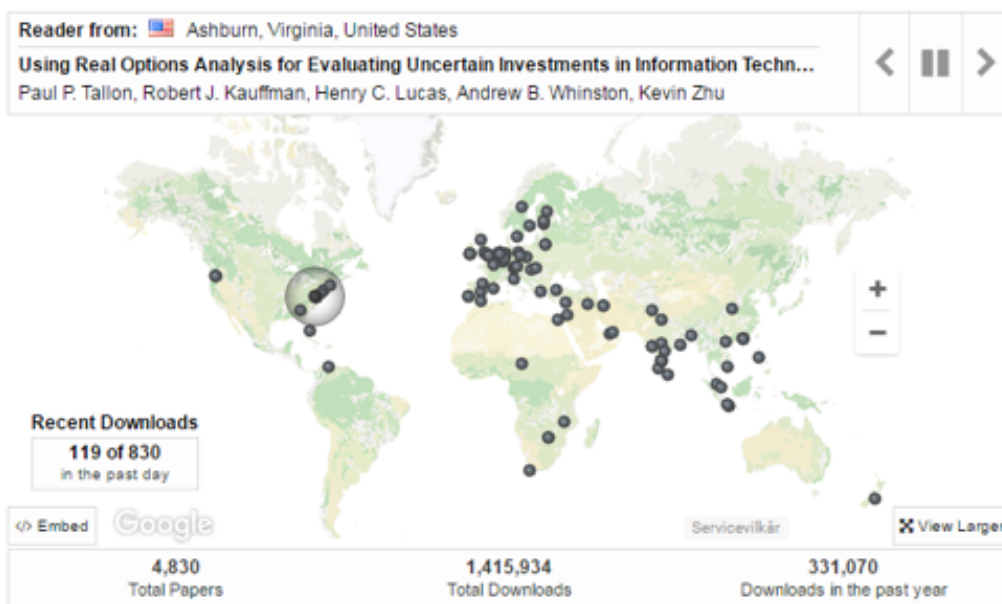


Figure 4. Behavior-based information in the AIS Library: dynamic display of article downloads

Pins pop up from all over the world, accompanied by information about which specific paper has been downloaded by a given user in a specific city and country. This is an illustration of the pure behaviors of AIS Library users. It does not tell an observer for which purpose a specific paper was downloaded. Was it the authors themselves who wanted to check out their first journal publication? Or was it downloaded for a literature review? Similarly, when users of music streaming service Spotify are presented with information about which music their friends are listening to, as illustrated in Figure 5, observers are not told whether the music was used to throw a wild party, for creating a relaxed dinner party atmosphere, or to create white-noise while working in an open office.

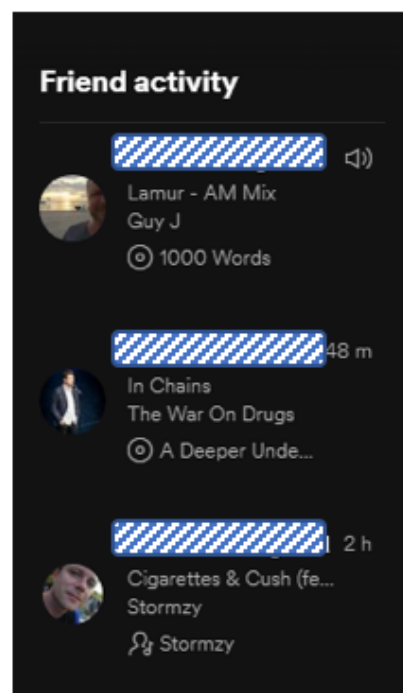


Figure 5. Behavior-based information in Spotify: display of friends' listening activity

These are both examples of pure behaviors, which have very limited natural observability. For instance, it is unlikely a colleague is present and attentive at the exact moment someone downloads a paper from the AIS Library, and even less likely that this behavior is observed at all. And while downloading a paper might be mentioned to colleagues whilst eating lunch, it is unlikely that anyone would provide an account of the behavior itself, telling the crowd "the other day I clicked and downloaded this paper". Most people would simply find this too mundane to actively share and would rather give their assessment or summary of the paper itself. In the light of these examples it becomes evident how technology has facilitated the

digital and broad disclosure of pure behaviors that in an offline context would have limited observability. Beyond the increase in observability of pure behavior enabled by digitization, we also see an increase in the ability to observe behavioral intention. Behavioral intention is the intent to make a certain action (e.g. I am planning to buy product X) compared to actual behavior (e.g. I have bought product X) (Zimbardo & Leippe, 1991). With the exception of children who write elaborate wish lists for Christmas and birthdays, most people do not actively inform their peers which behavioral intentions they have in regard to the consumption of products and services. Digitization however, prompts the creation of wish lists, such as books to read on Goodreads, accommodations to stay at on Airbnb, and goods to purchase on Amazon. They might be created for one's own utility, but once digitalized they can, and often are, disclosed to other users.

In summary, in this dissertation I do not attempt to draw a line between behaviors with and without known intention, nor do I isolate myself to only treating one of these types of behavior. I do however acknowledge that digitization has facilitated a much broader disclosure of behaviors (actual and planned) without knowing the context/intention of the person from whom the behavior originated. This represents a new type of information created in the interplay between technology and human behavior, which is an important part of my scientific motivation to carry out this research.

2.1.3 The importance of behaviors in a digital world

Consumers today are faced with increasing amounts of information about products and services (Godes et al., 2005; Sasaki, Becker, Janssen, & Neel, 2011). Beyond the burgeoning availability of products, enabled by the virtually unlimited shelf space of online retailers (Wenjing Duan, Gu, & Whinston, 2009) the number of attributes and specifications about products has also seen a sharp increase (Godes et al., 2005). Adding to the information overload, it can be difficult to ascertain product quality before purchase in many e-commerce situations (Thies et al., 2016). Given the information overload and asymmetry, consumers often turn to the advice or actions taken by social others for guidance in product-related decisions (Wenjing Duan et al., 2009; Godes et al., 2005; Sasaki et al., 2011; Thies et al., 2016). Collectively, the opinions and the actions of social others can be referred to as 'social interactions'. Social interactions encompass the many different ways information (typically product or company-related) can flow between consumers, and which carry the potential to influence the purchase or usage decisions of the receiver of that information (Libai et al., 2010). Social interactions can

take two overall forms representing ways consumers can influence each other: opinion-based social interactions, unanimously referred to as WOM or eWOM depending on an offline or online setting respectively, or behavior-based social interactions (Y. Chen et al., 2011; Cheung et al., 2014; Libai et al., 2010; Thies et al., 2016).

In extant literature eWOM in its many forms has been recognized as extremely influential on product-related decisions (Zhou & Duan, 2016). However a major challenge still remains, generating eWOM requires effort and consumers have limited time for expressing their opinions online, resulting in a significant underreporting (King et al., 2014). In general, most people will review or rate only a fraction of the products they interact with. On the contrary, pure behaviors are plentiful. Most digital services log and archive massive amounts of data on users' behaviors. These digital traces of behavior can then be turned into meaningful communicative cues by the particular service without any additional effort required by users. As such, digitization has vastly increased the observability of behaviors (Liu et al., 2015), in effect turning mere behaviors into accountable social actions that are observable and reportable (Garfinkel, 1967) and which can act as social cues in consumer decisions regarding products and services.

2.2 Behaviors in product design: literature review

Observable behaviors and their impact on others is far from a new research topic. It has been extensively studied in offline contexts, from both theoretical and empirical perspectives and by various academic disciplines. For example, economists have argued that individuals tend to disregard their own private signals, both prior knowledge and/or intuition, when exposed to opposing choices made by as little as two other people (Bikhchandani et al., 1998). Elaborate experiments have been performed by psychologists, such as the 'sky-watching experiment' by Milgram, Bickman, and Berkowitz (1969), showing that people are greatly influenced by observing the mere behaviors of others. Driven by the challenges and possibilities originating from digitization, in recent years scholars have shown a renewed interest in making user behaviors easily observable within products and services and uncovering the impact hereof. The following sections will review this literature and provide an overview of the type of empirical studies performed, distill their findings, and finally demonstrate the current conceptualization of behavior-based information.

2.2.1 Overview of findings in extant literature

The articles reviewed in the following sections are not positioned neatly in a well-defined body of literature. Rather, they share the common theme of behavior-based information being incorporated into products and services, while the research itself represents different approaches and are based in varied fields of literature. This review brings together these scattered literatures, identifying the common thread, the current state of knowledge as well as its gaps.

The nature of this dissertation's primary aim – to theorize an emerging and ill-defined phenomenon – made it impossible, as well as less relevant, to perform one systematic literature review that narrowly identifies the current state of research in the field. Rather, the review that follows in this section is the result of several rounds of literature reviews over the course of producing this PhD. The main elements in this process were:

- 1) Quasi-systematic review of consumption experiences shared in active as well as passive manners in social media contexts (early stage of project). The search was rather broad and spanned across several disciplines and levels of academic outlets.
- 2) Systematic review of eWOM literature in leading IS, marketing, and e-commerce journals for the years 2014-17. This was done for Paper 3 with the aim of uncovering current conceptual understandings of eWOM and, where possible, how eWOM and eWOB compare. In the course of this search, a few papers were found which directly seek to compare eWOM with behavior-based information (eWOB). Those articles have been included in the following synthesis of literature.
- 3) Use of seminal articles as basis for back- and forward tracking.

The different phases of the literature search process reflect how the conceptual understanding of the phenomenon of interest matured over time. In the early phases, for example, the main interest was behaviors (actively and passively) shared in social media contexts. As the concept developed, the requirement of *social media context* was no longer relevant. In that sense, the original pool of literature was broadened up. However, the relevant literature was narrowed down in other areas, e.g. from including both the *active* and *passive* sharing of “consumption experiences” to in the end being focused on the more passive types of behavior disclosure

(digital traces of behaviors being disclosed). The result is a pool of literature that I do not claim is an exhaustive collection of literature about the use of behavior-based information in products and services, but which can be viewed as a foundation for further exploration of this theme.

Table 2 provides an overview of the prominent research identified throughout this project and the associated findings.

Table 2. Overview of current literature about behavior-based information

PAPER	OUTLET	TYPE OF STUDY	EMPIRICAL CONTEXT	TYPE OF BEHAVIOR	FINDINGS
Salganik & Watts (2008)	Social Psychology Quarterly	Online experiment	Experiment music website	Aggregated no. of previous downloads for a song - disclosed on the website	Significant positive impact of behaviors on music downloads; even for songs whose download count had been manipulated high.
Duan, Gu & Whinston (2009)	MIS Quarterly	Panel data analysis	CNET (software)	Aggregated no. of prior downloads for a piece of software - disclosed on CNET.	Significant positive impact of behaviors on software downloads, whereas ratings (opinions) only has impact on less popular products.
Aral & Walker (2011)	Management Science	Online experiment	Online gaming	Facebook friends' achievements in online game automatically posted to Facebook.	Modest, but significant, positive impact of behavior disclosure on game adoption. Behaviors are overall more impactful than WOM-style messages because of the high volume and minimal manual effort required
Chen, Wang & Xie (2011)	Journal of Marketing Research	Online experiment	Digital cameras on Amazon	Sales rank (based on aggregated no. of previous purchases – disclosed on Amazon	Significant positive impact of behaviors on sales. However, if the number of prior purchases is low, the disclosure hereof has neither positive nor negative impact.
Tucker & Zhang (2011)	Management Science	Online experiment	Yellow Pages-style website for wedding services	Aggregated no. of link clicks per vendor – disclosed on the website.	Significant positive impact of behavior disclosure on website traffic. Narrow-appeal vendors gain more website traffic from disclosure of behaviors than do broad-appeal.
Bond et al. (2012)	Nature	Online experiment	Voting	(Self-reported) voting-behavior in US election posted to voters' Facebook pages	Modest but significant positive impact of behaviors on friends' and friends of friends' actual voting behavior and information seeking. Impact largest among close ties.
Cheung, Xiao & Lui (2014)	Decision Support Systems	Panel data analysis	Asian beauty forum	Prior purchases of beauty products - disclosed on users' profile pages.	Significant positive impact of behaviors in terms of influencing purchase decisions. Behaviors are found more impactful than eWOM (opinions)
Bapna & Umyarov (2015)	Management Science	Online experiment	Last.fm (music streaming)	Users' status as premium subscriber is disclosed on users' profile pages	Significant positive impact of behaviors on purchases of premium subscriptions. Impact largest on users with small number of friends.
Thies, Wessel & Benlian (2016)	Journal of Management Information Systems	Panel data analysis	Indiegogo (crowdfunding)	Aggregated no. of previous backers for a campaign – disclosed on Indiegogo	Significant positive impact of behaviors on funding decisions. However, the impact decays faster than that of eWOM.

As shown in Table 2 the current literature is mainly based on large-scale experiments or panel datasets with data points in the millions. Here, the most prominent perspective taken is that of

the business, where the impact of behavior-based information on user choices is studied as a variable which can potentially affect the company's bottom line. Generally, a positive impact of behavior-based information has been identified across a number of diverse product categories, such as digital cameras (Y. Chen et al., 2011), online gaming (Aral & Walker, 2011), premium subscriptions in freemium-based music streaming (Bapna & Umyarov, 2015), and wedding services (Tucker & Zhang, 2011) to name a few.

The majority of studies have investigated the impact of behavior-based information when presented on an aggregate level, for example displaying the total previous number of backers of a crowdfunding project (Thies et al., 2016) or the aggregate number of link clicks on a website (Tucker & Zhang, 2011). However, exceptions do exist where behaviors are displayed at the individual-specific level (e.g. Aral & Walker, 2011; Bapna & Umyarov, 2015; Bond et al., 2012). Both aggregate and individual behavior-based information is found to have a positive impact on consumer choices, albeit moderated by a number of variables, including total amount of social ties in a user's network (Bapna & Umyarov, 2015), tie strength (Bond et al., 2012), impact over time (Thies et al., 2016), size of potential market for the product (Tucker & Zhang, 2011), and user expertise (Cheung et al., 2014).

2.2.2 Thematic & theoretical approaches of extant literature

Thematically, scholars dealing with the integration of behavior-based information in products and services have taken slightly different approaches. One stream explicitly recognizes the design-driven nature of disclosing behavior-based information, and can be characterized as 'social design'. Godes et al. (2005) posited that "at least some of the social interaction effects are partially within the firm's control" (p. 415). Building on this observation, a focus on how to design 'viral' or 'social' products has emerged (Aral, Dellarocas, & Godes, 2013; Aral & Walker, 2011; Bapna & Umyarov, 2015; Dou, Niculescu, & Wu, 2013). Here, researchers focus on how social elements, including but not restricted to behavior-based information, can be incorporated into the product design to stimulate adoption, and customer engagement and retention (Bapna & Umyarov, 2015). As such, this stream of literature acknowledges how product design in a digital age often merges with marketing communications. Because this stream is not constrained to investigating behaviors, the focus is put on social information and social features. This includes both the behaviors and opinions of users, as well as social features such as the use of referral options built into the product, and how collectively these can help diffuse a product as well as retain users.

Another stream takes point of departure in the interrelated literatures of eWOM and social interactions. Likely the most widely used definition of eWOM, with 4,194 citations according to Google Scholar, is “any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet” (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004, p. 39). Here, eWOM is defined as “positive or negative statements”, implying a consumer-driven activity which involves the expression of opinions. Scholars departing from the eWOM/social interactions perspective have been especially interested in studying the impact of opinions (eWOM) in comparison to behaviors when integrated into digital products and services. For example, Thies et al. (2016) applied the perspective of social interactions in a crowdfunding context, where eWOM was contrasted against what they refer to as ‘popularity information’, a behavior-based social interaction, operationalized as the number of previous backers of a given project. They found that although popularity information had an overall larger impact than eWOM, the effect diminished relatively quickly compared to that of eWOM. Another study by Cheung et al. (2014) directly compared the effect on consumer decision making of “opinion-based social information” in the form of peer consumer reviews, which is a common type of eWOM, to that of “action-based social information” described as “publicly observable online social information about other consumers’ actions” (p. 51) and operationalized as users’ self-reported past purchases. Based on the analysis of a large dataset from an online beauty community, they find that behavior-based is more influential than the opinion-based information. Relatedly, Chen et al. (2011) investigated the impact of consumer opinions (eWOM) against what they referred to as “observational learning information” operationalized as the purchases of users, which is behavior-based information. Although this study did not directly compare the effectiveness of the two, the findings document a positive impact of both positive eWOM and the presence of behavior-based information. Further, in contrast to negative eWOM, the absence of behavior-based information (viewed in this study as negative behavior-based information) does not harm sales.

Across the two thematic approaches described above, social design and eWOM/social interactions, scholars mainly apply the theoretical perspective of observational learning (Chen et al., 2011) and the related concept of informational cascades (Duan et al., 2009; Thies et al. (2016). Informational cascades encapsulate the phenomenon when individuals follow the past behavior of others and disregard their own information (Huang & Chen, 2006). Based on these dominant theoretical perspectives it is reasonable to conclude that the current literature treats

the presence of behavior-based information as a design element that aims to reduce consumers' efforts in decision-making processes.

2.2.3 Current conceptualizations of behavior-based information in products & services

In the above, I have shown how the disclosure of users' behavior-based information within digital products and services can be viewed as a behavioral social interaction and how in extant literature this is often contrasted against the opinion-based social action, unanimously referred to as eWOM. However, while there is rich literature about the concept of eWOM, (cf. King et al. (2014) and Cheung and Thadani (2012) for reviews), behavior-based social interaction is much less explored conceptually. Table 3 provides an overview of some of the various conceptualizations of behavior-based information in studies that contrast opinion-based and behavior-based social interactions.

Table 3. Conceptualizations of behavior-based information in extant literature

Paper	Type of Social Interaction	Conceptualization
Chen et al. (2011)	Opinion	"WOM"
	Behavior	"Observational learning information"
Cheung et al. (2014)	Opinion	"eWOM"
	Behavior	"Action-based information"
Thies et al. (2016)	Opinion	"eWOM"
	Behavior	"Popularity information"
Libai et al. (2010)	Opinion	"WOM"
	Behavior	"Observational learning"

Firstly, it is evident that there is a lack of a common concept to capture behavior-based social interaction. Whereas the opinion-based is unanimously referred to as eWOM, multiple different concepts are used to describe the behavior-based. In other cases the behavior-based is not even explicitly recognized as being based on behaviors, but rather regarded as an instantiation of peer-to-peer influence (Aral & Walker, 2011; Bapna & Umyarov, 2015). I argue that such lack of a common theoretical ground hinders the effective accumulation of knowledge in a given field, as posited by Gregor (2006) and King et al. (2014).

Secondly, the absence of a common concept and nuanced insights into the characteristics and building blocks of behavior-based information poses challenges in terms of comparison across empirical findings. Specifically, although extant literature does provide empirical insights into the positive impact of behavior-based information, these studies are based on very different types of behavior-disclosure, and the nuances of these are not explicated. Rather, the current application of behavior-based information seems to suffer from a taken for granted-ness.

Thirdly, the use of the term “observational learning information” employed by Chen et al. (2011) and Libai et al. (2010) presupposes that behavior-based information always has an impact, and a specific kind that relates to learning from the observation of others. This is not the case, just as a review (a piece of eWOM) need not always lead to an impact on those exposed to it – it depends on various factors such as the expertise and the trustworthiness of the person crafting the review (Cheung & Thadani, 2012). Such more nuanced mechanisms of behavior-based information are still to be uncovered.

Finally, the use of the term ‘popularity information’ signals that behavior-based information carries a specific meaning among those exposed to it. This might be the actual meaning ascribed to behavior-based information, however, to the best of my knowledge, there is currently no evidence that this is the case, and researchers have recently been warned to not jump to conclusions about how such subtle traces of behavior are interpreted by users (Freelon, 2014).

2.2.4 Synthesizing the status quo of current literature

Summarizing on the above review of literature on the use of behavior-based information in products and services, it is evident that the disclosure of user behavior has been found to significantly affect other users’ choices and behaviors, in some cases more so than the disclosure of users’ opinions (Cheung et al., 2014; Wenjing Duan et al., 2009; Thies et al., 2016). Further, the impact is moderated by factors such as tie strength (Bond et al., 2012), total amount of ties of a user (Bapna & Umyarov, 2015), impact over time (Thies et al., 2016), size of potential market for the product (Tucker & Zhang, 2011), and user expertise (Cheung et al., 2014). Finally, such use of behavior-based information has been recognized to be part of designing a product with mechanisms that support marketing goals (Aral & Walker, 2011; Bapna & Umyarov, 2015; Dou et al., 2013).

However, what is also evident from the reviewed literature is that it suffers from a lack of conceptual clarification which a) hinders the effective accumulation of knowledge b) neglects important nuances, which make it hard to compare findings as well as set guidance for future research. Further, extant empirical findings at the individual-specific level lack insight into the impact when incorporated *into* a product (rather than disclosed on an external platform such as Facebook). Finally, extant research is dominated by large-scale experiments all of which apply a business-perspective. Building on Freelon's (2014) recent call for more research that applies a user-perspective on such digital traces of behavior, I argue that this lack of user-perspective risks faulty design and untapped opportunities.

2.3 Theoretical foundations

The aim of this section is to briefly introduce the reader to the main theoretical foundations of this dissertation. Firstly, social influence theory, and a particular type thereof namely observational learning theory, is reviewed to provide a foundation for understanding the mechanisms of interpersonal influence. Secondly, self-determination theory is presented as a lens to understanding how behavior-based information can add value to users' product-use experience beyond providing cues to the popularity of content and products.

2.3.1 Social influence theory & observational learning

Social influence theory, and the related theoretical perspectives of observational learning (Bandura, 1986) and social impact theory (Latané, 1981), is the overarching theoretical foundation for this research. It is essentially concerned with how humans influence each other's thoughts, attitudes, and behaviors. Social influence can be exerted in explicit as well of more implicit manners (Fulk, Schmitz, & Steinfield, 1990). Overt statements and opinions about a product, service, or technology, is an explicit form of social influence. On the contrary, social influence can also be exercised in less direct ways, such as by performing an action (behavior) visible to others, and thereby potentially influencing others to do the same (Fulk et al., 1990), known as observational or social learning (Bandura, 1986).

Bandura's approach to learning developed from the behaviorist stance on learning. In the first half of the 20th century behavioral psychology was the dominant perspective in psychology. Led by John B. Watson and further developed by B. F. Skinner, the behaviorists posited that learning happens through a process of stimulus and response called classical conditioning

(Watson, 1913), and that rewards and punishments are important factors for learning through operant conditioning (Skinner, 1963). Put simply, the focus was on learning as an effect of one's own *direct* experiences (Bandura, 1977). Bandura's stance on learning differs from that of behaviorism in the sense that he recognizes the important role of the social environment. Specifically, using the illustrative examples of teaching children to swim or adolescents to drive cars he has famously claimed that learning would be a hazardous affair if all learning was to take place through the direct, personal experience of trial and error (Bandura, 1977). Rather, he posits that humans are capable of learning through the observations of others' behaviors. Although Bandura in this manner differs from the behaviorists of the early 20th century, he does not dismiss the learning impact of rewards and punishments as emphasized in operant conditioning (Skinner, 1963). In fact, in Bandura's view, learning through the observation of others is strengthened if the outcome of the modeled behavior is *also* observable. For example, observing that one's siblings are rewarded for good manners can increase the observer's learning of good manners. Bandura's theory of observational learning is in essence a theory of learning. However, given its foundational emphasis on the social environment in making changes in individual behavior, we can also view it as a theory of social influence with high relevance for design.

From an observational learning perspective products whose use are high in observability (e.g. clothing, cars), are generally more prone to influence others than those products whose use cannot be observed that easily (e.g. shampoo, bed linen) (Bandura, 1986; Rogers, 2003). This is a crucial point for this dissertation, as digitization transforms a wide range of products, or more precisely their usage, from being low in observability to being highly observable, at least in an indirect way (e.g. not observing *actual* music listening behavior, but rather digitally observing a story or trace of a person listening to music). Accordingly, the main theoretical perspective applied in the extant literature about digitally observable behaviors has been that of observational learning (e.g. Chen et al., 2011) and the related phenomenon of informational cascades (Duan et al., 2009; Thies et al. 2016). This PhD dissertation is no exception. The main theoretical motivation for embarking on this project has been the premise that observing the behaviors of others can influence one's own attitudes and behaviors.

Consequently, in this project, and specifically for the online experiment set to answer RQ 2, I hypothesize that the inclusion of social information in online products and services – i.e. information about other users' product-related behaviors and opinions - can positively affect

potential users' attitude towards an online service. To give further nuance to this hypothesis, building upon Bandura's (1986) observational learning theory and social impact theory (Latané, 1981), this research recognizes that a number of factors impact how effective that influence is. These are: 1) who the observed person or the 'model' is 2) the number of people modeling, and 3) whether the outcome of the modeled behavior is observable. These are expanded below.

First, observing the actions of or receiving recommendations from people who are knowledgeable about a specific topic, or in some way opinion leaders, generally has a stronger impact than observing random people's behavior (Bandura, 1986; Bikhchandani et al., 1998, Latané, 1981). Consequently, I hypothesize that the product-category relevance of the modelling person matters, and that the behaviors of category-specific influentials will have a stronger impact on observers than those of random individuals. Second, social impact theory posits that a greater number of influencers increases the likelihood that an individual will be influenced (Latané, 1981). However, from the field of economics we find theoretical arguments that explain how observing the actions of as few as two other people can serve as a turning point where one starts disregarding their own information and follows the behavior of others (Bikhchandani et al., 1998). Consequently, I hypothesize that the inclusion of social information from two friends is enough to create an impact but that a higher number of friends will have a larger impact on observers. Third, Bandura (1986) argues that the effect is generally amplified when the observer can observe the consequence of a behavior. For example, in the case of a behavior where the model is rewarded for that behavior there will be more impact on the observer than without seeing the reward outcome. Turning to the online sphere, we find that people perform a vast number of product-related behaviors every single day, booking a hotel, ordering groceries online, streaming music and the like, many of which can be made observable online to others. In Bandura's terminology, these can be regarded as mere behaviors without observable outcome. On the contrary, if the user provides some kind of evaluation, such as a review, adding a 'like', a rating, or some other indication of how the user experiences that event, one must assume that this opinion was formed on the basis of an experience (a behavior) with the product/service. Accordingly, the evaluation implicitly tells us about a person's behavior with that product/service, and this behavior can thus be regarded as observable behavior *with* observable outcome. Contrary to the popular saying that "actions speak louder than words" I thus hypothesize that opinions will have stronger impact than behaviors. On a final note, it is worth mentioning that Bandura also recognized the importance

of observing one's *own* behaviors to improve performance, such as with improving in sport (Bandura, 1986). This is an important point, particularly in terms of Paper 5 where the impact on the individual when faced with their own music listening behaviors is also discussed.

2.3.2 Self-determination theory

As demonstrated in the literature review, extant literature has been focused on identifying the impact of behavior-based information on consumer decision-making and behavior and have done so mainly from an observational learning perspective, where the point of departure is the business and the impact on the business. Only few studies take a user perspective, for example Luarn, Yang, and Chiu (2015) who identified user motivations to share their behavioral information on location-based services. Moreover, the current knowledge base has primarily taken a functional view of behavior-based information. Extant research assumes that the user interprets and uses the behavior-based information as cues to what is popular (hence the term popularity information) and thus make either better or more effortless decisions in line with observational learning theory. While this approach has its benefits and valid theoretical rationale, I argue that in order to truly shed light on how to best make use of behavior-based information in product design, there is a need to go beyond this purely functional view and seek knowledge from the point of the user: how users actually interpret this rather sterilized information, and how it is used in practice. Simply put, design of solutions with behavior-based information must also take into account the user needs as well as concerns in order to take full advantage of the potential of behavior-based information. To support that end, the self-determination theory (SDT) is introduced. Specifically, I draw on a sub-theory of SDT, namely the theory of *basic psychological needs*. It posits that all human beings possess three basic psychological needs (Ryan & Deci, 2017). Each of these must be nurtured and satisfied for human beings to thrive. If deprived of this need satisfaction, the well-being of an individual will decrease, just as with a human being who is deprived of basic physiological needs such as sleep, food, and water. The three needs are: autonomy, competence and belonging.

First, *autonomy* refers to circumstances where “one’s behaviors are self-endorsed, or congruent with one’s authentic interests and values” (Ryan & Deci, 2017, p. 10). It has to do with freedom of decision and the personal meaningfulness of the task at hand (Sailer, Hense, Mayr, & Mandl, 2017). *Competence* refers to the basic need to master something, be it sports, cooking, or math, and generally operate efficiently within important life contexts (Ryan & Deci, 2017). It is what drives the golf player to practice small details again and again and the toddler to insist on

doing things themselves instead of having their parents help. Lastly, the need for *relatedness* describes human being's need for feeling cared for by others and to belong to social groups. An important component of relatedness is to give and contribute to significant others (Ryan & Deci, 2017). This explains, for example, the joy of giving personal gifts to family members for Christmas, the gifts becoming a signifier of close relationships.

SDT, and its three basic psychological needs, is especially well-suited for design topics as it emphasizes the active role of the environment in satisfying these basic psychological needs (Ryan & Deci, 2017; Sheldon, Abad, & Hinsch, 2011). Accordingly, I argue that by shedding light on how behavior-based information within a digital service can satisfy basic psychological needs, designers will be better equipped to design services that retain and engage users through satisfaction of these human needs. As such, SDT is used to discuss the empirical findings in Paper 5 based on a hypothesis that behavior-based information affords users more than the functional affordance of guidance towards popular content, as prescribed by extant literature. To the best of my knowledge, SDT has not previously been applied to the case of behavior-based information in digital products and services. However, it has been successfully applied to related areas such as online gaming (Ryan, Rigby, & Przybylski, 2006), Facebook use (Sheldon et al., 2011), the use of gamification design elements (Sailer et al., 2017) and in Q&A communities (Li, Huang, & Cavusoglu, 2012). Furthermore, while most often applied in quantitative – often experimental – research, it has also proved to be a well-suited theoretical lens for qualitative research (Garn, Matthews, & Jolly, 2010; Ryan & Niemiec, 2009).

2.4 Chapter summary

In this chapter, I have a) outlined the stance taken on behaviors adopted in this dissertation b) shed light on the increasing observability of behaviors, driven forward by digitization c) presented a review of extant literature on the use of behavior-based information in product design, and finally d) outlined the two main theories applied in this dissertation, namely observational learning theory and self-determination theory. In doing so, I have clarified that although some scholars seek to distinguish actions from behavior I will not seek to draw such a line in this dissertation. Further, it was demonstrated how digitization has vastly increased the potential observability of consumers' behaviors, and that such observable digital traces of behavior can act as social cues in decision-making processes. Moreover, it was shown that the phenomenon of behavior-based information is generally approached from an observational learning perspective, and that it is found to have a significant impact on observers' choices.

However, it was also revealed that the phenomenon is conceptually immature and lacks both a common terminology to describe it, as well as a more nuanced and structured understanding of the many ways behavior-based information can play out.

3 Methodology

This chapter introduces the methodologies applied in the course of this research project. First, the underlying research philosophy of this dissertation is discussed followed by some self-reflections on my own role as a researcher within a company. Next, the methodologies used to answer each research question are outlined and post hoc reflections are discussed. The reader will notice that the section about the methodological choices for answering RQ1 is somewhat more substantial than those tied to RQ2 and 3. This is a deliberate choice. RQ1 is a theory-building enquiry, and such processes tend to be highly iterative and messy. Therefore, the methodological reflections tied to RQ1 warrants more elaboration than that provided in the individual papers. For more detailed accounts of the methodology for RQ 2 and 3, the reader is referred to the individual papers.

3.1 Research philosophy

This section outlines the underlying scientific stance adopted in this dissertation. The role of a research philosophy is to go beyond the methodological considerations and to shed light on the fundamental scientific point of view taken by the researcher, which then guides the choice of methods and interpretations.

This research builds on the critical realist perspective (Bhaskar, 2015). Historically, the IS discipline – as well as many other disciplines – has been divided into two opposing camps, namely that of the ‘hard’ positivist approach and the ‘soft’ interpretivist approach (Fitzgerald & Howcroft, 1998). Critical realism seeks to bridge these seemingly opposing camps, and has successfully manifested itself as a legitimate approach to conducting IS research (Bygstad et al., 2016). In critical realism the aim is not to uncover causalities to be used in prediction of future events. Rather, the critical realist perspective is concerned with also understanding the underlying mechanisms that led to these events (Bygstad et al., 2016). Of special interest to the IS discipline is investigating the specific role of technology in these mechanisms, and the interplay between the social and the technical entities. For this dissertation the critical realist position implies that I seek not only to assess the effects of infusing social information into

products, I also investigate the underlying mechanisms of this cause and effect. In that process I take into account both the technology, i.e. the digital social information in products and its characteristics, and the actors, i.e. users and potential users) and the interplay between these entities. I argue that only by understanding these underlying mechanisms – how users interpret behavior-based information in a particular technology setting, and how they interact with it – can we generate the knowledge that allows product designers to create product experiences that support further socio-technical interaction.

I argue that this approach complements the current knowledge on the phenomenon, which has been dominated by a positivistic approach. Here researchers have meticulously sought to quantify the impact of behavior-based information on sales and other similar metrics (cf. Chapter 2). But little attention has been given to understanding the underlying mechanisms, such as the subtle subjectivities and meaning ascribed by users, that might lead to these outcomes. I seek to add to this knowledge by generating insights about the structure of the phenomenon and the socio-technical aspects of it.

3.2 My role as researcher in TDC Group

As described in Chapter 1 this PhD project was conceived in the context of and has been partly carried out in TDC Group. A number of aspects related to this collaboration and the methodological implications are thus worth mentioning.

First of all, I have been fortunate to enjoy rather free rein during my industrial PhD, in the sense that I have not been burdened by day-to-day work. I have been considered part of the team but have concentrated largely on the PhD itself. This did not, however, mean that TDC was indifferent in terms of what topics I should concentrate on. Early on it was clear to me that TDC Group prioritized the portion of my project that sought to quantify the impact of behavior-based information. From a business perspective this made perfect sense; find out the scale of the impact, and if there is one try to understand it – which is more or less the approach I followed. In hindsight I likely would have found it more beneficial to have performed this part of the PhD project as one of my final research activities. The advantage of doing so would have been my own more mature understanding of the concept of eWOB and a conceptual framework within which I could position and guide my research. Moreover, I would have had qualitative insights that I could empirically validate.

When planning the impact-related part of the research (related to RQ2) it became clear that there would be several challenges in setting up an empirical study based on the current TDC infrastructure. Firstly, TDC Group did not, despite good intentions, have the sufficient time to invest in helping me implement a proper research design. Specifically, I faced challenges related to setting up separate treatment and control groups and keeping their conditions constant throughout the experiment. Further, the possibilities for tracking users' behavior on all required levels posed challenges we could not mitigate. Consequently, I settled on using one of TDC Group's online services, Blockbuster, running an experiment on a mock-up of the Blockbuster website, the advantages and disadvantages of which will be elaborated later in this chapter. However, thanks to my affiliation with TDC Group, I did gain invaluable access to potential users of Blockbuster through their official Facebook page. Using the Facebook ads system, I was able to target and recruit people that were validated non-users of Blockbuster but who matched the profile of their target market. Another advantage of my connection to TDC Group was that I could position Blockbuster as the sender of the ad campaign, making it more trustworthy. As such, the experiment was staged as a survey from Blockbuster that recruited potential users to test out a new version of their website.

Finally, my placement in TDC Group has also had consequences for the final empirical study conducted, where I carried out in-depth interviews. Having made the choice to use Spotify as my point of departure, due to their exemplary integration of behavior-based information, I was contemplating how to acquire subjects for such a study. The requirements for participation were not complex; subjects simply had to be regular users of Spotify Premium (the paid version). Recruiting a sufficient amount of these users, who were motivated to spend an hour discussing and revealing insights, sometimes quite personal, about their use of Spotify, was not easy however. I therefore took advantage of my access to TDC Group's +5,000 employees which I could recruit through the company's intranet. During this process I took care to screen out co-workers I knew beforehand to avoid the interviews being influenced by our common background. To the informants I represented myself as a researcher interested in their private use of Spotify (not in their professional opinions about the service); albeit a researcher with a partly internal status, which I felt created additional trust between the informants and myself.

3.3 Methodological approach

In my Work in Progress 2 seminar I was encouraged by one of my opponents to tell 'the story' of the methodology applied in this PhD project. Why I began where I did, why I chose the

methods I did, and how the methodological approach evolved. With this in mind, and in a conscious attempt not to make lengthy repetitions, I will not restate in detail the methodologies applied in each of the studies. For those details, I refer the reader to the individual articles. Rather, I will in the following sections provide reflections about the methodological choices taken, the sequence in which the research was carried out, and any additionally methodological details that were omitted from the papers due to page limitations.

But before I begin, let me outline the mixed-methods approach applied in this project. The mixed method approach was specifically applied in this paper through three different designs. First, the concept of eWOB was derived through a number of literature reviews and a grounded theory-inspired approach of constant comparative analysis of empirical examples gathered through both existing literature and a process that can be described as 'digital auto ethnography'. Second, the impact of eWOB and eWOM from friends, together referred to as 'social information', was assessed through an online experiment using a 2x2x2 factorial design in the empirical context of the movie streaming service Blockbuster. Finally, understanding how eWOB is interpreted and acted upon when integrated into an online content-based service was investigated through semi-structured in-depth interviews with users of the music streaming service Spotify and a means-end chain analysis.

In the beginning of my PhD studies I naively imagined that the project would progress in a neat, linear manner. It turned out that the process of conceptualizing eWOB was an ongoing activity throughout my studies with many refinements along the way. That was where I began, and that is (almost) where I end the project, having produced three papers (1-3) around this theme. Alongside this conceptual endeavor I have carried out two empirical studies resulting in Paper 4 and 5. Moreover, during the course of my PhD studies I have been blessed with two wonderful sons with each of whom I spent nine months maternity leave. Although the two maternity leaves provided extra time for reflection, I do view my PhD as consisting of three main periods of activity which are illustrated in Figure 6. It should be noted that Paper 2 is not strictly conceptual, a netnographic analysis was also conducted, but as the main focus of Paper 2 is conceptual it is classified as such below.

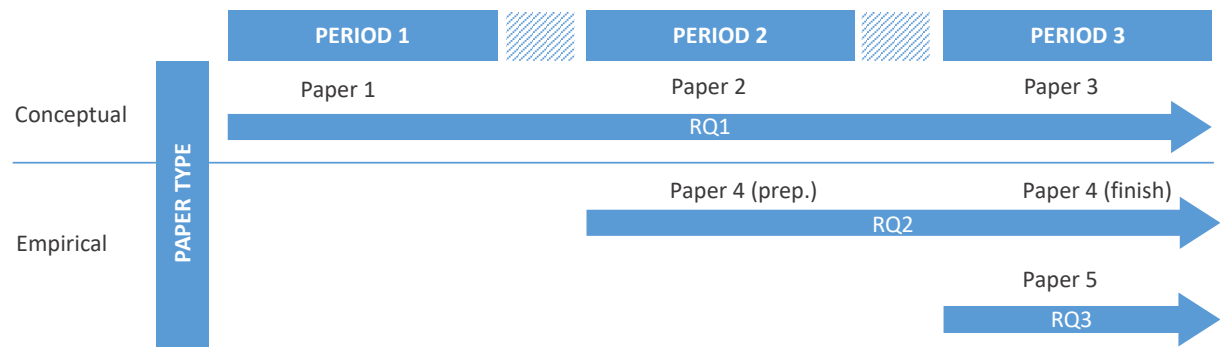


Figure 6. Progression of the PhD

Due to the rather broad problem field of my research questions I decided early on that I needed to approach my topic from multiple methodological angles. In the following, I will provide a summary of how I went about answering the three research questions as well as provide critical reflections for the methodological choices taken.

3.3.1 Methodological choices: deriving the concept of eWOB (RQ1)

Answering RQ 1 was a truly iterative process that lasted from the first day of the PhD until the its final months. Deriving a new theoretical concept is no easy task as there are no predefined templates or success formulas for theory development (Cornelissen, 2016; Ragins, 2012). It simply takes time and involves deep reflection and constant comparison with the existing knowledge base. Finally, and based on my experience most importantly, it takes a lot of feedback. Deriving the concept of eWOB took three individual but partly overlapping papers. For each paper and during each revision round the reviewers helped me develop the concept towards to be increasingly distinct and with a stronger foundation in the existing knowledge base.

In writing this cover chapter, I have the benefit of hindsight and I am equipped with a much stronger tool box of theories and methodological approaches than I was when I began the process. Admittedly while I did not originally have a structured plan for how to develop the concept of eWOB the process that I have followed nevertheless has strong similarities to the grounded theory method, including a data collection process that can best be described as digital auto-ethnography, both of which I will elaborate on in the following.

3.3.1.1 Digital autoethnography: a case for the researcher's active role

My starting point for this PhD was my aforementioned curiosity about an emergent empirical phenomenon that I had observed over a number of years. In my position as head of the social media & digital marketing department in TDC Group I had begun to archive examples of what I referred to as 'consumption-sharing' through social media platforms. I simply documented these encounters from my everyday use of digital products and services by taking a screenshot and writing a few notes and reflections and archiving this information in a PowerPoint file as shown in Figure 7 and 8.

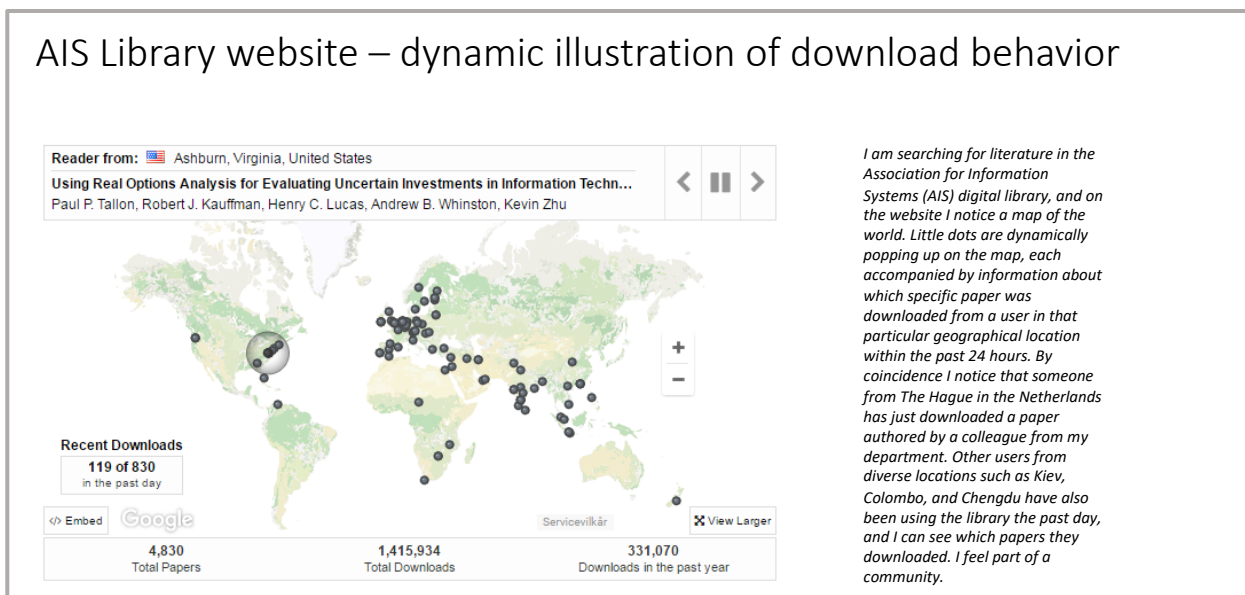


Figure 7. Example of contents of database and author notes: AIS Library

From Last.fm front page

Who is listening RIGHT NOW => a sense of temporal immediacy

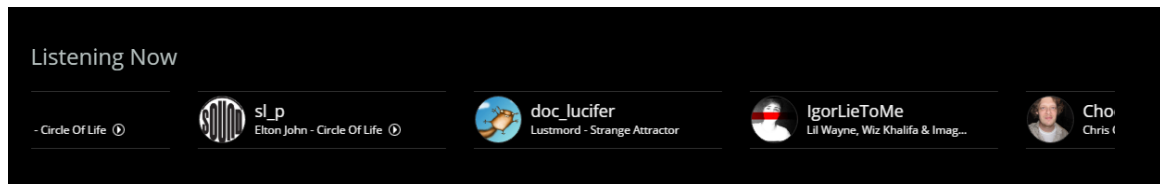


Figure 8. Example of contents of database and author notes: Music streaming service Last.fm

Over the years that PowerPoint developed into a small database, which now includes 70+ unique examples of how consumers' behaviors can be disclosed by digital platforms (see Appendix 8.6 for a sample of the database). It was the seeds of this database that spurred my thought process, and over the years helped me see patterns, similarities, and variations among what has come to be coined as eWOB. This type of data collection can be related to the qualitative method of autoethnography. Autoethnography is an approach to research, where the researcher seeks to describe and systematically analyze (*graphy*) personal experience (*auto*) in order to understand cultural experience (*ethno*) (Ellis, 2004). Here, the researcher in a sense becomes the research subject (Denzin & Lincoln, 2011) and, as in ethnography, an embodied research instrument (Hine, 2011). The researcher actively analyzes them self and engages in critical self-reflections that "results in a narrative of the researcher's engagement with others in particular sociocultural contexts" (Spry, 2011, p. 498). As a method it represents both a research process and the research output (Ellis, Adams, & Bochner, 2010). Typically, it involves highly narrative accounts of personal events. My data collection was never intended to be a fully-fledged auto-ethnographic analysis. While I did in some cases write more elaborate memos about what I had found, skilled autoethnographers will likely not regard this part of my PhD as meeting their criteria. However, I argue that this process of collecting and reflecting upon data from my everyday use of digital products and services, and actively using the data for

analytic purposes, partially bears similarities to the autoethnographic approach. I call it *digital* autoethnography as the data collection was grounded in my own everyday usage of digital products and services and the encounters with behavior-based information experienced here.

Along the way, as the database developed, I found it useful to compare empirical cases to each other, identifying similarities and differences, and comparing the empirical cases against theoretical frameworks. How did the empirical cases match the frameworks? And did the frameworks provide a structure to derive essential differences between the cases? This leads me to the grounded theory methodology which I will elaborate in the following.

3.3.1.2 Deriving eWOB through grounded theory

Grounded theory is an inductive approach to data analysis that aims to develop theory from data. It typically starts with a loosely conceived investigative area or with the collection of data. Through a process of coding data that leads to 'concepts' and 'categories', theory about a given phenomenon is gradually developed. Data can include interviews, documents, observations and the like. One hallmark of grounded theory is the constant comparative method (Glaser, 2008). Here, pieces of data are continuously compared against each other, and later in the process with existing literature, with the purpose of identifying differences and similarities. In the end, the researcher should end up with a set of categories that have their own unique set of properties and dimensions (Corbin & Strauss, 2015). As such, it is a highly iterative process, going back and forth from data to theory. The process stops once there are no more discrete categories to be found in the data, and theoretical saturation has been reached (Corbin & Strauss, 2015). I will now elaborate on how the approach I followed for deriving the concept of eWOB bears important similarities to the grounded theory methodology.

As previously stated, it was an iterative process. It involved a constant loop of asking how the observed phenomena related to established concepts, and which nuances and properties could be identified within the data. Figure 9 illustrates the process. “CC” denotes constant comparison and “TC” denotes theoretical comparison.

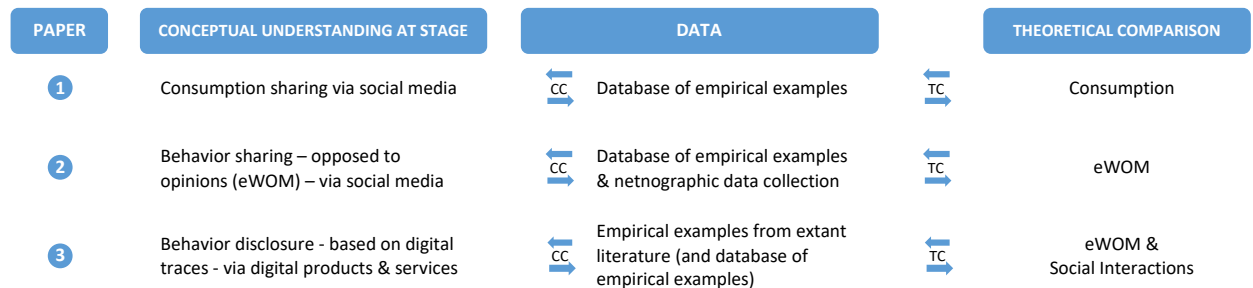


Figure 9. Grounded theory-inspired process of developing the concept of eWOB

The process started with the production of a literature review (Paper 1). The aim was to uncover the current scholarly knowledge about the phenomenon of interest which, at that point, I described as consumers’ sharing of consumption experiences via social media platforms. ‘Sharing’ encompassed both active sharing where users put in effort to share content, as well as a more passive sharing better labelled ‘disclosure’. Here, digital traces of behavior are disclosed without the individual having to put in much, if any, effort. Empirically, I was drawing on the early version of my database, and theoretically I was drawing upon the concept of ‘consumption’. As such, I used the concept of consumption to categorize the empirical phenomenon of interest into distinct types in a taxonomy of what I called ‘socially shared consumption’.

In the second stage (that led to Paper 2) I sought to further progress the conceptualization of the phenomenon of interest by taking in additional data as well as additional theory. Empirically, this stage drew on the database of empirical examples, which had expanded since stage one, as well as empirical examples collected through a systematic netnographic data collection. Netnography is a methodological approach, grounded in the ethnographic tradition, for collecting and analyzing online social interactions and online cultures (Kozinets, 2010). Netnographic researchers can be described as “professional lurkers” who in unobtrusive manners observe and analyze online activity and online social interactions (Kozinets, 2002). Following this approach, I used my own Facebook newsfeed as a data source and over a period

of seven days collected incidents of product-related information being shared by my Facebook friends, resulting in 78 pieces of content. This pool was then analyzed and coded in terms of whether each piece of content was simply a product-related opinion (e.g. someone actively recommending others to read a particular news article), or it represented a shared product-related behavior (e.g. someone checking into a movie theatre); in total resulting in 37 pieces of eWOB content. Moreover, this stage introduced the concept of eWOM as a theoretical unit of comparison to the empirical data collected. This allowed me to perform a theoretical comparison between eWOM and the phenomenon of interest, which lead to five propositions about eWOM and their contrast to eWOB, as presented in Paper 2. This second stage of the theory-development process represents a turning point for the development of the eWOB concept, akin to the selection of a core category in the grounded theory approach. Specifically, the phenomenon of interest was narrowed down from *consumption sharing* to *behaviors* being disclosed, and such digitally disclosed behaviors were placed in opposition to *opinions* (represented by eWOM). Finally, it was at this stage that the phenomenon of interest was coined eWOB.

Finally, the third and most extensive stage (that led to Paper 3) involved further theoretical comparison with eWOM through a more comprehensive review of the eWOM literature. Additionally, the concept of 'social interactions' was introduced for further theoretical comparison. Social interactions has been proposed as an umbrella concept covering both opinion-based information and behavior-based information being shared among consumers (Godes et al., 2005; Libai et al., 2010; Thies et al., 2016). However, while eWOM is the term used to capture the opinion-based information, the literature lacks a concept to capture the phenomenon of digitally disclosed behaviors. Empirically, this stage drew on examples found in extant literature to compare against one another (arriving at three design dimensions of how eWOB can be presented) and against the theoretical concepts of eWOM and social interactions, arriving at a conceptual framework for eWOB that builds on Cheung & Thadani's (2012) framework for eWOM.

In summary, this ongoing and iterative process of collecting data, comparing data against each other and against established theoretical concepts until theoretical saturation was achieved, in order to derive unique categories and properties strongly resembles the grounded theory method.

3.3.1.3 *Methodological reflections: Answering RQ1*

In this section, I will critically address some of the methodological choices made in the process of answering RQ1.

To begin, the literature review about consumers' sharing of consumption experiences in social media contexts produced in Paper 1 warrants reflection. It was produced in the first four months of my PhD and was my first research output. My attempt to conduct a systematic literature review was a bumpy ride, to say the least, largely due to my inexperience. Firstly, I did not limit myself to any specific academic outlets, which made the sheer volume of literature to be synthesized insurmountable. Secondly, I initially expended much effort looking for articles with the exact terminology I employed at this phase, calling the phenomenon of interest 'socially shared consumption', or 'social consumption'. This was not a good strategy as it generated far too many irrelevant articles from obscure academic fields. Finally, in an attempt to focus less on the term and instead look more at the phenomenon, I ended up searching for articles that had an element of consumers' sharing of consumption experiences in a social media context. Nevertheless, this first endeavor of crafting an academic paper ended up providing me with a foundation for the remainder of the PhD. Building on the taxonomy of socially shared consumption, produced in this paper, I was later able to refine and narrow the scope of the phenomenon I was trying to uncover.

Further, the digital autoethnographic approach merits elaboration. At first glance, this approach, where data is collected through one's everyday usage of digital products and services may be seem 'unscientific'. However, what sets the autoethnographic researcher apart from collecting random experiences, is her scientific mindset and apparatus that enables her to apply theoretical thinking to these seemingly random experiences, and see patterns that have larger implications (Brinkmann, 2012; Ellis et al., 2010). Following this line of thinking a stream of 'experiential research' in IS has recently begun to embrace the use of personal and often mundane experiences to extract higher level insights or theories (Bødker, 2017; Bødker & Blegind, 2017; Bødker & Chamberlain, 2016).

Despite the slowly growing acceptance of autoethnography in IS, I have indeed in the course of this PhD project been faced with feedback from prominent scholars who worried that I might not be able to publish the conceptualization of eWOB if based on my own data collection. They recommended that I applied a more well-established academic approach where I

systematically collected data over a given period of time from a predefined set of websites, or that I recruit “ordinary users” to collect such examples. There are several problems with that approach. Firstly, I indeed did perform a systematic data collection for Paper 2. Here, I surveyed my Facebook feed for a week for instances of product-related behaviors being posted. However, limiting myself to a certain platform and a certain period produces a less rich dataset than if based on my everyday usage of digital products and services over a longer period of time. One cannot force the data to appear – the relevant cases appear at different points and on different platforms, which is why I view the longitudinal dimension as crucial. Further, as put by Postill and Pink (2012) “ethnographic places are not bounded localities”. Accordingly, in such research it does not make sense to be constrained by predefined set of platforms. The dynamic nature of both research itself and digital technology means that both the analytical conceptualization and the platforms it occurs on evolves over time, both of which did during my PhD. While in the beginning I was capturing examples of ‘consumption sharing’ through social media (or social media connected services) that was broadened to the disclosure of user behaviors – beyond social media and also in aggregated, anonymous manners. Finally, towards the end of the PhD, the concept of eWOB was refined to include only the disclosure of behaviors that are based on digital traces of behaviors, i.e. not a Facebook user’s own active posting of his latest gadget purchase, visit to a restaurant and the like. If I had from the onset defined that I - or anyone else that I might engage to collect examples in the capacity of an unbiased regular internet user – should be looking for “consumption sharing on social media”, then I would not have been able to further refine and develop the concept of eWOB.

Instead, I took the approach of placing myself as the curious observer trying to identify patterns over time. An analogy can be made to a biologist, who on a walk in the forest with family discovers what looks like a new species of beetle. The biologist’s curiosity is spurred by this seemingly mundane event, but then perhaps over the next many months and years, studies the beetle in its natural habitat, seeking more variations of it – how it looks, where it lives, and importantly how it relates to and differs from the already know species. Upon compiling all of these observations a description of the new species and how it varies from others can be made. Similarly, (auto)ethnography is about conducting field-based research of phenomena and studying them as they occur in context (Boellstorff, Nardi, Pearce, & Taylor, 2012).

It is important to stress that the database should not be used for deriving longitudinal tendencies of, for example, the development of behavior-based information. Although it

includes examples that no longer technically exist, it would be faulty to draw tendencies from the database. At best, those tendencies would represent my own process in defining the concept of eWOB, going from broad terms, which included reviews of consumption experiences, to being manually and automatically shared behaviors, finally to being restricted to disclosure of behaviors based on digital traces. Further, the building of this database was not meant as a core part of my research. It surfaced out of curiosity and remained that way throughout. Consequently, there has probably been dozens of instances where I stumbled upon a piece of behavior being disclosed where I just did not have time to record it in the database.

3.3.2 Methodological choices: Assessing the impact of eWOB (RQ2)

Prior to settling on my experimental design my plan was to take a social network analysis (Borgatti, Mehra, Brass, & Labianca, 2009) and diffusion theory (Granovetter, 1973; Rogers, 2003) approach and investigate the possible diffusion of the TDC Group-owned music streaming service TDC Play when users' behaviors were disclosed to their social network on Facebook. TDC Play had at that time a Facebook integration that allowed users' listening behaviors to be shared to users' Facebook Timelines, as illustrated in Figure 10.

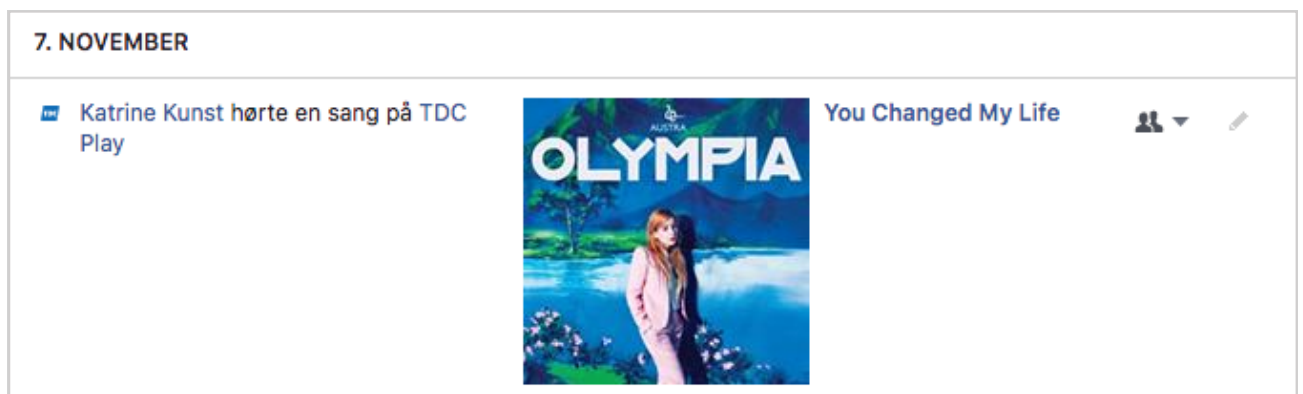


Figure 10. Example of how TDC Play listening behaviors were disclosed to Facebook in 2014. Translation: "Katrine Kunst listened to a song on TDC Play"

My aim was to assess whether being friends with someone who was an active TDC Play user, and thus being exposed to information about their listening behaviors, increased the likelihood of using TDC Play. If such an impact existed, there was a strong case for promoting the use of Facebook integration among its userbase for TDC Group. This approach was inspired by the study by Aral and Walker (2011), where in an online field experiment with 1,4 million Facebook users of online gaming pages they identified a small, but significant, increase in game

adoption among those exposed to Facebook messages about their friends' in-game achievements (i.e. game-related behaviors). Building on this, I was curious about more detailed variables that could potentially guide companies in the design of eWOB and specifically how eWOB is presented in the most efficient manner. I wanted to directly compare whether the number of friends exhibiting behavior mattered, whether the perceived knowledge of music of those friends was influential, and the relative effectiveness of opinions and behaviors. This overall approach of applying social network analysis on the TDC Play case was unfortunately abandoned because of Facebook's decision to gradually decrease the visibility – and thus the potential impact – of such auto-generated stories ². In addition, the elements that I wanted to compare were impossible to do in the natural environment of Facebook. Instead, I turned to the approach of performing a randomized controlled field experiment within the empirical context of the TDC-owned movie streaming service Blockbuster and involving an action design research-inspired (Sein, Henfridsson, Purao, & Rossi, 2011) development of a tool, the SOCIALIIT, to assist the integration of Facebook information into a website.

Movie streaming, and Blockbuster in particular, was chosen for several reasons. First, it had come to my attention that Blockbuster had already implemented Facebook login, but remained uncertain whether they should proceed in making use of social information in their interface, and if so, how. This confluence of real-world industry need, coupled with a bona fide research problem, provided a solid research rationale. Secondly, movie streaming is an experience good, where inspiration from friends and peers is likely to play a role because of the difficulty of assessing quality before purchase. Thirdly, since Blockbuster is an online service, we could establish a seamless integration with Facebook which would serve as the source of social information. Lastly, my affiliation with TDC Group entailed certain privilege, such as access to Blockbuster's official Blockbuster Facebook page from which we were allowed to recruit participants for the experiment, who represented real, potential users of Blockbuster. Using the Blockbuster Facebook page added credibility to the experiment. Additionally, my internal status also allowed us to draw on the technical competences of the team in terms of Facebook ad management in the recruiting process, and actively engage the Blockbuster team in the development and testing of the SOCIALIIT.

² <https://www.adweek.com/digital/latest-news-feed-algorithm-change-third-party-implicit-posts-punished/?red=if>

3.3.2.1 Development phase

A number of elements were developed for the experiment: a) A mockup of the real Blockbuster website b) a survey module and c) the tool SOCIALIIT that enabled us to infuse Facebook information into both the mock-up website and the survey module. These were built adopting guidelines from action design research methodology (Sein et al., 2011). Action design research brings together individuals who are implicated by the project, including the organizational stakeholders, researchers, developers, and end users, who co-build an ensemble IT-artefact in cycles of feedback, improving the final product and generating research knowledge at the same time (Sein et al., 2011). In total, we employed three iterative cycles of design, development and evaluation to arrive at the final version of the SOCIALIIT and the connected elements (website and survey module). Specifically, stakeholders from both the Blockbuster team and from the Strategy team, where I was situated, were involved in testing the survey and the mockup website of Blockbuster.

3.3.2.2 Experiment procedure & analysis

Facebook posts from the official Blockbuster Facebook page were targeted towards current non-users of the service who fit the target market profile. These posts directed participants to an online survey (see Appendix 8.7 for screen dumps from survey), where they were randomly assigned to one of eight theory-derived treatment groups or a control group. The randomization was handled by SOCIALIIT and was determined by order of visits. Specifically, the first person that clicked on the Facebook post was assigned to Group 1 (the control group) and was thus led to the experiment flow associated with Group 1. The second visitor was assigned to Group 2 and led to the experiment flow associated with Group 2. This process kept going for all 9 groups until the ninth click and was then repeated starting with Group 1, then Group 2, then Group 3 etc. until the data collection was stopped (in effect by ending the promotion of the Facebook post). When starting the survey, participants were informed that it was run by Blockbuster and a group of researchers from Copenhagen Business School, and that the purpose was to obtain their opinion on a new version of Blockbuster's website. All participants, except those in the control group, were informed that the survey included a request to connect with Facebook. It was explicitly stated that this was necessary to run the survey, that their social information would only be used for this particular study, and that we would not post to Facebook on participants' behalf.

Participants were then asked to evaluate a version of the movie streaming service, which included fictional information about their real Facebook friends' behaviors and opinions of Blockbuster. Following this exposure, participants answered questions about their attitude towards the service and intention to use it. Upon completion we carefully informed participants that the opinions and behaviors of friends seen in the website were fictional, and thus did not represent actual opinions or behaviors by friends. Figure 11 provides an overview of the treatments in the experiment.

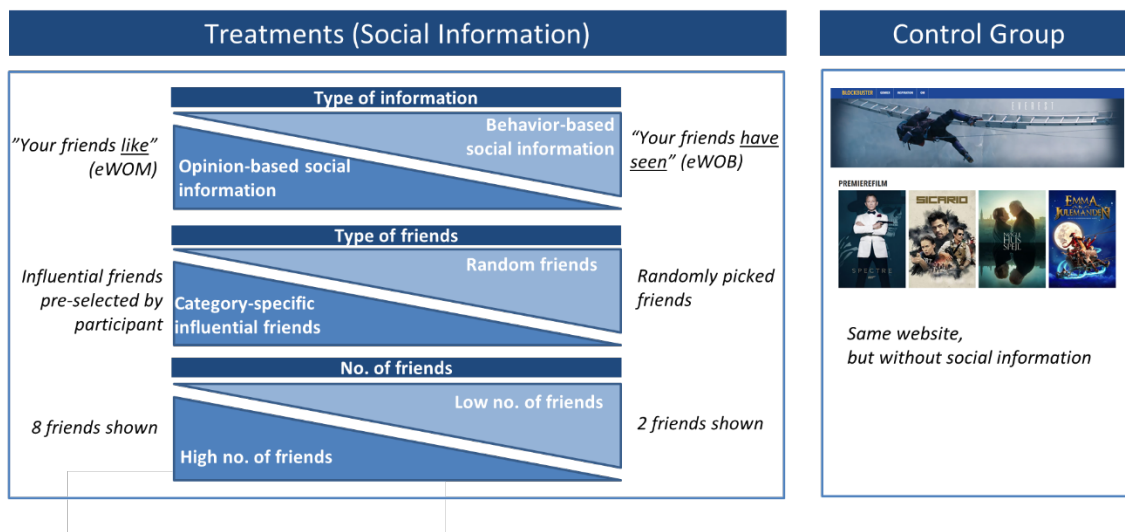


Figure 11. Overview of treatments. Darker blue indicates the hypothesized strongest effect.

In total, we gathered 473 complete responses, which after data quality and manipulation checks resulted in a final sample of 398. This data was then analyzed in the SAS program JMP using the ANOVA test. ANOVA is a statistical procedure used to test whether the means of three or more groups are equal, and a commonly used statistical analysis when conducting factorial design experiments (Jung, Schneider, & Valacich, 2010; Tsao, 2014).

3.3.2.3 Methodological reflections on methodology: answering RQ2

When conducting experiments, one constantly weighs the pros and cons of many methodological choices. One such choice for me was whether to include a pre-treatment score of the two dependent variables, namely participants' attitude towards Blockbuster and intention to use Blockbuster. The advantage of a pretest approach is that it allows the researcher to compare the pre- and post-treatment scores, with any deviations being attributed to the treatment (Salkind, 2010). However, I was not able to solve the problem of how to practically conduct a pre-test without sacrificing the natural environment, which was staged so

that participants had the impression that they were giving Blockbuster feedback on a new version of their website. Further, the necessary time lag between the pre- and the post-test stages poses a challenge, as there is no way to hold constant other factors. It could be that some participants had started using Blockbuster after participating in a pre-test while others would not have done so. This would lead to some participants suddenly being more knowledgeable about Blockbuster than others, which would conflict with our desired sample of *potential* users of Blockbuster. Finally, conducting a pre-test stage would have been much more expensive in terms of recruiting cost as we would most likely have experienced a large drop-out from the first to the second stage, and we simply did not have budget for that. With that said, there is no doubt that if the above laid out practical and financial issues could have been solved, some potential sources of bias could have been avoided, which will be elaborated on in Chapter 4.

Furthermore, the use of a mock-up website came with advantages as well as disadvantages. Obviously, the mock-up solution required a lot of time and effort to develop. Although we were careful to develop a well-functioning mockup, the experience was not like the real Blockbuster site, which arguably could have affected some of the participants, despite explaining to them that they should not expect a fully functioning site. On a positive note, the mock-up setting gave us much more freedom to test out different design dimensions than would have been possible if using the real Blockbuster website. Finally, out of the necessary evil of creating the mock-up website, a customizable survey module and a Facebook app also emerged, all of which together comprise the SOCIALIIT. This enabled us to integrate Facebook friend information into both the mock-up website and the survey module.

3.3.3 Methodological choices: Investigating the interpretations and uses of eWOB (RQ3)

At the offset of this PhD, there was a focus on understanding *why* people shared their behaviors online. Understanding these underlying motivations would allow designers to leverage such motivations. However, as the project progressed, this became both less feasible and less relevant. Specifically, the conceptual shift, from consumers *actively* sharing behaviors to eWOB, to being based on digital traces of behaviors turned into communicative content by digital services, was decisive. It entailed that a discussion of users' motivations would be misleading as users were not *actively* sharing content but rather, the digital services were, and therefore were not likely to have explicit motivations to share.

The user-perspective is, however, still relevant in order to design eWOB solutions that make sense for users and add value to their experience of the service. The experimental study performed had given some preliminary qualitative insights from an open-ended question as to how users perceived eWOB and how they would and would not like to use it. However, I needed to go beyond this somewhat superficial layer to carve out deeper insights about the socially constructed meanings ascribed to eWOB and what possible action it affords. Such explorative inquiry typically calls for a qualitative approach (Denzin & Lincoln, 2011). Accordingly, I chose to perform an interview-based single-case study. The case study methodology is generally considered appropriate when a) “how” or “why” questions are asked b) when the researcher has little control over the events and c) the topic of interest is a contemporary phenomenon within a real-life context (Yin, 2009), all of which applies to the problem I sought to investigate. The use of a single case is considered appropriate when, for example, a given case represents a unique or extreme case (Yin, 2009). Spotify represented such uniqueness because of their extensive integration of behavior-based information in their service, as exemplified in Figure 12. Moreover, Spotify is one of the largest music streaming services in the world and the leading in Denmark. Accordingly, by using Spotify I would be able to assess actual users of a service and to tease out accounts of their experiences with eWOB in Spotify in a real-life context.

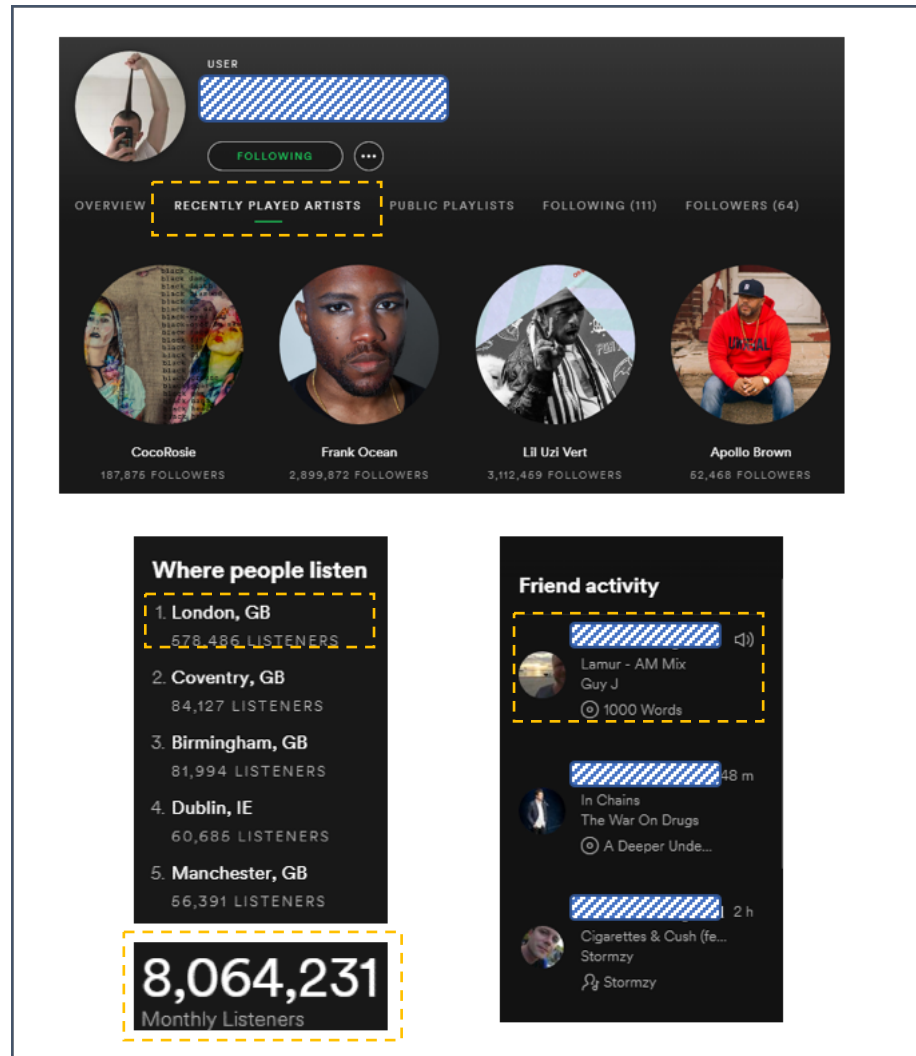


Figure 12. Examples of behavior-based information in Spotify (highlighted with orange dotted line; user names have been blurred)

3.3.3.1 In-depth interviews & means-end chain procedure

Several methodological approaches were considered before I settled on performing in-depth interviews using the means-end chain (MEC) approach to interviewing and analyzing the data. One option considered was to perform a range of observational studies where I observe whilst Spotify users interacted with the service, perhaps assisted by eye tracking technology. While such a study would indeed capture users in their natural surroundings, I suspected that due to the subtle nature of eWOB, interactions with eWOB content would represent a fraction of the overall interactions occurring on Spotify. As such, it would be an extremely lengthy affair with no guarantee of getting the desired insights. Alternatively, focus groups were also considered. Focus groups are considered a viable approach in cases of explorative research (Kvale & Brinkmann, 2009). However, my main concern with this method was an inability to tease out

personal accounts of eWOB interpretation and use, due to the personal nature of these accounts and a potential unwillingness to share in plenum. Further, I suspected that some participants would not, in the presence of others, like to admit that they were potentially under the social influence of friends when exposed to eWOB. Accordingly, focus groups were not considered a viable methodological approach, and I instead settled on in-depth personal interviews that were grounded in the informants' actual historic Spotify usage. Specifically, I chose the form of semi-structured interviews, outlining the topics I wanted to cover along with a set of suggested questions (Kvale & Brinkmann, 2009) (see interview guide in Appendix 8.9). The semi-structured in-depth interview approach is well-suited for uncovering deep seated themes as it allows the researcher to explore a set of pre-determined topics while at the same time explore informants' reasoning and emphasize certain topics depending on the individual relevance (Corbin & Strauss, 2015; Marshall & Rossman, 2006; Zaltman & Coulter, 1995).

As a tool to assist in generating insights from my interviews, I applied the MEC approach. The MEC approach is a widely used technique across disciplines (Jung & Kang, 2010), particularly within the consumer research and advertising fields, where it is recognized as an important tool for identifying meaningful end values. These insights have created more effective marketing communications (Reynolds & Whitlark, 1995). The MEC approach identifies links between concrete products and their attributes and higher-order benefits and end values satisfied by a particular product (Reynolds & Gutman, 1988; Walker & Olson, 1991). The 'means' are the product/product attributes whereas the 'ends' are "valued states of being" (Gutman, 1982, p. 60). From the most concrete to the most abstract level, a chain consists of four overall elements: attributes, functional consequence, psychosocial consequences, and values (Reynolds & Whitlark, 1995), as illustrated in Figure 13.

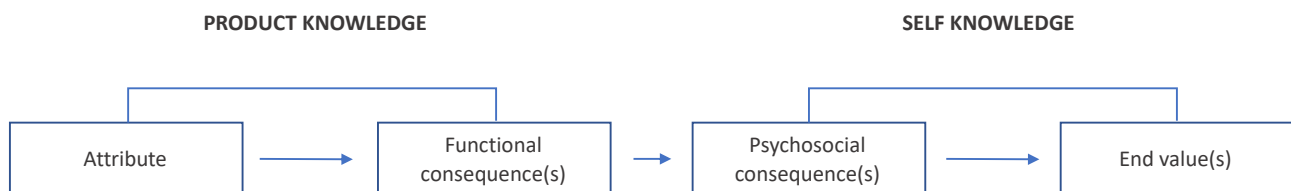


Figure 13. MEC-approach illustrated. Adapted from Walker & Olson, 1991

A *functional consequence* is the immediate, on occasion tangible, consequence of the attribute of interest. One level of abstraction upwards, *psychosocial consequences* represents how the

particular aspect affects the individual emotionally, and in relation to their social world. Finally, at the most abstract level we find end *values*, which are characterized as desired end states of existence (Gutman, 1982) relating to the core of the self, such as happiness, relatedness, freedom (Walker & Olson, 1991). As such, MEC represents both an interviewing technique and a way of analyzing and structuring the data. Specifically, a repertoire of probing questions is applied, which aids the interviewer in not biasing the interview, as well as exploring deeper layers of informants' experiences. The questioning process moves up and down the ladder having the informants establish the links between the rungs until a point of saturation (Y. Jung & Kang, 2010; Kjaergaard & Jensen, 2014). Questions such as "what do you mean by...?" and "tell me about a specific episode where this took place" serve to elaborate on the concept at hand. Questions such as "why is that important to you?" serve to ladder upwards toward the next rungs, whereas questions such as "what circumstances normally lead to...?" serve to ladder downwards to uncover the antecedents. Finally, if negative issues were mentioned, informants were probed with questions such as "why is that something you want to avoid?". Appendix 8.10 provides a list of the questions used.

3.3.3.2 Sampling & interview procedure

Informants for the interviews were sampled from the TDC Group's pool of employees using the company's intranet. A common denominator, and a requirement for partaking, was that they were all active users of the paid version of Spotify. As this study did not seek to generalize findings to the entire population this convenience sample was deemed appropriate. Further, as I would perform all the interviews myself I made a careful screening of potential informants, deselecting anyone I knew beforehand. This was to ensure that all interviews departed from the same level of informant-interviewer trust.

In total 21 interviews were conducted at the TDC Group headquarters, between 27 and 57 minutes long. The interviews were audio recorded and later transcribed verbatim for analysis. The informants were instructed to bring along the device(s) used for Spotify, and the point of departure was their own Spotify interface, and their records of actual listening history on the platform. This approach was chosen to elicit narratives about actual use behavior, and to be able to better discuss the specific elements of interest. To further support the generation of reality-based narratives, informants were also shown a picture of a CD collection and a screenshot from (an old version of) iTunes (see Appendix 8.11). These pictures served the purpose of stimulating elaboration on the role of music in the informants' lives, as well as to

put the multi-user experience of Spotify into perspective by comparing it with single-user music services. As such, the pictures were meant to tease out stories that might reveal how behavior-based information contributes to user experience.

In line with Reynolds & Gutman's (1988) advice when using the MEC method, informants were told by the interviewer at the start of each interview that they would be asked many questions for each topic, some of which might seem obvious and banal. In terms of openness about the interview's purpose, I opted for the funnel shaped interview (Kvale & Brinkmann, 2009), an approach where the researcher does not reveal the true purpose of the interview. Accordingly, informants were told that the interview was about music streaming and their own personal use of Spotify. This was done to avoid excessive informant focus on the behavior-based information in Spotify, and to tease out real stories of how informants had actually used it. I did properly debrief informants about the true purpose of the interview upon its closure.

3.3.3.3 Analysis

The analysis consisted of several rounds of coding using both the qualitative data analysis program MAXQDA and Excel. Figure 14 seeks to provide an overview of this process.

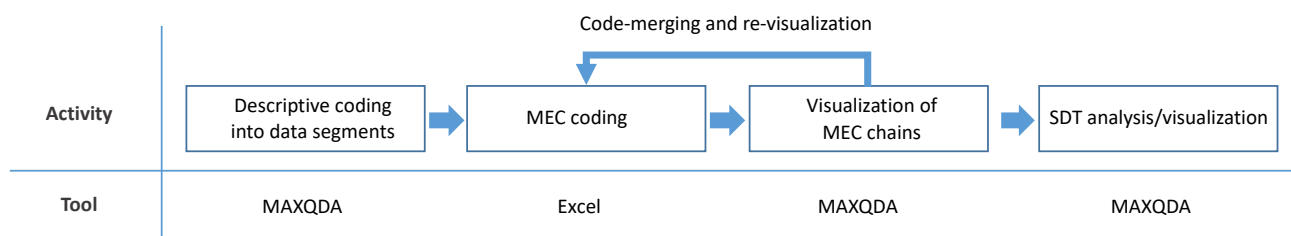


Figure 14. Analysis process for the interviews

Firstly, a round of descriptive coding enabled the identification of relevant segments from MAXQDA to be coded using the MEC approach. Excel was then used for performing the MEC analysis as it proved to be the most flexible way of constructing chains (see Appendix 8.12 for coding examples). The following criteria assisted the coding process:

- **Attribute:** The type of behavior-based information present and how it is manifested (e.g. the number of monthly listeners for an artist).
- **Functional consequence:** The tangible, stated use (or non-use) of behavior-based information and/or the imagined use by oneself or others. Non-use was also coded as it

typically included an explanation of what informants would not use it for, i.e. effectively stating their immediate interpretation of behavior-based information.

- **Psychosocial consequence:** More abstract uses, experiences, and emotions connected to the specific behavior-based information.
- **Values:** Overarching desired end states that can be said to be universally attractive to humans.

The coding process was iterative, akin to the constant comparative method (Corbin & Strauss, 2015; Glaser, 2008) where specific instances were reviewed against existing data. From that, new codes emerged, and others were collapsed. Finally, once the links and chains were identified in Excel, the consequences and values identified were visualized in MAXQDA to highlight the chain structure and to identify common clusters of concepts. The result was a map visualizing the means-end chains for behavior-based information as perceived and acted upon by users. This map was then further condensed and finally related to the theoretical lens of SDT. Here, each consequence, or end value, was evaluated in terms of whether it could be said to either satisfy or thwart one of the three basic psychological needs.

3.3.3.4 Methodological reflections: answering RQ3

Conducting the interviews and moving through the process of analyzing the transcripts and my own observational notes was a truly enriching experience. I was amazed at the informants' deeply personal tales, which gave rich insights about the phenomenon of interest. In the following I will elaborate on retrospective reflections of the methodological choices I made and present suggestions of things I could have done differently.

To begin with, the use of a convenience sample deserves elaboration. Clearly, sampling Spotify users from one single company's employee base makes it difficult to generalize the findings to the wider population of Spotify users, let alone the wider population. According to publicly available data³ (from 2015) about the age of global Spotify users, the bulk of users (approximately 37%) are between 18-24 years old, and even the age group 13-17 years constitutes about 12% of its user base. On the contrary, our sample leaned towards an older segment, with only two persons aged 18-24 years, and an average age of 31 years and a median of 29 years. Moreover, while our participants came from different educational backgrounds

³ <https://insights.spotify.com/at/2015/03/17/how-we-listen-sxsw-2015/>

and areas of expertise in the organization, our sample no doubt represents an above average level of education and IT literacy. One might speculate that this expertise has led informants to provide more analytical reflections and to be more critical in terms of how the Spotify interface is constructed compared to the ordinary Spotify user. Specifically, informants might be more critical of elements that they suspect are placed to persuade users (i.e. themselves) to perform certain actions. As eWOB elements can be placed in that category, one might speculate that our informants have been more critical of eWOB elements than an ordinary user would be.

Next, my constructed interview guide was quite broad. This was a deliberate choice to both make participants feel comfortable, as well as to uncover unexpected gems due to the subtle nature of eWOB in Spotify. However, this breadth also meant that there was much ground to cover in a short period of time, as I had only booked informants for one hour. Consequently, when reviewing the interviews, I can now see that certain statements begged for a follow-up in order to reach the 'end value' state but were unfortunately rushed over. This rush could be due to my inexperience with the MEC approach. While it may sound simple to ask increasing detail about a given topic, this did in some interviews lead to awkward situations, particularly in cases where informants were negative about the eWOB in Spotify. Here, my laddering questions were sometimes met with resistance. Related to this I would follow the recommendations of Corbin & Strauss (2015), and advise other researchers to start the analysis of the data on a running basis. While I did write down my immediate reflections at the end of each interview, I did not start the entire analysis before I had conducted the entirety of the interviews. Following such an approach, where coding is in conjunction with data collection, would have likely allowed me to improve my interviewing skills along the way.

Finally, I made the choice *not* to conduct the interviews grounded in the theoretical lens of SDT. While SDT had emerged as a viable theoretical lens, I did not explicitly revolve the interviews around topics related to validated scales for evaluating satisfaction of the basic psychological needs. Rather, I remained open in the interviewing process and not force a particular theoretical lens where it may not fit. This choice did, however, make the analysis quite complicated. Rather than exploring topics related to well-established scales of SDT, I was left to post-hoc extract meaning from the informants' narratives about how basic psychological needs were satisfied by eWOB. The main strength of my chosen approach is that we are – from the MEC analysis - producing insights that even without the SDT lens would have been useful for this project. As such, SDT simply adds an explanatory layer to the analysis.

3.4 Chapter Summary

In this chapter I have provided an overview of the methods applied in the production of this dissertation as well as the associated retrospective methodological reflections. Specifically, I took the philosophical stance of the 'critical realist' and reflected upon my own role as a researcher in TDC Group. Further, the methodological choices related to each research question were outlined. For answering RQ1 I argued how a grounded theory-inspired process was applied over the course of the entire PhD project. For answering RQ2, a quantitative approach involving an online experiment with the movie streaming service Blockbuster was taken. Finally, for answering RQ3, I applied a qualitative interview-based approach using the case of Spotify. Together this mixed-methods research design seeks to illuminate the phenomenon of interest from different angles.

4 Findings

In this chapter I will provide an overview of the findings of this dissertation, organized according to the three sub research questions. I conclude the chapter by deriving a set of implications for eWOB design, based on the findings of the papers. This chapter is primarily meant as a condensation of the results, and thus the reader is referred to the individual research papers for detailed accounts of the results, and to Chapter 5 for a richer discussion of them.

4.1 The concept of Electronic Word of Behavior (RQ1 / Paper 1-3)

RQ 1: What are the current practices of digital products and services in terms of transforming digital traces of consumers' behaviors into observable accounts of behavior, and how can this empirical phenomenon be conceptualized and theoretically understood?

The first sub research question was answered through a close examination of extant literature about behavior-based information in digital products and services, and the interrelated concepts of eWOM and social interactions. By employing an iterative and grounded theory-inspired process, where empirical examples of digitally disclosed behavior-based information, collected in a digital autoethnographic manner as well as from the literature, were compared to the above-mentioned literatures, the concept of eWOB was derived and defined as *published accounts of behavior, based on the unobservable digital traces of consumers' behaviors*.

Taking my conceptual point of departure in social interactions and eWOM, I position eWOB as a behavior-based type of social interaction. As such, it represents one of the two overall types of social interactions; the other being the opinion-based, most often referred to as eWOM. Positioning eWOB as one side of a coin in social interactions – and contrasting with the other side of that coin eWOM, provided a useful vocabulary and structure for carving out the unique properties of eWOB. With an offset in Cheung & Thadani's (2012) framework for eWOM, a conceptual framework for eWOB was developed. Figure 15 shows this framework and highlights with thickened lines the elements added, when compared with the original eWOM framework.

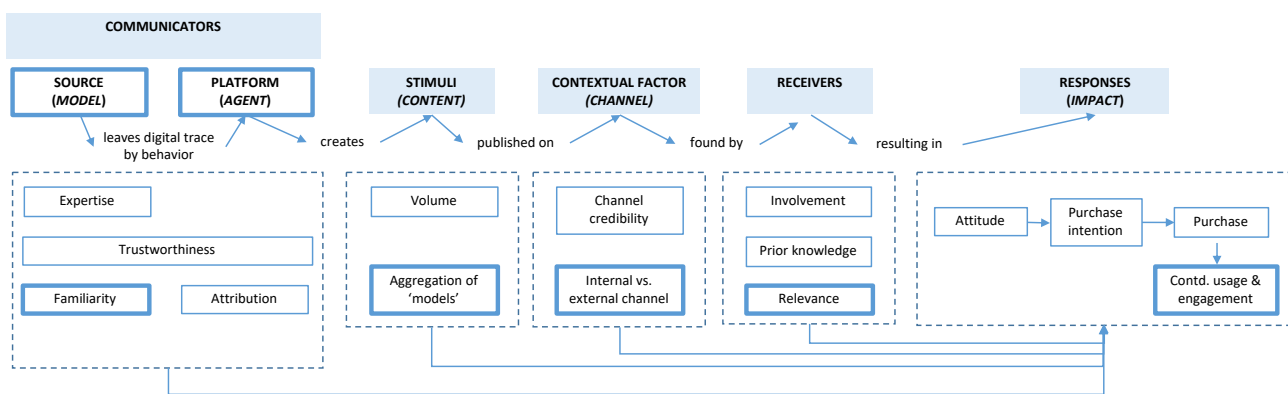


Figure 15. Conceptual framework for eWOB

4.1.1 The unique properties of eWOB

This conceptual framework, and the positioning of eWOB as a behavior-based type of social interaction demonstrates that eWOB has a number of unique characteristics:

First, it is based on the unobservable digital traces of behavior that consumers leave when interacting with digital products and services. Digital trace data is the trail of data records that get logged as users of digital products or services interact with a digital system. It has been defined as “records of activity (trace data) undertaken through an online information system” (Howison, Wiggins, & Crowston, 2011, p. 769). Some digital traces are intentionally left by users, such as a Facebook post meant to be disclosed, leaving a digital trace to a selected audience. This, we consider to be eWOM. Others digital traces are simply traces of our behaviors that are logged and stored by services and which are unobservable to users. When these, initially unobservable, traces of behavior are processed and made available in a meaningful format to users, then they become what I consider eWOB. Second, it so follows that, unlike eWOM,

eWOB is *plentiful and requires little, if any, effort* from users to generate. Third, eWOB is *design-driven* as it requires an active decision from product designers to use the unobservable digital traces of behavior and turn them into communicative content. Fourth, inherent in eWOB is a *duality in terms of who the communicator is*, as both the source of the behavior and the digital platform disclosing the user's behavior can be regarded as communicators. Fifth, eWOB is *more neutral in nature*, essentially reporting merely behaviors, not their intentions behind or evaluations of behavior. Sixth and finally, eWOB is concerned with not only sales, but also on *continued usage and engagement*.

4.1.2 Design dimensions of eWOB

Further, when looking at the empirical examples gathered through the digital autoethnographic approach, and the empirical examples present in extant literature, it is evident that there are at least three distinct design dimensions from which eWOB can be presented: *level of aggregation*, *familiarity*, and *place of disclosure*. These dimensions were also incorporated into the conceptual framework. In the following, I will present some illustrative examples of these three design dimensions. The eWOB elements are highlighted with dotted orange line.

Firstly, level of aggregation denotes how person-specific the presented eWOB is. For example, the book community Goodreads shows information about which book a specific friend has recently read (Figure 16). Alternatively, Hotels.com may show the aggregated number of other anonymous internet users looking for hotels in a particular city now (Figure 17).

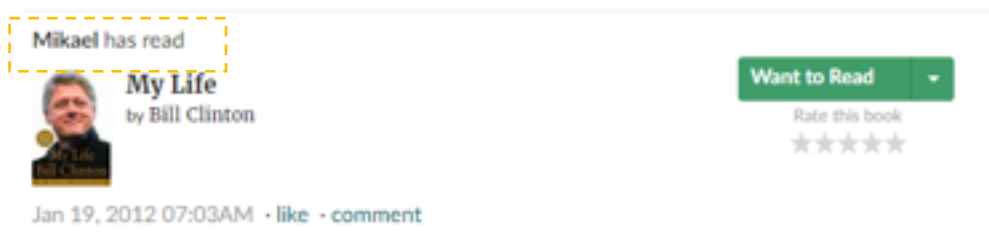


Figure 16. Example of individual-specific eWOB in Goodreads



Figure 17. Example of aggregated eWOB on Hotels.com. Translation: “7 people are looking at hotels in Cambridge right now”

Secondly, familiarity denotes the tie strength between the model and the observer of the behavior. When eWOB is presented at the individual-specific level, it may come from strangers or from well-known peers. For example, a crowdfunding website may display the actual names of recent backers, although the observer does not know these people (Figure 18). Alternatively, eWOB may be shown at the friend-level, as already illustrated in Figure 16.

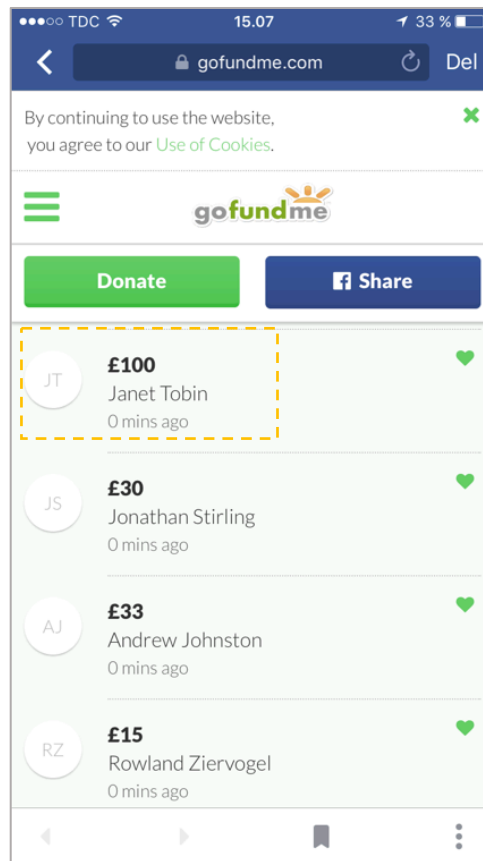


Figure 18. Example of individual-specific disclosure at stranger-level on Gofundme.com

Thirdly, place of disclosure denotes the relationship between the location where the behavior was performed and the channel that disclosed the behavior. In some case, those two are the

same. For example, a Spotify user's listening behavior may be disclosed to other users of Spotify, within the Spotify platform. I refer to this as 'internal disclosure' (Figure 19).

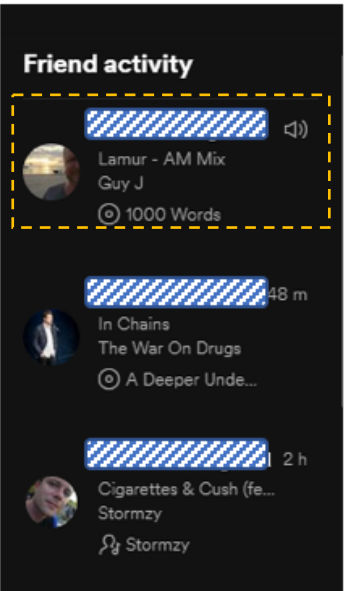


Figure 19. Example of internal disclosure: Spotify listening disclosed within Spotify

Alternatively, Spotify listening behavior may be disclosed externally on the user's Facebook timeline (Figure 20) or to the music service Last.fm (Figure 21). Here, the behavior is disclosed outside of the platform where the behavior took place. I refer to this as 'external disclosure'.

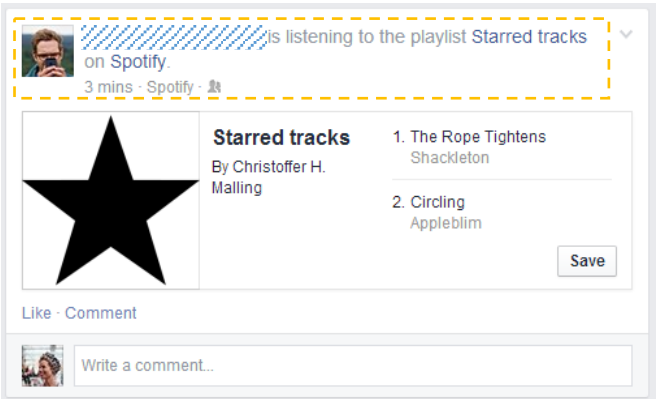


Figure 20. Example of external disclosure: Spotify listening disclosed on Facebook



Figure 21. Example of external disclosure: Spotify listening disclosed on Last.fm

These empirical examples serve to illustrate that eWOB can take many different forms, such as aggregated or individual-specific information, from strangers or from friends, all of which can be disclosed either internally on the platform where the behavior took place or externally on another platform. Accordingly, companies must decide which is better suited to the specific product at hand and given the specific challenges faced or goals pursued.

4.2 The impact of social information (RQ2 / Paper 4)

RQ 2: How does the integration of friend-specific social information impact potential users' attitude towards an online content-based service and their intentions to use it?

This research question was answered by performing an 2x2x2 between subjects factorial design experiment in collaboration with movie streaming service Blockbuster. Fictional information about participants' Facebook friends' behaviors and opinions related to Blockbuster were incorporated into the Blockbuster mockup website. The impact of this social information on participants' attitude towards the service and intention to use was assessed through an online survey. The entire procedure was estimated to last between 15-30 minutes. The data collection ran over the course of one month in August-September 2016. A total of 473 participants completed the survey (35,4% completion rate). A number of manipulation checks were built into the research design, including participants' ability to recall having seen pictures of Facebook friends as well as an analysis of participants' mouse activity during the experiment as a proxy for eye movement. These checks reduced the final sample down to 398. Table 4 provides an overview of the distribution of participants across the experiment groups.

Table 4. Overview of experiment groups

Group no.	Treatment overview	N	% of Total
1	Control	89	22%
2	Random / Low / Behavior	39	10%
3	Influential / Low / Behavior	27	7%
4	Random / High / Behavior	47	12%
5	Influential / High / Behavior	33	8%
6	Random / Low / Opinion	52	13%
7	Influential / Low / Opinion	27	7%
8	Random / High / Opinion	50	13%
9	Influential / High / Opinion	34	9%
Total		398	

Importantly, we asked participants how they generally went about finding inspiration for movies to watch. Here, the second most important input was friends' recommendations (47%), which suggests that movie streaming might be a fit for social information. The experiment tested a total of eight theoretically derived hypotheses. In summary, we hypothesized that:

1. Social information (all treatment groups as one) will positively enhance potential users' attitude towards Blockbuster as well as their intention to use Blockbuster (H1 a-b)
2. Disclosing opinion-based social information in Blockbuster will have a stronger positive impact on potential users' attitude towards Blockbuster than disclosing behavior-based social information (H2 a-b)
3. The inclusion of social information from category-specific influential friends into Blockbuster has a stronger positive impact on potential users' attitude towards Blockbuster and their intention to use Blockbuster than the inclusion of social information from random friends (H3 a-b)
4. The inclusion of social information from many friends has a stronger positive impact on potential users' attitude towards Blockbuster and intention to use Blockbuster than the inclusion of social information from a few friends (H4 a-b)

Looking at the descriptive statistics in Table 5 the mean scores are generally in accordance with our hypotheses, only in the case of H2b is there an inverse relationship. This initial overview

points to the positive impact of including social information into an online service such as Blockbuster.

Table 5. Mean scores across treatments

CTRL vs. Social information (H1)	N	Attitude towards BB		Intention to use BB	
		Mean	SD	Mean	SD
Control	89	4.76	1.38	3.57	1.54
Social information	309	5.08	1.34	3.81	1.47
Type of information (H2)					
Control	89	4.76	1.38	3.57	1.54
Behaviors	146	5.06	1.37	3.86	1.48
Opinions	163	5.10	1.32	3.76	1.46
Type of friends (H3)					
Control	89	4.76	1.38	3.57	1.54
Random	188	5.01	1.39	3.70	1.48
Influential	121	5.20	1.26	3.96	1.43
No. Of friends (H4)					
Control	89	4.76	1.38	3.57	1.54
Low	145	5.03	1.35	3.77	1.48
High	164	5.13	1.34	3.84	1.46

4.2.1 Hypothesis testing

First, an independent-samples t-test was conducted to compare attitude towards Blockbuster for the treatment condition (subjects exposed to social information, i.e. behaviors and opinions combined) and the control group (subjects exposed to no social information). In line with hypothesis H1a there was a significant difference in the scores for the control condition ($M=4.76$, $SD=1.38$) and the treatment condition ($M=5.08$, $SD=1.34$); $t(396)=-2.01$, $p = 0.045$ as can be seen from Table 7 and 6. This shows that the inclusion of social information has a positive impact on potential users' attitude towards the service. The same test was run for the second dependent variable, intention to use Blockbuster. No significant difference was found in the scores for the control condition ($M=3.57$, $SD=1.54$) and the treatment condition ($M=3.81$, $SD=1.47$); $t(396)=-1.34$, $p = 0.181$. This indicates that the presence of social information does not enhance potential users' intention to use the service. Consequently, we do not find support for H1b.

Table 6. Descriptive statistics for H1a and H1b

Group Statistics	CTRL vs. Treatment	N	Mean	Std. Deviation	Std. Error Mean
Attitude	Control	89	4.7566	1.3797	.1462
	Treatment	309	5.0831	1.3411	.0763
Intention to use	Control	89	3.5674	1.5387	.1631
	Treatment	309	3.8066	1.4658	.0834

Table 7. t-test results for H1a and H1b

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Attitude	Equal variances assumed	.548	.459	-2.011	396	.045	-.3265	.1624	-.6457	-.0073
	Equal variances not assumed			-1.979	139.468	.050	-.3265	.1649	-.6526	-.0004
Intention to use	Equal variances assumed	.871	.351	-1.341	396	.181	-.2392	.1783	-.5898	.1114
	Equal variances not assumed			-1.306	137.335	.194	-.2392	.1832	-.6014	.1230

Next, a factorial ANOVA was conducted to compare main effects of *type of information* (two levels: behavior vs. opinion), *type of friends* (two levels: random vs. influential), and *number of friends* (two levels: low (2) vs. high (8)) as well as the interaction effects of the three factors on the dependent variable attitude towards Blockbuster. Table 8 shows the descriptive statistics and Table 9 the results of the ANOVA.

Table 8. Descriptive statistics for H2a, H3a, H4a (DV1)

Descriptive Statistics

Dependent Variable: DV 1_Attitude

Type of friends	No. Of friends	Type of information (Behavior vs. Opinion)	Mean	Std. Deviation	N
Random	Low	Behavior	4.8120	1.4179	39
		Opinion	4.9808	1.4118	52
		Total	4.9084	1.4090	91
	High	Behavior	5.2553	1.3905	47
		Opinion	4.9667	1.3507	50
		Total	5.1065	1.3706	97
	Total	Behavior	5.0543	1.4122	86
		Opinion	4.9739	1.3753	102
		Total	5.0106	1.3892	188
Influential	Low	Behavior	5.2346	.9820	27
		Opinion	5.2222	1.4559	27
		Total	5.2284	1.2300	54
	High	Behavior	4.9495	1.5414	33
		Opinion	5.3824	.9714	34
		Total	5.1692	1.2928	67
	Total	Behavior	5.0778	1.3168	60
		Opinion	5.3115	1.2016	61
		Total	5.1956	1.2603	121
Total	Low	Behavior	4.9848	1.2668	66
		Opinion	5.0633	1.4223	79
		Total	5.0276	1.3497	145
	High	Behavior	5.1292	1.4530	80
		Opinion	5.1349	1.2224	84
		Total	5.1321	1.3357	164
	Total	Behavior	5.0639	1.3692	146
		Opinion	5.1002	1.3194	163
		Total	5.0831	1.3411	309

Table 9. Results of factorial ANOVA for DV1 (attitude)

Tests of Between-Subjects Effects

Dependent Variable: DV 1_Attitude

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.259 ^a	7	1.466	.811	.578
Intercept	7569.950	1	7569.950	4190.678	.000
Typeoffriends	2.723	1	2.723	1.508	.220
No.Offriends	.421	1	.421	.233	.630
Typeofinformation	.411	1	.411	.228	.634
Typeoffriends * No.Offriends	1.396	1	1.396	.773	.380
Typeoffriends * Typeofinformation	1.328	1	1.328	.735	.392
No.Offriends * Typeofinformation	.001	1	.001	.000	.985
Typeoffriends * No.Offriends * Typeofinformation	3.705	1	3.705	2.051	.153
Error	543.720	301	1.806		
Total	8537.778	309			
Corrected Total	553.979	308			

The main effect of type of information yielded an F ratio of $F(1,301)=0.228$, $p = 0.634$ indicating no significant difference between the conditions behavior ($M=5.06$, $SD=1.37$) and opinion ($M=5.10$, $SD=1.32$). The main effect of type of friends yielded an F ratio of $F(1,301)=1.508$, $p = 0.220$ indicating no significant difference between the conditions random ($M=5.01$, $SD=1.39$) and influential ($M=5.20$, $SD=1.26$). Finally, the main effect of number of friends yielded an F ratio of $F(1,301)=0.233$, $p = 0.630$ indicating no significant difference between the conditions low number of friends ($M=5.03$, $SD= 1.35$) and high number of friends ($M=5.13$, $SD=1.34$). Further, no significant interaction effects were found. A check for confounding variables was run (see Appendix 8.8a) using a number of demographic variables as well as variables related to movie watching. A significant effect of gender, number of films watched per month, and preferred genre of film was identified. However, controlling for these measures did not change the overall conclusion that neither of the three factors were found to significantly influence attitude towards the service. Consequently, we do not find support for H2a, H3a, and H4a.

The same procedure was run for the second dependent variable, intention to use Blockbuster. Here too, no significant main effects nor interaction effects were found. Table 10 shows the descriptive statistics and Table 11 the results of the ANOVA.

Table 10. Descriptive statistics for H2b, H3b, H4b (DV2)

Descriptive Statistics

Dependent Variable: DV 2: Intention to use

Type of friends	No. Of friends	Type of information (Behavior vs. Opinion)	Mean	Std. Deviation	N
Random	Low	Behavior	3.8077	1.50925	39
		Opinion	3.7212	1.53525	52
		Total	3.7582	1.51632	91
	High	Behavior	3.6755	1.50625	47
		Opinion	3.6350	1.43233	50
		Total	3.6546	1.46106	97
	Total	Behavior	3.7355	1.50017	86
		Opinion	3.6789	1.47897	102
		Total	3.7048	1.48498	188
Influential	Low	Behavior	4.0833	1.41421	27
		Opinion	3.5093	1.42181	27
		Total	3.7963	1.43415	54
	High	Behavior	3.9924	1.47834	33
		Opinion	4.2059	1.36996	34
		Total	4.1007	1.41760	67
	Total	Behavior	4.0333	1.43833	60
		Opinion	3.8975	1.42476	61
		Total	3.9649	1.42716	121
Total	Low	Behavior	3.9205	1.46639	66
		Opinion	3.6487	1.49171	79
		Total	3.7724	1.48134	145
	High	Behavior	3.8063	1.49364	80
		Opinion	3.8661	1.42717	84
		Total	3.8369	1.45579	164
	Total	Behavior	3.8579	1.47739	146
		Opinion	3.7607	1.45836	163
		Total	3.8066	1.46580	309

Table 11. Results of factorial ANOVA for DV2 (intention to use)

Tests of Between-Subjects Effects

Dependent Variable: DV 2: Intention to use

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.674 ^a	7	1.953	.907	.501
Intercept	4265.825	1	4265.825	1981.243	.000
Typeoffriends	4.117	1	4.117	1.912	.168
No.Offriends	.682	1	.682	.317	.574
Typeofinformation	1.081	1	1.081	.502	.479
Typeoffriends * No.Offriends	3.087	1	3.087	1.434	.232
Typeoffriends * Typeofinformation	.248	1	.248	.115	.735
No.Offriends * Typeofinformation	3.159	1	3.159	1.467	.227
Typeoffriends * No.Offriends * Typeofinformation	2.500	1	2.500	1.161	.282
Error	648.085	301	2.153		
Total	5139.313	309			
Corrected Total	661.759	308			

The main effect of type of information yielded an F ratio of $F(1,301)=0.502, p = 0.479$ indicating no significant difference between the conditions behavior ($M=3.86, SD=1.48$) and opinion ($M=3.76, SD=1.46$). The main effect of type of friends yielded an F ratio of $F(1,301)=1.912, p = 0.168$ indicating no significant difference between the conditions random ($M=3.70, SD=1.48$) and influential ($M=3.96; SD=1.43$). Finally, the main effect of number of friends yielded an F ratio of $F(1,301)=0.317, p = 0.574$ indicating no significant difference between the conditions low ($M=3.77, SD=1.48$) and high ($M=3.84, SD=1.46$). As in the case of the first dependent variable, no significant interaction effects were found. The check for confounding variables (Appendix 8.8b) yielded significant effects of age, gender, number of children, and preferred genre of film. However, controlling for these measures did not change the overall conclusion that neither of the three factors were found to significantly influence attitude towards the service. Consequently, we do not find support for H2b, H3b, and H4b.

4.2.2 Qualitative insights

The experiment also included an open-ended question where participants had the opportunity to further reflect on their experience with the website. Only 15 out of 100 comments regarded social information, which is an indication that the social information element was not a controversial one. Furthermore, the 15 comments fell into two overall categories of whether they focused on *receiving social information* or on *giving away social information*, where the former clearly outnumbers the latter. This is somewhat surprising given the current widespread consumer focus on privacy issues and concerns over personal data use in the digital sphere. The comments about *receiving information* were equally split between positive and negative opinions, with some remarks being made about wanting to be able to filter which friends to receive social information from. Of those who valued *receiving* social information, the utility of the social information was often mentioned as being used as a source of inspiration. Taken together, although not a fully-fledged analysis of how users interpret the social information, our data gives us some initial insights that suggest users want to be able to customize their 'friends list', both in terms of receiving and giving away social information, and when doing so, social information can add utility to a product/service. This topic is further elaborated in the final empirical study (Paper 5).

4.2.3 Reflections on findings

Taken together, the findings demonstrate that the inclusion of social information into Blockbuster had a significant positive impact on potential users' attitude towards Blockbuster. This lift in attitude did not, however, translate into an increase in intention to use Blockbuster.

Although the general tendency in the data was clearly trending in favor of our hypotheses (cf. Table 5) it is evident that the majority of our hypotheses were not supported. This points to the findings of Aral and Walker (2011) and Bond et al. (2012), where significant effects of social information were found, albeit small ones that only showed on a very large scale (both experiments had data points in the millions). Building on this, it should be noted that one obvious limitation of this online experiment is the sample size. While a sample size of 398 might be sufficient for many survey-based studies, the experimental approach using a 2x2x2 factorial design resulted in rather small subgroups. The small subgroups and the expected marginal impact combined, have likely made it difficult to generate statistically significant results at the most granular level, despite clear tendencies in the descriptive statistics. It is therefore recommended that future studies address this limitation by scaling the sample size up.

The experiment did not show any significant difference between the impact of opinion-based information (eWOM) and behavior-based (eWOB) on attitude or intention to use. This lack of overall significant impact is surprising given prior research has empirically identified such differences, generally in favor of behaviors, (Cheung et al. 2014; Thies et al. 2016). A possible explanation for this may be that the treatment materials were not sufficiently distinct. The difference between the 'behavior' and 'opinion' treatments were quite subtle (simply words stating that friends 'like' Blockbuster or a set of movies versus friends 'are using Blockbuster' or 'have seen' a set of movies) and thus may not be strong discriminants for the participants compared to the other treatments. In a real-life setting, the inclusion of behavior-based information would typically generate more content (users generally watch more movies than they review), while including opinion-based information will typically generate more rich information (explanatory text or visuals). Thus, we cannot on the basis of this experiment conclude whether opinions or behavior-based information is more efficient. On the contrary, the results indicate that the two might be equally effective. This is quite interesting seen from a marketing communications and product design point of view. As previously highlighted, the opinions from peers are highly influential in many product-related decisions. However, it still

takes some manual effort from the consumer to reflect upon a product experience, form an opinion about it, and then express that opinion (King et al., 2014). Contrary to opinions, the behavior-based type of social information is more automated and largely builds on data which is already there and requires little, if any, additional effort from the user. Accordingly, our empirical results indicate that it is possible to substitute opinions with the much less labor-intensive behavior-based information. This should be of high interest for e-commerce businesses and other digital platforms looking to acquire and retain customers in the most cost-efficient and user-friendly way.

I also feel obliged to provide some critical reflections of internal validity. The test groups were quite uneven in size and with a tendency for 'influential' groups to be smaller. A possible explanation for this may lie in the extra step required of these participants to choose at least 10 friends that they thought might have an interesting movie taste. Clearly, this step puts an extra cognitive load on participants. As a consequence, some might not have proceeded with the experiment. Further, it might be that participants did not complete this required step out of fear that their friends might be notified of their doing so, despite the fact that we clearly stated in the instructions that friends would not be notified. Taken together, these factors might explain why fewer participants in these groups completed the experiment. This skewedness – potentially as a result of increased cognitive load and concerns about privacy – could have some important implications for the internal validity of the results. Internal validity refers to "whether the observed covariation between independent and dependent variables reflects a causal relationship" (Venkatesh, Brown, & Bala, 2013). Basically, whether we can trust that A was in fact what caused B. One could speculate that only the participants who on beforehand were positive towards Blockbuster were motivated to go through this additional step of pre-selecting friends. If accepting this logic then there would have been an overrepresentation of these relatively more positive participants in the 'Influential' condition who would have rated Blockbuster more favorably than the rest of the sample, no matter the treatment. In other words, one could speculate that it was not the presence of social information that led to participants being more positive. Rather, that it was the experimental procedures required for some treatment groups that led only the most a priori positive individuals to complete the experiment.

A similar reasoning can be followed for all of the treatment groups. As opposed to the control group, all treatment groups were required to connect with Facebook during the course of the

experiment (through the SOCIALIIT tool). As such, we might also speculate that only those individuals who beforehand were relatively more positive towards Blockbuster would go through this step. If this is true, then the treatment groups would be biased towards being more positive towards Blockbuster, no matter the treatment. These potential threats to the internal validity of the experiment are not possible to (dis)confirm but should be taken into account in future research. One approach could be, as mentioned in Chapter 3, be to employ a pre-test that defines each participant's baseline in terms of attitude towards Blockbuster. Any change in attitude will then be attributed to the treatment. The difficult task here is to keep all other aspects constant. One concrete example would be that a pre-test would heighten awareness of Blockbuster which could lead some participants to try Blockbuster in the period between the pre-and post-test, and thus uneven levels of experience with Blockbuster would be introduced.

4.3 Users' interpretations and uses of Electronic Word of Behavior (RQ3 / Paper 5)

RQ3: How is behavior-based information interpreted and acted upon by users of an online content-based service?

This final question was answered through a qualitative inquiry of how real users of a digital content-based service (Spotify) interpret and act upon the behavior-based information incorporated into the user interface. 21 in-depth interviews were conducted using the means-end chain (MEC) approach. Chains that illustrate how Spotify users derive value beyond the functional level were constructed and illustrated in a map as shown in Figure 22. The numbers next to each consequence/value represent the number of informants that fell into that particular thematic category. The findings were then interpreted through the theoretical lens of self-determination the theory (SDT) as illustrated by the dotted lines.

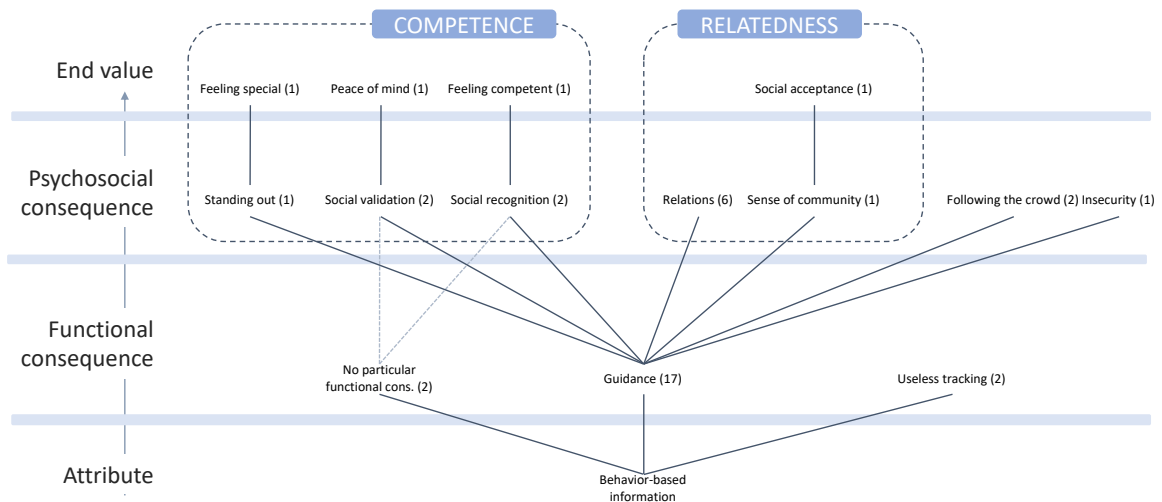


Figure 22. Means-end chain map. Basic psychological need satisfaction illustrated by dotted lines

As can be seen from Figure 22, 'Guidance' was the most frequently mentioned functional consequence of behavior-based information in Spotify. The interviews thus confirmed the assumptions in prior literature that users interpret behavior-based information as offered to provide informational value in the form of guidance to find new or more relevant content. However, it was also revealed that behavior-based information in Spotify was not limited to just functional guidance. Instead it was found that Spotify users to a large degree use this type of information as a means to maintain or expand current *relations*, and to create a *sense of virtual community* (psychosocial consequences), which can lead to the end value of *social acceptance*. Further, the behavior-based information was found to generate psychosocial consequences of *social recognition*, *social validation* and *standing out* from the crowd, which can progress into desired end values for users as *self-confidence*, *feeling competent*, and *peace of mind*. Next, the lens of the basic psychological needs theory of SDT was applied to these results, which demonstrated how the behavior-based information was instrumental in satisfying the basic psychological needs of *relatedness* and *competence*. In the following, I provide a selection of illustrative examples. For a more detailed account of the findings the reader is referred to Paper 5.

Interestingly, the satisfaction of the needs for competence and relatedness took effect not only when actively interacting with other users but also by mere observation of other users' behaviors. For example, observing a friend's listening behaviors can be the basis for future

interaction with that friend (a relation-building or expanding activity) as illustrated in the following excerpt from GS (m, 29):

GS: *For example, this guy I know, Alexander. I sometimes write him a message when I see he has listened to something that isn't his typical style. Because then we can joke around and have some fun with that.*

He continued:

GS: *One time he listened to a band from [specific city]. It was like this, sort of, high-pitched voice, and I couldn't understand why he listened to them. It didn't make sense. I tried to listen to it for myself, and then I wrote to ask him what the heck it was. And then, yes, I found out that he had listened to it while having dinner with his girlfriend, which meant that it was a little "out there". So you can use it like that once in a while.*

Here, the behavior-based information becomes a basis for future interaction with a friend through what we could label as 'friendly mocking' behavior. This active engagement in conversations with other users is in line with the perspectives of SDT, where people are thought to be actively seeking out and cultivating relationships in order to satisfy the need for relatedness (Baumeister & Leary, 1995). Additionally, this satisfaction of the basic psychological need for relatedness also happens by mere observation of other users' behaviors, as illustrated in the following:

It's, like, an ok way to follow what is going on but I don't know how much it's directly about the music. It's mostly just for the fun of it and to see what people listen to. [...] well, it might just be to keep up with what other people are up to and what they are listening to. (CJE, m, 26)

Similarly, the basic psychological need for competence is also satisfied by mere observation of others' behaviors. In the following excerpt a user tells how she sometimes observes her friends or family members' listening behaviors in Spotify's 'social feed', displaying the current or recent listening behaviors of one's connections:

I also have a good 'warm' feeling when I see my siblings, family, or close friends listen to music that I have sent them or something we have in common – I like that [...] It's just a kind of recognition that okay, I am not completely lost when it comes to music. I like music and it looks like you also like what I listen to. So that does make me happy. (IR, f, 27)

Here, the user is receiving an indirect social recognition from friends or family. She infers from observing their listening behaviors that she has had an impact on them, in line with the need

for competence being satisfied as a result from having an impact on one's environment (White, 1959). When probed further about what she meant by "warm", the user seems to derive a fundamental value of felt competency from such experiences:

Well, it's like, I do get happy – it warms me - because it might be that I don't play an instrument, and that I don't have a singer's voice, which I really wish I had, but then it's really nice to see that some of the music I like, that a person who is kind of, like, musically gifted, actually appreciates it. (IR, f, 27).

Taken together, the findings from the interviews confirm the current conception in extant literature of behavior-based information as something that provides functional value to users in terms of guiding their choices. However, beyond this confirmation the study demonstrated that behavior-based information has important other, and less conscious, functions to users, and that these can satisfy basic psychological needs for relatedness and competence. Based on these findings we derived a number of implications for design, which will be reviewed together with the design implications from answering RQ1 and RQ2 in the final summarizing section of this chapter.

4.3.1 Reflections on findings

Interestingly, the interviews did not reveal any satisfaction of the third basic psychological need, autonomy, from observing the behaviors of others. However, it was discovered that the need for autonomy did in fact play a role, albeit in a negative way when the perspective was changed from *receiving* behavior-based information to *sending* behavior-based information. Here it was found that in some cases users' receipt of behavior-based information served as a reminder of their *own* disclosure of behaviors. This gave rise to user concerns about which behavior-based information was being sent out, to whom, and in which context. Specifically, some users expressed discomfort because they felt that their music consumption was tightly knit to a personality trait or mood. Revealing such information to others would, presumably, allow observers to infer personal details about their personality, mood, and whereabouts. This led some informants to entirely turn off the options for behavior disclosure, for example by disconnecting their Spotify and Facebook accounts or listening in 'private mode', despite their enjoyment in *receiving* behavior-based information. Once turned off, opportunities for using behavior-based information for relatedness-satisfying interactions with peers is reduced. These user-concerns are in line with the qualitative insights from the experimental study where

participants expressed a wish to customize who they receive information from and who will receive their information.

Moreover, Spotify not only displays the behaviors of *others*. It also displays the past behaviors of oneself (e.g. one's recently played songs and most played songs from the past year).

Interestingly, the interviews suggested that such information can actually thwart satisfaction of the need for competence due to users' reliance on algorithmic suggestions for music. From a SDT perspective this reliance can stifle users' felt competence as they no longer have full ownership of their activities – a central requirement for individuals to experience competence (Deci & Ryan, 1985). As such, some users expressed confusion when faced with their own actual past listening behaviors, not recognizing the music they had been listening to. Their music listening behaviors could no longer be attributed to their competence, nor could they be viewed as personal accomplishments because the music was simply 'served' without the user having to invest any effort. For genuine music enthusiasts not knowing what one has listened to might actually be viewed as a personal failure. Consequently, holding up this 'music-history-mirror' in front of users might end up reflecting back their algorithmically-induced incompetence. Further, according to SDT, the feeling of competence is also tightly knit with individuals' perceptions of their selves, and competence has been posited to nourish people's selves (Ryan & Deci, 2017). Thus, not being able to recognize and be knowledgeable about one's past music listening can be thought to impact individuals' self-perception. For other users, though, this type of own behavior-based information actually had the function of awakening pleasant memories, while others enjoyed simply to keep an archive of one's listening behaviors, much akin to the self-tracking movement (Sjöklint, Constantiou, & Trier, 2015).

Finally, I provide some reflections on the coding of the data and its possible implications for the findings. Qualitative analyses usually involves coding the collected data to help structure it and to systematically derive insights from it (Miles, Huberman, & Saldaña, 2013). At the heart of this process is the researcher's interpretation of the data. There is no denying that one researcher might not derive exactly the same insights as another will. To curb this potential skewness the measure of an intercoder reliability score is often applied. Here, a second coder engages in coding the same data (or a subset). The coding is then reviewed and compared to see if there is sufficient agreement. This notion of "sufficient" is much debated, as well as the topic of which exact measures to apply when reporting such intercoder reliability (Lombard &

Snyder-Duch, 2002). Further, it has been questioned whether this approach is at all appropriate in interpretivist type of studies (Gioia, Corley, & Hamilton, 2012). In this study, we applied a pragmatic approach to this issue. As such, all coding was done by one author (me), but subsequently reviewed by the second author in terms of topicality, meaning extracted, and which level in the MEC scheme the content should be assigned to. Any disagreements were discussed, and solutions then implemented into the coding. In this way the coding has undergone some level of quality control without subscribing to the belief that qualitative data can be handled in the same ways as quantitative data can.

4.4 Summarizing the findings & their implications for design

Through a mixed-methods inquiry I have sought to answer the following overall research question:

How can the digitization-driven increased observability of consumers' behaviors be conceptualized, and how can such behavior-based information be used strategically as a persuasive element in the design of digital products and services?

I have derived the new concept of Electronic Word of Behavior (eWOB) defined as *published accounts of behavior, based on the unobservable digital traces of consumers' behaviors*. I characterized it as an instantiation of digital trace data and positioned it in relation to the concepts of social interactions and eWOM. From this foundation, as well as a number of empirical cases, I derived a conceptual framework for eWOB and a number of unique characteristics, and finally identified three distinct design dimensions of eWOB.

Further, I empirically explored the impact of eWOB as well as how it is interpreted and acted upon by users. It was found that the integration of information about friends' opinions and behaviors had a significant positive impact on potential users' attitude towards an online, content-based service. Further, the findings suggested that the labor-demanding eWOM (user opinions) seems to be replaceable with the readily available eWOB (user behaviors). Despite the general empirical trend in the data in support of the hypotheses, there was no significant difference between the various design configurations tested. Accordingly, future research is needed to investigate this area in depth and draw firm conclusions regarding the relative impact of different design dimensions. Finally, it was found, in line with extant literature, that users of an online content-based service do indeed largely interpret the published accounts of

other users' behaviors as providing functional guidance in a cluttered digital consumer experience. However, when analyzed through the means-end chain methodology it was found that users at the subconscious level ascribe significant deeper meanings to behavior-based information. Specifically, it was found that it can, amongst others, create a sense of community and social recognition, which can lead to end-value states of social acceptance and competence. Viewed through the lens of self-determination theory it was found that behavior-based information can satisfy the basic psychological needs of relatedness and competence and thus, presumably, increase user well-being, but also potentially thwart other basic psychological needs if not implemented in mindful manners.

Throughout this process it became evident that behavior-based information in the form of eWOB is a truly design-driven phenomenon. Therefore, I find it fitting to end this chapter by summarizing the implications for design identified in each of the three main parts of dissertation, as shown in Table 12.

Table 12. Implications for design

Paper	Design Implication		Exemplification
Paper 1-3	1	Determine goal (desired impact)	Should the eWOB support purchase decisions and/or user engagement and retention?
	2	Choose design configuration - based on available data and product fit	Access to friend-specific or anonymous data? Aggregated vs. individual-specific? Internal vs. external disclosure?
Paper 4	3	Assess product fit	Some products categories are not suited for disclosure of neither user behaviors nor opinions because of e.g. sensitive information
	4	Behaviors (eWOB) can be used as substitute for opinions (eWOM)	Displaying the product-related behaviors of peers can function as eWOM, but requires little consumer effort to generate
	5	Provide clear information about observability	Clearly inform users what will be observable and to whom
	6	Provide user controls for disclosure and receipt of eWOB Provide customization options for behavior disclosure	Option to customize whom to disclose one's behaviors to and whom to receive from, e.g. acceptance of followers, easy control of private vs. public mode, segmentation of followers/following etc. E.g. option for showing use context
Paper 5	7	Provide feedback options	Option to 'like' or comment on users' listening behaviors
	8	Provide behavior-based information for personal use	Provide overview of users' past, not only recent, listening activity.
	9	Provide educational information in users' personal listening overview	E.g. provide information about the artists listened to in personal overview
	10	Provide user control of recommendations	Option to select elements of a 'recently played' track that one wants to listen more to

In summary, the integration of behavior-based information into digital products and services can – if implemented in manners that take into account both the business opportunities and the user perspective – be a means to achieve a more persuasive and positive user experience.

5 Discussion

With this PhD dissertation, I have sought to conceptualize the emerging use of behavior-based information in digital products and services, which – although empirically investigated in extant literature – has so far suffered from a lack of conceptual clarification. Further, the dissertation extends the current empirical knowledge by a) providing insights on the impact of behavior-based information at the friend-specific level when incorporated into an online service and b) by providing insights from the user-perspective. In this final chapter I will discuss these findings and put them into a larger perspective, and critically discuss some of the ‘darker’ sides of eWOB. I will conclude by laying out the main limitations of this PhD dissertation and make suggestions for how to address these and other relevant topics for future research.

5.1 The merging of marketing communications and product design

Although I have over the past five years been exposed first-hand to the difficulties of doing scholarly work in an interdisciplinary field, I firmly believe in the interdisciplinary value of this PhD project. Increasingly, the design of digital products and services is merging with marketing communications. A prime example is multi-sided platforms where the importance of integrating marketing mechanics into the core of the product has been recognized as pivotal (Parker, Van Alstyne, & Choudary, 2016). This could, for example, be the ability to easily invite friends to use a product and being rewarded for this action. This reward is not only an individual-level benefit but also gives a network effects benefit associated with adding another user to the platform. Cloud service Dropbox is one example where such mechanics have been built into the product. Here, users get additional storage space if they acquire new users and they gain the network effect of having an additional user in their network, enabling easy sharing and collaboration. Photo-sharing service Instagram is also representative of how marketing communications can be built into the product. In the early days of Instagram, the default setting was to automatically share all photos posted in the app to users’ Facebook timeline, disclosing their content to a wider network. In effect, Instagram turned all of its users into marketers of the app (Parker et al., 2016) by utilizing behavior-based information. These examples illustrate what Aral and Walker (2011) have referred to as viral product design, describing “the process of explicitly engineering products so they are more likely to be shared among peers” (Aral & Walker, 2011, p. 1623). Further, the Instagram example shows how a single-user activity can be turned into a social, multi-user activity (Parker et al., 2016). The

initial unique property of Instagram was the ability to easily edit photos to make them appear more professional, which could have been addressed by keeping app usage private. However, by making the experience a multi-user social activity Instagram not only made usage itself a source of marketing communications, they also created an opportunity for users to receive feedback. Obviously, this feedback was directed at the photos shared by the user, most likely satisfying the basic psychological need for competence and perhaps relatedness. But it also served the important function to, indirectly, reinforce the user's choice of Instagram, without which the user would not have been able to create such beautiful pictures. Additionally, this social, multi-user experience also made it easier for users to discern the number of Instagram users in one's network and thus create a social proof effect (Cialdini, 2001). This very mechanism was highlighted by one of the informants in the qualitative study (Paper 5), where the mere presence of other known Spotify users reassured the informant that he had made the right choice of music service in Spotify. In fact, Spotify utilized the exact strategy Instagram did in their early days. Here, users' music consumption was automatically shared to their Facebook timelines and in the 'activity ticker' of Facebook, which also led to exponential growth in their first couple of years ⁴. As such, Spotify represents a highly social experience, despite not supporting active interactions between users such as the opportunity to 'like' or comment on others' activity. On the contrary, the other digital, content-based service that I empirically assessed in this PhD project, Blockbuster, represents a more traditional single-user experience. Here, the presence of other users is not directly discernable. A category of 'popular movies' exists but does not provide any further info, such as how many views those movies have, where geographically they are most viewed, among which types of or specific named users they are popular, and there are no real-time indications of any activity. Beyond this the service only provides traditional recommendations such as 'recommended by the editorial team' or categories related to the genre of movie. As such, Blockbuster does not provide any social proof of its service, nor means to follow the lead of other users or to receive and give feedback on users' consumption behaviors. This relates to my original motivation for carrying out this research, the gap in the experience of using Spotify when compared with TDC's music streaming service TDC Play which, at the initiation of this PhD project, functioned much like Blockbuster. This also relates to the difficulty of the product management team and the marketing team to enter a collaboration that would benefit the product as a whole. I can now conclude that the disclosure of user behaviors does indeed lead to a more persuasive user experience, both at the content-level and at the service-level, which can, to some degree, make

⁴ <https://growthhackers.com/growth-studies/spotify>

up for traditional marketing communications activities. This points to an increased importance for both product designers and marketers to be able to identify the marketing communications opportunities offered by product design in their particular empirical settings. This is no easy task, but I hope that the conceptual as well as empirical insights offered in this PhD dissertation can assist this process.

5.2 Broadening the theoretical scope

The choice of theoretical foundation for this dissertation warrants some reflections. I have approached the topic of eWOB from two theoretical perspectives, both of which are rooted in social psychology: observational learning and self-determination theory. The application of these theories has allowed for elaboration on the impact of observing others' choices and shown how this behavioral observation can satisfy basic human needs and thus contribute to users' general well-being. There is no doubt that the phenomenon of eWOB could also be approached from other theoretical perspectives, and that such endeavors would most likely generate complementary insights.

For example, a Goffmanian (1959) sociological approach could lead to an increased focus on the self-presentations and potential impression management performed by the senders of behavior-based information. Whereas in this dissertation I have mainly taken the view of those observing the behaviors of others, described as *receivers* of eWOB, several instances in the empirical studies give hints of the relevance for a self-presentation perspective on eWOB related to the *sender* perspective. Specifically, in both the experimental study performed for Paper 4 and the qualitative study performed for Paper 5, participants expressed concerns in terms of how their behaviors would be perceived by others, with some informants even considering altering their behaviors when under observation. Conversely, some informants in the qualitative study also articulated how they had actively used their own behaviors made observable to signal personal attributes to others. Such a micro-sociological view of eWOB would be highly relevant to apply.

Further, although I don't explicitly use the much-debated concept of affordances, stemming from ecological psychology (Gibson, 1979), it can nevertheless be said to be influential for especially Paper 5. Here, the examination of how users interpret and act upon a specific element in a digital service (behavior-based information) carries similarities to the concept of affordances. A (socio-technical) affordance has been defined as "a meaning-making

opportunity and simultaneously an action-taking possibility in an actor-environment system in a particular situation, relative to actor competencies and system capabilities” (Vatrapu, 2010, p. 113). As such, the application of a socio-technical affordance perspective would most likely be able to shed more light on the interrelationship between the design element of behavior-based information in relation to actor competencies and system capabilities.

Finally, the application of a relational sociology perspective would lead to an increased focus on the social network aspects of eWOB. Building on the findings from this dissertation it would be interesting to explore how far in a given social network that behaviors can act like opinions. For example, is it only the case among one’s strong ties or does it also apply to weak ties? Indeed, such social network analysis approaches have been utilized in the area of behavior-based information, such as in Aral and Walker’s (2011) study of the diffusion of an online game through players’ Facebook networks and Bond et al.’s (2012) work on the diffusion of voting behaviors through Facebook networks.

5.3 On the digitization of the individual

This PhD project emerged out of the digitization of our everyday lives and the products and services that are intertwined in them. Without the digitization of books, music, movies, travel bookings and so forth, the concept of eWOB would not bear much, if any, relevance. While the benefits of digitization are many (efficiency, distribution reach and speed, to name just a few) it also potentially eliminates some important ways for consumers to express themselves and construct meaning of their cultural worlds. At the most fundamental level, digitization diminishes the tangible and physically observable aspects of products and converts them to binary digits (0s and 1s). Existing as music files on a computer or e-books on a Kindle, once material entities such as records, CD’s, and books are rendered largely invisible to everyone but the consumer using them. This poses a substantial change for consumers, as chosen products and their consumption have long been an important vehicle for self-expression and definition in the creation and sustenance of cultural meaning (Belk, 1988; Goffman, 1959; Lehdonvirta, 2012; McCracken, 1990). According to Belk (1988, p. 139) humans to a large extent “knowingly or unknowingly, intentionally or unintentionally” view their possessions as part of their selves. In Goffman’s (1961) terminology possessions represent “identity-kits” used by humans to uphold identity and the presentation of self to the surrounding world. The removal of such identity-kits, in for example, prisons, military, and hospitals, leads to a depersonalizing and dehumanizing of the individual (Belk, 2013; Goffman, 1961). So what

happens when our physical possessions are digitalized? Consider the digitization of physical books to e-books. In addition to the loss of the physical book, with all its sensory qualities such as smell and paper quality, book lovers might also mourn the loss of a vehicle for creating and sustaining cultural meaning to oneself and others. For example, a book lover who is surrounded by a vast book collection, is reminded everyday of their favorites and of all of the personal stories and experiences that are tied to each. This likely anchors a sense of self for them - a history, and a place in this world, reinforced by their material books. Furthermore, maybe when our book lover commutes they bring a book on public transit. In this commuting situation the title, author, and book cover are all potentially visible to collocated fellow commuters. In this sense, they are again “knowingly or unknowingly, intentionally or unintentionally”, sending out subtle cues of their person (Belk, 1988, p. 139).

Surely, this is quite a different experience compared to collecting books on a Kindle. Here, the book lover is no longer reminded on a daily basis of their entire collection and everything connected to it. The Kindle may still be used every day, but it immediately jumps into the book one is currently reading, drawing no attention to the entire collection. And when reading on a Kindle on the subway, neither the title, author, nor book cover is observable to fellow commuters. Instead only the use of the Kindle device is observable to fellow passengers. In this sense, what is lost in the transformation from a physical book to a digital book seems to be not only the tangibility itself but also the ability to use the book as a reminder and reinforcement of self and self-expression. However, I argue that digitization enables new forms of identity building and self-presentation. In this example the physical book is indeed hidden inside a Kindle, but the book-reading *activity*, that would have left no lasting trace when reading a physical book, now leaves a trace in the underlying information system. And it is those behavior-based digital traces, that can be turned into eWOB by digital services. Drawing on the concept of ‘re-materialization’ as presented by Magaudda (2012) we can say that the once physical, but now digitalized, product has re-established some of its materiality. It is not the product itself (the book) that has re-materialized, rather, it is the *use* of the book - retrieved from the invisible strands of a database and turned into observable content through a digital re-materialization. This can then be interpreted as regaining the original (physical) object’s opportunity for cultural meaning-making and personal self-expression.

The above laid out issues and opportunities are largely connected to the *sending* out eWOB. While the focus throughout the production of this PhD dissertation has been on uncovering the

impact of what we can call the *receipt* of behavior-based information in the form of eWOB, the issues of sending eWOB are nevertheless of both theoretical and managerial relevance to further explore. Building on Belk's (1988, 2013) work we might ask: to which degree eWOB can replace the physical object's utility in self-presentation? And from a managerial perspective, how can we design products that support users' need for self-presentation? As indicated in Paper 5 eWOB could lead to a reduced sense of competence when faced with one's own usage behavior in Spotify, being made aware the degree to which behavior is directed by algorithms. In this sense, observing one's own behavior can actually be a mirror of one's own incompetence.

5.4 The dark side of eWOB

This PhD project was conceived in the years 2011-2012. It was around this time Facebook had just opened for the use of the so-called Open Graph, enabling Facebook users to bring along their social networks and entire 'social graph' into services outside of Facebook. The promises were of personalization and higher user relevance and user engagement ⁵. The attitude in 2012 towards the sharing of one's own data with Facebook and third-party developers was no doubt very different from the one most espouse today. At the time of writing, general public mistrust towards Facebook and its data protection practices is at a high. Sparked by the recent Facebook Cambridge Analytica scandal, and the data that was illegally acquired from Facebook and used for political purposes, increasing amounts of users have lost confidence in the platform. According to a recent survey by Business Insider 81% of Facebook users have little to no confidence in Facebook protecting their data and privacy – a number much higher than for other social media platforms ⁶.

This development, from a focus on personalization and the derived user benefits, towards a problematization of privacy issues, has been ongoing since the beginning of this PhD project. The empirical studies performed throughout my PhD have shown similar tendencies, raising data privacy-related issues. User privacy concerns were evident in both of the empirical studies performed during this research project. Both studies included elements of individual-specific behavior-based information being disclosed to a selection of users' Facebook friends. The concerns expressed by the study participants were similar to what a Director of Product

⁵ <https://mashable.com/2010/04/21/facebook-open-graph/?europe=true#vgA1s.ySkkqD>

⁶ <https://nordic.businessinsider.com/consumers-dont-trust-facebook-at-all-new-survey-data-2018-4?r=US&IR=T>

Innovation in Netflix told me during a phone interview in November 2016 about Netflix' use of social information:

You would like to know what your friends are watching - we [Netflix] hear that all the time. If you ask people "would you like to know what your friends are watching?" most people would say yes. But then you ask them "are you willing to share what you're watching?". And most people would say no. And, so, you have that problem.

This paradox has been referred to in the academic literature as the "personalization privacy paradox" (Farag Awad & Krishnan, 2006) and describes the inherent tradeoff between access to personalized services and the unwillingness to give away personal data that enables such personalization. Similarly, in the qualitative study for Paper 5 some informants showed elements of constrained behavior, effectively exemplifying what has been referred to as the extended chilling effect of social media (Marder, Joinson, Shankar, & Houghton, 2016). This term describes the tendency for some individuals to constrain or modify their real-life behaviors out of fear that their behavior will be disclosed on social media and observed by others. Specifically, some informants described how they might change their behaviors if they felt observed by other users. Such tendency to modify one's behavior if cognizant of an online audience has also been empirically demonstrated in, for example, the context of political voting decision-making (Vatrapu & Robertson, 2010).

Other informants clearly expressed discomfort at the thought of their past music listening behavior being observed. What is notable in these findings is that the informants' concerns mainly seemed to surface when imagining an audience they had no control over. That is, the feeling that their behaviors would be disclosed to an audience consisting of their entire Facebook friends list, as Spotify does not offer any segmentation controls. Social media platforms often collapse multiple audiences, one's friends, colleagues, and family – a phenomenon known as 'context collapse' (Marwick & Boyd, 2010). Facebook is no exception, and informants mainly explained that music and music listening behaviors can reveal details about one's personality and whereabouts, which they felt uneasy revealing to their entire Facebook friends list (through Spotify). Researchers have previously identified various strategies for navigating unclear audiences, such as self-censorship, selective sharing and grouping, and not posting at all (Semaan, Faucett, Robertson, Maruyama, & Douglas, 2015). If, on the contrary, audience controls were offered users were much more positive about the

presence of behavior-based information. Accordingly, one important design implication of this research for the future design of eWOB elements is to offer users control of the audience, particularly in cases where eWOB is disclosed at the individual-specific level.

Another important issue of eWOB is its potential for deceptive use. As I have argued eWOB can be seen as a strategy for designing persuasive systems. Defined as “computerized software or information systems designed to reinforce, change or shape attitudes or behaviors or both without using coercion or deception”, literature on persuasive systems emphasizes the importance of not using coercion or deception (Oinas-Kukkonen & Harjumaa, 2008, p. 202). However, such misuse remains a longstanding concern in this literature, and great efforts have been made to outline ethical guidelines for persuasive systems design (Berdichevsky & Neuenschwander, 1999; Verbeek, 2006). The challenge remains, even if as researchers we provide and adhere to ethical guidelines such guidelines are of little help when in the hands of ill-intentioned systems designers with a narrow focus on short-termed profit. The area is currently unregulated and lacks mechanisms that can assist users of digital products and services in assessing the validity of the eWOB faced. This is especially prevalent when data is presented at the aggregated and/or anonymous level. How much truth is there behind Airbnb informing you that *‘8 users are currently looking at this accommodation for the same dates as you’*? This obscures further contextual details because no information is provided about whether 8 users is many or few. Such practices are common in e-commerce, especially in the travel industry, and leverage the persuasive tactic of scarcity (Cialdini, 2001). In a similar vein, music streaming service Tidal has recently been accused of inflating the number of ‘listens’ for the artists Beyoncé and Kanye West ⁷. This not only misleads users, it also has profound financial consequences, given the number of listens determines how the artists are compensated financially by Tidal. Whereas most countries have laws that regulate how companies can carry out marketing communications activities (the use of competitor comparisons, marketing towards children, and use of threatening language are examples of regulated areas in some countries), there seems to be a blurry line when it comes to cases where the product design has merged with marketing-type of mechanics, such as eWOB.

Related to the topic of potential deception carried out by digital services, consumers can potentially control eWOB in ways that might harm the trustworthiness of behaviors. Behaviors have traditionally been viewed as the holy grail in terms of trustworthiness: It is what you *do*

⁷ <https://www.cbsnews.com/news/tidal-accused-of-falsifying-stream-numbers-for-beyonce-and-kanye-west/>

that matters; actions speak louder than words; walk the talk. These are popular phrases which seek to capture the presumably unfiltered and trustworthy nature of behaviors. However, in a digital world consumers' can carefully curate the disclosure of their behaviors. This happens, for example, when a user enters 'private session' listening in Spotify. When doing this, the music listened to, and thus the behavioral information, will not be disclosed to peers or other users. In essence, this makes it less reliable to take someone's listening behavior as a full picture of that person and their tastes, as it is but a curated representation. This is also the issue with the more manually controlled uses of behavior-based information as illustrated in the study of an online beauty forum by Cheung et al. (2014). Here users had the option to manually list and disclose to other users which beauty products they had previously purchased. It is likely that this option to disclose led to curated representations of actual purchases, akin to impression management (Leary, Kowalski, & Leary, 1990). For example, selectively *not* including more mundane or less 'cool' products to paint a certain image of self. In such cases, behaviors cannot be regarded as unfiltered and trustworthy accounts.

Broadening the scope, the 'dark side' of eWOB reaches beyond misuse related to the marketing of products and services. As demonstrated by Bond et al. (2012) observable voting behaviors of friends can affect one's own voting behavior. Whereas Bond et al.'s (2012) study was devoted to increasing voter turn-out, and not biasing a specific candidate, one might very well imagine that eWOB can also be used to influence which candidates are elected. As such, if in the hands of ill-intentioned systems designers – or politicians - it might be used in deceptive manners that can have profound implications for democracy. This ability of behavior-based information to "lead the herd astray" was demonstrated by Salganik and Watts (2008), where users of a music community were shown to blindly follow the lead of other users. Specifically, songs that had a low number of downloads, and thus interpreted to be less popular, were manipulated to look like they had a high number of downloads making them 'falsely popular'. As a result, the falsely popular songs increased in downloads, effectively showing that users were drawn towards making the same choices as others. Luckily, I should note, the Salganik and Watts (2008) study also found that over time the 'true popular' songs regained their pace. As such, this study demonstrated that although eWOB can be powerful in influencing behaviors, the human ability to critically assess a situation and make decisions accordingly is still prevalent, even in a digital world.

5.5 Limitations & future research

In this last section I will elaborate on the main limitations inherent in this dissertation as well as provide avenues for how to address these and other relevant topics related to eWOB in future research.

First, the issue of the results' external validity warrants elaboration. External validity refers to whether the results will also hold in other empirical settings (Venkatesh et al., 2013). In the empirical studies in this PhD dissertation I have focused on two different digital content-based services and their users (potential and real) in a Danish context. This has several implications. First, one might wonder whether the findings from the study with Blockbuster can be generalized to the other service, Spotify, and vice versa given the possible differences in user characteristics. It has not been possible for me to gather up-to-date user statistics from Spotify. However, when comparing publicly available information from 2015⁸ about the global Spotify audience with Blockbuster's Nordic user base⁹, we see that both services has an overrepresentation of male users, with Blockbuster taking the lead (58% vs. Spotify's 54%). In terms of age, the global Spotify audience is somewhat younger than Blockbuster's: about 49% of Spotify's users are 24 years old or younger, whereas this is only the case for 35% of Blockbuster's users. However, I will argue that the more important aspect to consider when it comes to external validity is the type of product and its characteristics studied. Here we should be wary of the difficulties of generalizing to other types of digital products or services. Both of the products explored in this PhD dissertation, music and movies, are experience goods, meaning that their quality is difficult to discern before experiencing the product. On the contrary, search goods are goods whose quality can generally be assessed before trial (Nelson, 1974), and the weight of eWOB might differ across these different types of goods. The category of digital cameras, as researched by Chen et al. (2011), is an example of search good. Here, consumers can compare camera specifications such as screen resolution and wi-fi connectivity before they buy. When such information is supplemented with information about other consumers' purchase behaviors, consumers will most likely also infer that each of these prior purchasers have performed an extensive search, comparing all the relevant specifications, and concluded that that particular camera was the best. As such, one can view purchases of search goods as more qualified choices than compared to experience goods. On the contrary, one can

⁸ <https://insights.spotify.com/at/2015/03/17/how-we-listen-sxsw-2015/>. Note that age statistics are estimates because Spotify only displays them graphically

⁹ Source: A 2018 Nordic survey of the video-on-demand market in the Nordic countries performed by YouGov for Nordisk Film

also argue that in the case of experience goods consumers have to rely more on indirect cues from their social environment, such as the product-related behaviors of friends, because they cannot directly assess the quality of the product prior to purchase or usage.

Moreover, even within the category of experience goods there are subtle, yet important, differences that may affect the potential impact of eWOB. Blockbuster and Spotify differ, for example, with respect to their model of revenue (pay per view versus all you can eat subscription, respectively). Consequently, we should expect that users in the subscription-based model are more likely to try out new content because there is no monetary risk of doing so, and even the potential cost of wasted time is rather small (a couple of minutes to listen to a song). On the contrary, movies in the pay per view model carry an actual monetary risk, as well as a larger cost in terms of wasted time (a couple of hours to watch an obliged movie now paid for). Furthermore, music is listened to again and again, whereas the majority of movies are only watched once. Such subtle differences can affect how eWOB plays out. For example, based on the above we should expect the volume of eWOB to be higher in a subscription-based music services such as Spotify compared to a pay per view movie service. However, since the risk involved in making a wrong choice is larger in movie streaming, we should expect users to do more extensive research and be quite dedicated to the movies they watch. As such, having 'watched' a particular movie might carry more weight when observed by other users than having 'listened to' a particular song. This reasoning illustrates the need for further research that compares the impact of eWOB across different product categories and revenue models, such as experience versus search goods, products with repetitive use versus single use, goods of mundane character versus self-expressive character, goods with sensitive or controversial content versus uncontroversial, and the like. Finally, also relevant in terms of generalization is the issue of cultural differences. Both studies were carried out in a Danish context – a country known for its high level of individualism ¹⁰. Consequently, it is reasonable to believe that eWOB can have different, and perhaps more significant, effects in more collectivistically orientated cultures where there is less willingness to stand out than in Denmark.

Moreover, it should be stressed that the conceptual framework for eWOB does not necessarily represent an exhaustive framework. Nor is it fully empirically validated. Rather, it seeks to provide scholars with a framework for understanding eWOB – its main components, processes, design dimensions, and how it conceptually differs from eWOM. It is the role of future research

¹⁰ <https://www.hofstede-insights.com/country-comparison/denmark/>

to empirically assess the connections in this framework. This also ties to the importance of design in making eWOB come to life, and the testing of additional design dimensions. For example, what is the role of geographic immediacy – of being able to observe the behaviors of other users in geographical vicinity compared to long distance? Or what is the role of temporal immediacy – the disclosure of recent behaviors versus all behaviors? These are important topics for further scholarly exploration. Related to the conceptual framework, I identified the ‘dual sender’, the platform as well as user, as a key factor distinguishing eWOB from eWOM. This deserves further research across product types and different ways of presenting eWOB. Most likely, the aggregated type of eWOB would mean a stronger emphasis on the platform as sender, whereas the friend-specific type of eWOB would appear more to come directly from users. But such differences have yet to be tested empirically.

Finally, both of the empirical studies raised issues that warrant further investigation. Firstly, future research should explore the design space related to social information, including eWOB. For example, investigating what the threshold is for the number of friends displayed to have an impact. Our study only investigated two fixed representations (two versus eight friends), but future research could benefit from viewing effects on a continuum. Further, we investigated the impact of influential friends determined by users’ own pre-selection. What might be the effect if the users were not involved in identifying the influentials? Such issues of design are important to further explore.

Secondly, both the experimental study and the qualitative study point towards the user need be able to easily control eWOB. In the experiment, users expressed how they would like to have the option to control from whom they *received* information, and in turn who they could observe *their* behaviors. Similar needs were expressed in the interview with Spotify users. Here, the main concern for users was options to implement audience control. Such controls are easy to implement, however their use can potentially affect the trustworthiness of behavior-based information, as described earlier in the discussion. On the other hand, such controls might mean that users will only receive information that is relevant to them. Accordingly, future research should address these potential pitfalls and opportunities of user-control by assessing whether the impact of eWOB decreases or increases in user-controlled conditions. Moreover, the qualitative study suggests that the disclosure of one’s *own* behaviors to oneself can be an important factor in the satisfaction or thwarting of users’ need for competence. As described above, digitization of products, and hence the product-related behaviors, have profound

implications for the individual, and future research should explore to which degree digital behavior-based information can replace the once physical artefacts as a means for self-expression and identity formation and reinforcement. Finally, while the extant literature generally paints a picture of users, more or less blindly following others, the interviews with Spotify users also gave indications of how eWOB can also be used inversely. In effect, providing a means for users to avoid certain, popular, music. Accordingly, the use of reference groups by niche segments should be further explored in future research.

6 Conclusion

This dissertation aims at theorizing an emerging empirical phenomenon and empirically investigating its potential as a communicative design element in two content-based digital services. I arrive at a conceptualization of the phenomenon of interest as ‘Electronic Word of Behavior’ (eWOB) defined as *published accounts of behavior, based on the unobservable digital traces of consumers’ behaviors*. I have related eWOB to the concepts of social interactions and eWOM and identified unique properties and three design dimensions of eWOB. eWOB distinguishes itself by a) being based on the unobservable digital traces of behavior, b) being plentiful and requiring little, if any, effort from users to generate c) being design-driven d) possessing an inherent duality in terms of who the communicator is e) being more neutral in nature compared to eWOM and finally f) being concerned with not only sales, but also on continued usage and engagement.

To assist the future design of eWOB in manners that leverage the strengths and minimizes the weaknesses, I moreover conducted two empirical studies. The first study, an online experiment, departed from a business perspective and investigated the use of social information in product design, consisting of opinions and behaviors of friends. The findings from this study demonstrated that online content-based services can benefit from incorporating social information into their interface in that it positively increases potential users’ attitude towards the service, albeit not intention to use the service. Moreover, the results suggest that behaviors can be designed to look like opinions and serve as endorsements. This means that eWOM, which requires user effort and suffers from an underreporting, can in some cases be substituted with eWOB, which requires little, if any, effort from the user and is plentiful. The experiment did not produce statistically significant results regarding the relative effectiveness of different design configurations and hence, further research in this direction is needed. Finally, the second empirical study, an interview study, departed from a user-perspective and

demonstrated that consumers apply interpretations and ascribe use-opportunities to eWOB that go beyond the notion of ‘popularity information’. Specifically, eWOB can satisfy the basic psychological needs of relatedness and competence but can also potentially thwart autonomy and competence. I posit that this need satisfaction can be further increased (and need thwarting reduced) if product designers become aware of this potential, presumably resulting in an increase in users’ general well-being. To this effect, the PhD offers a set of implications for design.

6.1 Contributions to Theory

This dissertation makes a disciplinary contribution to the field of IS, and specifically to the behavioral tradition and the HCI systems design stream. This is underscored by the dissertation’s strong focus on the interplay between technology and people, i.e. the socio-technical aspect. Thematically, the dissertation is positioned at the intersection between IS and Marketing, where the research streams concerning the use of behavior-based information in products and services, eWOM, and social design come together. Further extending the scope, the findings have relevance for the related fields of e-commerce, the persuasive systems design area of HCI, and research into social contagion phenomena. Specifically, the findings of this dissertation contribute to theory in three overall manners:

1) The introduction of the theoretical concept of eWOB brings together scattered literature to form a unifying concept for further exploration and accumulation of knowledge. The dissertation provides conceptual clarification and a detailed account of the dynamics and characteristics of an emerging phenomenon. The concept is placed in the larger theoretical context of eWOM and, more broadly, social interactions. Furthermore, the proposed conceptual framework for eWOB not only sheds light over the main components and processes of eWOB; it also represents a platform for other researchers to systematically uncover the many facets and detailed dynamics of eWOB through further empirical research. As such, the introduction of the eWOB concept represents a contribution to the behavioral stream of IS research.

2) The dissertation provides empirical insights about the impact, interpretation and use of behavior-based information from both the business and the user perspective, resulting in a number of design implications. This too represents a contribution to the behavioral stream of IS research as well as the design stream.

3) The dissertation makes a methodological contribution to the design science stream of IS research with the development of an IT artefact, the SOCIALIIT, which enables the testing of different ways of presenting social information to users. This tool can assist scholars in future research within the area of social product design.

6.2 Contributions to Practice

From a management perspective, the findings of this dissertation contribute to practice in the following ways.

1) The empirical findings of Paper 4 highlight the potential positive impact of incorporating information about other users' behaviors and opinions into an online service. More specifically, it is demonstrated how readily available behaviors can work as recommendations in a manner that requires less effort from the user than the generation of eWOM (opinions). As such, the findings suggest a strong business rationale for designing eWOB elements.

2) With the proposed conceptual framework of eWOB in Paper 3, I provide product designers with an overview of both the design opportunities and the central mechanisms of eWOB. Much akin to how a manager will benefit from knowing different archetypes of organizational structures (for example a matrix, functional, or divisional structure) when redesigning an organization, it is my hope that the conceptual framework can act as a roadmap for product designers and facilitate a strategic use of behavior-based information in the form of eWOB. Only by being aware of the conceptual underpinnings of a phenomenon and its core components can one instrumentally work with it beyond trial and error.

3) The empirical findings from Paper 5 aim to assist the design of mindful eWOB. Mindful in the sense that the eWOB elements are designed in such a manner that they not only seek to increase user efficiency but also address user concerns and satisfy basic psychological needs.

4) The development of the SOCIALIIT in Paper 4 also represents a contribution to practice as it provides a concrete tool that can be used by product designers to test out different configurations of social information, including eWOB.

6.3 Epilogue

The completion of this dissertation marks the end of what has been both an enriching and at times frustrating journey. Entering the academic world was a steep learning curve for me, and it still often feels like I am climbing a mountain. But that is also the beauty of research: there is always something more to learn. Something that could potentially change your view of the world. Despite the momentarily feelings of frustration and loneliness, a PhD truly is a privilege. One is fortunate enough to devote years to the investigation of a topic of interest. I have had the opportunity to put a theoretical frame around an empirical phenomenon that captured my interest while working in industry. I have learned about some of the fundamental workings of the human mind. What motivates people and makes them feel good? How do humans learn and how do they influence each other? Those are some of the theoretical questions that I have been lucky to investigate and subsequently translate into a business context where they can, hopefully, make a positive difference for the future design of digital products and services.

7 References

- Abbasi, A., Sarker, S., Chiang, R. H. L., & Lindner, C. H. (2016). Big Data Research in Information Systems: Toward an Inclusive Research Agenda. *Journal of the Association for Information Systems*, 17(2).
- Aral, S., Dellarocas, C., & Godes, D. (2013). Introduction to the Special Issue —Social Media and Business Transformation: A Framework for Research. *Information Systems Research*, 24(1), 3–13. <https://doi.org/10.1287/isre.1120.0470>
- Aral, S., & Walker, D. (2011). Creating Social Contagion Through Viral Product Design: A Randomized Trial of Peer Influence in Networks. *Management Science*, 57(9), 1623–1639.
- Aristotle. (2000). *Politics*. Dover Publications.
- Bandura, A. (1977). *Social Learning Theory* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Banker, R. D., & Kauffman, R. J. (2004). The Evolution of Research on Information Systems: A Fiftieth-Year Survey of the Literature in “Management Science” *Management Science*, 50(3), 281–298. <https://doi.org/10.1287/mnsc.1040.0206>
- Bapna, R., & Umyarov, A. (2015). Do Your Online Friends Make You Pay? A Randomized Field Experiment on Peer Influence in Online Social Networks. *Management Science*, 61(8), 1902–1920.
- Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Beath, C., Berente, N., Gallivan, M. J., & Lyytinen, K. (2013). Expanding the Frontiers of Information Systems Research: Introduction to the Special Issue. *Journal of the Association for Information Systems*, 14(45), 1–16.
- Belk, R. W. (1988). Possessions and the Extended Self. *Journal of Consumer Research*, 15(2), 139–168.
- Belk, R. W. (2013). Extended Self in a Digital World. *Journal of Consumer Research*, 40(3), 477–500.
- Berdichevsky, D., & Neuenschwander, E. (1999). Toward an ethics of persuasive technology. *Communications of the ACM*, 42(5), 51–58. <https://doi.org/10.1145/301353.301410>
- Bhaskar, R. (2015). *The possibility of naturalism: A philosophical critique of the contemporary human sciences*

- (Fourth). Routledge.
- Bikhchandani, S., Hirshleifer, D., & Welch, I. (1998). Learning from the Behavior of Others: Conformity, Fads and Informational Cascades. *Journal of Economic Perspectives*, 12(3), 151–170.
- Bødker, M. (2017). “What else is there...?”: reporting meditations in experiential computing. *European Journal of Information Systems*, 26(3), 274–286. <https://doi.org/10.1057/s41303-017-0041-6>
- Bødker, M., & Blegind, T. (2017). Sounding Out Is? Moods And Affective Entanglements In Experiential Computing. In *ECIS 2017*.
- Bødker, M., & Chamberlain, A. (2016). Affect theory and autoethnography in ordinary information systems. In *Twenty-Fourth European Conference on Information Systems (ECIS)*.
- Boellstorff, T., Nardi, B., Pearce, C., & Taylor, T. L. (2012). *Ethnography & Virtual Worlds. A Handbook of Method*. Princeton, New Jersey: Princeton University Press.
- Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D. I., Marlow, C., Settle, J. E., & Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), 295–298.
- Borgatti, S. P., Mehra, A., Brass, D. J., & Labianca, G. (2009). Network analysis in the social sciences. *Science*, 323(5916), 892–895. <https://doi.org/10.1126/science.1165821>
- Bostrom, R. P., Gupta, S., & Thomas, D. (2009). A Meta-Theory for Understanding Information Systems Within Sociotechnical Systems. *Journal of Management Information Systems*, 26(1), 17–48. <https://doi.org/10.2753/MIS0742-1222260102>
- Brinkmann, S. (2012). *Qualitative inquiry in everyday life: Working with everyday life materials*. SAGE Publications Ltd.
- Bygstad, B., Munkvold, B. E., & Volkoff, O. (2016). Identifying generative mechanisms through affordances: a framework for critical realist data analysis. *Journal of Information Technology*, 31(1), 83–96. <https://doi.org/10.1057/jit.2015.13>
- Chen, Y., Wang, Q., & Xie, J. (2011). Online Social Interactions: A Natural Experiment on Word of Mouth Versus Observational Learning. *Journal of Marketing Research*, 48(2), 238–254.
- Cheung, C. M. K., & Thadani, D. R. (2012). The impact of electronic word-of-mouth communication: A literature analysis and integrative model. *Decision Support Systems*, 54(1), 461–470. <https://doi.org/10.1016/j.dss.2012.06.008>
- Cheung, C. M. K., Xiao, B. S., & Liu, I. L. B. (2014). Do actions speak louder than voices? The signaling role of social information cues in influencing consumer purchase decisions. *Decision Support Systems*, 65, 50–58.
- Cialdini, R. B. (2001). Harnessing the Science of Persuasion. *Harvard Business Review*, 79(9), 72–81.
- Collins, H., & Kusch, M. (1999). *The shape of actions: What humans and machines can do*. MIT Press.
- Corbin, J., & Strauss, A. (2015). *Basics of Qualitative Research (Fourth)*. Thousand Oaks: SAGE Publications, Inc.
- Cornelissen, J. (2016). Developing propositions, a process model or a typology? Addressing the challenges of writing theory without a boilerplate. *Academy of Management Review*, 42(1), forthcoming. <https://doi.org/10.5465/amr.2016.0196>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The SAGE Handbook of Qualitative Research (4th ed.)*. Thousand Oaks, California: SAGE Publications, Inc.
- Dou, Y., Niculescu, M. F., & Wu, D. J. (2013). Engineering Optimal Network Effects via Social Media Features and Seeding in Markets for Digital Goods and Services. *Information Systems Research*, 24(1), 164–185.
- Duan, W., Gu, B., & Whinston, A. B. (2009). Informational Cascades And Software Adoption On The Internet: An Empirical Investigation. *MIS Quarterly*, 33(1), 23–48.
- Dyer, J. H., & Singh, H. (1998). The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. *The Academy of Management Review*, 23(4), 660–679. <https://doi.org/10.2307/259056>
- Ellis, C. (2004). *The ethnographic I: A methodological novel about autoethnography*. Walnut Creek, CA: AltaMira Press.
- Ellis, C., Adams, T. E., & Bochner, A. P. (2010). Autoethnography: An Overview. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 12(1), Art. 10.
- Farag Awad, N., & Krishnan, M. S. (2006). The Personalization Privacy Paradox: An Empirical Evaluation of Information Transparency and the Willingness To Be Profiled Online for

- Personalization. *Personalization Privacy Paradox MIS Quarterly*, 30(1), 13–28.
<https://doi.org/10.2307/25148715>
- Fitzgerald, B., & Howcroft, D. (1998). Towards Dissolution of the IS Research Debate: From Polarisation to Polarity. *From the Journal of Information Technology (Special Issue on Qualitative Research)*, 13(4), 313–326.
- Fogg, B. J. (2003). *Persuasive Technology: Using Computers to Change What We Think and Do*. Morgan Kaufmann Publishers.
- Freelon, D. (2014). On the Interpretation of Digital Trace Data in Communication and Social Computing Research. *Journal of Broadcasting & Electronic Media*, 58(1), 59–75.
<https://doi.org/10.1080/08838151.2013.875018>
- Garfinkel, H. (1967). *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.
- Garn, A. C., Matthews, M. S., & Jolly, J. L. (2010). Parental Influences on the Academic Motivation of Gifted Students: A Self-Determination Theory Perspective. *Gifted Child Quarterly*, 54(4), 263–272.
<https://doi.org/10.1177/0016986210377657>
- Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Feature Topic: Construct Measurement in Strategic Management Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. *Organizational Research Methods*, 16, 15–31. <https://doi.org/10.1177/1094428112452151>
- Glaser, B. G. (2008). The Constant Comparative Method of Qualitative Analysis. *Grounded Theory Review*, 07(3).
- Godes, D., Mayzlin, D., Chen, Y., Das, S., Mit, C. D., Pfeiffer, B., & Shi, M. (2005). The Firm's Management of Social Interactions. *Marketing Letters*, 16(3/4), 415–428.
- Goffman, E. (1959). *Presentation Of Self In Everyday Life*. Garden City, N.Y: Doubleday.
- Goffman, E. (1961). *Asylums*. Garden City, NY: Anchor.
- Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, 1360–1380.
- Gregor, S. (2006). The Nature of Theory in Information Systems. *MIS Quarterly*, 30(3), 611–642.
- Grudin, J. (2006a). Human Factors, CHI, and MIS. In P. Zhang & D. Galletta (Eds.), *Human-computer Interaction and Management Information Systems: Foundations*. Routledge.
- Grudin, J. (2006b). Is HCI Homeless? In Search of Inter-Disciplinary Status. *Interactions*, (January-February).
- Grudin, J. (2012). A Moving Target: The Evolution of Human-Computer Interaction. In J. A. Jacko (Ed.), *The Human-Computer Interaction Handbook. Fundamentals, Evolving Technologies, and Emerging Applications* (Third). Boca Raton, FL: CRC Press.
- Gutman, J. (1982). A Means-End Chain Model Based on Consumer Categorization Processes. *Journal of Marketing*, 46(2), 60–72.
- Hanseth, O., Aanestad, M., & Berg, M. (2004). Guest editors' introduction: Actor-network theory and information systems. What's so special? *Information Technology & People*, 17(2), 116–123.
<https://doi.org/10.1108/09593840410542466>
- Hennig-Thurau, T., Gwinner, K., Walsh, G., & Gremler, D. (2004). Electronic Word-Of-Mouth Via Consumer-Opinion Platforms: What Motivates Consumers To Articulate Themselves On The Internet? *Journal of Interactive Marketing*, 18(1), 38–52.
- Hine, C. (2011). Virtual Ethnography : Modes , Varieties , Affordances, 257–270.
- Howison, J., Wiggins, A., & Crowston, K. (2011). Validity Issues in the Use of Social Network Analysis with Digital Trace Data. *Journal of the Association for Information Systems*, 12(12), 767–797.
- Huang, J., & Chen, Y. (2006). Herding in online product choice. *Psychology & Marketing*, 23(5), 413–428.
- Jung, J. H., Schneider, C., & Valacich, J. (2010). Enhancing the Motivational Affordance of Information Systems: The Effects of Real-Time Performance Feedback and Goal Setting in Group Collaboration Environments. *Management Science*, 56(4), 724–742. <https://doi.org/10.1287/mnsc.1090.1129>
- Jung, Y., & Kang, H. (2010). User goals in social virtual worlds: A means-end chain approach. *Computers in Human Behavior*, 26, 218–225. <https://doi.org/10.1016/j.chb.2009.10.002>
- Kane, G. C., Alavi, M., Labianca, G. J., & Borgatti, S. P. (2014). What's Different About Social Media Networks? A Framework and Research Agenda. *MIS Quarterly*, 38(1), 275–304.
- King, R. A., Racherla, P., & Bush, V. D. (2014). What We Know and Don't Know About Online Word-of-Mouth: A Review and Synthesis of the Literature. *Journal of Interactive Marketing*, 28(3), 167–183.
<https://doi.org/10.1016/j.intmar.2014.02.001>
- Kjaergaard, A. L., & Jensen, T. B. (2014). Using cognitive mapping to represent and share users'

- interpretations of technology. *Communications of the Association for Information Systems*, 34(1), 1097–1114.
- Kozinets, R. V. (2010). *Netnography. Doing Ethnographic Research Online* (1st ed.). London: SAGE Publications Ltd.
- Kozinets, R. V. (2002). The Field Behind the Screen: Using Netnography For Marketing Research in Online Communities. *Journal of Marketing Research*, 39(February), 61–72.
- Kunst, K. (2015). Electronic Word of Behavior: The Mediating Role of Social Media in Disclosing Otherwise Non-observable Product-related Behavior. In *Proceedings of the 44th Annual conference of the European Marketing Academy*. Brussels: EMAC.
- Kunst, K., & Vatrappu, R. (2014). Towards A Theory Of Socially Shared Consumption: Literature Review, Taxonomy, And Research Agenda. In M. Avital, J. M. Leimeister, & U. Schultze (Eds.), *ECIS 2014 Proceedings*. Atlanta, GA: Association for Information Systems.
- Kunst, K., & Vatrappu, R. (2018). Understanding electronic word of behavior: conceptualization of the observable digital traces of consumers' behaviors. *Electronic Markets*, (Advance online publication). <https://doi.org/10.1007/s12525-018-0301-x>
- Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the Craft of Qualitative Research Interviewing* (2nd ed.). Thousand Oaks, California: SAGE Publications, Inc.
- Latané, B. (1981). The Psychology of Social Impact. *American Psychologist*, 34(4), 343–356.
- Leary, M. R., Kowalski, R. M., & Leary, R. (1990). Impression Management: A Literature Review and Two-Component Model. *Psychological Bulletin*, 107(1), 34–47.
- Lehdonvirta, V. (2009). *Virtual Consumption*. Turku School of Economics. Retrieved from <http://papers.ssrn.com/sol3/Delivery.cfm?abstractid=1630382#page=183>
- Lehdonvirta, V. (2012). A History of the Digitalization of Consumer Culture. In J. Denegri-Knott & M. Molesworth (Eds.), *Digital Virtual Consumption* (pp. 11–28). New York: Routledge.
- Li, Z., Huang, K.-W., & Cavusoglu, H. (2012). Quantifying The Impact Of Badges On User Engagement In Online Q&A Communities. In *Proceedings of the Thirty Third International Conference on Information Systems*.
- Libai, B., Bolton, R., Bugel, M. S., de Ruyter, K., Gotz, O., Risselada, H., & Stephen, A. T. (2010). Customer-to-Customer Interactions: Broadening the Scope of Word of Mouth Research. *Journal of Service Research*, 13(3), 267–282.
- Liu, D., Brass, D. J., Lu, Y., & Chen, D. (2015). Friendships in online peer-to-peer lending: pipes, prisms, and relational herding. *MIS Quarterly*, 39(3), 729–742.
- Lombard, M., & Snyder-Duch, J. (2002). Content Analysis in Mass Communication: Assessment and Reporting of Inter-coder Reliability. *Human Communication Research*, 28(4), 587–604.
- Magaudda, P. (2012). What Happens to Materiality in Digital Virtual Consumption? In J. Denegri-Knott & M. Molesworth (Eds.), *Digital Virtual Consumption* (pp. 111–126). New York: Routledge.
- Marder, B., Joinson, A., Shankar, A., & Houghton, D. (2016). The extended 'chilling' effect of Facebook: The cold reality of ubiquitous social networking. *Computers in Human Behavior*, 60, 582–592. <https://doi.org/10.1016/j.chb.2016.02.097>
- Marshall, C., & Rossman, G. B. (2006). *Designing Qualitative Research*. Thousand Oaks: SAGE Publications Ltd.
- Marwick, A. E., & Boyd, D. (2010). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society*, 13(1), 114–133. <https://doi.org/10.1177/1461444810365313>
- McCracken, G. D. (1990). *Culture and Consumption: New Approaches to the Symbolic Character of Consumer Goods and Activities* (First). Bloomington: Indiana University Press.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative Data Analysis : A Methods Sourcebook* (Third). Thousand Oaks, California: SAGE Publications, Inc.
- Milgram, S., Bickman, L., & Berkowitz, L. (1969). Note on the drawing power of crowds of different size. *Journal of Personality and Social Psychology*, 13(2), 79–82.
- Nelson, P. (1974). Advertising as Information. *Journal of Political Economy*, 82(4), 729–754. <https://doi.org/10.1086/260231>
- Oinas-Kukkonen, H., & Harjumaa, M. (2008). Towards Deeper Understanding of Persuasion in Software and Information Systems. In *Proceedings of the First International Conference on Advances in Computer-Human Interaction*. <https://doi.org/10.1109/ACHI.2008.31>
- Oinas-Kukkonen, H., & Harjumaa, M. (2009). Persuasive Systems Design: Key Issues, Process Model,

- and System Features. *Communications of the Association for Information Systems*, 24(28), 485–500.
- Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). *Platform revolution : how networked markets are transforming the economy and how to make them work for you* (First edition). New York: W. W. Norton & Company.
- Postill, J., & Pink, S. (2012). Social Media Ethnography: The Digital Researcher in a Messy Web. *Media International Australia*, 145(1), 123–134. <https://doi.org/10.1177/1329878X1214500114>
- Ragins, B. R. (2012). Reflections on the craft of clear writing. *Academy of Management Review*, 37(4), 493–501.
- Reynolds, T. J., & Gutman, J. (1988). Laddering Theory, Method, Analysis, And Interpretation. *Journal of Advertising Research*, 28(1).
- Reynolds, T., & Whitlark, D. (1995). Laddering data to communications strategy and advertising practice. *Journal of Advertising Research*, 35(4), 9–18.
- Rogers, E. M. (2003). *Diffusion of Innovations* (Fifth). New York: Free Press.
- Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. New York: The Guildford Press.
- Ryan, R. M., & Niemiec, C. P. (2009). Self-determination theory in schools of education. *Theory and Research in Education*, 7(2), 263–272. <https://doi.org/10.1177/1477878509104331>
- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The Motivational Pull of Video Games: A Self-Determination Theory Approach. *Motivation & Emotion*, 30(4), 344–360. <https://doi.org/10.1007/s11031-006-9051-8>
- Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*, 69, 371–380. <https://doi.org/10.1016/J.CHB.2016.12.033>
- Salganik, M. J., & Watts, D. J. (2008). Leading the Herd Astray: An Experimental Study of Self-fulfilling Prophecies in an Artificial Cultural Market. *Social Psychology Quarterly*, 71(4), 338–355.
- Salkind, N. J. (Ed.). (2010). *Encyclopedia of Research Design*. SAGE.
- Sarker, S., Chatterjee, S., & Xiao, X. (2013). How “Sociotechnical” Is Our Is Research? An Assessment And Possible Ways Forward. In *Proceedings of the Thirty Fourth International Conference on Information Systems*. Milan.
- Sasaki, T., Becker, D. V., Janssen, M. A., & Neel, R. (2011). Does greater product information actually inform consumer decisions? The relationship between product information quantity and diversity of consumer decisions. *Journal of Economic Psychology*, 32, 391–398. <https://doi.org/10.1016/j.joep.2011.02.010>
- Sein, M., Henfridsson, O., Purao, S., & Rossi, M. (2011). Action Design Research. *Management Information Systems Quarterly*, 35(1), 37–56.
- Semaan, B., Faucett, H., Robertson, S., Maruyama, M., & Douglas, S. (2015). Navigating Imagined Audiences: Motivations for Participating in the Online Public Sphere. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW'15)* (pp. 1158–1169). New York: ACM. <https://doi.org/10.1145/2675133.2675187>
- Sheldon, K. M., Abad, N., & Hinsch, C. (2011). A Two-Process View of Facebook Use and Relatedness Need-Satisfaction: Disconnection Drives Use, and Connection Rewards It. *Psychology of Popular Media Culture*, 1(S), 2–15. <https://doi.org/10.1037/2160-4134.1.S.2>
- Sjöklint, M., Constantiou, I., & Trier, M. (2015). The Complexities of Self-Tracking - An Inquiry into User Reactions and Goal Attainment. In *Proceedings of The 23rd European Conference on Information Systems (ECIS) 2015*.
- Skinner, B. F. (1963). Operant behavior. *American Psychologist*, 18(8), 503–515. <https://doi.org/10.1037/h0045185>
- Spry, T. (2011). Performative Autoethnography: Critical Embodiments and Possibilities. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE Handbook of Qualitative Research* (4th ed., pp. 497–511). Thousand Oaks, California.
- Thies, F., Wessel, M., & Benlian, A. (2016). Effects of Social Interaction Dynamics on Platforms. *Journal of Management Information Systems*, 33(3), 843–873. <https://doi.org/10.1080/07421222.2016.1243967>
- Tsao, W.-C. (2014). Which type of online review is more persuasive? The influence of consumer reviews and critic ratings on moviegoers. *Electronic Commerce Research*, 14(4), 559–583. <https://doi.org/10.1007/s10660-014-9160-5>
- Tucker, C., & Zhang, J. (2011). How Does Popularity Information Affect Choices? A Field Experiment.

- Management Science*, 57(5), 828–842.
- Vatrapu, R. (2010). Explaining culture: An Outline of a Theory of Socio-Technical Interactions. In *Proceedings of the 3rd ACM International Conference on Intercultural Collaboration (ICIC 2010)* (pp. 111–120). Frederiksberg, Denmark.
- Vatrapu, R. K., & Robertson, S. P. (2010). An information foraging analysis of note taking and note sharing while browsing campaign information. In *Proceedings of HICSS-43: Hawaii International Conference on System Sciences* (p. (10pp)). IEEE Computer Society.
<https://doi.org/10.1109/HICSS.2010.57>
- Venkatesh, V., Brown, S., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly*, 37(1), 21–54.
- Verbeek, P.-P. (2006). Persuasive Technology and Moral Responsibility Toward an ethical framework for persuasive technologies. In *Proceedings of Persuasive06, Eindhoven University of Technology*.
- Walker, B. A., & Olson, J. C. (1991). Means-end chains: Connecting products with self. *Journal of Business Research*, 22(2), 111–118. [https://doi.org/10.1016/0148-2963\(91\)90045-Y](https://doi.org/10.1016/0148-2963(91)90045-Y)
- Watson, J. B. (1913). Psychology as the behaviorist views it. *Psychological Review*, 20(2), 158–177.
- White, R. W. (1959). Motivation Reconsidered: The Concept Of Competence. *Psychological Review*, 66(5), 297–333.
- Yin, R. K. (2009). *Case Study Research: Design and Methods* (4th ed.). Los Angeles: SAGE Publications, Inc.
- Zaltman, G., & Coulter, R. H. (1995). Seeing the Voice of the Customer: Metaphor-Based Advertising Research. *Journal of Advertising Research*, 35(4).
- Zhang, P., & Galletta, D. (2006). *Human-computer Interaction and Management Information Systems: Foundations* (First). New York, NY: Routledge.
- Zhou, W., & Duan, W. (2016). Do Professional Reviews Affect Online User Choices Through User Reviews? An Empirical Study. *Journal of Management Information Systems*, 33(1), 202–228.
<https://doi.org/10.1080/07421222.2016.1172460>
- Zimbardo, P. G., & Leippe, M. R. (1991). *The Psychology of Attitude Change and Social Influence*. McGrawHill.

8 Appendices

8.1 Appendix: Paper 1

Kunst & Vatrappu (2014). Towards a Theory of Socially Shared Consumption: Literature Review, Taxonomy, And Research Agenda. *The 22nd European Conference on Information Systems (ECIS) 2014*

TOWARDS A THEORY OF SOCIALLY SHARED CONSUMPTION: LITERATURE REVIEW, TAXONOMY, AND RESEARCH AGENDA

Research in Progress

Kunst, Katrine, Copenhagen Business School, Howitzvej 60. 3.floor, Frederiksberg, 2000, Denmark, kalk.itm@cbs.dk

Vatrapu^{1,2}, Ravi, ¹Copenhagen Business School, Howitzvej 60. 2.14, Frederiksberg, 2000, Denmark, ²Norwegian School of Information Technology, Schweigaardsgate 14, Oslo, 0185, Norway, vatrapu@cbs.dk,

Abstract

Recent years have seen an increased sharing of consumptive practices, experiences and evaluations on social media platforms. Such socially shared consumption can range from electronic word-of-mouth to formal online reviews as well as automated product mentions facilitated by social media applications. Based on a review of extant emerging literature on this topic as well as of literature on relevant topics such as social influence, online reviews, theories of the extended self and conspicuous consumption, this paper proposes a new concept, “socially shared consumption”, and a taxonomy for better understanding and analysing the growing phenomenon of consumers’ social sharing of consumption on social media platforms. The taxonomy consists of five dimensions of socially shared consumption: Phase, Automation, Formality, Expressiveness, and Sentiment. The primary contributions of this research-in-progress paper are (a) description and definition of the new concept of socially shared consumption, (b) preliminary proposal of a taxonomy of socially shared consumption, and (c) outline of a research agenda to conduct theory-based empirical studies of socially shared consumption phenomena.

Keywords: Social business, social media, social sharing, consumer behaviour

1. Introduction

This paper is motivated by the increasing use of social media platforms that allow consumers to seamlessly share their consumption of products and services with their online social networks (Hoffman, Novak, & Stein, 2013). While the general phenomenon of consumers sharing consumption experiences is not new, the scale of it has been significantly amplified with the introduction of social media and integrated social sharing features such as Facebook’s Open Graph, introduced in 2011. Prime examples of companies that utilise the Open Graph functionality are music service Spotify and media streaming service Netflix, which let users seamlessly post their music/film consumption to Facebook (“Person A is listening to Song B via Spotify”). As such, social media allows consumers to share consumption experiences way beyond what Granovetter (1973) calls one’s strong ties. At the same time, not only do the socio-technical affordances (Vatrapu, 2010) of social media amplify the scale of potential reach of sharing, they also induce consumers to interact in new ways and share new types of consumption information, presumably not shared before (Hoffman et al., 2013). Furthermore, services such as Open Graph can be seen as serendipity enablers (Parr, 2011), implying that socially shared consumption actions might represent not only an explicit mention but also some form of implicit endorsement of the consumed product. As such, this increased social sharing of consumptive practices has the potential to significantly affect how businesses gain competitive advantages, towards an increased focus on making customers interact with products and services, i.e. socialising the consumption of products, services, and experiences. This paper proposes a new concept, namely ‘socially shared consumption’ (SSC) to

describe this practice of consumers sharing their consumption of products, services, and experiences with their networks via social media platforms. To the best of our knowledge, little research has been done on this exact topic, and more specifically, on determining the motivations of consumers to share their consumption online and the potential social impact and resulting business value created by offering a socialised consumption process. However, we find relevant existing research within a number of associated areas such as management, innovation, marketing, information systems, and human-computer interaction. By performing a literature review of the disjointed extant research on this new phenomenon as well as of supporting literature, the paper seeks to answer the following research question: *What is Socially Shared Consumption?* As such, it contributes to the field of information systems and to the emerging field of ‘social business’ (R. Vatrpu, 2013) by (1) introducing a new concept - SSC – to better understand the phenomena of consumers sharing their consumptive practices and experiences with online social others, 2) proposing a taxonomy for understanding this phenomenon and 3) offer new directions for further research. The remainder of the paper is organised as follows. Section 2 presents an introduction to the concepts of consumption and social media. Section 3 details the methodology for the literature review. Section 4 presents the main findings from the literature review. Section 5 proposes a conceptual taxonomy for understanding SSC, and Section 6 concludes the paper with an outline of a future research agenda.

2. Foundations

2.1 Consumption

Consumption is a complex concept that spans multiple academic disciplines (D. Miller, 2005), and can, amongst others, be understood as a theory of choice (Lehdonvirta, 2009). As such, the phenomenon of consumption potentially spans over the consumer decision-making phase, the purchase of the good or service, the consumption of it, and finally the evaluation of it. Interestingly, it is actually quite difficult to find a definition of consumption *per se* in literature on consumption, and more specifically digital/online consumption. For example, Hoffman & Novak (2012) define consumption of content on social media platforms as to “*find, get, acquire, consume, download or receive content*” (Hoffman & Novak, 2012, p. 20) i.e. in line with a broader view of consumption including the decision-making process. Thus, this paper treats the concept of consumption as spanning across several stages: the consumer decision-making phase, purchase, the actual consumption, and potential mention and/or evaluation of the consumed product/service.

2.2 Social media

The term ‘social media’ has found its way into our everyday vocabulary as services like Facebook and Twitter have grown massively. Some definitions of social media lean towards the participatory element of users creating and/or interacting with content, (e.g. Kaplan & Haenlein, 2010) whereas other emphasise the networking/social aspect (e.g. Hoffman et al., 2013). In this paper, we emphasize the notion of ‘social’ in ‘social media’, and use the definition offered by Hoffman et al. (2013, p. 29): “*The set of web-based and mobile tools and applications that allow people to create (consume) content that can be consumed (created) by others and which enables and facilitates connections*”. Finally, we also recognise that social networking sites can add a social layer to otherwise non-social sites. Thus, for the purposes of this paper, a site like Amazon is not considered social media *per se* because of its participatory features (e.g. user reviews). However if an integration to the individual users’ social network (e.g. Facebook) is present, allowing users to share their purchases or see recommendations from friends – and thus in line with the definition above, enables and facilitates connections - we consider this a social media context. In this sense, the mention and/or review of an Amazon product that is socially shared with the user’s online social network (such as Facebook or Twitter) will qualify as an instance of socially shared consumption.

3. Literature Review: Methodology

The methodology of this literature review is as follows:

- Current research on the phenomenon of consumers sharing consumption experiences via social media platforms was identified. Search terms included contemporary use of the term ‘socially shared consumption’ as well as possible alternative terms, e.g. ‘social consumption’, ‘visible consumption’ and aspects of the socio-technical affordances such as ‘Open Graph’.
- Foundational literature in related, established areas that may help to describe, understand, and explain the phenomenon was identified.
- The results from the foundational literature and current research searches were supplemented via backtracking and relevant popular articles were added, resulting in a pool of SSC papers.
- Finally, current research on the phenomenon and foundational literature from related areas were combined with the aim of conceptualising the new concept, socially shared consumption.

The criteria for being included in the pool of SSC papers were that the paper included both a consumption dimension (pre/during/post consumption) *and* a social media element. It was considered sufficient that the papers only briefly elaborated on SSC (e.g. as a topic to be further researched). The first search resulted in 22 papers, which, when supplemented via backtracking, resulted in a pool of 30 papers. As this is an emerging phenomenon, it is expected that this will be expanded over the course of the project. The rest of the papers were grouped into the following themes, serving as foundational literature. Finally, papers within unrelated fields (e.g. “social consumption of alcohol” in the public health domain) were discarded.

- Theme 1: Consumer motivations for and/or impact of sharing content on social media platforms (e.g. photos, likes etc.), however not specifically related to consumption of goods and services
- Theme 2: Consumer motivations for and/or impact of shared consumption, but in an offline context (e.g. consumers’ use of goods to express their self-identity, social influence of others in social consumption contexts).
- Theme 3: Online reviews outside a social media context

The following figure illustrates how SSC is situated among foundational research, including examples of sub-themes.

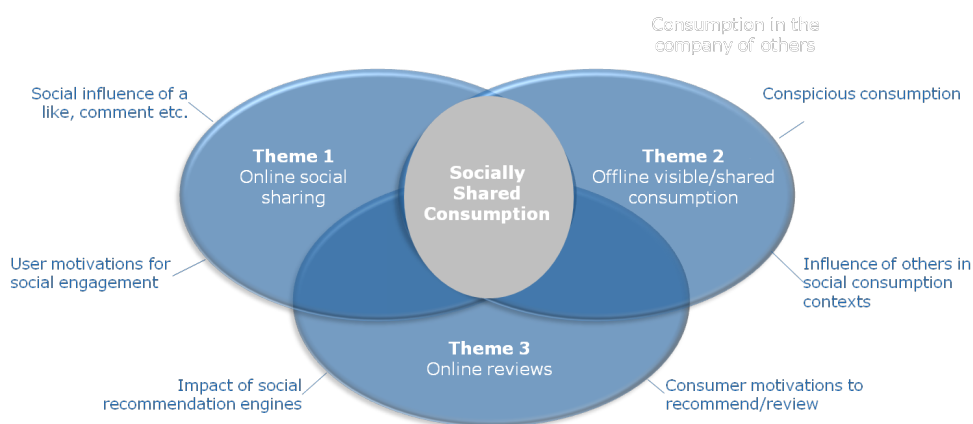


Figure 1. Overview of Foundational Research for Socially Shared Consumption

4. Literature Review: Findings

Our search for current use of the term ‘socially shared consumption’, as expected, resulted in only a few papers, of which none qualified as having an element of both social media and consumption. We first analysed current research about the phenomenon of consumers sharing consumption experiences in a social media context and this informed the definition of SSC. We then synthesised current research on

SSC and foundational literature in related areas (Figure 1) to create a conceptual taxonomy and propose a research agenda.

4.1 SSC: Scope and Definition

When isolating our search to the characteristics of the phenomenon of shared consumption in a social media context, we do get a few relevant results on the phenomenon of interest to this paper. However, a common definition of the phenomenon is lacking. Villi (2012) applies a “curation” view on content sharing, and as such SSC can be viewed as a form of socially oriented endorsement from the consumer side. Wang et al. (2012) use the term “consumption-related peer-communication”, and investigate consumption sharing on social media platforms. Here, the concept is defined quite broadly and includes status updates asking friends for input on a particular product, reviews, comments etc. thus spanning over across several stages of the consumption process. This can be characterised as a quite active consumption dialogue, in the sense that the communication is generated manually rather than automatically posted to e.g. Facebook via an app. Similarly, a broad definition of consumption-related communication on social media platforms is found in Saenger et al. (2010) who include listing of favourite books and general pictures of one’s lifestyle. From both academic research and entertainment industry perspectives, the term ‘Social TV’ has generated attention lately, essentially also expressing a form of SSC. Social TV is often described as the act of discussing or interacting with a live TV show, usually via hashtags on Twitter (Armano, 2011; Luger, 2013). Similar kind of real-time socially shared consumption is found in the automated actions produced by social media sharing applications (e.g. Spotify’s Open Graph app). This new kind of SSC does however differ from past practices reported in extant literature due to its semi-or fully-automated nature (once the consumer has chosen to connect a particular service with Facebook, actions from this service are shared automatically). Finally, looking to the field of online reviews as an expression of post-consumption evaluation, we find that reviews can generally be divided into two types: Formal and informal reviews (Rad & Benyoucef, 2011). Formal reviews are posted on a dedicated third-party website (e.g. Tripadvisor) or a merchant’s website (e.g. Amazon), typically at the request of the website/merchant, and within the formal review section of the product page. In contrast, informal reviews are unstructured and do not appear in a dedicated review context. Informal reviews typically consist of casual product mentions made on social networking sites such as Twitter and Facebook, and are usually created by the initiative of the consumer.

On the basis of the above review of current research describing various angles of the phenomenon of interest, the following holistic definition of SSC is proposed:

“Socially Shared Consumption (SSC) is an activity where consumers by means of social media platforms share their consumption of products, services, and experiences with their online social network(s). The consumption activities shared can be the very act of consumption itself, or it can be considerations leading up first to the purchase and consumption, as well as the subsequent evaluation of the good/service consumed. The consumption may be an individual act – and may take place offline or online - but can be said to be socialised by the online sharing of that act.”

4.2 SSC: Consumer Motivations

One research theme identified in current research on the phenomenon of SSC is the consumer motivations for sharing consumption experiences on social platforms. Sharing one’s consumption activities on social media platforms is viewed by Saenger et al. (2010) as a form of consumer exhibitionism. This view situates consumers’ SSC activities in the field of well-established concepts such as ‘materialism’ (e.g. Fitzmaurice & Comegys, 2006), the ‘theory of conspicuous consumption’ (Veblen, 1899 and Patsiaouras & Fitchett, 2012), and ‘the extended self’ (Belk, 1988), in all of which shared consumption experiences function as ways of constructing or expressing one’s identity, self, or social class. While these concepts generally describe offline phenomena, they can be helpful in understanding and analysing the concept of SSC. Examples of such identity-building, reinforcing, or signalling of user motivations for social sharing of consumption are also found in the literature (e.g. Drenten, 2012). On the basis of an empirical study, Drenten (2012) concludes that photos of brands and consumption experiences (actual or desired) shared on social media platforms are important tools to identity

construction among teenage girls. Furthermore, Belk (n.d.) presents a revised theory of the extended self, applicable in a digital world, which offers interesting insights into the possible consumer motivations and effects of engaging in SSC. Belk (n.d.) finds that digitalisation has led to a more extensive sharing of experiences with products/possessions, and that the resulting potential feedback from others can actually enrich that feeling of self and/or the feeling of belonging to a group. Different frameworks for analysing consumer motivations to engage in social media activities in general (i.e. not necessarily consumption-related) may also be useful for understanding consumer motivations for sharing consumption experiences on social media platforms (e.g. the “4Cs” of social media Hoffman & Novak, 2012). Interestingly, the 4C framework does not explicitly include the above mentioned motivations of self-expression, consumer exhibitionism etc. The authors do however point to the need for further research into the user motivations for creating content (e.g. what drives a user to write on Facebook about a coffee shop he just visited?) (Hoffman et al., 2013). A similar framework is presented by Muntinga (2011) who focus on motivations for brand-related social media use, including online reviews. The final relevant stream of research to understand consumer motivations to engage in SSC are theories of diffusion of innovations, popularised by Rogers (2003), Gladwell (2001), and Moore (1998), which theorise that different consumer segments are needed to spread new ideas, products, innovations, or knowledge and account for their differential adoption. Arguably, these different segments have different motivations to share knowledge such as an altruistic desire to help others (Walsh, Gwinner, & Swanson, 2004) vs. a concern for socio-technical capital (Resnick, 2002).

In summary, the relatively scarce literature on the phenomenon of SSC indicates that consumer motivations for SSC is an existing research theme, primarily explaining it as an identity building, reinforcing, or signalling activity.

4.3 SSC: Impact

The second overarching theme of SSC literature is the potential impact of consumers sharing their consumption on social platforms. Arguably, impact can be achieved on many different levels such as increased brand awareness/buying intention/sales etc. In the wider (i.e. non-social media related) area of recommendations and reviews, numerous academic studies have researched the value of online reviews (e.g. Amblee & Bui, 2011; Chen et al., 2004; and Duan et al., 2008), and the widely used Net Promoter Score (NPS) is built upon the insight that having a large amount of customers that are willing to actively recommend a company’s product is directly linked to company growth (Reichheld, 2003). Moving to the field of SSC, the notion of social influence (Cialdini & Goldstein, 2004; Kelman, 1958; S. Milgram, 1963) is of essence as the communication takes place between peers and/or trusted others given the other-orientation of social media. Generally, it is well known and accepted that a personal recommendation from a friend is much stronger than one coming from a stranger or a company (e.g. Xu et al., 2013; Yang et al., 2013) although variations in impact are seen among different consumer segments (Iyengar, Han, & Gupta, 2009; Munar & Jacobsen, 2013) and product categories (Zhu & Zhang, 2010). Thus, it seems logical that Wang et al. (2012) find a positive impact from consumption-related peer-communication (made on social media platforms) on product attitude, product involvement, and purchase intention. Within the field of online reviews and more specifically recommendation engines, we see that incorporating social network information in traditional recommendation engines has the potential to improve recommendation accuracy (Falahi, Mavridis, & Atif, 2012; Yang et al., 2013).

As stated earlier, the mere act of social sharing of consumption experiences is not a new phenomenon as such. However socio-technical affordances of social media platforms has magnified the potential reach, use, and impact of it. This poses an interesting question, also raised by Hoffman et al. (2013), namely how this increasing amount of day-to-day consumption information influences consumer opinions and decisions? Additionally, Hoffman et al. (2013) point to the importance of further research into how content “*containing thin slices of opinions on products shape viewers’ opinions, albeit in ways that are less direct than full reviews do*” (p.33), adding the example of who is using a particular service. In contrast to this view of indeterminate impact of social sharing of consumption, Powers (2012) interestingly states that consumption of goods and services which are shared via social media platforms is increasingly falsely taken for product endorsement. These somewhat opposing views raise an

important question about whether the mere (shared) use of a particular product/service may be perceived by one's peers as a form of endorsement of that product/service, and thereby influence consumers' attitudes and purchasing behaviour. A number of established theories - from Leibenstein's (1950) 'bandwagon effect', Rogers' (2003) 'diffusion of innovations', to the theory of observational learning (Garg, Smith, & Telang, 2011) - help shed light on this question, in that they claim that an individual's or group's consumption can impact other people's consumption choices, preferences, and behaviours. Thus, socially shared consumption becomes a kind of user endorsement. A couple of studies support this view. Garg et al. (2011) find that peer influence (stemming from visible use behaviour) increases music diffusion with up to a factor of six. Similarly, Wattal et al. (2010) find that blog use among an individual's network increases one's own blog use. Finally, others' shared or visible consumption in social contexts (e.g. a restaurant visit) can also act as peer pressure to conform to certain consumption standards (Sotiropoulos & D'astous, 2012). That said, there are many open questions with regard to impact of SSC that need to be empirically addressed. For example, if the mere act of listening to a song (e.g. on Spotify) can be viewed as an endorsement, how is that potential endorsement weighted between endorsement of the service (Spotify) and the content (the song listened to)? Furthermore, if the mere shared use of a product/service can be conceptualised as a form of endorsement, how strong an endorsement is it? Finally, does a potential endorsement effect apply across consumer segments and across product categories? And what effect does it have on business KPIs such as brand awareness, consideration, and sales? These still remain unanswered questions of academic importance as well as practical relevance.

5. Towards a Taxonomy of SSC

Drawing from the literature discussed above, the following section outlines and discusses a taxonomy for understanding the phenomenon of SSC, and extant literature is grouped into the different (sub-) dimensions. As this is a research-in-progress paper, the dimensions are not necessarily exhaustive nor sufficient, and empirical validation is pending.

Dimension	Definition	Practice Examples	Total # papers
Phase	Refers to which phase of consumption is socially shared. It can be the actual act of consumption, but also the considerations leading up to the choice of product, as well as the subsequent evaluation of it.	Pre: Receiving input or asking friends for input on Facebook and Twitter, checking out recommendations from social others on Yelp, booking a restaurant table or concert tickets and sharing that story on Facebook.	20
		During: Real-time sharing of photos on Instagram of having dinner.	14
		Post: Writing a review of the restaurant on Tripadvisor or Yelp, available for friends and social others.	19
Automation	Refers to whether the platform, from which the sharing takes place, offers automation. Two major types are seen: Automation of the <i>sharing</i> (the sharing takes place without the user actively choosing to post) and/or of the <i>content</i> shared (pre-defined text, illustrations etc.)	Low: A consumption-related status update or tweet	18
		Medium: A user actively posts a Foursquare check-in to Facebook but without actively writing anything (automation of content, e.g. a map or photo)	10
		High: A user's music or film consumption is posted to Facebook from e.g. Spotify and Netflix (automation of both sharing and content)	11
Formality	Refers to whether the consumption shared has the format of a formal review or not. Often, this will be determined by whether the mention takes place in a review context or not.	Informal: A tweet about a product experience	18
		Semi-formal: Check-ins on Foursquare and recent purchases on Amazon	16
		Formal: Reviews on Yelp or Tripadvisor	11
Expressiveness	Refers to whether the shared consumption is accompanied by a distinct expression of opinion (either positive or negative) about the product/service consumed.	Weak: A photo posted of a new iPhone on Facebook, not accompanied by explanatory text	13
		Medium: A 'like' on Facebook	15
		Strong: A photo posted of a new iPhone on Facebook, accompanied by an endorsement of the phone's new design.	21
Sentiment	Refers to the direction of opinion expressed (positive, neutral, negative)	Negative: A tweet describing a disappointing restaurant experience	16
		Neutral: A restaurant check-in on Foursquare without any accompanying text	19
		Positive: A tweet about a good restaurant experience	21

Table 1. Taxonomy of SSC

Some of the dimensions in the SSC taxonomy tend to follow each other while others are more unlikely to be combinatorial. For example, literature on the impact of reviews and other post-consumption activities tend to *also* have a pre-consumption *phase* element as the impact is exercised on consumers who are in the pre-consumption phase. Similarly, as the *formality dimension* stems from the literature on online reviews, literature on the motivations for formal mentions will typically take place after consuming the product. Additionally, the concept of a “review context” is in constant development. For example, while not a dedicated review site, Twitter’s hashtag functionality does lend itself to a form of reviews (e.g. #mcdstories). An important note on the *automation dimension* is that it is heavily influenced by socio-technical affordances (R. Vatrappu, 2010). As such, technical features can induce new ways of sharing consumption. However, even for non-automated content there may still be a “template” steering the

content in a particular direction – either technical (e.g. Twitter’s 140 characters and emerging discourse conventions) or socio-cultural like the dominant use of Facebook’s status update. With regard to the *expressiveness dimension*, expression of opinion can in some cases (e.g. irony) presume access to implicit information about the context and/or the person sharing in order to fully evaluate what is being expressed. In our taxonomy, we assume that the relation to the sharing person stemming from being associated with one another on a social platform should form the needed background information in order to judge the particular expression of opinion. Finally, a noteworthy distinction across several of the five dimensions is that of the content consumed vs. the platform facilitating the content. For example, to what degree does a Foursquare check-in at a restaurant, shared on Facebook, communicate a message about the content (the restaurant) vs. the platform (Foursquare)? Or is it that the person engaging in SSC is the message? In a twist on McLuhan’s (1964) famous dictum, it could be that “the messenger is the message”.

6. Outline of a Research Agenda for SSC

In this paper we have identified disjointed extant research on the phenomenon of consumers sharing consumption practises as well as research in supporting research areas. On the basis of this, we have proposed a new concept, SSC, and a taxonomy for better understanding this phenomenon. In our future research on SSC we wish to refine our taxonomy and empirically transform it into a conceptual framework. The framework will be informed by our initial work of this paper as well as by empirical data collection and analysis hereof, and we aim to establish a conceptual framework for socially shared consumption, that empirically identifies how consumption can be socially shared across the entire consumption process. The work will draw on established models of consumer decision making and buying behaviour, which are expected to be enriched with a (digital) social sharing dimension. As such, besides the academic relevance of adding to established models and understanding a new phenomenon, the framework is expected to have a practical business relevance in terms of how to encourage consumers’ sharing of consumption across the entire consumption process by use of socio-technical affordances. This leads us to the following research question for future research:

RQ1: What is SSC and how does it manifest on social media platforms throughout the entire consumption process?

Furthermore, on the basis of the literature review and the extracted taxonomy it becomes evident that the primary gaps in knowledge about SSC are centred on the area of the phase *during consumption*, with *medium to high automation* and a *weak expressiveness*. One reason for this could be the recent growth in social media platforms offering more or less automated consumption sharing. Even though papers within these categories do exist, none exclusively conceptualises and analyses this phenomenon. Thus, questions such as the following remain unanswered: Consumer motivations for sharing, potential endorsement effect and relative strength compared to more formal reviews, perception of content shared (e.g. a song) vs. the platform from which it is shared (e.g. Spotify), and socio-technical aspects of SSC: What impact the technological platforms offered have on how people behave in terms of sharing consumption - what they share, how often they share etc. This leads us to propose the following two research questions, which will specifically focus on the consumption in the phase *during consumption*, with *medium to high automation* and a *weak expressiveness*.

RQ2: What are the motivations for consumers to share their consumption of products, services, and experiences on social media platforms?

RQ3: What is the social impact and the resulting business value created from consumers sharing their consumption of products, services, and experiences on social media platforms?

In order to answer these questions, foundational literature will be used to form hypothesis for both consumer motivations and impact, which will then be empirically tested.

References

- Amblee, N., & Bui, T. (2011). Harnessing the influence of social proof in online shopping: The effect of electronic word of mouth on sales of digital microproducts. *International Journal of Electronic Commerce*, 16(2), 91–113.
- Armano, D. (2011). Six Social Media Trends for 2012. *Harvard Business Review Blogs*. Retrieved July 22, 2013, from http://blogs.hbr.org/cs/2011/12/six_social_media_trends_for_20.html
- Belk, R. W. (n.d.). Extended Self in a Digital World. *Journal of Consumer Research*, 000–000. doi:10.1086/671052
- Belk, R. W. (1988). Possessions and the Extended Self. *Journal of Consumer Research*, 15(2), 139–168.
- Chen, P. Y., Wu, S., & Yoon, J. (2004). The impact of online recommendations and consumer feedback on sales. In *ICIS 2004 Proceedings* (p. Paper 2058).
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: compliance and conformity. *Annual Review of Psychology*, 55(1), 591–621.
- Drenten, J. (2012). Snapshots of the Self: Exploring the Role of Online Mobile Photo Sharing in Identity Development Among Adolescent Girls. In A. G. Close (Ed.), *Online Consumer Behavior: Theory and Research in Social Media, Advertising and E-tail* (pp. 3–34). New York: Routledge.
- Duan, W., Gu, B., & Whinston, A. (2008). The dynamics of online word-of-mouth and product sales—An empirical investigation of the movie industry. *Journal of Retailing*, 84(2), 233–242.
- Falahi, K. Al, Mavridis, N., & Atif, Y. (2012). Social Networks and Recommender Systems: A World of Current and Future Synergies. In Abraham, A. & A. E. Hassanien (Eds.), *Computational Social Networks: Tools, Perspectives and Application* (pp. 445–465). Springer.
- Fitzmaurice, J., & Comegys, C. (2006). Materialism and Social Consumption. *The Journal of Marketing Theory and Practice*, 14(4), 287–299.
- Garg, R., Smith, M. D., & Telang, R. (2011). Measuring Information Diffusion in an Online Community. *Journal of Management Information Systems*, 28(2), 11–38.
- Gladwell, M. (2001). *The Tipping Point*. London: Abacus.
- Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, 1360–1380.
- Hoffman, D. L., & Novak, T. P. (2012). Why Do People Use Social Media? Empirical Findings and a New Theoretical Framework for Social Media Goal Pursuit. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1989586
- Hoffman, D. L., Novak, T. P., & Stein, R. (2013). The Digital Consumer. In R. W. Belk & R. Lamas (Eds.), *The Routledge Companion to Digital Consumption* (First., pp. 28–38). Abingdon, Oxon: Routledge.
- Iyengar, R., Han, S., & Gupta, S. (2009). *Do friends influence purchases in a social network?* (No. 09). *Harvard Business School Marketing Unit Working Paper*.
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59–68.
- Kelman, H. C. (1958). Compliance, Identification, and Internalization: Three Processes of Attitude Change. *The Journal of Conflict Resolution*, 2(1), 51–60.
- Lehdonvirta, V. (2009). *Virtual Consumption. Sarja/Series A-11: 2009*. Turku School of Economics. Retrieved from <http://papers.ssrn.com/sol3/Delivery.cfm?abstractid=1630382#page=183>
- Leibenstein, H. (1950). BANDWAGON , SNOB , AND VEBLEN EFFECTS IN THE THEORY OF CONSUMERS ' DEMAND. *Quarterly Journal Of Economics*, 64(2), 183–208.
- Luger, J. (2013). The Rise of Social TV: How Social Media Is Amplifying TV Advertising. *Businessinsider.com*. Retrieved July 04, 2013, from <http://www.businessinsider.com/social-media-amplifying-tv-advertising-2013-6>
- McLuhan, M. (1964). *Understanding Media: The Extensions of Man*. New York: McGraw Hill.
- Milgram, S. (1963). Behavioral Study of Obedience. *The Journal Of Abnormal And Social Psychology*, 67(4), 371–378.
- Miller, D., & Miller, D. (Eds.) . (2005). *Acknowledging consumption*. Routledge.
- Moore, G. A. (1998). *Crossing the Chasm* (Second.). Chichester: Capstone Publishing Limited.
- Munar, A. M., & Jacobsen, J. K. S. (2013). Trust and Involvement in Tourism Social Media and Web-Based Travel Information Sources. *Scandinavian Journal of Hospitality and Tourism*, 13(1), 1–19.

- Muntinga, D. (2011). Introducing COBRAs. *International Journal of Advertising*, 30(1), 13–46.
- Parr, B. (2011). Facebook Open Graph Seeks to Deliver Real-Time Serendipity. *Mashable.com*. Retrieved July 02, 2013, from <http://mashable.com/2011/09/22/new-facebook-open-graph/>
- Patsiaouras, G., & Fitchett, J. a. (2012). The evolution of conspicuous consumption. *Journal of Historical Research in Marketing*, 4(1), 154–176.
- Powers, D. (2012). Notes on Hype. *International Journal of Communication*, 6, 857–873. Retrieved from <http://ijoc.org/ojs/index.php/ijoc/article/view/1441>
- Rad, A. A., & Benyoucef, M. (2011). A model for understanding social commerce. *Journal of Information Systems Applied Research*, 4(2), 63.
- Reichheld, F. F. (2003). The One Number You Need to Grow. *Harvard Business Review*, 81(12), 46–54.
- Resnick, P. (2002). Beyond bowling together: Sociotechnical capital. In J. M. Carroll (Ed.), *HCI in the New Millennium* (pp. 247–272). Addison-Wesley.
- Rogers, E. M. (2003). *Diffusion of Innovations* (Fith.). New York: Free Press.
- Saenger, C., Thomas, V., Johnson, J., & Jewell, R. (2010). Exposing Consumer Exhibitionists: The Development and Validation of the Consumer Exhibitionism Scale. *Advances In Consumer Research*, 37, 895–896.
- Sotiropoulos, V., & D’astous, A. (2012). Social Networks and Credit Card Overspending Among Young Adult Consumers. *Journal of Consumer Affairs*, 46(3), 457–484.
- Vatrapu, R. (2010). Explaining culture: an outline of a theory of socio-technical interactions. In *Proceedings of the 3rd ACM International Conference on Intercultural Collaboration (ICIC 2010)* (pp. 111–120).
- Vatrapu, R. (2013). Understanding Social Business. In K. B. Akhilesh (Ed.), *Emerging Dimensions of Technology Management* (pp. 147–158). Springer India.
- Veblen, T. (1899). *The theory of the leisure class: An economic study in the evolution of institutions*. Oxford: Oxford University Press.
- Villi, M. (2012). SOCIAL CONSUMPTION OF PROFESSIONAL MEDIA CONTENT ON THE INTERNET. In *2012 Conference of the International Communication Association* (pp. 1–30).
- Walsh, G., Gwinner, K. P., & Swanson, S. R. (2004). What makes mavens tick? Exploring the motives of market mavens’ initiation of information diffusion. *Journal of Consumer Marketing*, 21(2), 109–122.
- Wang, X., Yu, C., & Wei, Y. (2012). Social Media Peer Communication and Impacts on Purchase Intentions: A Consumer Socialization Framework. *Journal of Interactive Marketing*, 26(4), 198–208.
- Wattal, S., Racherla, P., & Mandviwalla, M. (2010). Network externalities and technology use: a quantitative analysis of intraorganizational blogs. *Journal of Management Information Systems*, 27(1), 145–174.
- Xu, Y. (C. ., Zhang, C., & Xue, L. (2013). Measuring product susceptibility in online product review social network. *Decision Support Systems*. Retrieved from <http://dx.doi.org/10.1016/j.dss.2013.01.009>
- Yang, X., Guob, Y., Liua, Y., & Steckc, H. (2013). A Survey of Collaborative Filtering Based Social Recommender Systems. *Wanlab.poly.edu*. Retrieved from http://wanlab.poly.edu/xiawang/doc/social_rec_survey.pdf
- Zhu, F., & Zhang, X. (2010). Impact of Online Consumer Reviews on Sales: The Moderating Role of Product and Consumer Characteristics. *Journal of Marketing*, 74(2), 133–48.

8.2 Appendix: Paper 2

Kunst (2015). Electronic Word of Behavior: The Mediating Role of Social Media in Disclosing Otherwise Non-observable Product-related Behavior. *Proceedings of the 44th Annual Conference of the European Marketing Academy (EMAC) 2015*

Electronic Word of Behavior: The Mediating Role of Social Media in Disclosing Otherwise Non-observable Product-related Behavior

Katrine Kunst, kalk.itm@cbs.dk

Copenhagen Business School, Department of IT Management

Abstract

It is widely recognized that the transition from Word-of-mouth (WOM) to electronic word-of-mouth (eWOM) allows for a wider and faster spread of information. However, little attention has been given to how digital channels expand the types of information consumers share. In this paper, we argue that recent years have seen a social media-facilitated move from opinion-centric eWOM (e.g. reviews) to behavior-centric (e.g. information about friends' music consumption on Spotify). A review of the concepts of WOM and eWOM and a netnographic study reveal that the current definitions and understandings of the concepts do not capture this new kind of consumer-to-consumer information transfer about products and services. Consequently, we suggest an extension of those concepts: Electronic Word of Behavior.

Keywords: Social Media, Word of Mouth, Electronic Word of Behavior

Track: Online Marketing & Social Media

1.0 Introduction

It is widely recognized that the transition from Word-of-mouth (WOM) to electronic word-of-mouth (eWOM) allows for a wider and faster spread of opinions and information, well into one's weak ties (Granovetter, 1973) and even beyond (e.g. review sites) (Hennig-Thurau & Walsh, 2003; Kaplan & Haenlein, 2011; De Bruyn & Lilien, 2008; Lang & Hyde, 2013). However, little attention has been given to how technology changes or expands the *types* of information which we share (Hoffman et al., 2013), and how that influence other consumers. Special features of social media now enable consumers to share a wide array of their online and offline behaviors in various (semi-)automated ways. As a result, product use-behavior that inherently have low observability and thus may not have been possible to be shared with a wider audience before, can now – mediated by social media - easily be shared and potentially influence other consumers. A now classic example of this kind of automated consumption sharing is music service Spotify, which allows users to seamlessly broadcast their music consumption to Facebook, as well as to Facebook friends on Spotify. As such, an otherwise non-observable product-related¹¹ behavior (merely listening to a particular song) becomes observable to a wider audience, due to social media.

Technology aside, the phenomenon described above is in its essence consumers sharing product-related experiences. Looking to the field of WOM, we find that WOM is often described as “the sharing of information about a product, promotion etc., between a consumer and a friend, colleague, or other acquaintance” (Kaplan & Haenlein, 2011, p. 254). Accordingly, we would expect this new type of consumer behavior to be naturally included in our understanding of WOM, and more specifically, eWOM. However, when reviewing the concepts of WOM and eWOM we find that WOM and eWOM are typically restricted to either *positive* or *negative* statements (about brands, products, or services) (e.g. Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). In contrast, the kind of social media-facilitated information described above is often neutral in nature. For example, a message on Facebook that “*Peter listened to XX via Spotify*” cannot be categorized as either positive or negative, at least not without further analysis of the intentions behind. It is therefore not captured in our current understanding of eWOM, even though it is product-related information from a consumer, available for other consumers to see. Furthermore, extant research on eWOM is overall quite opinion-centric (what consumers *think* of a product), whereas the above-described pieces of information are behavior-centric (how consumers *behave* in regards to a product).

In this paper, we show that these social media-facilitated disclosures of product-related behaviors are, for a number of reasons, not captured in the current, scholarly understanding of eWOM. Thus, we propose the concept of ‘Electronic Word of Behavior’ (eWOB): *Information about consumers’ online and offline behaviors, disclosed via social media to a wider online audience, and often in a structured and automated format*. This addition to our knowledge about how product-related messages can be transferred via consumers is important because of recent years’ growth in social media-facilitated consumption-sharing among consumers. Here, product-related behaviors with otherwise low observability become observable, thanks to the mediating role of social media. Examples of this range from people “checking into” restaurants, to people disclosing their music consumption on Spotify or film consumption on Netflix. Consequently, we argue that this new mode of product-related, consumer-to-consumer information transfer should be recognized and researched as a new type of its own, and as a supplement to our extant knowledge of WOM and eWOM. From a theoretical point of view, this paper makes a contribution to the fields of WOM and eWOM, by extending the current understanding of how

¹¹ For simplicity reasons we use the term “product-related”, though it may also cover service-, brand-, and firm-related behaviors.

product-related messages can be transferred between consumers. From a practitioner perspective, insights into this field and its consequences are important as these shared product-related behaviors – albeit their often neutral nature - may very well have the potential to influence other consumers, just as traditional WOM and eWOM have.

2.0 Background

A large body of literature, especially from psychology and sociology, looks at how people influence each other by means of behavior, and it is widely recognized that consumers do influence each other in such, less direct, ways. Consequently, seeing other consumers perform a task, generally makes one more likely to also engage in that activity (Bandura, 1986; Cialdini, 2001). In line with this, concepts such as ‘customer-to-customer interactions’ (Libai et al., 2010) and ‘Customer Driven Influence’ (Blazevic et al., 2013) make attempts, by including behavioral learning, to extend our understanding of how product-related messages can be transmitted from consumer(s) to consumer(s). However, recent years have seen an important transformational factor in the form of social media. Social media enable consumers to disclose product-related behaviors that – without the presence of social media – would otherwise have limited observability. Now, these behaviors become available for a wider audience through a mediating layer of social media, as illustrated in Figure 1. Only limited research (e.g. Aral & Walker, 2011) has studied the effects of this social media-facilitated behavioral transfer of product-related information, and to the best of our knowledge, it has not yet been conceptualized, and positioned in relation to eWOM. Figure 2 illustrates how eWOB relates to WOM and eWOM. The main distinguishing factor is that the left part (WOM and eWOM) is concerned with the *communication of opinions*, whereas the right part is concerned with *behaviors which are disclosed*. As illustrated, it is also possible to extend the behavioral dimension to the offline world, represented by what we know as behavioral learning. Our focus in this paper, though, is on conceptualizing the online sharing of behaviors, but in doing so, we will also draw on literature about WOM, as WOM and eWOM are highly interrelated.

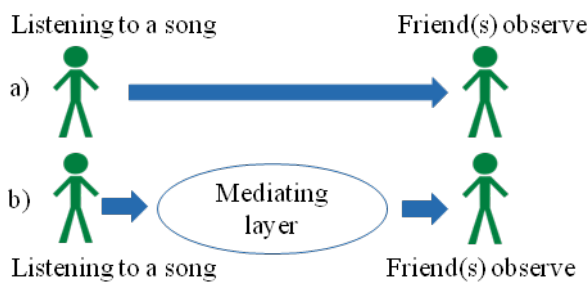


Figure 1. Directly observable behavior vs. social media-mediated behavior

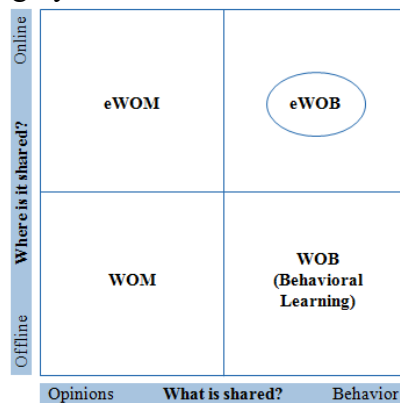


Figure 2. EWOB in the bigger picture

3.0 Methodology

We base this paper on a review of the concepts of WOM and eWOM, and a netnographic study of shared product-related behaviors on social media platforms. Our starting point was a number of extensive and recent reviews of the literature on WOM and eWOM, which were supplemented via further backtracking. Two main areas were our focus: How the authors define the concepts, as well as how they describe and exemplify the concepts. These findings were then synthesized into “five propositions about eWOM”, that reflect how eWOM is defined and researched today. For the empirical study, a netnographic approach (Kozinets, 2010) was

employed, grounded in the author's own social networks, to gather the data. Netnography was chosen as the objective was to explore and describe a phenomenon, enacted online. Data was gathered from four social networks (Facebook, Instagram, Foursquare/Swarm, and Twitter) plus three online services with social media integration (Spotify, Netflix, and Tripadvisor), as well as various webshops with social media integration. The data collection ran over two rounds. First, a systematic search for shared product-related information was performed within the author's Facebook newsfeed in a period of seven days, resulting in 78 pieces of content. This pool was then analyzed and coded in terms of whether each piece of content was simply a product-related comment (e.g. someone actively sharing and recommending others to read a news article), or it represented a shared product-related *behavior* (e.g. a person tagged at a specific restaurant), resulting in 37 pieces of eWOB content. Secondly, this was supplemented by examples collected from 2011-2014 by the author, across the social media platforms listed above, adding 31 more pieces of content to the pool. The final pool of content was then used as examples of current enactment of eWOB to be contrasted against the "five propositions" about eWOM.

4.0 Review of the Theoretical Concepts of WOM and eWOM

This section synthesizes the current definitions and understanding of eWOM into "five propositions" about eWOM, inspired by the consumption-sharing categories of Kunst & Vatrappu (2014). The five propositions are then contrasted with eWOB.

Category	eWOM	eWOB
Expressiveness	Is either positive or negative statements	Is information with low level of expressiveness
Phase	Generally happens before or after the act of consumption/usage as a result of some sort of consumer evaluation	Is often shared during the act of consumption
Automation	Is both actively shared and received	Is shared in (semi-)automated manners
Format	Is generally verbal (textual)	Is behavioral (often, turned textual)
Manageability	Is difficult for firms to control	Is somewhat manageable for firms

Table 1. Five propositions about eWOM and their contrast to eWOB

First, a widely used definition of eWOM is "any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet" (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004, p. 39). Here, it is clear by sheer definition that eWOM is viewed as either *positive* or *negative* statements. Other indications of this polarity is the common reference to "positive WOM" and "negative WOM" (e.g. Lang & Hyde, 2013; Kietzmann & Canhoto, 2013), and the way extant research oftentimes contrast the effect of positive vs. negative statements (e.g. Kim & Gupta, 2012; Park & Lee, 2009). This makes good sense – when a consumer is to actively engage in some sort of product-related conversation, it is usually either the very positive or the very negative experiences which are told (Kietzmann & Canhoto, 2013). In contrast, we find that eWOB is often neutral in nature, exemplified as mere statements or disclosed information about consumers' product-related behaviors. For example, a story shared from Amazon to Facebook about a person's recent purchase does not tell you what this friend *thinks* of the book purchased. Similarly, simply by looking at a friend's album collection or "recently listened to" on Spotify, does not tell you how the friend feels about the albums or songs, let alone Spotify. There is arguably a possibility that he likes the albums he has collected, and thus an implicit positive meaning to be inferred from this information, but there is no explicit mention of positive or negative feelings, as typically seen in traditional WOM and eWOM.

Second, even though the definition of eWOM allows for eWOM shared *during* the consumption, extant research on eWOM (as well as WOM) is to a large extent focused on eWOM generated *after* the purchase/consumption of the product/service, and to some extent *before* in the form of ‘buzz’. For example, Kietzmann & Canhoto (2013) propose an integrative model of eWOM, describing how pre-purchase/consumption expectations vs. the actual experience can influence the likelihood to spread eWOM. Similarly, a large portion of the eWOM literature is devoted to studying various aspects of customer reviews on dedicated review sites or merchant sites with user reviews (e.g. Ambler & Bui's (2011) study of customer reviews on Amazon). In contrast, eWOB often takes place during the very act of consumption. An example is when a consumer watches a film on Netflix, and when that information automatically gets posted to Facebook, real-time, available for friends to see. In this case, consumers disclose behavioral information *during* consumption without having evaluated the content to be consumed/is consumed. There may be some general evaluation of the service when setting up such automated sharing features, however, once it's set up, consumption behavior is automatically disclosed without evaluation.

Third, and related to the above, literature on eWOM seems to assume a relatively active or deliberate sending and reception of the information shared, often in the form of an opinion. On the sender-side, the consumers are described as having “*busy lifestyles and thus have limited attention budgets to express their opinions*” (King, Racherla, & Bush, 2014, p. 170). On the other hand, the receiver is referred to as “*seeking*” and “*assessing*”, and “*evaluating*” information or opinions about products and services (King et al., 2014). These descriptions lead to a perception of eWOM as being actively shared and received/searched for. In contrast, we see that automated sharing features allow consumers to seamlessly share their product-related behaviors in (semi-)automated ways that do not require a deliberate act of communicating to one's network. An example of such eWOB would be a person “checking in” to a restaurant. This is a partly active sharing: The person has to open a mobile app, choose the restaurant in the list of nearby places, press the check-in button, and perhaps also post that story to Facebook. It is considered semi-automated, as the app provides an easy way to share the story about one's product-related behavior in a structured way (pre-defined text, map, photo etc.). An example of a fully automated sharing is when Spotify posts one's music consumption to Facebook, or adds it to the user's “recently/most listened to” list.

Fourth, although some researchers (e.g. King et al., 2014) recently have pointed to the importance of studying “visual eWOM” (e.g. an “unboxing” video on YouTube), eWOM is still considered mainly a verbal (textual) form of communication. Similarly, WOM is usually referred to as “*oral person to person communication*” (Arndt, 1967, p. 3). Consequently, both WOM and eWOM have to do with the use of *words* to express oneself. This is not entirely in contrast with eWOB, as all of the above-mentioned examples result in more or less textual content posted to Facebook or other social media/social media-integrated platforms. However, the important difference here is that in the case of traditional eWOM it is a person's *experience of a product/service, which is communicated* (e.g. “this hotel was so horrible” on Tripadvisor or a negative McDonald's customer experience shared on Twitter). On the contrary, in the case of eWOB, it is information about the product-related *behavior itself which is disclosed* (e.g. listening to music, purchasing things on the internet, booking a restaurant table online etc.). These behaviors are usually not directly observable to people out of physical vicinity, but they are mediated by social media and thus transformed into text, which describes with words the behavior performed by the consumer.

Fifth and finally, several researchers refer to the uncontrollable nature of eWOM and the dangers involved when firms try to control eWOM. A common notion is that social media has reduced firms' control over the conversations about them (e.g. Blazevic et al., 2013; De Bruyn

& Lilien, 2008), and generally firms are advised to walk with caution when entering the legal melting-pot of e.g. awarding customers who spread commercial messages (Lang & Hyde, 2013). While this may make sense when considering traditional eWOM, eWOB opens new opportunities for marketers to induce sharing of product-related stories through built-in product features (such as the auto-sharing to Facebook on Spotify). A few studies support this as a promising strategy, e.g. Aral & Walker (2011) who, based on an extensive, randomized experiment, find that firms can indeed engineer products to be shared behaviorally by mere use of them, and that this can tremendously increase adoption and usage of a service.

In summary, although the phenomenon of interest can be described as an online disclosure of consumers' off-/online product-related behaviors, we find that the current definition of eWOM does not allow room for what is here referred to as eWOB. Furthermore, extant research on eWOM has not recognized this new type of product-related information transfer. In the following section, we present a conceptual framework for eWOM and eWOB and offer directions for further research.

5.0 Conceptual Framework and Directions for Further Research

Based on our review of WOM and eWOM, and in line with Libai et al.'s (2010) call for more research into observational learning, and (Blazevic et al., 2013) distinction between verbal (oral and textual) and behavioral communication, we offer the following conceptual framework for eWOM and eWOB. In the lower left quadrant we find eWOM where opinions are expressed in a relatively manual (non-automated, and often active) manner, typically as either text or video. Moving to the right side of the figure, we find behavioral information. In the lower right quadrant, consumers are actively posting/uploading/tweeting evidence of their behaviors, typically in a visual way. In the upper right quadrant, we find the semi- to fully-automated information about ones behavior, often transformed into text by the mediating layer. Finally, the upper left quadrant is less populated as auto-sharing of opinions are (yet) not common. In practice, it is not always possible to draw an exact line between eWOM and eWOB. A check-in at a restaurant may be considered a *behavior* shared in a *semi-automated* manner, but if the consumer also writes a positive accompanying text ("looking forward to tonight's dinner") then it is considered in-between a shared opinion and a shared behavior. Accordingly, our framework can be used in future research on eWOM and eWOB to compare and analyze the two concepts.

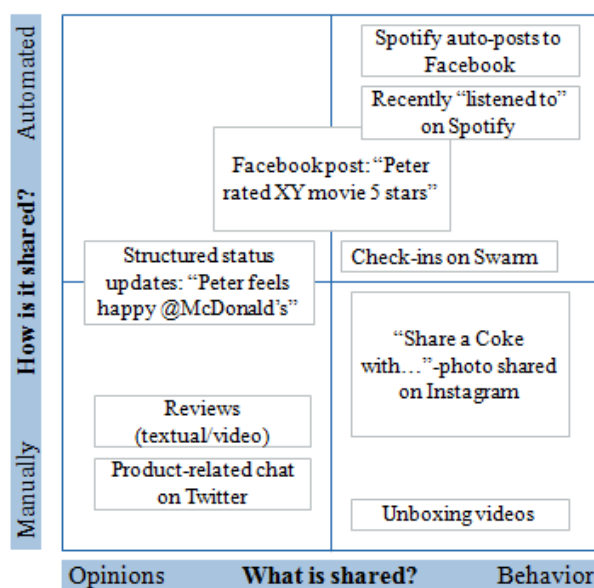


Figure 3. Conceptual framework of eWOM and eWOB

Further research into this exciting new field is needed. Following the work of King et al. (2014) on eWOM, research may be divided into uncovering the *motivations* for both senders of eWOB (e.g. identity construction, helping others, relation-making etc.) and receivers of eWOB (e.g. inspiration and entertainment), as well as the *impact* on both senders (e.g. feeling of belonging) and receivers (e.g. attitudes and adoption of product). Finally, it would be interesting to contrast the aggregate impact of traditional, opinion-centric eWOM with eWOB, taking into account that traditional eWOM (e.g. reviews) may not occur in the same volume as more passively spread eWOB (e.g. broadcast-style messages about one's music consumption on Spotify), as suggested by the findings of Aral & Walker (2011).

6.0 References

- Amblee, N., & Bui, T. (2011). Harnessing the influence of social proof in online shopping: The effect of electronic word of mouth on sales of digital microproducts. *International Journal of Electronic Commerce*, 16(2), 91–113.
- Aral, S., & Walker, D. (2011). Creating Social Contagion Through Viral Product Design: A Randomized Trial of Peer Influence in Networks. *Management Science*, 57(9), 1623–1639.
- Arndt, J. (1967). Word of Mouth Advertising: A Review of the Literature. *Advertising Research Foundation*.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.
- Blazevic, V. et al. (2013). Beyond Traditional Word-of-Mouth: An Expanded Model of Customer-Driven Influence. *Journal of Service Management*, 24(3), 294–313.
- Cialdini, R. B. (2001). Harnessing the Science of Persuasion. *Harvard Business Review*, 79(9), 72–81.
- De Bruyn, A., & Lilien, G. L. (2008). A multi-stage model of word-of-mouth influence through viral marketing. *International Journal of Research in Marketing*, 25(3), 151–163.
- Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, 1360–1380.
- Hennig-Thurau, T., Gwinner, K., Walsh, G., & Gremler, D. (2004). ELECTRONIC WORD-OF-MOUTH VIA CONSUMER-OPINION PLATFORMS: WHAT MOTIVATES CONSUMERS TO ARTICULATE THEMSELVES ON THE INTERNET? *Journal of Interactive Marketing*, 18(1), 38–52.
- Hennig-Thurau, T., & Walsh, G. (2003). Electronic Word-of-Mouth: Motives for and Consequences of Reading Customer Articulations on the Internet. *International Journal of Electronic Commerce*, 8(2), 51–74.
- Hoffman, D. L., Novak, T. P., & Stein, R. (2013). The Digital Consumer. In R. W. Belk & R. Lamas (Eds.), *The Routledge Companion to Digital Consumption* (pp. 28–38). Abingdon, Oxon: Routledge.
- Kaplan, A. M., & Haenlein, M. (2011). Two hearts in three-quarter time: How to waltz the social media/viral marketing dance. *Business Horizons*, 54(3), 253–263.
- Kietzmann, J., & Canhoto, A. (2013). Bittersweet! Understanding and Managing Electronic Word of Mouth. *Journal of Public Affairs*, 13(2), 146–159.
- Kim, J., & Gupta, P. (2012). Emotional Expressions in Online User Reviews: How They Influence Consumers' Product Evaluations. *Journal of Business Research*, 65(7), 985–92.
- King, R. A., Racherla, P., & Bush, V. D. (2014). What We Know and Don't Know About Online Word-of-Mouth: A Review and Synthesis of the Literature. *Journal of Interactive Marketing*, 28(3), 167–183.
- Kozinets, R. V. (2010). Netnography. *Doing Ethnographic Research Online* (1st ed., pp. 1–221). London: SAGE Publications Ltd.

- Kunst, K., & Vatrappu, R. (2014). Towards A Theory Of Socially Shared Consumption: Literature Review, Taxonomy, And Research Agenda. In M. Avital, J. M. Leimeister, & U. Schultze (Eds.), *ECIS 2014 Proceedings*. Atlanta, GA: Association for Information Systems.
- Lang, B., & Hyde, K. F. (2013). WORD OF MOUTH: WHAT WE KNOW AND WHAT WE HAVE YET TO LEARN. *Journal of Consumer Satisfaction, Dissatisfaction & Complaining Behavior*, 26, 1–18.
- Libai, B., Bolton, R., Bugel, M. S., de Ruyter, K., Gotz, O., Risselada, H., & Stephen, A. T. (2010). Customer-to-Customer Interactions: Broadening the Scope of Word of Mouth Research. *Journal of Service Research*, 13(3), 267–282.
- Park, C., & Lee, T. (2009). Information direction, website reputation and eWOM effect: a moderating role of product type. *Journal of Business Research*, 65(1), 61–67.

8.3 Appendix: Paper 3

Kunst & Vatrappu (2018). Understanding Electronic Word of Behavior: Conceptualization of the Observable Digital Traces of Consumers' Behaviors. *Electronic Markets* (advance online publication). DOI: 10.1007/s12525-018-0301-x

(this enclosed version is a preprint version of the accepted manuscript)



Electronic Markets – The International Journal on Networked Business

Full Title of Article:	Understanding Electronic Word of Behavior: Conceptualization of the Observable Digital Traces of Consumers' Behaviors
Subtitle (optional):	
Preferred Abbreviated Title for Running Head (maximum of 65 characters including spaces)	Understanding Electronic Word of Behavior (eWOB)
Key Words (for indexing and abstract services – up to 6 words):	electronic word of mouth (eWOM), electronic word of behavior (eWOB), social influence, observational learning, social interactions, digital trace data
JEL classification	M15: IT Management, M31: Marketing, L81 Retail and Wholesale Trade; e-Commerce, D11 Consumer Economics: Theory

Abstract

The widespread digitization of consumers' daily lives entails a plethora of digital traces of consumers' behaviors. These traces can be turned into meaningful communicative and observable content by the services that possess the trace data. While extant research has empirically showed this to have a significant impact on consumer choices we argue that the phenomenon is undertheorized. In this theoretical paper, we conceptualize this kind of observable behavior-based information as '*Electronic Word of Behavior*' (*eWOB*) and define it as "*published accounts of behavior, based on the unobservable digital traces of consumers' behaviors*". We characterize eWOB as an instantiation of Digital Trace Data and situate it within the established concepts of Social Interactions and Electronic Word of Mouth (eWOM). By drawing on extant empirical research and constructs from Digital Trace Data, Social Interactions and eWOM, we propose a framework for eWOB that highlights its unique characteristics and design dimensions.

Understanding Electronic Word of Behavior:

Conceptualization of the Observable Digital Traces of Consumers' Behaviors

Introduction

Almost everything we as human beings and as consumers do online leaves a digital trace of our online behavior. When we listen to music on Spotify, Spotify logs the time, location, duration, and artist of that listening activity along with a plethora of other data about our listening behavior. Some of these 'digital trace data' are used by recommendation engines and help the service give us more relevant suggestions for what to listen to, read, watch, book etc. But the digital traces stay relatively invisible for users. In other instances, these digital traces are being made more explicitly observable to users. Let us exemplify. Users of Spotify can see what their friends are listening to right now, Facebook Events lets one perceive how many others who are planning to attend an event and even the simple message that an e-mail was "Sent from my iPhone" exemplifies a consumer *behavior* being digitally disclosed to other individuals. These examples illustrate how the shift from analogue to digital products and services and the resulting digitization of the individual fosters behavior-based digital traces which can be utilized in product design to significantly increase the observability of users' behaviors.

For designers of information systems as well as marketers, this increased observability of user behaviors is intriguing and important given that it is widely accepted that humans can influence each other by means of behavior (Bandura, 1986; Cialdini, 2001). Following this logic, it is perhaps not surprising that several empirical studies have already documented a positive impact from the use of behavior-based information in product design on sales (Y. Chen et al., 2011), consumer decision making (Cheung et al., 2014), online game adoption (Aral & Walker, 2011), link clicks (Tucker & Zhang, 2011), crowdfunding (Thies et al., 2016), software downloads (Wenjing Duan et al., 2009), and music downloads (Salganik & Watts, 2008). Furthermore, it is digital trace data which is already there, generated solely by individuals' purchase or product usage behavior, and thus represents a rich stream of cost-efficient data to potentially be used for marketing-type of purposes (Aral & Walker, 2011).

Although scholars have begun this empirical enquiry into behavior-based information and its use in a marketing and/or product design context, little attention has been allocated to the conceptual aspects of behavior-based

information. The few exceptions that do exist have positioned behavior-based information in the context of ‘Social Interactions’ (Godes et al., 2005), ‘Online Social Interactions’ (Thies et al., 2016), or ‘Customer-to-Customer Interactions’ (C2C) (Libai et al., 2010)¹². Social Interactions take two forms: Opinion-based and behavior-based, where the former is consistently referred to as Word of Mouth (WOM) or Electronic Word of Mouth (eWOM) in the case of digitally communicated opinions. However, while there is a rich literature about the concept of (e)WOM (its definition, types of eWOM, dynamics of impact etc.), the conceptual aspects of behavior-based information haven’t been systematically investigated. This is surprising given how recent years’ digitization has significantly increased the observability of consumers’ behaviors and the extant empirical research demonstrating their profound impact on observers’ subsequent choices. The consequence is that knowledge is scattered, the terminology is diverse, and, as we shall show, important conceptual elements and processes have so far been neglected. We argue that this lack of common ground hinders the accumulation of knowledge (Gregor, 2006) at the expense of both scholars and practitioners.

This paper explores behavior-based information and its use in product design. We derive the concept of eWOB based on the literature about Digital Trace Data, Social Interactions, eWOM and extant research on the impact of digitally observable behavior-based information. By extracting central components and themes from these literatures and adapting them to the specific case of behavior-based information we are able to construct a conceptual framework of eWOB and a formal definition of eWOB as “*published accounts of behavior, based on the unobservable digital traces of consumers’ behaviors*”. Our aim is that this new concept will help advance knowledge about this important phenomenon and guide practitioners in their efforts to design products and services that persuade, inspire, engage, and retain users.

The importance of behaviors

Consumers of today are faced with massive amounts of information about products and services (Godes et al., 2005; Sasaki et al., 2011). Not only has the number of available products vastly expanded due to the rise of the internet and the accompanying virtually unlimited shelf space of online retailers (Wenjing Duan et al., 2009) but also the number of attributes and specifications about products has seen a sharp increase (Godes et al., 2005). Adding to that, product quality can be difficult to ascertain before purchase in many e-commerce purchase situations (Thies et al., 2016). Given this information overload and information asymmetry, consumers often turn to

¹² To simplify, we refer to these almost identical concepts as ‘Social Interactions’

the either the recommendations and opinions of social others (i.e. eWOM) or the actions taken by social others for guidance in product-related decisions (Wenjing Duan et al., 2009; Godes et al., 2005; Sasaki et al., 2011; Thies et al., 2016)

While eWOM (in its many forms) in extant literature has been recognized as extremely impactful on many product-related decisions (Zhou & Duan, 2016) a major challenge still remains: generating eWOM requires effort and consumers have limited time for actively expressing their opinions online (King et al., 2014). Consequently, it is fair to assume that most people will review or rate only a fraction of the products they purchase and consume. In other words, behaviors outnumber opinions. Against this backdrop, we argue that eWOM, although influential in its own right, represents only a tip of a much larger iceberg of potential social influence that digital products and services can take advantage of. In the digital society of today the many digital behaviors performed by internet users and consequently logged by digital services everyday represent the bottom of that iceberg. Whether it be playing a song on Spotify, reading a book on one's Kindle or booking a hotel on Hotels.com, they all leave digital traces, many of which can be turned into meaningful communicative cues by the particular service without any additional effort required by users. Simply put, the internet has vastly increased the observability of behaviors (Liu et al., 2015), in effect turning mere behaviors into "accountable social actions" that are "observable and reportable" (Garfinkel, 1967).

Interestingly, a number of recent empirical studies have actually found that the disclosure of past user behaviors is more impactful than is the disclosure of opinions in the form of eWOM (e.g. Cheung et al., 2014; Thies et al., 2016). However, the use of behavior-based social information in digital products and services is still a topic much less explored than is its conceptual sister, eWOM, both conceptually and empirically (Cheung et al., 2014). Accordingly, in this paper we seek to address the recent calls by, amongst others, Chen et al. (2011), Godes et al. (2005) and Libai et al. (2010) for more research into this area.

Theoretical framework

This paper is situated at the intersection of the Marketing and Information Systems research domains. More specifically, we seek to contribute to the interrelated streams of research on Social Interactions and eWOM as well as the emerging literature about Social Design. This interdisciplinarity is no coincidence. Increasingly, the design of digital products and services is merging with marketing mechanics. A prime example is multi-sided platforms where the importance of integrating marketing mechanics into the core of the product has been recognized as

pivotal (Parker et al., 2016). Accordingly, new research problems that require the integration of both research domains arise. One such is the use of behavior-based information in product design. In the following section we offer two complementary perspectives on behavior-based information: behavior-based information as Digital Trace Data and as Social Interactions. Further, we review extant literature on the impact of observable behavior-based information to assess the current state of knowledge and derive three design dimensions.

Digital Trace Data

Behavior-based information can be regarded as an instantiation of ‘digital trace data’. Digital trace data is the long trail of data records that get logged when users of digital products or services interact with a digital system. It has been defined as “*records of activity (trace data) undertaken through an online information system (thus, digital)*” (Howison, Wiggins, & Crowston, 2011, p. 769) and also sometimes referred to as ‘Digital Footprints’ (e.g. Zhao, Binns, Kleek, & Shadbolt, 2016). Driven by the increasingly digital lives of our time, most of us leave innumerable digital traces everyday (Zhao et al., 2016). Some of these traces are intentionally left by users. For example, the act of posting a Facebook post is an action intentionally meant to be disclosed – and thus, leave a digital trace – to a (selected) audience. Similarly, retweets, hyperlinks, and number of Twitter followers have all been described as ‘digital traces’ (Freelon, 2014), all of which represent examples of observable digital traces that are left with some degree of intentionality.

On the contrary, other digital traces are simply traces of our behaviors that are logged and stored by services and which are unobservable to users. In the case of listening to a song on Spotify (a behavior), Spotify most likely logs a plethora of information about that behavior, e.g. time of day, geographical location, and how many seconds the song was listened to. These data are not left intentionally by the user (a Spotify user is hardly likely to put on a specific song to leave a trace within the system). In fact, one of the defining characteristics of digital trace data is that it is a byproduct of online users’ activities (Howison et al., 2011). In this paper, we refer to these unintentionally left digital traces as ‘unobservable digital traces’ as they are not readily visible to the users despite being stored by the digital system.

The unobservable digital traces might seem mundane. But many digital services nowadays successfully use this type of digital traces of behavior in several ways. One way has been as input into recommendation engines. In such cases the trace itself is still unobservable to the user that generated the trace as well as to other users. Another way to use these digital traces of behavior is to make them observable to users as an integral part of the

product experience. Continuing with the music streaming example, Spotify displays which tracks that have been “Recently Played” by particular users, which tracks a user’s Facebook friends are listening to right now, and how many monthly listeners a particular artist has. Here, users’ music listening behaviors are not only logged, but also made observable by the service to users in various ways (synchronous vs. asynchronous, collocated vs. distributed, individual-specific vs. aggregated etc.). It is this particular use of unobservable digital traces to be transformed into observable traces of behavior that we refer to as eWOB.

Social interactions

The concept of ‘Social Interactions’ (SI) encompasses the many different ways information (typically product/company-related) can flow from consumer(s) to consumer(s) and which have the potential to influence the purchase/usage decisions of the receiver(s) of that information (Libai et al., 2010). SI can take two overall forms representing two fundamental ways for consumers to influence each other: opinion-based SI or behavior-based SI (Y. Chen et al., 2011; Cheung et al., 2014; Libai et al., 2010; Thies et al., 2016). The focus of this paper is the behavior-based SI, however in order to fully understand its characteristics and how it fits into the larger picture, we first offer a brief review of the opinion-based SI, which in the literature is unanimously referred to as WOM or eWOM depending on an offline or online setting respectively.

Opinion-based social interactions: A brief introduction to WOM and eWOM

WOM has been said to be one of the most powerful marketing tools, and so old that it precedes marketing as a discipline (Stanislaw, 2015). The early conception of WOM was a one-to-one and face-to-face exchange of information about a product or service (Godes et al., 2005), such as informal “over the backyard fence” conversations (King et al., 2014) and thus a mostly verbal activity (Libai et al., 2010). Empirical studies dating back to the mid twentieth century have proved WOM to be a powerful source of information for consumers and one more important than mass media-style sources of information (Johan Arndt, 1968) amongst others because of its trustworthiness (Cheung & Thadani, 2012; Godes et al., 2005).

With the advent of internet, WOM was extended to also include digitally transmitted consumer-to-consumer messages, i.e. Electronic Word of Mouth (eWOM), often defined as “*any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet*” (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004, p. 39). Although

WOM and eWOM share the same fundamental element of consumer-to-consumer transfer of information, eWOM has been recognized to carry a unique set of characteristics facilitated by the internet. For example, eWOM has been said to possess greater speed of diffusion (Cheung & Thadani, 2012; Godes et al., 2005), greater anonymity (Cheung & Thadani, 2012; Godes et al., 2005; King et al., 2014), enhanced volume (King et al., 2014), greater accessibility (Cheung & Thadani, 2012; King et al., 2014), and to be more measurable and thus less open for interpretation (Cheung & Thadani, 2012; King et al., 2014). Arguably, eWOM can take many different forms, e.g. debates on online discussion forums, social media chatter, blogs, and online consumer reviews to name a few (Cheung & Thadani, 2012). In an attempt to integrate extant findings across all of these different types of eWOM Cheung & Thadani (2012) presented an integrative framework of the impact of eWOM. Here, eWOM is depicted as consisting of “Communicators” (i.e. senders of eWOM), “Receivers” (i.e. those exposed to eWOM), “Stimuli” (i.e. the eWOM content), “Contextual factor” (i.e. the medium/channel), and finally the “Impact” (e.g. a change in attitude and/or purchase intention or actual purchase). We find this model to be useful for understanding the fundamental elements of eWOM and we will therefore draw upon it when we derive the concept of eWOB later in this paper.

Behavior-based social interactions

Whereas extant literature generally agrees that SI consists of either opinion- or behavior-based information and that the opinion-based kind is captured by the distinct and well-established concepts of WOM and eWOM, a closer look at the behavior-based type of SI reveals a lack of common concept to capture this second type of (online) SI. This is evident from a number of recent studies that compare and contrast the impact of opinion-based SI to behavior-based SI, especially in digital contexts (e.g. Chen et al., 2011; Cheung et al., 2014; Thies et al., 2016). This attempt to directly compare opinions and behaviors clearly demonstrates an implicit assumption that the two types of SI are different. However, the question then becomes: If the digital disclosure of user behaviors is not eWOM, then what is it? Table 1 provides an overview of some of the various conceptualizations and operationalizations of behavior-based information in studies that contrast opinions and behaviors.

Table 1. Conceptualization of behavior-based information in extant literature

Paper	Type of SI	Conceptualization	Operationalization
Chen et al. (2011)	Opinion	"WOM"	Online reviews
	Behavior	"Observational learning information"	Information about what other customers have ultimately bought after viewing a specific product
Cheung et al. (2014)	Opinion	"eWOM"	Online reviews
	Behavior	"Action-based information"	Self-reported prior purchase (item added to a "buy-list")
Thies et al. (2016)	Opinion	"eWOM"	Comments & Facebook shares
	Behavior	"Popularity information"	Number of previous backers of a crowdfunding project
Libai et al. (2010)	Opinion	"WOM"	N/A (theoretical paper)
	Behavior	"Observational learning"	N/A (theoretical paper)

First, it is evident that there is a lack of a common concept to capture the behavior-based kind of (online) SI. Multiple different concepts are used and such lack of common theoretical ground hinders the effective accumulation of knowledge in a given field (Gregor, 2006; King et al., 2014). Further, the use of the term "*observational learning information*" presupposes that behavior-based information always has an impact (and a specific kind). This is not the case, just as a review (i.e. piece of eWOM) need not always lead to an impact on those exposed to it – it depends on various factors such as the expertise and the trustworthiness of the person crafting the review (Cheung & Thadani, 2012). Such more nuanced mechanisms of behavior-based information are still to be uncovered. Finally, the use of the term "*popularity information*" signals that behavior-based information carries a specific meaning among those exposed to it. This might very well be the actual meaning ascribed to behavior-based information by users. However, to the best of our knowledge, there is currently no evidence that this is the case, and in the case of digital trace data, which we argue behavior-based information is an instantiation of, researchers have generally been warned not to jump to conclusions about how these subtle traces are interpreted by users (Freelon, 2014).

In summary, extant literature suffers from not only a lack of common concept to capture the phenomenon of interest, but the concepts employed also exhibit a somewhat simplified view of the use of behavior-based information. As such, we argue the need for further theorization of this emerging phenomenon. In line with Gregor's (2006) view of the role of theory, we firmly believe that it will help accumulate and advance knowledge in this field as well as enlighten practitioners' use of behavior-based information in products and services.

Extant research on the impact of observable digital behaviors

Observable behaviors and their impact on others is by far a new research topic. It has been extensively studied in offline contexts from both theoretical and empirical perspectives and in various academic disciplines. For example, economists have argued that individuals tend to disregard their own private signals (prior knowledge and intuition) when exposed to the (opposing) choices made by as little as two other people (Bikhchandani et al., 1998). Elaborate experiments have been performed by psychologists, such as the “sky-watching experiment” by Milgram, Bickman, & Berkowitz (1969), showing that people are greatly influenced by observing the mere behaviors of others. However, behaviors have been transformed by the widespread digitization of our lives. A wide range of behaviors with little observability in the offline world are now – or at least can easily be made– digitally observable to others. Additionally, much more granular information about individuals’ behaviors can be disclosed because of digitization which altogether give rise to new, interesting research questions about the impact of digitally observable behaviors and how firms can work strategically with them. Accordingly, a stream of literature across academic disciplines (but mainly from Information Systems and Marketing) has begun investigating the impact of such digitally observable consumer behaviors which we shall briefly review in the following.

As stated in the introduction, the digital disclosure of behavior-based information has generally been found, across different product categories, to have a significant impact on the subsequent choices of those exposed to it. Further, this impact has also been seen to extend to subsequent offline behaviors (Bond et al., 2012). Considering the more nuanced dynamics of impact we find that the impact, not surprisingly, varies across different empirical contexts and design configurations as can be seen in Table 2 and discussed in the following.

Table 2. Overview of extant literature on the impact of observable digital behaviors and three design dimensions of behavior-based information, derived from extant literature

PAPER	EMPIRICAL CONTEXT	TYPE OF BEHAVIOR	IMPACT FINDINGS	DESIGN CONFIGURATION		
				Place of disclosure	Level of aggregation	Familiarity
Salganik & Watts (2008)	Experiment music website	No. of previous downloads for a song - disclosed on the website	Significant positive impact of behaviors on music downloads; even for songs whose download count had been manipulated high.	Internal	Aggregated	Unknown (anonymous users)
Duan, Gu & Whinston (2009)	CNET (software)	No. of prior downloads for a piece of software - disclosed on CNET.	Significant positive impact of behaviors on software downloads, whereas ratings (opinions) only has impact on less popular products.	Internal	Aggregated	Unknown (anonymous users)
Aral & Walker (2011)	Online gaming	Facebook friends' achievements in online game automatically posted to Facebook.	Modest, but significant, positive impact of behavior disclosure on game adoption. Behaviors are overall more impactful than WOM-style messages because of the high volume and minimal manual effort required	External (Facebook)	Individual-specific (Facebook friends)	Known (Facebook friends)
Chen, Wang & Xie (2011)	Digital cameras on Amazon	Sales rank (based on no. of previous purchases – disclosed on Amazon	Significant positive impact of behaviors on sales. However, if the number of prior purchases is low, the disclosure hereof has neither positive nor negative impact.	Internal	Aggregated	Unknown (anonymous users)
Tucker & Zhang (2011)	Yellow Pages-style website for wedding services	No. of link clicks per vendor – disclosed on the website.	Significant positive impact of behavior disclosure on website traffic. Narrow-appeal vendors gain more website traffic from disclosure of behaviors than do broad-appeal.	Internal	Aggregated	Unknown (anonymous users)
Bond et al. (2012)	Voting	(Self-reported) voting-behavior in US election posted to voters' Facebook pages	Modest but significant positive impact of behaviors on friends' and friends of friends' actual voting behavior and information seeking. Impact largest among close ties.	External (Facebook)	Individual-specific & aggregated	Known (friends) & unknown
Cheung, Xiao & Lui (2014)	Asian beauty forum	Prior purchases of beauty products - disclosed on users' profile pages.	Significant positive impact of behaviors in terms of influencing purchase decisions. Behaviors are found more impactful than eWOM (opinions)	Internal	Individual-specific	Semi-known (community members)
Bapna & Umyarov (2015)	Last.fm (music streaming)	Users' status as premium subscriber is disclosed on users' profile pages	Significant positive impact of behaviors on purchases of premium subscriptions. Impact largest on users with small number of friends.	Internal	Individual-specific	Most likely both known & unknown (friends & community members)
Thies, Wessel & Benlian (2016)	Indiegogo (crowdfunding)	No. of previous backers for a campaign – disclosed on Indigogo	Significant positive impact of behaviors on funding decisions. However, the impact decays faster than that of eWOM.	Internal	Aggregated	Unknown (anonymous users)

Chen et al. (2011) investigated how the volume of prior purchases impacted sales. Drawing on the theme of ‘valence’ in the eWOM literature they refer to “*positive*” vs. “*negative*” “*observational learning (OL) information*” (operationalized as a high vs. low purchase percentage respectively of a given digital camera). Somewhat in contrast to the typical empirical pattern found in research on eWOM valence, they found that the existence of “*positive OL information*” significantly impacts sales positively while “*negative OL information*” does not have a significant negative impact. This finding indicates that vendors can favorably disclose prior purchases for both broad-appeal products and niche products without hurting the latter. On a related note, Tucker & Zhang (2011) found that narrow-appeal vendors actually seem to benefit more from what they term “popularity information” operationalized as number of clicks a website had received. They conducted a natural experiment on a yellow pages-style website with links to providers of wedding services and found that vendors with a narrow target market (referred to as “narrow appeal” and defined by population size in vendor’s town) saw a larger impact of disclosing behavior-based information than did the broad-appeal vendors.

Moreover, the number of connections a user has also seems to matter for the impact. Bapna & Umyarov (2015) applied a network perspective in their investigation of peer-to-peer influence in the case of premium subscriptions to the music streaming Last.fm. They found that those users with a low number of connections on Last.fm were more likely to be influenced by information about whom of their Last.fm connections had purchased a premium subscription than were users with a high number of connections. The logic here is that if a user only has 10 connections, he/she will more easily notice information about each of his/her connections than will a user with 1000 connections (Bapna & Umyarov, 2015). Further, it might also look more convincing when 5 out of 10 of one’s connections has signed up for a premium subscription than if 5 out of one’s 1000 connections have done so.

Additionally, impact of observable behaviors varies over time. Thies et al. (2016) compared the impact of eWOM and “*popularity information*” in crowdfunding (operationalized as number of previous backers of a given project). They found that although “popularity information” had an overall larger impact than did eWOM, the effect diminishes relatively quickly compared to that of eWOM. Relatedly, Salganik & Watts (2008) performed an experiment in an online music context where less popular songs (i.e. with a low number of actual downloads) were manipulated to look like popular songs (i.e. with a high number of disclosed downloads). This manipulation had a significant immediate impact resulting in an increase in downloads of the falsely popular songs. However, over time the effect wore off and the “true” popular songs regained their popularity, indicating that although clear bandwagon-type of mechanisms exist, consumers do not under all circumstances blindly follow the lead of others.

Further, some researchers have taken their point of departure in the eWOM literature and have made direct comparisons between the impact of eWOM (opinions) and behavior-based information. Accordingly, Cheung et al. (2014) directly compared the effect on consumer decision making of “*opinion-based social information*” (operationalized as peer consumer reviews, i.e. a common type of eWOM) to that of “*action-based social information*” described as “*publicly observable online social information about other consumers' actions*” (p. 51) and operationalized as users’ self-reported past purchases. Based on an analysis of a large dataset from an online beauty community, they find that the behavior-based information is more influential than the opinion-based. The same main effect was found by Thies, Wessel, & Benlian (2016) in the context of crowdfunding. Opposingly, Aral & Walker (2011) investigated how users’ achievements (i.e. behaviors) in an online game which were automatically shared to Facebook (i.e. outside of the platform where the behavior actually took place) impacted product adoption relative to personalized invitations from existing users to peers (comparable to eWOM). Interestingly, they found that although the personalized invitations had a larger impact *per impression* the automatically disclosed behavior-based information was overall more impactful because of the sheer volume. This highlights what seems to be one of the crucial differences between opinion-based information (eWOM) and behavior-based information: That consumers’ behaviors are plentiful and if properly enabled by technology, they can be disclosed in ways that require far less effort from the consumer than the task of forming *and* expressing an opinion.

Summarizing on the above, it is evident that the disclosure past of user behavior has been found to significantly affect other users’ choices and behaviors and in some cases even more so than the disclosure of users’ opinions (Cheung et al., 2014; Wenjing Duan et al., 2009; Thies et al., 2016). Further, the impact is moderated by factors such as tie strength (Bond et al., 2012), total amount of ties of a user (Bapna & Umyarov, 2015), impact over time (Thies et al., 2016), size of potential market for the product (narrow vs. broad appeal) (Tucker & Zhang, 2011), and user expertise (Cheung et al., 2014). However, what is also evident from the many empirical cases studied is that behavior-based information can be displayed in digital interfaces in many different ways. Simply put, different designs can be (and are being) used which makes it hard to directly compare the findings of the current literature.

This leads us to an important last point about behavior-based information, namely that there is a substantial element of design involved in the use of behavior-based information. Unlike its sister concept of eWOM, digital behaviors are not made observable to a broad public by the individual user. Rather, it is dependent on the platform

where the behavioral trace was recorded. A deliberate design decision must be made to use the digital trace of behavior and transform it into some meaningful piece of information for the observing users. Without design it simply does not come into existence and an opportunity is lost for using behavior-based information strategically to influence customer choices (Wenjing Duan et al., 2009). Accordingly, and building on Godes et al.'s (2005) assertion that “*at least some of the social interaction effects are partially within the firm’s control*” (p. 415), a particular focus on how to design ‘viral’ or ‘social’ products has emerged (Aral et al., 2013; Aral & Walker, 2011; Bapna & Umyarov, 2015; Dou et al., 2013). Here, researchers focus on how social elements (including, but not restricted to, behavior-based information) can be incorporated into the product design to stimulate product adoption, customer engagement, and retaining customers (Bapna & Umyarov, 2015). In line with this design-driven way of thinking strategically about the use of behavior-based information, we argue that the empirical cases investigated in current literature represent at least three overall dimensions of how behavior-based information can be integrated into product design: Place of disclosure, Level of aggregation and Familiarity, as depicted in Table 2.

First, we notice how behaviors are disclosed either within the platform where it was generated, e.g. a user’s purchase of a premium subscription to Last.fm is displayed on the user profile within Last.fm (Bapna & Umyarov, 2015) which we shall denote *Internal disclosure*. On the other hand, behaviors can be disclosed to another platform, e.g. Facebook in the case of Aral & Walker (2011) which we refer to as *External disclosure*. By far the most common place of disclosure in extant research is the *internal* which underlines the tendency for marketing mechanics to be integrated into the product. Second, the element of *aggregation* denotes the use of either aggregated data about behaviors (“*100 people have backed this project*” in the case of Thies et al. (2016)) vs. behaviors of specific individuals (e.g. subscription purchases made by specific users, cf. Bapna & Umyarov (2015)). These individuals need not be known to the sender though, which brings us to the third dimension, *familiarity*. Individuals can be strangers (cf. Chen et al. (2011)), fellow community members one has met online (cf. Cheung et al. (2014)), or they can be close ties, also known from the offline world (cf. Aral & Walker, 2011; Bond et al., 2012).

Table 2 does not constitute an exhaustive design framework of the use of behavior-based information in product design as the examples are drawn from the emerging literature on the phenomena. Rather, we seek to offer a high-level overview of the various possible design paths that designers of information systems can take when taking advantage of behavior-based digital traces. As such, the design dimensions laid out aim to not only provide strategic guidance for practitioners but also to function as a framework for researchers to better articulate the

differences in the strategic use of behavior-based information and to determine where comparisons across studies can or cannot reasonably be made, and finally identify avenues for future research including optimal design configurations.

Deriving the concept of eWOB

The previous section laid out the theoretical foundations for the concept of eWOB. In the following section, we will use this foundation to derive the concept of eWOB which allows us to arrive at the definition of eWOB as being “*published accounts of behavior, based on the unobservable digital traces of consumers’ behaviors*”.

Behaviors in a Social Interactions context

In the previous section we saw how interpersonal influence stemming from observing the behaviors of others can be viewed as one of the two overall types of Social Interactions (SI). Although there has been an increasing interest among researchers to investigate the impact of observable behavior-based information extant literature on this topic lacks a shared terminology from which to consolidate knowledge and a stronger conceptualization to understand the unique characteristics of observable behavior-based information and how it differs from the related concept of eWOM. In the following section we will draw on the *three facets of SI* presented by Godes et al. (2005) to illustrate (a) key elements of behavior-based information, (b) when it actually becomes eWOB, and (c) how eWOB differs from eWOM.

SI possess three essential facets (Godes et al., 2005): *Channel*, *Content*, and *Impact* as illustrated in Figure 1. In the case of eWOM (i.e. opinions) the *channel* is the medium in which an opinion is communicated through, for example a review platform such as Tripadvisor. The *content* is then the (opinion-based) information passed on, i.e. the actual instantiation of eWOM. In the case of Tripadvisor this could be a review of a hotel. Finally, the *impact* is the ultimate effect on those exposed to the eWOM, e.g. a change in attitude among prospective customers, the forming of a purchase intention (or the opposite) or even an actual purchase.

Social Interaction Element	Exemplification
Channel	Review site, blog etc.
Content	eWOM
Impact	Change in attitude and/or behavior

Figure 1. Godes et al.’s (2005) three facets of Social Interactions

This three-tier model is useful for describing the main components of the opinion-based kind of SI. However, to fully demonstrate how what we refer to as eWOB fits into the context of SI and how it differs from eWOM we need to adapt the model with a number of additional facets (Figure 2).

Social Interaction Element	Exemplification	
Trigger	Opinion	Behavior
Trace	N/A	Unobservable digital trace data
Channel	Review site, blog etc.	Product interface, Facebook etc.
Agent	Consumer	Platform (product/Service)
Content	eWOM	eWOB
Potential explanatory mechanism of impact	Social influence	Observational learning
Impact	Change in attitude and/or behavior	Change in attitude and/or behavior

Figure 2. Social Interactions expanded

First, the three-tier model disregards what comes before the instantiation of the actual *content*. At the most fundamental level, an opinion is really just a subjective assessment inside one's head. It leaves no trace until it is communicated through a channel and then the opinion becomes a piece of communication. The same cannot be said about digital behaviors. Most, if not all, digital behaviors leave a trace inside an information system (Howison et al., 2011). These traces are unobservable to the users of the information system. Accordingly, to discern between the opinion/behavior itself and its instantiation as *content* we add the element of *Trigger*, being either an opinion or a behavior. Second, we add the element of *Trace* to capture the traces left before the opinion/behavior takes the form of actual *content*.

Third, we add the element of *Agent*, describing the primary agent involved in turning mere opinions and behaviors into actual communicative *content*. In eWOM, the *content* is created by the consumer (cf. for example Cheung & Thadani (2012); King et al. (2014)). The *channel* might help creating an overall format for how the opinion is being transformed into actual *content*, for example the possibility to add stars to a review. But the consumer is the primary *agent* responsible for turning opinions into eWOM content. On the contrary, with behaviors the primary *agent* is the platform where the behavior took place which in most, but not all, cases will also be the *channel* that communicates the eWOB. Let us elaborate. For a digital trace to become actual *content* (i.e.

eWOB), the platform that captured the digital trace acts as the *agent* that turns the trace into *content* with communicative value that is observable to other users. It is not the individual user who does so. The user might at some point give his/her one-time permission for the platform to disclose his/her usage behaviors to his/her connections (as the Facebook-integration used in Aral & Walker (2011) requires), but it is not a decision that needs to be taken for each piece of content. Further, in cases where the individual's behavior is aggregated with other users' (as in the case of e.g. Chen et al. (2011); Thies et al. (2016); Tucker & Zhang (2011)), the individual user will not at all be actively involved in the disclosure.

Fourth, we add the element of *Potential Explanatory Mechanism of Impact*. This element is useful for understanding one of the key confusions in extant literature about behavior-based information. Referring back to Godes et al.'s (2005) original three facets of SI, we find the *impact* to be the “*ultimate effect*” on those exposed to SI, e.g. sales. Given the human-to-human nature of SI it is reasonable to assume that the final *impact* is a result of social influence (acknowledging that social influence also has many facets) which represents what we term the *potential explanatory mechanism of impact*. In the case of behavior-based information we would expect the *impact* to be a result of the particular type of social influence, namely Observational Learning (Bandura, 1986; Bikhchandani et al., 1998), given the widespread use of Observational Learning as a theoretical lens for the impact of observable behaviors (e.g. Chen, Wang, & Xie, 2011; Libai et al., 2010). However, turning to the extant literature that seeks to directly compare the impact of opinion-based and behavior-based information, we notice how “observational learning” is used to describe the behavior-based *content*, whereas the opinion-based *content* is referred to as ‘eWOM’. Clearly, there is a conceptual misalignment where the term used to describe the *content* is also the *potential explanatory mechanism of impact*. Further, as seen in Table 1 “action-based information” has also been used as a term to denote the *content* level (e.g. Cheung et al., 2014). However, this effectively is comparable to the *Trigger* level in this framework.

In conclusion, we argue that Godes et al.'s (2005) three facets of SI provide a good foundation for conceptual alignment of eWOM and eWOB but that several new facets have to be introduced to encompass the particular characteristics of eWOB. Further, we identified two central aspects that differentiate eWOB from eWOM: (a) the ability to leave unobservable *traces*, and (b) the *agent* driving the transformation of the initial *trigger* into actual (observable) *content*.

Behavior-based information in an eWOM context

In this section we will draw on the integrative framework of the impact of eWOM communication developed by Cheung & Thadani (2012) to further illustrate how eWOB differs from the related concept of eWOM. The Cheung & Thadani (2012) framework was chosen as it provides a comprehensive overview of the main components of eWOM from both a supply- and demand-side perspective and in greater detail than the SI framework used in the previous section. To better highlight the dynamics of eWOM communication we have slightly modified the original framework to highlight the process of eWOM communication, and additionally also simplified the *Response* category. Figure 3 illustrates this slightly simplified version of the framework.

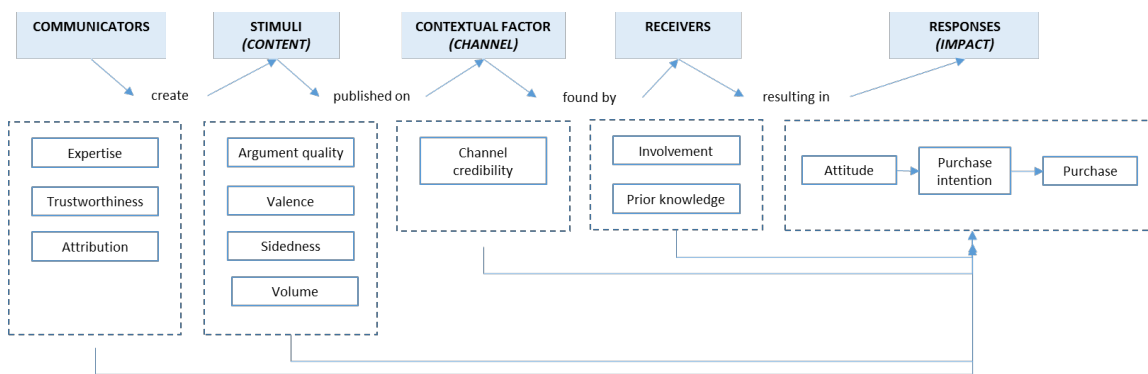


Figure 3. Integrative framework for the impact of eWOM communication, adapted from Cheung & Thadani (2012)

The basic logic of the framework is that an individual (*Communicator*) creates a piece of eWOM *Stimuli* (equivalent to *content* in the SI framework), e.g. a review on Amazon. This is now made available to other individuals by a *Channel*¹³. The *Stimuli* is now seen by a *Receiver* or a multitude of hereof. Finally, this might lead to a *Response* (equivalent to *impact* in the SI framework), which can range from a slight change in attitude to actual purchase. Related to both the *communicators*, the *content*, the *channel*, and the *receivers* are a number of variables that directly affect or moderate the *impact*, shown in the boxes with dotted lines in Figure 3. We will now present a revised version of the above framework which outlines the basic elements and dynamics of eWOB. By taking our point of departure in an established model of eWOM, we hope to be able to highlight differences and similarities between the two interrelated concepts.

¹³ Cheung & Thadani's original term for this element was 'Contextual Factor', however it basically describes the channel/platform on which the eWOM was published, and thus we will refer to it as Channel which also aligns it with the SI framework

As can be seen from Figure 4, our framework of eWOB shares many of the same overall elements with eWOM. In both cases, a piece of *content* is transferred from *communicators* to *receivers* through some *channel*, which in the end might lead to an *impact* on the *receiver*. However, a closer look reveals several new elements (marked with thick line in Figure 4) as well as the deletion of elements deemed irrelevant for eWOB.

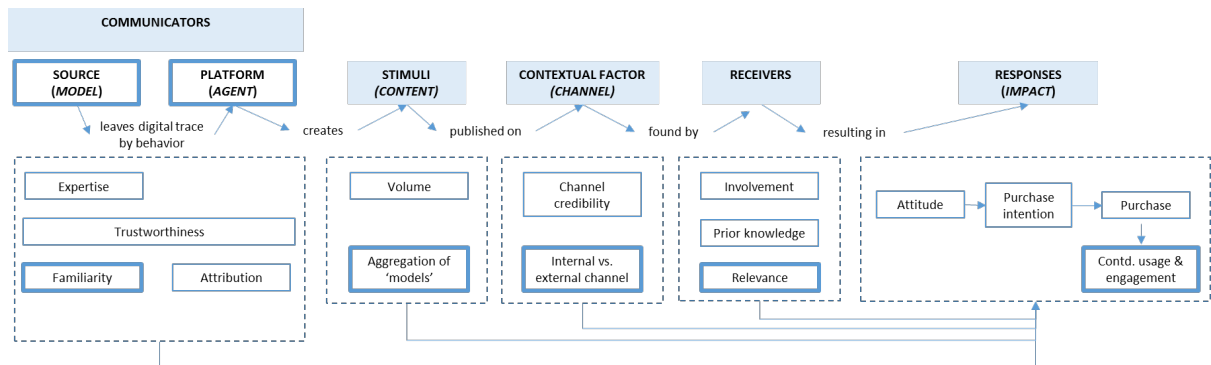


Figure 4. Framework for eWOB

First, the *communicators* consist of two sub-elements: *source* (model) and *platform* (agent). Referring to digital traces and social interactions, a special characteristic of digital behaviors is that they leave digital traces, often unintentionally, by the user of the system. We call the person leaving this behavior-based digital trace the *Source* and drawing on the terminology from Observational Learning, we say that the *source*'s behavior is being "modeled" when made observable to others (Bandura, 1986). However, someone must decide to disclose that behavior (an *agent*). Unlike eWOM where the *agent* is the consumer him/herself, in the case of eWOB the *agent* is not the *source* but rather the *platform* on which the trace was generated (which often, but not always, is identical to the *channel* that discloses the behavior). Here, a deliberate design decision must be made to make the digital trace observable and in which way(s). Drawing on mechanisms known from Observational Learning (Bandura, 1986) we should also in the case of behavior-based information expect a number of elements related to the *communicators* influence the final *impact*: The expertise of the *source* within the given area, the trustworthiness of both the *source* and the *platform* and the motives attributed to the platform for disclosing the behavior-based information as eWOB. However, these are not empirically demonstrated yet and further empirical research is needed in this regard. Finally, drawing on extant research about the impact of behavior-based information and the three design dimensions derived from that we add the element of *Familiarity* to describe the strength of tie between the *source* and the *receiver* (known vs. unknown, weak vs. strong tie). Here, prior empirical research suggests that behaviors spread faster through strong ties (Bond et al., 2012) but this might very well vary by product category and thus is an area for further empirical validation.

Second, the behavior is turned into actual *content*. Here, we see in the original framework by Cheung & Thadani (2012) that the *argument quality*, the *valence*, and *sidedness* (direction of valence) are all expected to influence the *impact*. However, we argue that in the case of eWOB these elements are hardly assessable. The simple reason is that the disclosure of behaviors – as opposed to opinions - is a subtler way of communicating (Y. Chen et al., 2011) . It is by nature a rather neutral account of behaviors and in our view thus not possible to assess neither *argument quality*, *valence* (positive/negative), nor *sidedness*. While some studies have used the volume of behaviors as a proxy for its valence (Chen et al. (2011) reported a low number of prior purchases as "*negative observational learning information*") we argue that the use of volume to assess valence should be employed with caution, if at all, as it really depends on the characteristics of the receiver and his/her reference group. One might very well imagine a scenario where more niche-orientated consumers actively try to steer away from the bestseller products and thus towards products that seem less popular, measured by sales. In such a scenario, a high number of prior purchases would actually be perceived as negative valence among this niche-segment. But if the same product is (also) the most purchased/used within the niche-orientated customer's own reference group (Shibutani, 1955) it might be perceived as positive. This goes to show that the categorization of behavior-based information into 'positive' and 'negative' might not be as simple as it looks on the surface. For these reasons the three elements of *argument quality*, *valence*, and *sidedness* were excluded from the eWOB framework. Further empirical investigation is clearly needed in this area in order to shed light on these more detailed mechanics of eWOB. Finally, drawing on the previously discussed three design dimensions that were derived from empirical cases in extant literature, we add the element of *aggregation* to describe whether *communicators* are presented at an aggregated level or as individuals or both.

Third, the content must be disclosed through some *channel* (referred to as 'platform' in Cheung & Thadani's framework), and the nature of that *channel* might influence the final impact. Amazon might be perceived more credible than a relatively unknown review platform, and thus the impact of the reviews (*content*) will be affected by the *channel*. Similarly, we see no reason not to believe that the impact of eWOB content also varies across different *channels*, however needs to be empirically validated by future research. Further, in the case of eWOB the *channel* can– but need not – be the same as the *platform*. If the *platform* where the behavior took place is also the place where the *content* is published (e.g. a behavior on Indiegogo gets disclosed on Indiegogo as in the case of Thies et al. (2016)), that is an example of *internal disclosure*. Conversely, if the behavior on Indiegogo is published on Facebook, then we refer to that as *external disclosure*. Thus, we add this last of our three design dimensions to the eWOB framework. Whether the *external* or *internal* type of disclosure is the more impactful is

premature to conclude based on extant empirical research. However, we argue that – all things being equal - the observer is reached in a more relevant context in the case of *internal disclosure* (an Indiegogo user is presented with information about the behaviors of other users on Indiegogo while using Indiegogo herself), whereas observers in the case of *external disclosure* might be preoccupied with tasks that has nothing to do with the behavior being disclosed to them (a Facebook user is presented with a story about her friend’s backing of a project on Indiegogo – in the midst of reading the news on Facebook and watching friends’ baby photos). Drawing again on Observational Learning theory, we should thus expect the *internal disclosure* to have a greater impact, as behaviors that are considered more personally relevant have greater impact on the observer(s) (Bandura, 1986).

Fourth, in the case of eWOM the *involvement* and *prior knowledge* of the receiver are important aspects for the final *impact*. This makes sense as the use of eWOM is typically depicted in the literature as an active information-seeking process (mainly a ‘pull’ type of information) from the side of the receiver (e.g. Bartikowski & Walsh, 2014; Chang & Wu, 2014; Cheung & Thadani, 2012; Daugherty & Hoffman, 2014; Fu, Ju, & Hsu, 2015; Goodrich & de Mooij, 2013; King et al., 2014). Therefore, the more involved the receiver is, the greater the expected impact will be. However, in the case of eWOB we argue that the receiver is less likely to be actively seeking this type of information (mainly a ‘push’ type of information) and consequently the contextual relevance for the receiver of that information is more important than in the case of eWOM. Therefore, we add *Relevance* to the framework.

Finally, we add a new type of *impact* to our eWOB framework, namely *Continued usage & engagement*. Clearly, some types of eWOB are – just like eWOM – designed with the impact goal of persuading users to complete a purchase. In other cases, though, we notice how the function of eWOB seems to be more a matter of stimulating continued usage and engagement. For example, being able to observe on Spotify what friends are listening to right now is clearly not designed to persuade one into a purchase, as the user has already signed up for Spotify. Rather, it is most likely implemented to create a sense of community and/or provide inspiration for what to listen to and/or simply confirming the user in his/her choice of Spotify through showing the presence of social others, all of which stimulate *continued usage and engagement*. Accordingly, researchers assessing the impact of eWOB should in future research also consider the impact beyond the purchase stage.

To sum up, our framework of eWOB illustrates that eWOB differs from eWOM in a number of central aspects. Arguably, the most important difference is the duality of the *communicators* consisting of both a *source* and a *platform*. But also, the more neutral nature of eWOB (being purely behavior-based) is a clear difference from

eWOM, where *valence*, *sidedness*, and *argument* quality are traditionally central themes of analysis but difficult, if not impossible, to assess in the case of eWOB. Finally, with eWOB the desired *impact* might very well be not only on sales but also on *continued usage and engagement* due to the subtler nature of eWOB.

Discussion

This paper is motivated by the increased observability of consumer behaviors enabled by the widespread digitization of individuals' daily lives. Building on the foundations of Digital Trace Data, Social Interactions, and eWOM, we have derived the concept of eWOB defined as *published accounts of behavior, based on the unobservable digital traces of consumers' behaviors* to fill in a conceptual gap in extant literature about Social Interactions and eWOM. Our definition highlights that eWOB is content based on unobservable digital traces that are generated solely by user behavior. As a consequence, eWOB is truly design-driven and the platform (i.e. digital product/service) is the primary agent responsible for turning unobservable digital traces into actual communication that is observable to others. From the perspective of the receiver this also entails a duality in terms of who the communicator is. The central aspect of digital trace data and the active role of the platform further means that it is not to be considered eWOB when a consumer actively creates a Facebook post with a photo of him/her unboxing a new iPhone. This is in its core an expression of product-related *behavior* (signaling a recent purchase of the iPhone), however we consider it to be eWOM as it is actively created by the user and not as a result of prior logged behavior. Finally, eWOB, the term itself deserves elaboration. At first glance, the use of '*Word*' might seem to limit the concept to written communication. However, the '*Word*' should be interpreted in a broader context that denotes the *communication* of behaviors. This is no different from the term eWOM, where it is widely recognized that eWOM can take other forms than verbal/written communication, e.g. the existence of 'visual eWOM' (King et al., 2014).

Contributions

This research aims to contribute to theory by offering conceptual clarification and a detailed account of the dynamics and characteristics of an emerging phenomenon in the interrelated literatures of Social Interactions and eWOM, spanning across the Information Systems and Marketing disciplines. Specifically, our research seeks to address several important conceptual gaps in extant literature. First, although several empirical studies exist on the topic of behavior-based information, this literature has so far treated behavior-based information as relatively homogenous. However, as we have shown, it can take many different forms which to a large degree is dependent

on design. Second, although extant literature has indeed made direct comparisons of the impact of behavior-based information and opinion-based information (eWOM), we have addressed a conceptual gap in terms of how the two distinguish themselves from each other and what the unique characteristics and processes of eWOB are.

Accordingly, we encourage researchers to use our proposed conceptual framework as a tool to point out opportunities for future research and the structuring hereof; for example by investigating the impact of different design configurations or the role of moderating factors such as trustworthiness, engagement etc. Given that extant literature is still conceptually at an early stage, many opportunities exist for such comparative empirical studies. Moreover, our research adds to the current understanding of ‘social/viral product design’ (Aral & Walker, 2011; Bapna & Umyarov, 2015), by expanding our conceptual and design-specific knowledge of a specific sub-component of social design, namely the use of behavior-based information in the form of eWOB.

Finally, our research highlights the design-aspect of eWOB and thus the active role of the platform in the creation of eWOB. As current empirical research has demonstrated significant positive impacts of eWOB, we urge practitioners to consider this exciting opportunity to actively use behavior-based information in product design to persuade, inspire, engage, and retain users. With the proposed conceptual framework, we seek to provide system designers not only with an overview of both the design opportunities but also the central mechanisms of eWOB. Much akin to how a manager will benefit from knowing different kinds of organizational structures (for example a matrix, functional, or divisional structure), we hope that the conceptual framework can act as a roadmap for system designers and facilitate a strategic use of behavior-based information in the form of eWOB. Only by being aware of the conceptual underpinnings of a phenomenon and its core components can one instrumentally work with it beyond trial and error.

Open research questions & future research directions

Hopefully, our introduction of eWOB has brought about conceptual clarity around the digitally observable behaviors of consumers and how it fits into the larger context of Social Interactions and complements the well-established concept of eWOM. However, the introduction of a new concept also gives rise to new intriguing research questions that are ripe for further research. First, the issue of product category is critical in a number of ways. While we argue a broad possible use of eWOB, obviously there are types of products simply not suitable for eWOB activities. On the one hand, it is not difficult to imagine products where users will prefer to leave no observable traces about their behaviors and where it would also be considered awkward to be receiver of that information, an obvious example – especially at the individual-specific level - is adult movies. In other cases, the

behaviors may simply be too mundane to disclose at least at the individual-specific level. Does one want to know the specific brand of detergent that one's friend has purchased in an online supermarket? The answer will depend on the context and the way the eWOB is presented. Finally, in some product categories consumers will actually try to diverge from the choices made by their immediate surroundings. Fashion is one such example. Here, consumers might actively try to steer away from products purchased by close friends to avoid looking too similar. Thus, eWOB can actually have an inverse impact guiding consumers to what *not* to buy. Further, although the eWOB in such instances might not stimulate product diffusion it could actually be imagined having a relational effect, i.e. being able to see fashion purchases of significant others might stimulate conversation between peers. Accordingly, we argue that eWOB could potentially also stimulate the basic human need for relatedness (Ryan & Deci, 2017). This relational role of eWOB is to the best of our knowledge completely absent from extant literature and represents an exciting new research topic. Additionally, the nature of the product (complexity and ability to assess its fit and usefulness before purchase) is relevant for the role of eWOB. Consider the category of digital cameras. Here, most users do extensive research before making an actual purchase and thus an observable purchase might signal more than a purchase behavior but rather the culmination of a thorough information-seeking process. In such cases, we should expect eWOB to signal to observers something close to an opinion. In other cases, e.g. movie watching, being able to observe that a friend has watched a specific movie will probably carry much less information to the observer as a movie can only truly be assessed *after* having watched it. If we can observe that the friend has watched it *several* times, we might be able to infer some more informational value from that but such comparisons are relevant to explore in future research.

Next, our conceptualization of eWOB and the review of extant empirical research in this domain give rise to several design-related questions. For instance, how does the impact of eWOB vary with the degree of customization? Cheung et al. (2014) suggested that customization of eWOB can be necessary to avoid information overload, but are certain product categories more suitable for customization? Further, research should explore and compare how various ways of presenting eWOB affects impact e.g. eWOB presented at the individual-specific level vs. at an aggregated level; eWOB from strangers vs. known people; from strong vs. weak ties etc. as well as the impact of internal vs. external disclosure of eWOB. Building on that, we should notice that the design dimensions presented in this paper are not exhaustive as they are primarily built on the cases used in extant empirical research. Moreover, while the focus of this paper as well as prior research in this domain has been on the disclosure of behaviors to *others*, it is not far-fetched to believe that a *Source-to-Source* information flow of eWOB

can actually present valuable information for users similar to the design mechanisms of the ‘quantified self’ movement such self-monitoring (Snyder, 1987) and as known from Observational Learning (Bandura, 1986). A concrete example is when Spotify at the end of each year presents users with their own most listened to songs for that year.

Finally, two pressing issues related to the user perspective need to be explored. First, researchers are urged to follow the call by Freelon (2014) and apply a user-perspective to the interpretation of eWOB. Researchers cannot simply assume that eWOB is solely interpreted by users as an expression of popularity. It might also have other important interpretations and functions such as the relation-supporting role suggested in the above. Last, but absolutely not least, the element of ethics and trust requires further research. At the time of writing, eWOB seems to be completely unregulated with little opportunity for consumers to assess whether the information presented to them is real, distorted, or simply fake. Especially relevant here is eWOB presented at an aggregated level or eWOB from strangers. As Salganik & Watts (2008) has shown, human beings can easily be manipulated by such information. Consequently, just as the eWOM literature has dealt with fake reviews and trust (e.g. Chiou, Chang, Mezzour, Perrig, & Sun, 2009; Furner, Zinko, & Robert A., 2016; Zhang, Zhou, Kehoe, & Kilic, 2016), so should future research about eWOB.

In closure, the phenomenon of eWOB is an exciting new area where marketing seems to merge with the design of digital products and services. Several empirical studies have shown the significant impact of eWOB but many areas are still underexplored. We thus encourage scholars and practitioners alike to engage in eWOB research and activities to further advance knowledge in this field.

References

- Aral, S., Dellarocas, C., & Godes, D. (2013). Introduction to the Special Issue —Social Media and Business Transformation: A Framework for Research. *Information Systems Research*, 24(1), 3–13. <http://doi.org/10.1287/isre.1120.0470>
- Aral, S., & Walker, D. (2011). Creating Social Contagion Through Viral Product Design: A Randomized Trial of Peer Influence in Networks. *Management Science*, 57(9), 1623–1639.
- Arndt, J. (1968). Selective Processes in Word of Mouth. *Journal of Advertising Research*, 8(3), 19–22.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bapna, R., & Umyarov, A. (2015). Do Your Online Friends Make You Pay? A Randomized Field Experiment on Peer Influence in Online Social Networks. *Management Science*, 61(8), 1902–1920.
- Bartikowski, B., & Walsh, G. (2014). Attitude contagion in consumer opinion platforms: posters and lurkers. *Electronic Markets*, 24(3), 207–217. <http://doi.org/10.1007/s12525-013-0149-z>
- Bikhchandani, S., Hirshleifer, D., & Welch, I. (1998). Learning from the Behavior of Others: Conformity, Fads and Informational Cascades. *Journal of Economic Perspectives*, 12(3), 151–170.

- Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D. I., Marlow, C., Settle, J. E., & Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), 295–298.
- Chang, H. H., & Wu, L. H. (2014). An examination of negative e-WOM adoption: Brand commitment as a moderator. *Decision Support Systems*, 59(1), 206–218. <http://doi.org/10.1016/j.dss.2013.11.008>
- Chen, Y., Wang, Q., & Xie, J. (2011). Online Social Interactions: A Natural Experiment on Word of Mouth Versus Observational Learning. *Journal of Marketing Research*, 48(2), 238–254.
- Cheung, C. M. K., & Thadani, D. R. (2012). The impact of electronic word-of-mouth communication: A literature analysis and integrative model. *Decision Support Systems*, 54(1), 461–470. <http://doi.org/10.1016/j.dss.2012.06.008>
- Cheung, C. M. K., Xiao, B. S., & Liu, I. L. B. (2014). Do actions speak louder than voices? The signaling role of social information cues in influencing consumer purchase decisions. *Decision Support Systems*, 65, 50–58.
- Chiou, S.-Y., Chang, S.-Y., Mezzour, G., Perrig, A., & Sun, H.-M. (2009). A Trustable Reputation Scheme Based on Private Relationships. In *2009 International Conference on Advances in Social Network Analysis and Mining* (pp. 19–24). IEEE. <http://doi.org/10.1109/ASONAM.2009.8>
- Cialdini, R. B. (2001). Harnessing the Science of Persuasion. *Harvard Business Review*, 79(9), 72–81.
- Daugherty, T., & Hoffman, E. (2014). eWOM and the importance of capturing consumer attention within social media. *Journal of Marketing Communications*, 20(1–2), 82–102. <http://doi.org/10.1080/13527266.2013.797764>
- Dou, Y., Niculescu, M. F., & Wu, D. J. (2013). Engineering Optimal Network Effects via Social Media Features and Seeding in Markets for Digital Goods and Services. *Information Systems Research*, 24(1), 164–185.
- Duan, W., Gu, B., & Whinston, A. B. (2009). INFORMATIONAL CASCADES AND SOFTWARE ADOPTION ON THE INTERNET: AN EMPIRICAL INVESTIGATION. *MIS Quarterly*, 33(1), 23–48.
- Freelon, D. (2014). On the Interpretation of Digital Trace Data in Communication and Social Computing Research. *Journal of Broadcasting & Electronic Media*, 58(1), 59–75. <http://doi.org/10.1080/08838151.2013.875018>
- Fu, J.-R., Ju, P.-H., & Hsu, C.-W. (2015). Understanding why consumers engage in electronic word-of-mouth communication: Perspectives from theory of planned behavior and justice theory. *Electronic Commerce Research and Applications*, 14(6), 616–630. <http://doi.org/10.1016/j.elerap.2015.09.003>
- Furner, C., Zinko, P., & Robert A. (2016). The influence of information overload on the development of trust and purchase intention based on online product reviews in a mobile vs. web environment: an empirical investigation. *Electronic Markets*. <http://doi.org/DOI 10.1007/s12525-016-0233-2>
- Garfinkel, H. (1967). *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.
- Godes, D., Mayzlin, D., Chen, Y., Das, S., Mit, C. D., Pfeiffer, B., & Shi, M. (2005). The Firm's Management of Social Interactions. *Marketing Letters*, 16(3/4), 415–428.
- Goodrich, K., & de Mooij, M. (2013). How “social” are social media? A cross-cultural comparison of online and offline purchase decision influences. *Journal of Marketing Communications*, 20(2), 1–14. <http://doi.org/10.1080/13527266.2013.797773>
- Gregor, S. (2006). The Nature of Theory in Information Systems. *MIS Quarterly*, 30(3), 611–642.
- Hennig-Thurau, T., Gwinner, K., Walsh, G., & Gremler, D. (2004). ELECTRONIC WORD-OF-MOUTH VIA CONSUMER-OPINION PLATFORMS: WHAT MOTIVATES CONSUMERS TO ARTICULATE THEMSELVES ON THE INTERNET? *Journal of Interactive Marketing*, 18(1), 38–52.
- Howison, J., Wiggins, A., & Crowston, K. (2011). Validity Issues in the Use of Social Network Analysis with Digital Trace Data. *Journal of the Association for Information Systems*, 12(12), 767–797.
- King, R. A., Racherla, P., & Bush, V. D. (2014). What We Know and Don't Know About Online Word-of-Mouth: A Review and Synthesis of the Literature. *Journal of Interactive Marketing*, 28(3), 167–183. <http://doi.org/10.1016/j.intmar.2014.02.001>
- Libai, B., Bolton, R., Bugel, M. S., de Ruyter, K., Gotz, O., Risselada, H., & Stephen, A. T. (2010). Customer-to-Customer Interactions: Broadening the Scope of Word of Mouth Research. *Journal of Service Research*, 13(3), 267–282.
- Liu, D., Brass, D. J., Lu, Y., & Chen, D. (2015). Friendships in online peer-to-peer lending: pipes, prisms, and relational herding. *MIS Quarterly*, 39(3), 729–742.
- Milgram, S., Bickman, L., & Berkowitz, L. (1969). Note on the drawing power of crowds of different size. *Journal of Personality and Social Psychology*, 13(2), 79–82.
- Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). *Platform revolution : how networked markets are transforming the economy and how to make them work for you* (First edition). New York: W. W. Norton & Company.
- Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. New York: The Guildford Press.
- Salganik, M. J., & Watts, D. J. (2008). Leading the Herd Astray: An Experimental Study of Self-fulfilling Prophecies in an Artificial Cultural Market. *Social Psychology Quarterly*, 71(4), 338–355.

- Sasaki, T., Becker, D. V., Janssen, M. A., & Neel, R. (2011). Does greater product information actually inform consumer decisions? The relationship between product information quantity and diversity of consumer decisions. *Journal of Economic Psychology*, 32, 391–398. <http://doi.org/10.1016/j.joep.2011.02.010>
- Shibutani, T. (1955). Reference Groups as Perspectives. *American Journal of Sociology*, 60(6), 562–569.
- Snyder, M. (1987). *Public appearances, private realities: The psychology of self-monitoring*. New York, NY, USA: WH Freeman/Times Books/Henry Holt & Co.
- Stanislaw, B. (2015). Why Social Is the New Word-of-Mouth Marketing, and What That Means. Retrieved November 15, 2017, from <http://www.marketingprofs.com/opinions/2015/26771/why-social-is-the-new-word-of-mouth-marketing-and-what-that-means>
- Thies, F., Wessel, M., & Benlian, A. (2016). Effects of Social Interaction Dynamics on Platforms. *Journal of Management Information Systems*, 33(3), 843–873. <http://doi.org/10.1080/07421222.2016.1243967>
- Tucker, C., & Zhang, J. (2011). How Does Popularity Information Affect Choices? A Field Experiment. *Management Science*, 57(5), 828–842.
- Zhang, D., Zhou, L., Kehoe, J. L., & Kilic, I. Y. (2016). What Online Reviewer Behaviors Really Matter? Effects of Verbal and Nonverbal Behaviors on Detection of Fake Online Reviews. *Journal of Management Information Systems*, 33(2), 456–481. <http://doi.org/10.1080/07421222.2016.1205907>
- Zhao, J., Binns, R., Kleek, M. Van, & Shadbolt, N. (2016). Privacy languages: Are we there yet to enable user controls? In *Proceedings of the 25th International Conference Companion on World Wide Web* (pp. 799–806). <http://doi.org/http://dx.doi.org/10.1145/2872518.2890590>
- Zhou, W., & Duan, W. (2016). Do Professional Reviews Affect Online User Choices Through User Reviews? An Empirical Study. *Journal of Management Information Systems*, 33(1), 202–228. <http://doi.org/10.1080/07421222.2016.1172460>

8.4 Appendix: Paper 4

Kunst, Vatrappu & Hussain (n/d). Exploring Social Product Design: A Field Experiment on the Effect of Infusing Social Information into a Movie Streaming Service.

Submitted to *Behaviour & Technology*. Invited for second round review on June 13th 2018. This enclosed version has been updated to take into account some of the reviewers' comments.

Exploring Social Product Design: A Field Experiment on the Effect of Infusing Social Information into a Movie Streaming Service

Katrine Kunst^{a*}, Ravi Vatrapu^{a, b} & Abid Hussain^a

^aCentre for Business Data Analytics,

Department of Digitalization, Copenhagen Business School

Howitzvej 60, 4., 2000 Frederiksberg, Denmark

^bKristiania University College, Oslo, Norway

* katrine.kunst@gmail.com / kk.digi@cbs.dk / +45 51909690

Exploring Social Product Design: A Field Experiment on the Effect of Infusing Social Information into a Movie Streaming Service

This paper investigates how the integration of information about existing users' product-related behaviours and opinions into a movie streaming service affects potential users. Drawing on theories of Social Influence, Social Impact, and Observational Learning we conducted a controlled field experiment with 398 potential users of a movie streaming service. For this purpose, we developed a Social Information Integrator Tool that allowed us to inject Facebook information simulating existing users' product-related opinions and behaviours – referred to as 'social information' - into the movie streaming service. We demonstrate that the integration of social information from friends has a significant positive effect on potential users' attitude towards the service. Further, we explore different design configurations of social information. Contrary to findings in extant literature, we do not find significant differences between the display of user opinions versus user behaviours. This suggests that product-related user behaviours can be designed to look like user endorsements of the product in question, providing marketing value. The paper contributes to the extant body of knowledge on 'social product design' by offering empirical insights and design recommendations for friend-specific social information when incorporated into a product. The findings have important managerial implications, urging product designers to leverage the positive effects of including social information into digital product experiences.

Keywords: Electronic Word of Mouth (eWOM), Electronic Word of Behaviour (eWOB), social product design, social influence, observational learning

1. Introduction

It is well-established that Word of Mouth (WOM) and its digital counterpart, Electronic Word of Mouth (eWOM) is extremely influential in many consumer decisions (Cheung & Thadani, 2012; De Bruyn & Lilien, 2008; Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004), largely driven by the power of social influence (Cialdini & Goldstein, 2004). Accordingly, information from friends and family continue to be rated the most important trusted source of product-related

information. For example, Nielsen reports¹⁴ that 83% of consumers across 60 countries say they trust the recommendations from friends and family. At the same time, products and services are increasingly becoming digitalized (e.g. books, music, travel booking, grocery shopping etc.), resulting in an ongoing stream of digital traces of user behaviour. Digitalization of products not only creates conveniences of consumption for the user (Lehdonvirta, 2012) but it also empowers companies with technological affordances for incorporating and displaying users' product-related opinions and behaviours *within* products and services, and essentially draw upon the aforementioned strengths of information stemming from peers (Kunst & Vatrappu, 2014). This development is interesting as it integrates what used to mainly be considered a marketing activity, eWOM, into the product design process. However, product developers keen on pursuing this, are left with little direction for the design process, and even large commercial players like Netflix have failed to create solutions that satisfy user needs while at the same time addressing user concerns over e.g. privacy issues, c.f. Netflix' recent withdrawal from providing information about Facebook friends' movie consumption and preferences within the streaming service¹⁵.

Against this backdrop and addressing the call by Aral, Dellarocas, & Godes (2013) for more research into the design of products and services with social elements, this paper seeks to contribute to extant knowledge in two ways: First, we take an Action Design Research (ADR) approach (Sein, Henfridsson, Purao, & Rossi, 2011) to design and develop a tool that can be used by academics and practitioners alike to test and evaluate various social product designs among users and potential users. Second, we conduct an online experiment with this tool among 398 potential users of a Scandinavian movie streaming service. Our findings show that the inclusion of *friend-specific* social information incorporated *into* an online service positively

¹⁴ <http://www.nielsen.com/eu/en/press-room/2015/recommendations-from-friends-remain-most-credible-form-of-advertising.html>

¹⁵ <http://www.businessinsider.com/netflix-users-dont-want-social-features-2016-2?r=US&IR=T&IR=T>

affects potential users' attitude towards the service. Based on the empirical findings and the tool development process, we outline a set of implications for social product design.

The rest of the paper is organized as follows: In Section 2, we review extant research relevant for our study on social product design. In section 3, we outline the theoretical foundations and generate a set of hypotheses to be tested in our experiment. In section 4, we discuss methodological details regarding i) developing a Social Information Integrator Tool and ii) conducting the online experiment to test and evaluate different kinds of social product design using the tool. In section 5, we report the results of the online experiment. In section 6 we discuss the results and derive a set of implications for design. Finally, in section 7 we conclude and assess the limitations of the study, and as well as outline future research agenda for social product design.

2. Related Work

2.1 Social Product Design

This paper is situated in the intersection between literature on the use of interpersonal communication in marketing, often known as (Electronic) Word of Mouth (Berger, 2014; Tan, 2017), Persuasive Systems Design in human-computer interaction (Oinas-Kukkonen & Harjumaa, 2009), and Social Design (Aral & Walker, 2011; Bapna & Umyarov, 2015). Facilitated by digitalization, companies now have an array of opportunities to stimulate consumers' disclosure of opinions and behaviours. Accordingly, a stream of literature on the topic of how to engineer and evaluate products that facilitate and encourage such social information disclosure has begun to emerge (Dou, Niculescu, & Wu, 2013). This has been referred to 'viral product design' by Aral & Walker (2011) to describe "*the process of explicitly engineering products so they are more likely to be shared among peers*" (p. 1623). Here, the focus is on sharing information about the product to non-users, by either actively inviting them

to use the service, or auto-sharing product-usage information *from* the service *to* Facebook. A related but somewhat broader perspective is proposed by Bapna & Umyarov (2015) who view ‘social design’ as “*products and services (...) designed with social features that help with initial adoption, sustained engagement, and user retention*” (p. 1903). Here, the focus is not only to share product-related information to non-users (e.g. on Facebook), but also using social features and information to stimulate continued usage, *within* the product/service. Finally, Dou et al., (2013) describe the phenomena as “*firms’ strategies and opportunities to engineer WOM effects*” (p. 165). Although the terms ‘social design’ and ‘viral product design’ are not widely used (a database search reveals only very few relevant papers), research into what could be termed ‘product-facilitated peer-to-peer effects’ is accumulating, providing empirical insights from diverse product categories such as digital cameras (Y. Chen, Wang, & Xie, 2011), online gaming (Aral & Walker, 2011), premium subscriptions in freemium-based online services (Bapna & Umyarov, 2015), and social ads (Tucker & Zhang, 2011) to name a few. However, current research within this phenomenon is predominantly concerned with making methodological contributions in terms of demonstrating causal evidence of peer-to-peer effects. Less attention is given to generating and evaluating design guidelines on how to implement social features and information into products and services. Following the call for more research into the design of products and services with social features (Aral et al., 2013) we address this gap. Building on Bapna & Umyarov (2015), we use the term ‘social product design’ to describe: “*The process of infusing social information and social features into products and services in a way that stimulates adoption, sustained engagement, and/or user retention*”¹⁶. In this definition, we differentiate between ‘social features’ and ‘social information’. We conceptualise *social features* as items that allow for some kind of interaction (e.g. user feedback

¹⁶ For simplicity reasons the term ‘social product design’ does not include the word ‘service’, although it does indeed cover design of services.

on self-designed products as seen in Hildebrand, Häubl, Herrmann, & Landwehr (2013), while *social information* is the disclosure of information about other users' behaviours and/or opinions, e.g. the public display of a user's product purchase history as seen in Cheung, Xiao, & Liu (2014). Both social features and social information can be viewed as persuasive elements (Fogg, 2003; Oinas-Kukkonen & Harjumaa, 2009) in product design. In this paper, we will focus on product design involving social information.

2.2 Social Information in Products & Services

Social information comes in different forms and shapes. This section draws on extant literature to exemplify three overall ways in which social information can be presented. 1) Social information as opinions or behaviours, 2) the level of aggregation of the information, and 3) where the social information is disclosed. Before we embark on this, it is worthwhile to ask the question: what does the 'social' in 'social information' actually mean? In this research, drawing upon the enactive approach to the philosophy of mind (Gibson, 1979; Noë, 2004) and the phenomenological approach to sociology (Garfinkel, 1967), we adopt a micro-sociological view of 'social' that can be described as "other-orientation". In this phenomenological view of the social world, being 'social' implies being oriented towards other human beings in terms of apperceptions, perceptions and actions (Vatrapu, 2010) and 'social information' is the kind of information that affords and/or constraints such an orientation towards social others. This is not to say that users intentionally disclose information about their opinions or behaviours in order to socially interact with other users. Rather, in our product design context, the 'social' merely connotes the peer to peer nature of the information being made available by the system. An illustrative example is when a Spotify user is looking at an artist page, and Spotify then informs the user *whom* of his/her Facebook friends are also listening to that particular artist. Or when Spotify informs the user *how many* monthly listeners that artist has each month on Spotify. Both

are examples of what we consider social information: information that stems from one user and which is made available, through the system, to other users. On the contrary, we do not consider it ‘social’ information when Spotify provides recommendations such as “*we think you would like...*” even though the underlying data foundation for these recommendations might be the listening patterns of peers.

2.2.1 Opinions vs. Behaviours

One of the fundamental elements of social information is which *type* of information is being disclosed: Opinions or behaviours. Information about what consumers *think* of a product/service (i.e. opinion-based information) is typically referred to in the literature as eWOM, and often takes the form of consumer reviews and ratings. eWOM is an interdisciplinary field of research with contributions spanning the fields of Information Systems, Marketing and Human-Computer Interaction (e.g. Cheung & Thadani, 2012; Thies, Wessel, & Benlian, 2016). On the other hand, information about others’ *behaviours* with regard to a product may also be disclosed to users. For example, the number of downloads of a piece of software (Duan, Gu, & Whinston, 2009), and number of downloads of songs (Salganik & Watts, 2008), or the past purchases of beauty items (Cheung et al., 2014). Recently, scholars have been interested in comparing the effects of opinion-based information with that of behaviour-based (e.g. Y. Chen et al., 2011; Cheung et al., 2014), and this type of behaviour-based information has even been conceptualized as ‘Electronic Word of Behavior’ (Kunst, 2015).

2.2.2 Level of aggregation

Secondly, social information can be presented at an aggregated or individual-specific level, as shown in Figure 1.

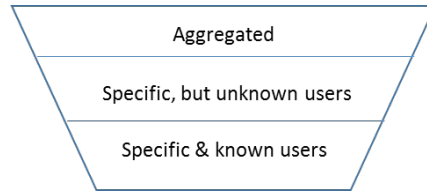


Figure 1. Funnel of aggregation

On the aggregated level, companies can disclose information about the popularity of specific products and which products are frequently bought together with other specific products; an approach pioneered by online dealers such as Amazon. Here, the opinions or purchase/use-behaviours of many individual consumers are *aggregated* when presented to other consumers, and studies have reported a positive effect of this kind of aggregated social information on sales of digital cameras (Chen, Wang, & Xie, 2011) and voting behaviour (Bond et al., 2012).

At the other end of this spectrum, we find services where information about *specific individuals* is disclosed. This level can be further divided into social information about specific individuals but who are *unknown* to the observing user (e.g. when the crowdfunding platform gofundme.com shows the names of recent backers of a cause, or specific individuals who are *known* to the observing user (e.g. when Spotify offers information about which songs and artists a user's connections on Twitter and/or Facebook have listened to). Examples of research at the individual-specific level include Aral & Walker (2011) who found a positive effect in terms of adoption when exposed to a Facebook friend's online gaming behaviours (achieving a new level etc.) on Facebook. Likewise, Cheung et al. (2014) studied a beauty community and found a similar positive effect when exposed to other (connected, but otherwise unknown) members' purchase history.

2.2.3 Location of Disclosure

Last but not least, it is relevant to look at *where* the social information is disclosed, as illustrated in Figure 2. External disclosure is represented by e.g. Aral & Walker (2011) who studied the

effect of sharing social information *from* a gaming platform *to* Facebook, and reported significant positive effects of this type of disclosure. However, Facebook has gradually decreased the algorithmic importance of this kind of auto-shared behaviour-based content shared to Facebook from third party apps because of accusations of “newsfeed spam”¹⁷. Consequently, in this research, and for the specific case company investigated, we find it more relevant to look into instances of internal disclosure, i.e. where the social information is disclosed *within* a service. In doing so, we follow the lead of e.g. Bapna & Umyarov (2015); Duan, Gu, & Whinston (2009); Salganik & Watts (2008) who all studied the effect of disclosing social information within a product or service.

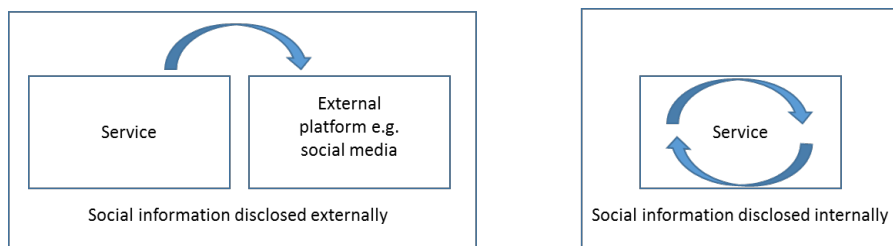


Figure 2. Location of disclosure.

Summarizing the above, current research on social information product & services has predominantly been occupied with either friend-specific social information being externally shared to platforms such as Facebook (e.g. Aral & Walker, 2011; Bond et al., 2012), or with social information being disclosed internally, but on an aggregated level (e.g. Y. Chen et al., 2011) or from specific users but whose real identity might not be known (Cheung et al., 2014). As such, this research seeks to extend current literature by investigating the impact on potential users when infusing *individual-specific social information from friends* into an online service.

3. Theoretical Foundations and Hypotheses

¹⁷ <http://www.adweek.com/digital/latest-news-feed-algorithm-change-third-party-implicit-posts-punished/?red=if>

This section uses social influence theory to derive a set of hypotheses which we shall later test in our online experiment.

Social influence theory is essentially concerned with how humans influence each other's thoughts, attitudes, and/or behaviours. Social influence can be exerted in explicit as well as more implicit manners (Fulk, Schmitz, & Steinfield, 1990). Overt statements (opinions) about a product, service, or technology, is an explicit form of social influence. On the contrary, social influence can also be exercised in less direct ways, e.g. by performing an action (behaviour) visible to others, and thereby potentially influencing others to do the same (Fulk et al., 1990), often referred to as Observational Learning (Bandura, 1986). Thus, we expect that incorporating social information (either consumers' opinions or behaviours) into a service will positively affect potential users:

***H1a:** The inclusion of social information into a service will positively enhance potential users' attitude towards the service*

***H1b:** The inclusion of social information into a service will positively enhance potential users' intention to use it*

However, a number of factors can determine how impactful the social influence is, as posited by both Latané (1981) and in the original works on Observational Learning (Bandura, 1986).

These are described in the following.

While observing the actions of others can influence an individual, Bandura (1986) argues that the effect is generally amplified when the observant can observe the consequence(s) of that action. I.e. an action where "the model" (the person performing an action) is being rewarded for that action will have more impact on observer(s) than simply observing the action but not the outcome. Turning to the online sphere, we find that people – just as in the offline world –

perform a vast number of actions every single day (e.g. booking a hotel, ordering groceries online, streaming music etc.), many of which can be made observable online to others (e.g. which music one has listened to recently on Spotify). In addition, some of these people will take the time and effort to also communicate their opinions about these product-related experiences to others e.g. giving a “like” to a newspaper article, writing a review of a hotel on TripAdvisor, or giving a song on Spotify a “star” mark. We regard the mere mention of a behaviour as observable behaviour but *without* observable outcome as we cannot tell from a long list of songs listened to by a friend, which songs (s)he actually might have liked or disliked (i.e. the outcome). On the contrary, if the user provides some kind of evaluation (e.g. a review, a like, a rating, or some other indication of how the user experiences that event) we must assume that this opinion was formed on the basis of an experience with the product/service (e.g. listening to a specific song). Accordingly, the evaluation implicitly tells us about a person’s behaviour with that product/service, and we thus regard this as observable behaviour *with* observable outcome. Thus, contrary to the popular saying that “*actions are stronger than words*” our second hypothesis is that opinions will have stronger impact than behaviours:

H2a: *Disclosing opinion-based social information in a service will have a stronger impact on potential users’ attitude towards the service than disclosing merely behaviour-based social information.*

H2b: *Disclosing opinion-based social information in a service will have a stronger impact on potential users’ intention to use the service than disclosing merely behaviour-based social information.*

This is not to dismiss the potential of including behaviour-based social information in products and services. On the contrary, while the above may be proven true, the sheer amount of actions

performed every single day might altogether be more effective in influencing observers than the much smaller amount of actual reviews (observable outcome) as suggested by Aral & Walker (2011).

Next, observing the actions of or receiving recommendations from people who are knowledgeable about a specific topic or in some way opinion leaders, generally has a stronger impact than observing random/unknown people's behaviour (Bandura, 1986; Bikhchandani et al., 1998, Latané, 1981). Consequently, our third hypothesis is that the product-category relevance of the “modelling” person matters:

H3a: *The inclusion of social information from category-specific influential friends into a service has a stronger positive impact on potential users' attitude towards the product than has the inclusion of social information from random friends.*

H3b: *The inclusion of social information from category-specific influential friends into a service has a stronger positive impact on potential users' intention to use the product than has the inclusion of social information from random friends.*

Finally, Social Impact Theory posits that a greater number of influencers increases the likelihood that an individual will be influenced (Latané, 1981). However, from the field of economics we find theoretical arguments for observing the actions of as few as two other people can be the turning point where one starts disregarding one's own intuitions and starts following the behaviours of others (Bikhchandani et al., 1998). Consequently, our final hypothesis is that the number of people matters:

H4a: *The inclusion of social information from many friends has a larger impact on potential users' attitude towards a service than has the inclusion of social information from a few friends.*

***H4b:** The inclusion of social information from many friends has a larger impact on potential users' intention to use a service than has the inclusion of social information from a few friends.*

Having outlined four hypotheses (including sub-hypotheses), we now discuss the methodology.

4. Methodology

This section is divided into three main parts. We first introduce the empirical context of our studies. We then provide a detailed account of the development of the Social Information Integrator Tool informed by the method of Action Design Research. Finally, we discuss the research design for our online experiment where the Social Information Integrator Tool was used to test the effects of different kinds of social product design, i.e. the hypotheses derived in the previous section.

4.1 Empirical Context

The empirical context of this research is an online movie streaming service in the Danish market, more specifically Blockbuster. After the bankruptcy of the American movie rental chain Blockbuster, the rights to the Blockbuster brand in the Danish market were acquired by the Danish telecom TDC Group in 2014, and Blockbuster was soon hereafter re-launched as an online movie streaming service. Movie streaming, and Blockbuster in particular, was chosen for several reasons. First, one of the authors was partly affiliated with the company which owns the Blockbuster brand in Denmark, and thus had access to Blockbuster's product development teams for the use of social information. It was thus brought to our attention that Blockbuster had already implemented Facebook login, but were not sure whether they should proceed in making use of social information in their interface, and if so, how. The internal debate over whether to proceed or not was dominated by managers' personal preferences for/against social networking

services, and Facebook in particular. For an Action Design Research project this confluence of real-world industry need coupled with a bona fide research problem is essential, and the timing of the study was appropriate. Secondly, movie streaming is a cultural good where inspiration from friends and peers is likely to play a role. Finally, since Blockbuster is an online service, we could establish a seamless integration with Facebook which would serve as the source of social information. Taken together, movie streaming, and Blockbuster in particular, served as a good test bed to investigate the phenomenon of social product design.

4.2 Development of the Social Information Integrator Tool

The overall goal of the research was to investigate the impact on potential users' attitude and purchase intention when infusing Blockbuster with social information. Furthermore, we wanted to test different kinds and configurations of social information. In order to do so, we needed an infrastructure that could 1) infuse specific social information from Facebook into Blockbuster (or any other online service) 2) measure attitude and purchase intention in a survey module 3) collect and store data in a database. To the best of our knowledge no such tool exists, nor do guidelines for designing such a tool. Consequently, we set out to design and build a Social Information Integrator Tool (SOCIALIIT).

4.2.1 Action Design Research

SOCIALIIT was built adopting guidelines from ADR methodology. ADR brings together the individuals that have implications for the project (that includes the organizational stakeholders, researchers, developers, and end users) and promotes co-building. ADR aims for building an ensemble IT-artefact in cycles of feedback improving the final product and generating research knowledge at same time. Due to the experimental nature of the SOCIALIIT it was important to involve the organization (in this case Blockbuster Denmark) to inform and evaluate the key

features of the SOCIALIIT. In total, we employed three iterative cycles of design, development and evaluation to arrive at the final version of the SOCIALIIT.

4.2.2 Technical Features

SOCIALIIT is a web-based software solution that has multiple backend modules to handle social media integration as well as storage and data export process. SOCIALIIT is built using Microsoft.Net with the web component developed using ASP.Net and the backend developed using C#. For handling the connection to Facebook Graph API JQuery Ajax API access and API calls through C# API library are utilized. SQL Server Enterprise Database Management System is utilized to store the collected social information and the experimental data. Figure 3 presents a schematic of the SOCIALIIT.

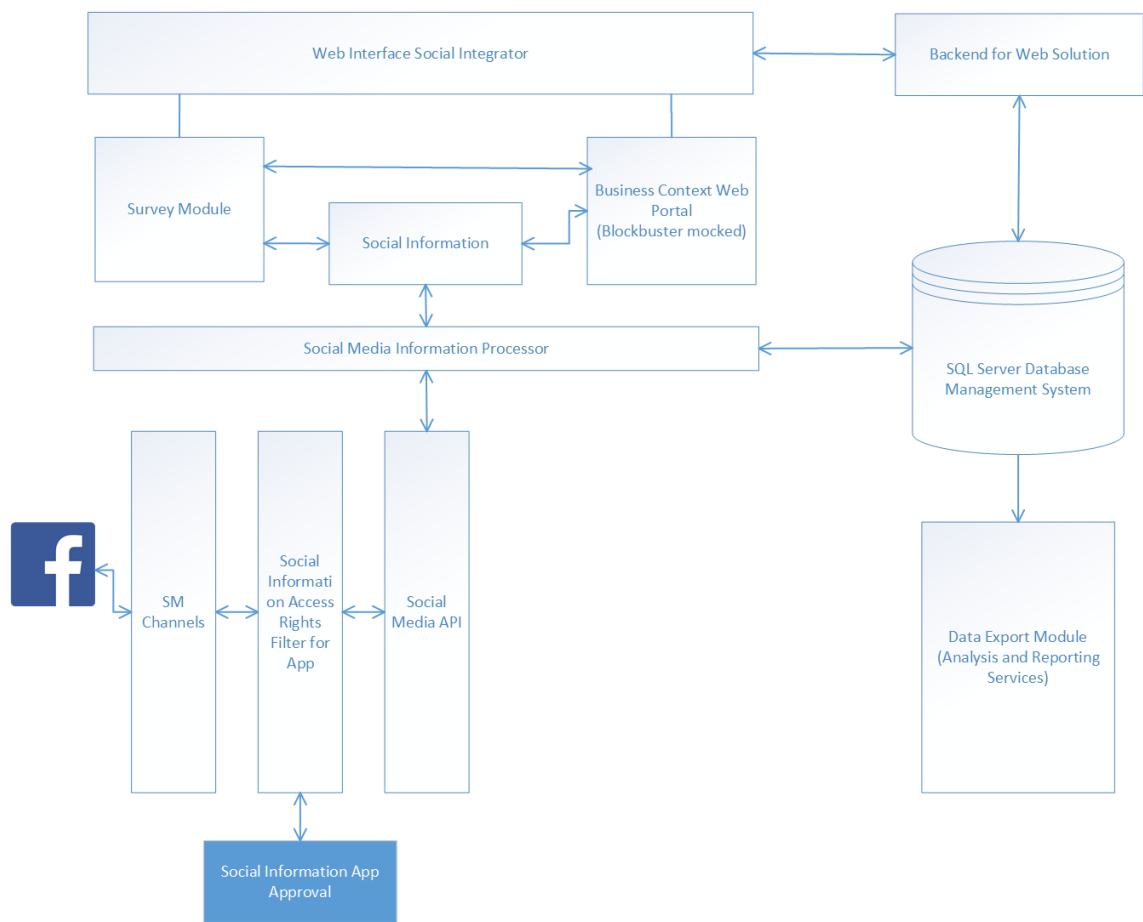


Figure 3. Schematic of Social Information Integrator Tool

As can be seen from Figure 3, SOCIALIIT has a modular architecture. The web interface consists of three logical modules: 1) Web Survey consisting of multiple pages that present the questionnaire to the end user, 2) Business context related web pages; in this case these are four mocked Blockbuster pages; but it could be any real business website pages, 3) Social Information consists of web interface components where social information related to end-user is presented. In our case, it includes the friend information of the user on the mocked-up pages as well as the survey related pages where social information is presented such as social login or friend rating page in SOCIALIIT. SOCIALIIT presents a generic model that uses Facebook as social information source. However, it can be extended for any other social media platform, for example Twitter where ‘friends’ would be replaced with ‘followers’ and so on.

In order to store the information collected through survey as well as the extensive logging (for analysis) collected during use of SOCIALIIT, a backend module is utilized which is developed using C# and data is stored into Microsoft SQL Server DBMS. To store social information of the end users a logical module named Social Media Information Processor is developed that is responsible for social media login, fetching social media information, and presenting social media related information wherever required on the web portal. An export module is responsible for retrieving, transforming and exporting the collected data so it could be made available to researchers of ADR team for analysis and reporting.

4.3 Online Experiment

In this section, we introduce the research design of an online experiment where we will be using the SOCIALIIT with Blockbuster.

4.3.1 Experimental Design

We employed a 2x2x2 between-subjects independent groups factorial design consisting of one

control group (no social information) and eight treatment groups corresponding to the different social information types (Opinion vs. Behaviour, Random vs. Category-Specific Friends, Few vs. Many Friends) as stated in the hypotheses in Section 3.

4.3.2 Participants

The target group for the experiment was potential new users (current non-users), of Blockbuster as we wanted to uncover how the inclusion of social information affected potential new users' attitude towards the service and their intention to start using it. Recruiting was done via ad-supported posts from Blockbuster Denmark's official Facebook page, which provided a stratified random sampling frame for the study. More specifically, so-called 'dark posts' were used to recruit participants. This method allowed us to place Facebook posts in the newsfeeds of pre-defined targeted Facebook users who met our criteria and only visible to those users. We combined this with Blockbuster's own database to target only current non-users. A total of 473 people qualified as potential customers and completed the questionnaire, but 75 of those were excluded for failing manipulation checks and time constraints which we will discuss later in this paper. The final sample size was then 398.

4.3.3 Procedure & Materials

Figure 4 illustrates the process of the experiment. After clicking the Facebook post (1) participants were taken to an online survey (2) and at the same time randomly assigned to one of eight treatment groups or the control group.

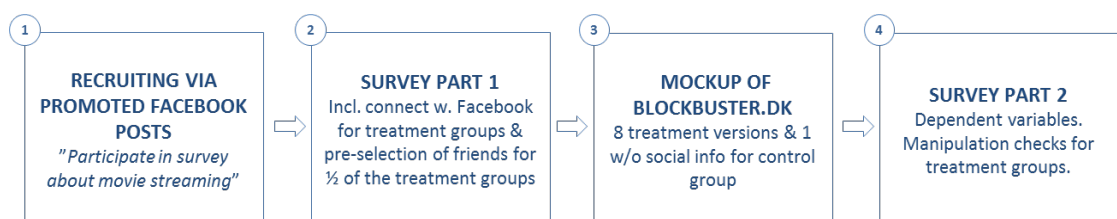


Figure 4. Experimental protocol

The survey included a visit to the mock-up website (3), which had been manipulated on three parameters each with two levels: Number of friends (high (8) vs. low (2); type of friends (category-specific influential vs. random), and type of information (opinion-based vs. behaviour-based). When starting the survey, participants were informed that the survey was run by Blockbuster and a group of researchers from “University ABC”¹⁸ and that the purpose was to get participants’ opinion about a new version of Blockbuster’s website. Participants (except control group) were also informed that the survey included a request to connect with Facebook. It was explicitly stated that this was necessary to run the survey, that their social information would only be used for this particular study, and that their permission would not allow us to post to Facebook on participants’ behalf nor on the timelines of their friends. Once connected, half of these groups were shown a list of their Facebook friends and were asked to mark at least 10 friends who they thought “*have an interesting movie taste*” (see Appendix 1). Selected friends were then regarded as being ‘category-specific influentials’. It was explicitly stated that the friends selected would not be notified about this selection. The other half of the treatment groups were not taken through this step. Next, all groups visited a clickable mock-up version of the Blockbuster streaming website consisting of a front page and three sub-pages. The website was manipulated in 8 different combinations utilizing Facebook profile photos of participants’ friends to illustrate friends’ (fictional) use of Blockbuster. In the Behaviour-condition participants were exposed to information that “*these friends are already using Blockbuster*” (followed by profile pictures of specific Facebook friends) as well as a set of movies “*Seen by your friends*” (followed by profile pictures of specific Facebook friends). In the Opinion-condition, participants were exposed to information that “*These friends like Blockbuster*”

¹⁸ A well-known local university, but anonymized for the purpose of peer review

(followed by profile pictures of specific Facebook friends) and a set of movies “*Liked by your friends*” (followed by profile pictures of specific Facebook friends). Participants were instructed to browse the site and as a minimum look at three (specific) pages. This task was designed to be authentic and similar to a potential Blockbuster customer visiting the website for the first time. Upon that, participants returned to part 2 of the survey (4) which included questions about their attitude towards the website and intention to start use Blockbuster, our dependent variables. Finally, we implemented three manipulation checks: First, the survey included a question about participants’ recall of having seen the social information on the website. Secondly, we used tracking software to track participants’ mouse movements throughout their visit on the mock-up website¹⁹, as mouse movement can be used as a proxy for eye movement (M. C. Chen, Anderson, & Sohn, 2001). And third, we tracked how much time participants spent on the Blockbuster website, so we would be able to exclude those who spent very little time.

4.3.4 Measures

We measured attitude towards the movie streaming service using an adapted three-item construct based on existing measures of attitude towards a website (Lynch, Kent, & Srinivasan, 2001; Stevenson, Bruner, & Kumar, 2000). All items were measured on a 7-point Likert-type scale. As Blockbuster is a pay-per-view service, intention to start using the service (our second dependent variable) can be viewed as a purchase intention (PI). The PI was measured using four items, all on a 7-point scale, and adapted from existing literature (Bickart & Schindler, 2001; Putrevu & Lord, 1994). The items used to measure Attitude and PI are included in Appendix 2.

¹⁹ We explicitly informed about this at the beginning of the survey

5. Results

5.1 Data Pre-Processing

A total of 473 participants completed the survey (35,4% completion rate). We then coded the screen recordings in terms of whether each participant's mouse was placed in the area with the social information or not. Of the 378 non-control group, 300 (79%) were coded as having the mouse in the area of interest (at some point during their session), while 37 (10%) were coded as not having the mouse in the area of interest. The rest – 41 (11%) were not coded either because they entered on a mobile device, or they could not be found in the system. We then looked at the percentage of all self-reported recalls (as part of our manipulation check, participants self-reported having seen profile photos of some of their Facebook friends on the movie streaming service), and compared these to how these cases had been coded in terms of mouse movement. 85% of self-reported recalls were also coded as having had their mouse in the area of interest (i.e. have “seen” the social information). This indicates that the placement of the mouse is a pretty good indicator of having noticed the social information. We further used the screen logging data to filter out a total of 41 invalid responses for the following reasons: i) Some participants had entered the website from a mobile device (12 in total), and since the website was not optimized towards mobile, these participants' answers would most likely be negatively skewed ii) some sessions could not be found in the session recording system (19); and iii) a few session recordings could not be displayed in the system (10). Finally, based on the Keystroke-Level Model (KLM) (Mackenzie, 2003), we set a threshold for minimum time spent on Blockbuster website. We did this to ensure that participants spent sufficient time on the website to form an opinion about it and to be able to notice the social information. The threshold for minimum time required was set to 10 seconds, which excluded 34 participants. The final sample size was then 398, with 89 (22%) participants in the control group.

5.2 Descriptive Statistics

Table 1 provides an overview of the number of participants in the control group and the eight treatment groups.

Table 1. Overview of groups

Group no.	Treatment overview	N	% of Total
1	Control	89	22%
2	Random / Low / Behaviour	39	10%
3	Influential / Low / Behaviour	27	7%
4	Random / High / Behaviour	47	12%
5	Influential / High / Behaviour	33	8%
6	Random / Low / Opinion	52	13%
7	Influential / Low / Opinion	27	7%
8	Random / High / Opinion	50	13%
9	Influential / High / Opinion	34	9%
Total		398	

Table 2 shows the demographic characteristics of the sample. The sample was relatively evenly split gender and age-wise. The majority were married or in a relationship (65%), while 36% were single.

Table 2. Demographics of sample

Gender	N	% of Total	Marital status	N	% of Total
Female	211	53%	In relationship, not married	42	11%
Male	187	47%	Married	214	54%
			Single	142	36%
Age	N	% of Total	No. of children	N	% of Total
Under 25	3	1%	0	234	59%
25-30	140	35%	1	69	17%
31-40	125	31%	2	77	19%
41-50	129	32%	3	13	3%
Over 50	1	0%	4+	5	1%

They were quite movie-savvy (46% reported watching six or more movies per month) which was in line with the profile of a potential customer. The overall preferred source of inspiration

for movies to watch was reviews (from newspapers, movie websites like IMDB, blogs etc.) used by 53% of the participants, while the second most important source of movie inspiration was friends' recommendations (47%), which suggests that movie streaming might be a fit for social information. Among those who reported using friends' recommendations, 42% fell into the young age group (25-30 years), indicating a tendency among younger people to look to friends for inspiration rather than more authoritarian sources like formal reviews. In terms of gender, males were somewhat more likely to seek out friends' opinions (51% of males, compared to 43% females).

Table 3 displays the mean scores across the main treatments. It is noticeable how mean scores are generally in accordance with our hypotheses. Only in the case of H2b is there an inverse relationship compared to our hypothesis. This initial overview points to the positive impact of including both opinions and behaviours into an online service such as Blockbuster, and that the display of category-specific influential friends and/or a high number of friends will lead to a greater impact.

Table 3. Mean scores across treatments

CTRL vs. Social information (H1)	N	Attitude towards BB		Intention to use BB	
		Mean	SD	Mean	SD
Control	89	4.76	1.38	3.57	1.54
Social information	309	5.08	1.34	3.81	1.47
Type of information (H2)					
Control	89	4.76	1.38	3.57	1.54
Behaviours	146	5.06	1.37	3.86	1.48
Opinions	163	5.10	1.32	3.76	1.46
Type of friends (H3)					
Control	89	4.76	1.38	3.57	1.54
Random	188	5.01	1.39	3.70	1.48
Influential	121	5.20	1.26	3.96	1.43
No. Of friends (H4)					
Control	89	4.76	1.38	3.57	1.54
Low	145	5.03	1.35	3.77	1.48
High	164	5.13	1.34	3.84	1.46

5.3 Hypotheses Testing

First, an independent-samples t-test was conducted to compare attitude towards Blockbuster for the treatment condition (subjects exposed to social information, i.e. behaviours and opinions combined) and the control group (subjects exposed to no social information). In line with hypothesis H1a there was a significant difference in the scores for the control condition ($M=4.76$, $SD=1.38$) and the treatment condition ($M=5.08$, $SD=1.34$); $t(396)=-2.01$, $p = 0.045$ as can be seen from Table 4 and 5. This shows that the inclusion of social information has a positive impact on potential users' attitude towards the service. The same test was run for the second dependent variable, intention to use Blockbuster. No significant difference was found in the scores for the control condition ($M=3.57$, $SD=1.54$) and the treatment condition ($M=3.81$, $SD=1.47$); $t(396)=-1.34$, $p = 0.181$. This indicates that the presence of social information does not enhance potential users' intention to use the service. Consequently, we do not find support for H1b.

Table 4. Descriptive statistics for H1a and H1b

Group Statistics	CTRL vs. Treatment N		Mean	Std. Deviation	Std. Error Mean
Attitude	Control	89	4.7566	1.3797	.1462
	Treatment	309	5.0831	1.3411	.0763
Intention to use	Control	89	3.5674	1.5387	.1631
	Treatment	309	3.8066	1.4658	.0834

Table 5. t-test results for H1a and H1b

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Attitude	Equal variances assumed	.548	.459	-2.011	396	.045	-.3265	.1624	-.6457 -.0073
	Equal variances not assumed			-1.979	139.468	.050	-.3265	.1649	-.6526 -.0004
Intention to use	Equal variances assumed	.871	.351	-1.341	396	.181	-.2392	.1783	-.5898 .1114
	Equal variances not assumed			-1.306	137.335	.194	-.2392	.1832	-.6014 .1230

Next, a factorial ANOVA was conducted to compare main effects of *type of information* (two levels: behaviour vs. opinion), *type of friends* (two levels: random vs. influential), and *number of friends* (two levels: low (2) vs. high (8)) as well as the interaction effects of the three factors on the dependent variable attitude towards Blockbuster. Table 6 shows the descriptive statistics and Table 7 the results of the ANOVA.

Table 6. Descriptive statistics for H2a, H3a, H4a (DV1)

Descriptive Statistics

Dependent Variable: DV 1_Attitude

Type of friends	No. Of friends	Type of information (Behaviour vs. Opinion)	Mean	Std. Deviation	N
Random	Low	Behaviour	4.8120	1.4179	39
		Opinion	4.9808	1.4118	52
		Total	4.9084	1.4090	91
	High	Behaviour	5.2553	1.3905	47
		Opinion	4.9667	1.3507	50
		Total	5.1065	1.3706	97
	Total	Behaviour	5.0543	1.4122	86
		Opinion	4.9739	1.3753	102
		Total	5.0106	1.3892	188
Influential	Low	Behaviour	5.2346	.9820	27
		Opinion	5.2222	1.4559	27
		Total	5.2284	1.2300	54
	High	Behaviour	4.9495	1.5414	33
		Opinion	5.3824	.9714	34
		Total	5.1692	1.2928	67
	Total	Behaviour	5.0778	1.3168	60
		Opinion	5.3115	1.2016	61
		Total	5.1956	1.2603	121
Total	Low	Behaviour	4.9848	1.2668	66
		Opinion	5.0633	1.4223	79
		Total	5.0276	1.3497	145
	High	Behaviour	5.1292	1.4530	80
		Opinion	5.1349	1.2224	84
		Total	5.1321	1.3357	164
	Total	Behaviour	5.0639	1.3692	146
		Opinion	5.1002	1.3194	163
		Total	5.0831	1.3411	309

Table 7. Results of factorial ANOVA for DV1 (attitude)

Tests of Between-Subjects Effects

Dependent Variable: DV 1_Attitude

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.259 ^a	7	1.466	.811	.578
Intercept	7569.950	1	7569.950	4190.678	.000
Typeoffriends	2.723	1	2.723	1.508	.220
No.Offriends	.421	1	.421	.233	.630
Typeofinformation	.411	1	.411	.228	.634
Typeoffriends * No.Offriends	1.396	1	1.396	.773	.380
Typeoffriends * Typeofinformation	1.328	1	1.328	.735	.392
No.Offriends * Typeofinformation	.001	1	.001	.000	.985
Typeoffriends * No.Offriends * Typeofinformation	3.705	1	3.705	2.051	.153
Error	543.720	301	1.806		
Total	8537.778	309			
Corrected Total	553.979	308			

The main effect of type of information yielded an F ratio of $F(1,301)=0.228$, $p = 0.634$ indicating no significant difference between the conditions behaviour ($M=5.06$, $SD=1.37$) and opinion ($M=5.10$, $SD=1.32$). The main effect of type of friends yielded an F ratio of $F(1,301)=1.508$, $p = 0.220$ indicating no significant difference between the conditions random ($M=5.01$, $SD=1.39$) and influential ($M=5.20$, $SD=1.26$). Finally, the main effect of number of friends yielded an F ratio of $F(1,301)=0.233$, $p = 0.630$ indicating no significant difference between the conditions low number of friends ($M=5.03$, $SD= 1.35$) and high number of friends ($M=5.13$, $SD=1.34$). Further, no significant interaction effects were found. A check for confounding variables was run (see Appendix 3a) using a number of demographic variables as well as variables related to movie watching. A significant effect of gender, number of films watched per month, and preferred genre of film was identified. However, controlling for these measures did not change the overall conclusion that neither of the three factors were found to

significantly influence attitude towards the service. Consequently, we do not find support for H2a, H3a, and H4a.

The same procedure was run for the second dependent variable, intention to use Blockbuster. Here too, no significant main effects nor interaction effects were found. Table 8 shows the descriptive statistics and Table 9 the results of the ANOVA.

Table 8. Descriptive statistics for H2b, H3b, H4b (DV2)

Descriptive Statistics

Dependent Variable: DV 2: Intention to use

Type of friends	No. Of friends	Type of information (Behaviour vs. Opinion)	Mean	Std. Deviation	N
Random	Low	Behaviour	3.8077	1.50925	39
		Opinion	3.7212	1.53525	52
		Total	3.7582	1.51632	91
	High	Behaviour	3.6755	1.50625	47
		Opinion	3.6350	1.43233	50
		Total	3.6546	1.46106	97
	Total	Behaviour	3.7355	1.50017	86
		Opinion	3.6789	1.47897	102
		Total	3.7048	1.48498	188
Influential	Low	Behaviour	4.0833	1.41421	27
		Opinion	3.5093	1.42181	27
		Total	3.7963	1.43415	54
	High	Behaviour	3.9924	1.47834	33
		Opinion	4.2059	1.36996	34
		Total	4.1007	1.41760	67
	Total	Behaviour	4.0333	1.43833	60
		Opinion	3.8975	1.42476	61
		Total	3.9649	1.42716	121
Total	Low	Behaviour	3.9205	1.46639	66
		Opinion	3.6487	1.49171	79
		Total	3.7724	1.48134	145
	High	Behaviour	3.8063	1.49364	80
		Opinion	3.8661	1.42717	84
		Total	3.8369	1.45579	164
	Total	Behaviour	3.8579	1.47739	146
		Opinion	3.7607	1.45836	163
		Total	3.8066	1.46580	309

Table 9. Results of factorial ANOVA for DV2 (intention to use)

Tests of Between-Subjects Effects

Dependent Variable: DV 2: Intention to use

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.674 ^a	7	1.953	.907	.501
Intercept	4265.825	1	4265.825	1981.243	.000
Typeoffriends	4.117	1	4.117	1.912	.168
No.Offriends	.682	1	.682	.317	.574
Typeofinformation	1.081	1	1.081	.502	.479
Typeoffriends * No.Offriends	3.087	1	3.087	1.434	.232
Typeoffriends * Typeofinformation	.248	1	.248	.115	.735
No.Offriends * Typeofinformation	3.159	1	3.159	1.467	.227
Typeoffriends * No.Offriends * Typeofinformation	2.500	1	2.500	1.161	.282
Error	648.085	301	2.153		
Total	5139.313	309			
Corrected Total	661.759	308			

The main effect of type of information yielded an F ratio of $F(1,301)=0.502$, $p = 0.479$ indicating no significant difference between the conditions behaviour ($M=3.86$, $SD=1.48$) and opinion ($M=3.76$, $SD=1.46$). The main effect of type of friends yielded an F ratio of $F(1,301)=1.912$, $p = 0.168$ indicating no significant difference between the conditions random ($M=3.70$, $SD=1.48$) and influential ($M=3.96$; $SD=1.43$). Finally, the main effect of number of friends yielded an F ratio of $F(1,301)=0.317$, $p = 0.574$ indicating no significant difference between the conditions low ($M=3.77$, $SD=1.48$) and high ($M=3.84$, $SD=1.46$). As in the case of the first dependent variable, no significant interaction effects were found. The check for confounding variables (Appendix 3b) yielded significant effects of age, gender, number of children, and preferred genre of film. However, controlling for these measures did not change the overall conclusion that neither of the three factors were found to significantly influence attitude towards the service. Consequently, we do not find support for H2b, H3b, and H4b.

5.4 Qualitative Insights

The questionnaire included an open-ended question where participants had the opportunity to further reflect upon their experience with the website. Specifically, participants were encouraged to “*elaborate on your experience of the website. Were there, for example, any specific elements or functions that especially spurred your attention, made you interested or annoyed?*”. 100 participants provided comments (21% of the 473 who completed the questionnaire), and their answers were analysed in terms of whether they commented on the social information or not. Only 15 persons did so, which is an indication that the social information element was not a controversial one. Furthermore, the 15 comments can be categorized in terms of whether they focus on “*receiving information*” or on “*giving away information*”, where the former clearly outnumbers the latter. This is somewhat surprising given the current widespread consumer focus on privacy issues (i.e. concern over giving away personal data) in the digital sphere. The comments about *receiving information* were roughly equally split between positive and negative opinions, with some remarks being made about a need for specifying which friends to receive social information from. Of those who valued *receiving* the social information, the utility of the social information was often mentioned (using social information as a source of inspiration). Taken together, although not a fully-fledged analysis of how users perceive the social information, our data gives us some initial insights that point to the direction that users want to be able to customize their “friends list”, and when doing so, social information can add utility to a product/service. This is however, a topic to be further explored in future research.

6. Discussion

The results from the online experiment show that the inclusion of social information in Blockbuster has a significant positive effect on potential users’ attitude towards Blockbuster. Moreover, despite the general empirical trend in the data, the experiment did not yield

statistically significant support for the remaining hypotheses. These findings will be discussed in the following.

One possible explanation for the lack of statistically significant results may lie in the nature of the stimuli for the different treatment conditions themselves. The difference between the ‘behaviour’ and ‘opinion’ treatments were quite subtle (simply words stating that friends “like” Blockbuster /a set of movies vs. friends “are using Blockbuster”/”have seen” a set of movies), and thus may not be strong discriminants for the participants compared to the other treatments. This experimental design decision regarding the treatment in the behaviour/opinion groups respectively was made in order to keep other design elements invariant and thus comparable. Given the “demand characteristics” of social experiments (Orne, 1962), we prioritised ecological validity with the controlled field experiment by closely simulating the current design practices with regard to behavioural and opinion social information. Further, in reality, inclusion of behaviour-based information will typically generate more content (users generally watch more movies than they review), while including opinion-based information will typically generate more rich information (a rating, an elaborated review etc.). Thus, we cannot on the basis of the current study conclude whether opinions or behaviour based information is the more efficient one. On the contrary, another possible explanation for the absence of significant difference between the two conditions might be that the two are equally actually effective. This is quite interesting seen from a marketing and product design point of view. As previously highlighted, the opinions from peers are highly influential in many product-related decisions. However, since it still takes some manual effort to reflect upon a product experience, form an opinion about it, and express that opinion (in the form of a full review of just the assignment of stars or a “like”), the behaviour-based type of information represents a much more automated type that largely builds on data which is already there and requires little, if any, additional effort from the user. Accordingly, our empirical results indicate that it might possible

to substitute opinions with the much less labour-intensive behaviour-based information. This should be of high interest for especially e-commerce businesses and other digital platforms looking to acquire and/or retain customers in the most cost-efficient and user-friendly way. In doing so, subtle differences between these two types of information and their respective dynamics need to be taken into account, such as e.g. temporal issues as researched by Thies et al. (2016) and Tan (2017) and the impact of strong vs. weak ties as investigated by Jankowski, Bródka, & Hamari (2016) and Tan (2017). In addition, behaviours and opinions might also vary in strength, e.g. the simple assignment of stars vs. stars and a written review (opinions), and one-time usage info vs. continued usage info (behaviours), which are to be explored in future research.

Similarly, in terms of the two other factors tested – number and type of friends displayed - the issue of design might very well be a factor in explaining the lack of significant results. For example, we only tested a fixed number of friends (2 and 8), not a continuum. The number 2 was chosen based on economic theory where observing the behaviours of as few as two other persons is expected to be influential on an individual's choices. The number 8 was chosen as it represents a realistic number within a movie service such as Blockbuster given the service's market share and thus the number of possible other users in one's social network. However, the results indicate that the tested levels might not have been sufficiently apart to differentiate between the "low" and "high" conditions. Accordingly, such further design variations should be explored in future research. From a managerial perspective these indicative results pointing towards the necessity of critical mass and displaying individuals that are deemed influentials, pose a substantial challenge. Specifically, for many product categories it might be difficult to achieve such critical mass. There might be many of one's friends also using a specific digital service, but then how many of these have also connected their Facebook account to that service? Currently, Facebook is the dominant social login where users can bring along their social

networks into a product, but we might see other solutions in the future. Further, having to identify influentials within a specific category can pose a practical challenge. The current setup in Facebook does not allow such segmentation, so practitioners will have to rely on more user-driven approaches as the one used in this experiment, although it comes with the risk of increased cognitive load for the user and thus a possible neglect of this function.

6.1 Implications for Design

Collectively, the results from the online experiment and the experiences from developing SOCIALIIT have a number of implications for the practice of social product design, which will be outlined and discussed in the following. We posit that at least three overall elements need to be addressed when embarking on a social product design process: 1) Product fit 2) Type of social data 3) Customization.

First, designers and product developers must determine whether there is a product fit with social information. Some product categories involve sensitive information that users might not want to share with social others. Furthermore, social information might carry more potential value to the individual user in some categories than in others. Our findings from the online experiment, including the qualitative feedback, suggested that movie streaming (and thus, probably also other content-based digital services with cultural goods) is a well-suited product category. This might be explained by that it is a category with an abundance of content where users need guidance to find the relevant content, and that movies are a cultural good that might be used by individuals to express (social) identity (McCracken, 1990).

Second, designers and product owners must determine which type of social data should be incorporated into product design, and in which configurations. Behaviour-based will most likely generate the most data, and opinion-based more rich data. If designers are interested in comparing the effects of the two kinds, e.g. through testing via SOCIALIIT or a similar tool, the

difference between the two types of social information should be made very clear. A suggestion could be to provide the user with features to graphically express his/her sentiment in regard to the content in question, e.g. opportunity to rate with stars. Both of these designs would make the opinion-based social information more distinct from the behaviour-based.

Third, the qualitative insights as well as the development process of SOCIALIIT clearly indicated a user need for customization of social information. Users are different and have different needs, concerns, and behavioural patterns (Hodis, Sriramachandramurthy, & Sashittal, 2017). Thus, being able to customize whom to receive information from and who should be able to see one's information is a crucial element designers need to consider. Based on the development of SOCIALIIT, we found it valuable to users to have multiple ways of finding relevant individuals to select, e.g. both a search bar to search for specific individuals, and a listing of individuals to allow for serendipity effects. Furthermore, we found it very important to users that clear instructions were given in regard to which consequences customization had. Specifically, although users were interested in being able to customize their list of friends, they worried that their friends would be notified if added to a list. Accordingly, designers must make sure that users are well informed about which actions can/cannot be observed by others, e.g. that friends will *not* be notified when a user adds them to his/her list.

7. Conclusion, Limitations & Future Research

This paper is motivated by the apparent lack of knowledge as to how companies can infuse products and services with social information in ways that satisfy and address user needs and concerns. In doing so, we first developed a Social Information Integrator Tool (SOCIALIIT) – a generic tool that can be used by researchers and practitioners alike for testing the effectiveness of different social designs and getting feedback on these among users or potential users of online services. We then used the SOCIALIIT to test the overall impact of incorporating social

information into an online movie streaming service as well as the effectiveness of eight different social designs among 398 potential users of the service. Our results from this 2x2x2 factorial design experiment show that the inclusion of social information leads to a significant positive lift in potential users' attitude towards the service, which supports our overall hypothesis. However, we were not able to identify statistically significant effects regarding the relative effectiveness of opinions vs. behaviours. Following this logic, the findings suggest that behaviours can actually be designed to resemble endorsements. Nor were any significant differences found regarding the type or number of friends displayed, which might be ascribed to a lack of distinctiveness in the treatments. Finally, both the development process of the SOCIALIIT as well as the quantitative and qualitative data obtained in the online experiment provided insights from which we derived a number of implications for social product design

This paper contributes to the emerging body of research on social product design. Current research in this field has predominantly been occupied with either friend-specific social information being externally shared to platforms such as Facebook (e.g. Aral & Walker, 2011; Bond et al., 2012), or with social information being disclosed internally, but on an aggregated level (e.g. Y. Chen et al., 2011) or from specific users whose real, offline identity might not be known (Cheung et al., 2014). As such, this research makes a contribution by extending current knowledge and showing that the infusion of individual-specific social information from friends into an online service can lead to a positive impact on attitude towards the service among potential users. Additionally, we make a design contribution with the development of a tool that can be used to test such social product design in other services

This research also has clear implications for practice. First, the overall finding that the inclusion of social information in an online, content-based service can positively impact potential users' attitude towards the service is important as it can provide a new design-based way to diffuse a product among potential users. While this study has focused on one particular

case within a movie-streaming context, it is likely that related product categories, especially digital cultural goods services such as books and music, can too benefit from infusing social information into the user experience. Second, the study provides a number of hands-on guidelines for designing social products, prompting designers to assess *product fit* with social information, determine *type of data* to be used, and offer *customization* of the social information. Finally, it can be argued that this paper in some sense also challenges established organizational ways of working that marries Marketing with product design in the sense that it provides product designers with guidelines for persuasive elements to increase adoption and/or retention of customers. When doing so, designers will be utilizing own data, which all things equal will be more cost-efficient than relying solely on expensive advertising to acquire new customers.

7.1 Limitations & Directions for Future Research

As with all research, this study is a result of the weighing of pros and cons of various possible avenues for research design and analysis, all of which carry a set of limitations. In the following, we will address the limitations of the current study, along with suggestions for how to advance the knowledge in this line of research.

First, the use of a mock-up website was chosen as it allowed us to control and manipulate significantly more elements than would have been possible using the real website of the company. It did, however, also contain some limitations, one being that the site was not a fully functioning site. This might have negatively influenced users' attitudes towards the service and intention to use it, however, since we were mainly interested in the *relative* differences between the groups (based on different stimuli), we deemed that the use of a mock-up was sufficient.

Second, the behaviour-based and opinion-based social information presented to participants were quite similar, in the sense that only the wording varied. Future studies should explore how a stronger expression of opinion (e.g. star ratings) compares to behaviour-based information. The latter should in turn be integrated in a way that capitalizes on the quantity factor, i.e. that user actions are more plentiful than opinions because it requires more of people to form opinions and actively express these (Aral & Walker, 2011).

Third, future studies might benefit from a larger sample size. Our sampling was limited by the fact that we recruited real potential users in a natural environment (using targeted posts from Blockbuster's Facebook page). This approach has its benefits in terms of validity but is also costly and thus limited us from boosting our sample size. However, given the overall empirical trend in the data towards support for most of our hypotheses, we are quite confident that a larger sample size would enable stronger, more significant results.

Fourth, while in the current study we have provided insights that show that the integration of social information into an online content-based service positively affects potential users' attitude towards the service, it is crucial also to take the user's perspective and investigate *why* this is the case. Building upon the findings in this study, future research should seek to uncover how (potential and current) users perceive and make meaning of the social information presented to them in products and services, and which courses of action it affords them. This is an under-researched topic, but nevertheless crucial in understanding how products and services can be successfully designed with social information and/or social features. In pursuing this theme researchers might also explore complementary theoretical approaches to create insights into which meaning users make out of social information in products. For example, the use of Self Determination Theory (Ryan & Deci, 2000) could help discern between whether users interpret social information as something that provides utilitarian value (stimulating the need for competence) or relational value (stimulating the need for relatedness).

Finally, our findings build on the study of one specific online, content-based company (Blockbuster), integrating social information from one specific source (Facebook). Arguably, certain product categories would seem more appropriate for social product design, while others would seem less. There are countless of ways social information can be presented, and future research should explore these, as well as investigate how far our findings extend into other product categories.

References

- Aral, S., Dellarocas, C., & Godes, D. (2013). Introduction to the Special Issue —Social Media and Business Transformation: A Framework for Research. *Information Systems Research*, 24(1), 3–13. <http://doi.org/10.1287/isre.1120.0470>
- Aral, S., & Walker, D. (2011). Creating Social Contagion Through Viral Product Design: A Randomized Trial of Peer Influence in Networks. *Management Science*, 57(9), 1623–1639.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bapna, R., & Umyarov, A. (2015). Do Your Online Friends Make You Pay? A Randomized Field Experiment on Peer Influence in Online Social Networks. *Management Science*, 61(8), 1902–1920.
- Berger, J. (2014). Word of mouth and interpersonal communication: A review and directions for future research. *Journal of Consumer Psychology*, 24(4), 586–607. <http://doi.org/10.1016/j.jcps.2014.05.002>
- Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D. I., Marlow, C., Settle, J. E., & Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), 295–298.
- Chen, M. C., Anderson, J. R., & Sohn, M. H. (2001). What can a mouse cursor tell us more? In *CHI '01 extended abstracts on Human factors in computing systems - CHI '01* (p. 281). New York, New York, USA: ACM Press. <http://doi.org/10.1145/634067.634234>
- Chen, Y., Wang, Q., & Xie, J. (2011). Online Social Interactions: A Natural Experiment on Word of Mouth Versus Observational Learning. *Journal of Marketing Research*, 48(2), 238–254.
- Cheung, C. M. K., & Thadani, D. R. (2012). The impact of electronic word-of-mouth communication: A literature analysis and integrative model. *Decision Support Systems*, 54(1), 461–470. <http://doi.org/10.1016/j.dss.2012.06.008>
- Cheung, C. M. K., Xiao, B. S., & Liu, I. L. B. (2014). Do actions speak louder than voices? The signaling role of social information cues in influencing consumer purchase decisions. *Decision Support Systems*, 65, 50–58.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: compliance and conformity. *Annual Review of Psychology*, 55(1), 591–621. <http://doi.org/10.1146/annurev.psych.55.090902.142015>
- De Bruyn, A., & Lilien, G. L. (2008). A multi-stage model of word-of-mouth influence through viral marketing. *International Journal of Research in Marketing*, 25(3), 151–163. <http://doi.org/10.1016/j.ijresmar.2008.03.004>
- Dou, Y., Niculescu, M. F., & Wu, D. J. (2013). Engineering Optimal Network Effects via Social

- Media Features and Seeding in Markets for Digital Goods and Services. *Information Systems Research*, 24(1), 164–185.
- Duan, W., Gu, B., & Whinston, A. B. (2009). Informational Cascades and Software Adoption on the Internet: An Empirical Investigation. *MIS Quarterly*, 33(1), 23–48.
- Fogg, B. J. (2003). *Persuasive Technology: Using Computers to Change What We Think and Do*. Morgan Kaufmann Publishers.
- Fulk, J., Schmitz, J., & Steinfield, C. (1990). A Social Influence Model of Technology use. In J. Fulk & C. Steinfield (Eds.), *Organizations and Communication Technology* (pp. 117–141). Thousand Oaks: SAGE Publications, Inc.
- Garfinkel, H. (1967). *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.
- Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin.
- Hennig-Thurau, T., Gwinner, K., Walsh, G., & Gremler, D. (2004). Electronic Word-of-Mouth Via Consumer-Opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet? *Journal of Interactive Marketing*, 18(1), 38–52.
- Hildebrand, C., Häubl, G., Herrmann, A., & Landwehr, J. R. (2013). When Social Media Can Be Bad for You: Community Feedback Stifles Consumer Creativity and Reduces Satisfaction with Self-Designed Products. *Information Systems Research*, 24(1), 14–29. <http://doi.org/10.1287/isre.1120.0455>
- Hodis, M. A., Sriramachandramurthy, R., & Sashittal, H. C. (2017). Interact with me on my terms: a four segment Facebook engagement framework for marketers. *Journal of Marketing Management*, 31(11–12), 1255–1284. <http://doi.org/10.1080/0267257X.2015.1012535>
- Jankowski, J., Bródka, P., & Hamari, J. (2016). A picture is worth a thousand words: an empirical study on the influence of content visibility on diffusion processes within a virtual world. *Behaviour & Information Technology*, 35(11), 926–945. <http://doi.org/10.1080/0144929X.2016.1212932>
- Kunst, K. (2015). Electronic Word of Behavior: The Mediating Role of Social Media in Disclosing Otherwise Non-observable Product-related Behavior. In *Proceedings of the 44th Annual conference of the European Marketing Academy*. Brussels: EMAC.
- Kunst, K., & Vatrappu, R. (2014). Towards A Theory Of Socially Shared Consumption: Literature Review, Taxonomy, And Research Agenda. In M. Avital, J. M. Leimeister, & U. Schultze (Eds.), *Proceedings of the European Conference on Information Systems (ECIS) 2014, Tel Aviv, Israel*. Atlanta, GA: Association for Information Systems.
- Latané, B. (1981). The Psychology of Social Impact. *American Psychologist*, 34(4), 343–356.
- Lehdonvirta, V. (2012). A History of the Digitalization of Consumer Culture. In J. Denegri-Knott & M. Molesworth (Eds.), *Digital Virtual Consumption* (pp. 11–28). New York: Routledge.
- Mackenzie, I. S. (2003). Motor Behaviour Models for Human-Computer Interaction. In J. M. Carrol (Ed.), *HCI Models, theories and frameworks: Towards a Multidisciplinary Science of Human-Computer Interaction* (pp. 27–54). Morgan Kaufmann Publishers. <http://doi.org/10.1016/B978-1-55860-808-5.50003-4>
- McCracken, G. D. (1990). *Culture and Consumption: New Approaches to the Symbolic Character of Consumer Goods and Activities* (First). Bloomington: Indiana University Press.
- Noë, A. (2004). *Action in perception*. MIT Press.
- Oinas-Kukkonen, H., & Harjumaa, M. (2009). Persuasive Systems Design: Key Issues, Process Model, and System Features. *Communications of the Association for Information Systems*, 24(28), 485–500.
- Orne, M. T. (1962). On the social psychology of the psychological experiment: With particular

- reference to demand characteristics and their implications. *American Psychologist*, 17(11), 776–783. <http://doi.org/10.1037/h0043424>
- Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, 55(1), 68–78.
- Salganik, M. J., & Watts, D. J. (2008). Leading the Herd Astray: An Experimental Study of Self-fulfilling Prophecies in an Artificial Cultural Market. *Social Psychology Quarterly*, 71(4), 338–355.
- Sein, M., Henfridsson, O., Purao, S., & Rossi, M. (2011). Action Design Research. *Management Information Systems Quarterly*, 35(1), 37–56.
- Tan, W.-K. (2017). The effect of temporal psychological distance on reliance on word-of-mouth for information about destination image attributes. *Behaviour & Information Technology*, 1–10. <http://doi.org/10.1080/0144929X.2017.1349179>
- Thies, F., Wessel, M., & Benlian, A. (2016). Effects of Social Interaction Dynamics on Platforms. *Journal of Management Information Systems*, 33(3), 843–873. <http://doi.org/10.1080/07421222.2016.1243967>
- Tucker, C., & Zhang, J. (2011). How Does Popularity Information Affect Choices? A Field Experiment. *Management Science*, 57(5), 828–842.
- Vatrapu, R. (2010). Explaining culture: An Outline of a Theory of Socio-Technical Interactions. In *Proceedings of the 3rd ACM International Conference on Intercultural Collaboration (ICIC 2010)* (pp. 111–120). Frederiksberg, Denmark.

Appendix 1: Screen dumps from survey and mocked up Blockbuster website

BLOCKBUSTER

CBS COPENHAGEN BUSINESS SCHOOL

I det følgende vil du se en liste over dine Facebook-venner.

Kig på listen og marker minimum 10 personer (men gerne flere), som du tror, har en interessant film-smag.

Dine venner vil ikke få at vide, at du har markeret dem her.































Når du er færdig, så tryk på knappen "Næste" nederst på siden.

Søg

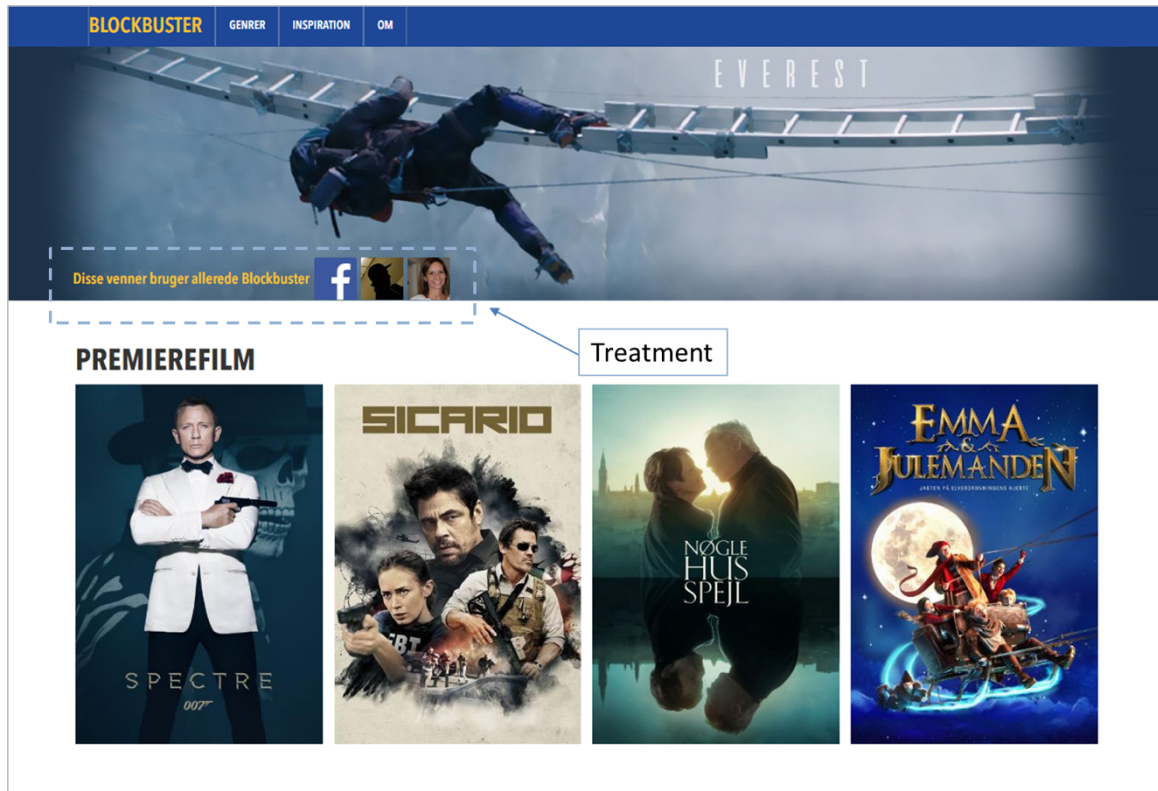
search

Vis alle

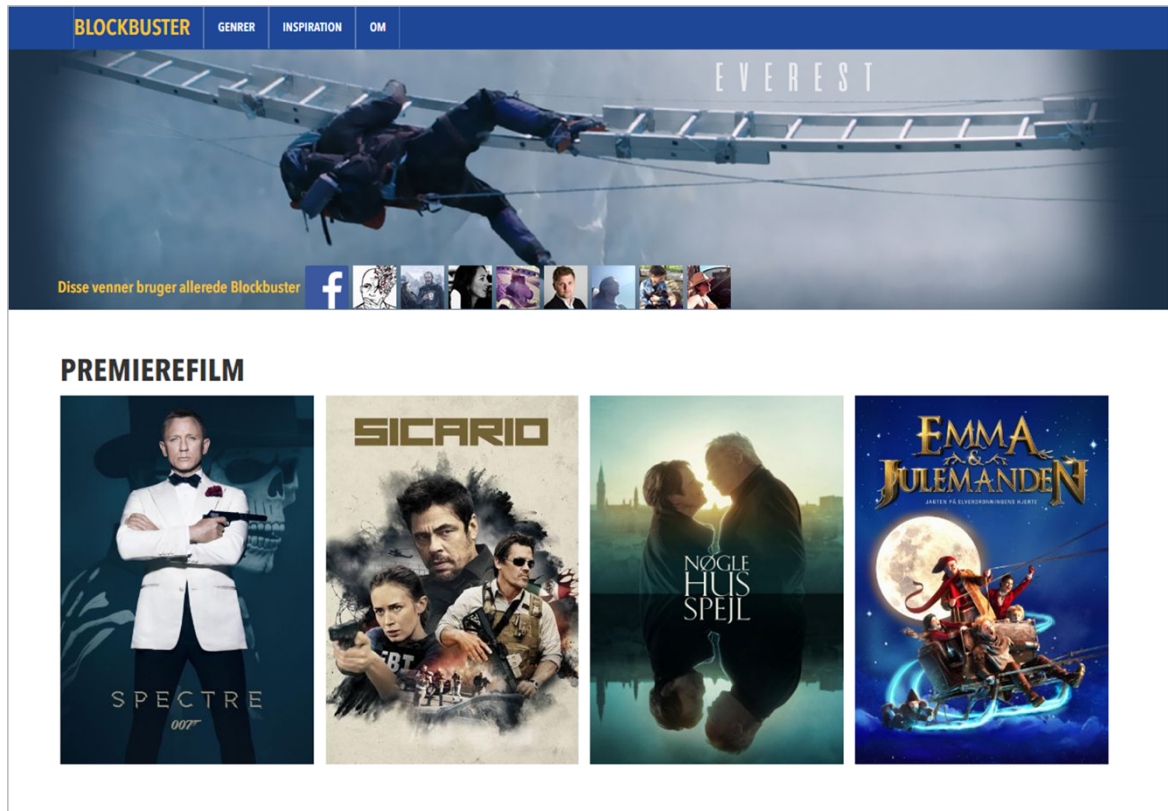
Antal venner valgt

NAMES HIDDEN FOR THE PURPOSE OF PUBLICATION									
									
									
									

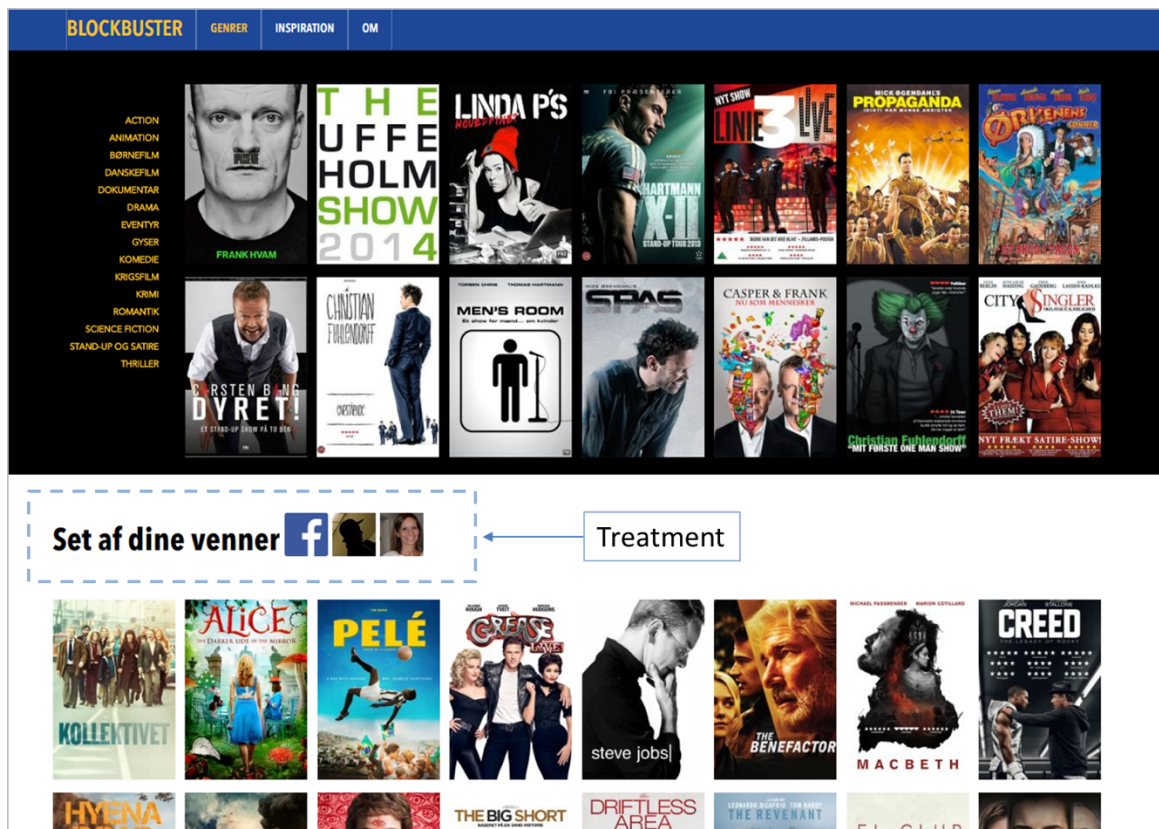
Screen dump 1: Pre-selection of friends having “an interesting movie taste” in survey



Screen dump 2: Blockbuster experiment website main page - example of treatment with low number of friends (2), behaviour-based information (indicated by wording that friends are “*using*” Blockbuster vs. friends “*like*” Blockbuster in Opinion-condition), and category-specific influential friends (pre-selected by participant in survey vs. a random selection from entire friend list).



Screen dump 3: Blockbuster experiment website main page - example of treatment with high number of friends (8)



Screen dump 4: Blockbuster experiment website - example of sub-page

Appendix 2: Operationalisation of dependent variables

Attitude Towards the Blockbuster Website

How much do you agree with the following statements about the Blockbuster website you just saw?

- a) I like the website
[1 = I completely disagree; 7 = I completely agree]
- b) The website makes it easy to find a movie that I would like to watch
[1 = I completely disagree; 7 = I completely agree]
- c) I think it seems like a good movie streaming service
[1 = I completely disagree; 7 = I completely agree]

Purchase Intention

- a) If I were to see a movie, which is not running in the cinema, I would consider using Blockbuster
[1 = strongly disagree; 7 = strongly agree]
- b) If I were to see a movie, which is not running in the cinema, I would prefer to use Blockbuster
[1 = strongly disagree; 7 = strongly agree]
- c) What is the probability that you will use Blockbuster within the next three months?
[1 = very unlikely; 7 = very likely]
- d) What is the probability that you will use Blockbuster the next time you want to see a movie, which is not running in the cinema?
[1 = very unlikely; 7 = very likely]

Appendix 3: Check for confounding variables – ANOVA output

Appendix 3a

Tests of Between-Subjects Effects

Dependent Variable: DV 1_Attitude

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	62.884 ^a	17	3.699	2.192	.005
Intercept	70.099	1	70.099	41.538	.000
Age	2.859	1	2.859	1.694	.194
Gender	19.454	1	19.454	11.527	.001
MaritalStatus	.000	1	.000	.000	.990
ChildrenCount	.691	1	.691	.409	.523
FilmCountPerMonth	7.526	1	7.526	4.460	.036
HowSeeFilm	2.637	1	2.637	1.563	.212
FilmType	17.763	1	17.763	10.526	.001
PaymentType	.009	1	.009	.005	.943
UseFilmTvSerial	1.954	1	1.954	1.158	.283
Inspiration_FriendsRecommendation	.881	1	.881	.522	.471
Typeoffriends	1.525	1	1.525	.903	.343
No.Offriends	.157	1	.157	.093	.761
Typeofinformation	.640	1	.640	.379	.538
Typeoffriends * No.Offriends	.765	1	.765	.453	.501
Typeoffriends * Typeofinformation	1.168	1	1.168	.692	.406
No.Offriends * Typeofinformation	.081	1	.081	.048	.827
Typeoffriends * No.Offriends * Typeofinformation	.736	1	.736	.436	.510
Error	491.095	291	1.688		
Total	8537.778	309			
Corrected Total	553.979	308			

Appendix 3b

Tests of Between-Subjects Effects

Dependent Variable: DV 2_Intention to use

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	109.353 ^a	17	6.433	3.389	.000
Intercept	50.762	1	50.762	26.741	.000
Age	7.699	1	7.699	4.056	.045
Gender	46.633	1	46.633	24.566	.000
MaritalStatus	.116	1	.116	.061	.805
ChildrenCount	8.660	1	8.660	4.562	.034
FilmCountPerMonth	1.119	1	1.119	.590	.443
HowSeeFilm	.127	1	.127	.067	.796
FilmType	10.474	1	10.474	5.518	.019
PaymentType	5.547	1	5.547	2.922	.088
UseFilmTvSerial	.265	1	.265	.140	.709
Inspiration_FriendsRecommendation	.000	1	.000	.000	.987
Typeoffriends	3.141	1	3.141	1.654	.199
No.Offriends	.057	1	.057	.030	.862
Typeofinformation	.279	1	.279	.147	.702
Typeoffriends * No.Offriends	1.082	1	1.082	.570	.451
Typeoffriends * Typeofinformation	.435	1	.435	.229	.633
No.Offriends * Typeofinformation	4.283	1	4.283	2.256	.134
Typeoffriends * No.Offriends * Typeofinformation	.427	1	.427	.225	.636
Error	552.406	291	1.898		
Total	5139.313	309			
Corrected Total	661.759	308			

8.5 Appendix: Paper 5

Kunst, Ringberg & Vatrapu (n/d). On the Behaviors of Others. *(not submitted)*

On the Behaviors of Others

Katrine Kunst¹, Torsten Ringberg¹ & Ravi Vatrapu^{1,2}

1) Copenhagen Business School, Denmark 2) Westerdals – Oslo School of Arts, Communication & Technology

ABSTRACT

This paper explores the deeper-lying interpretations and opportunities for action provided by behavior-based information within the context of a digital, content-based service. Although users' immediate interpretations of behavior-based information are generally found to be in line with prior conceptualizations of behavior-based information as 'popularity information' with an intended inspirational/guiding value, we demonstrate through a qualitative enquiry that behavior-based information is also acted upon by users in ways that satisfy the basic psychological needs for relatedness and competence. This need satisfaction takes place through social interactions with peers as well as by mere observation of other users' behaviors. As such, we extend the current conceptualization of behavior-based information and implications for design are derived.

Introduction

Further developments in communication technology will enable people to observe on request almost any desired activity at any time on computer-linked television consoles

(Bandura, 1986, p. 70)

The above was written by psychologist Albert Bandura in the mid-1980ies. It is truly remarkable how this prediction foresaw the opportunities of the digital landscape of the 2010s. Nowadays individuals can access (often real-time) digital information about other users' behaviors, such as, what music their friends listen to (e.g., Spotify), how many other users have purchased a specific product (e.g., Groupon), how many other users are looking at a particular hotel/accommodation (e.g., Hotels.com/ AirBnB), and which specific users have backed a project on a crowdfunding platform (e.g., Gofundme.com). The underlying enabler of this ability is the digitization of products and services. Digitization now enables a broad range of consumer behaviors, whose natural observability was previously largely limited to one's physical surroundings, to be broadcasted to peers and other users in the digital sphere (Kane, Alavi, Labianca, & Borgatti, 2014; Libai et al., 2010).

Seen from a marketing perspective this development is intriguing given the human propensity to be influenced by merely observing the behaviors of others (Bandura, 1986; Bikhchandani et al., 1998; Katrine Kunst & Vatrappu, 2018). In line with this theoretical proposition extant empirical research has indeed identified a significant effect on consumer decision making from observable behavior-based information across a number of product categories, such as digital cameras (Y. Chen et al., 2011), cosmetics (Cheung et al., 2014), online games (Aral & Walker, 2011), wedding services (Tucker & Zhang, 2011), crowdfunding (Thies et al., 2016), software downloads (Wenjing Duan et al., 2009), and music downloads (Salganik & Watts, 2008). Further, unlike opinions, information about user-behavior is abundant and does not require much, if any, effort from users to generate (Aral & Walker, 2011; Katrine Kunst & Vatrappu, 2018). Accordingly, whereas marketers have long had to encourage customers to spread positive (electronic) word of mouth (eWOM), digitization of behavior enables a new type of design-driven path to utilize social influence mechanisms in a manner where marketing seems to merge with digital design (Katrine Kunst & Vatrappu, 2018).

But what does it actually *mean* to an online user to be able to observe the behavior of another (known) online user or perhaps of many other (unknown) users? And what actions does this behavior-based information, consciously as well as unconsciously, afford the observing user? Looking to extant research the presence of digital information about other users' behaviors is often referred to as 'popularity information' (e.g. Duan et al., 2009; Sasaki, Becker, Janssen, & Neel, 2011; Thies et al., 2016; Tucker & Zhang, 2011) and mainly grounded in observational learning and herding theory (Bandura, 1986; Bikhchandani et al., 1998; Wenjing Duan et al., 2009). More specifically, extant literature has largely assumed that users actively use behavioral information of others to guide their own decisions in the direction of that of other users. However, these a priori assumptions of researchers about users' digital traces might not represent the reality of the user (Freelon, 2014). In fact, given the rich literature on the multifaceted meanings and roles of consumption, i.e., consumers' product-related behaviors, (e.g. Belk, 1988; Lehdonvirta, 2009; McCracken, 1990) we argue that there is reason to believe that information about other users' behaviors can convey meaning and facilitate usage beyond the informational level of providing guidance to popular content/products. Accordingly, and also following a recent call for more research into the user-interpretation of consumers' digital traces (see Freelon, 2014), this paper seeks to extend the current knowledge about the integration of behavior-based information in digital services. It does so by adopting a user perspective and the theoretical lens of self-determination theory (Ryan & Deci, 2017) and empirically explores the following research question: *How is behavior-based information interpreted and acted upon by users of an online content-based service, and how does it satisfy basic psychological needs?*

Acquiring such broader understanding of how behavior-based information is interpreted and acted upon by users is critical for how we as scholars approach the phenomenon. The preconceptions we have of a phenomenon largely determine the topics we choose to investigate in our research. A narrow focus will thus lead to in-depth insights, but also potentially neglect other relevant aspects. For practitioners, a well-rounded understanding of behavior-based information is crucial because behavior-based information is entirely dependent on design decisions. It simply only comes into existence if deliberate design decisions are made to include it in the digital interface. Therefore, knowing the full spectrum of how behavior-based information can fulfill user needs will allow product designers to better support these user goals, and thus reap the associated benefits hereof.

To answer the research question, we conduct a qualitative study of 21 Spotify users. Spotify is one of the most successful online music providers that enable its users to observe what other users do. Through semi-structured interviews we analyze how Spotify users interpret information about other users' behaviors within Spotify, and how this information is acted upon. To go beyond the commonly taken perspective of behavior-based information (i.e., that it serves as 'popularity information') we apply the means-end chain (MEC) approach (see Gutman, 1982; Walker & Olson, 1991) and the theoretical perspective of self-determination theory (SDT) (Ryan & Deci, 2000). From this case, we draw design implications that aim to support the design of content-based digital services to leverage behavior-based information but also point out missed opportunities that Spotify and other digital, content-based services can benefit from.

The Use of Behavior-Based Information in Product Design

The following section seeks to provide a brief introduction to behavior-based data and its use in product design and an overview of extant literature on this topic.

Given that we posit that the phenomenon of our interest is design-driven, we first find it important to clarify what we mean by 'design'. We adopt the view of design provided by the Human-Computer Interaction (HCI) literature. Within the HCI literature, design has long had a prominent role, manifested in sub areas of HCI such as Participatory Design, User Experience (Clemmensen, Kaptelinin, & Nardi, 2016), and Persuasive Systems Design (Oinas-Kukkonen & Harjumaa, 2009). Here, as put by Dourish (2006), design "goes beyond giving form to technologies to encompass appropriation – the active process of incorporation and co-evolution of technologies, practices, and settings" (Dourish, 2006, p. 546). Accordingly, we view the inclusion of behavior-based information as one element, out of many, in the overall design of digital services. Our interest lies in the study of how users appropriate the element of behavior-based information when incorporated in a given manner, and from that to generate user insights that feed back into the use of behavior-based information in the design of digital services.

The relevance of behavior-based information has been stressed by scholars due to, amongst others, the ever-increasing amount of content and product options available on the internet. This creates information overload among consumers making it increasingly difficult for

consumers to achieve overview of and compare every option available (Wenjing Duan et al., 2009). In such instances, information about the behaviors of others can provide helpful cues to online users in their decision making process (Cheung et al., 2014; Duan et al., 2009) in the sense that it presumably reflects what is popular among other users, hence the commonly used term 'popularity information' (Y. Chen et al., 2011; Tucker & Zhang, 2011).

Godes et al.'s (2005) posit that displaying the behaviors of users represent one type of 'social interaction' information that firms can strategically use to influence other users. As such, the use of behavior-based information is tightly knit with product design in the sense that the digital behaviors of other users can only become observable to the user if a deliberate decision design is taken to include it. Such deliberate use of behavior-based information in digital products and services has recently been referred to as the creation of 'Electronic Word of Behavior' (eWOB) (Katrine Kunst & Vatrapu, 2018). In line with this, a number of studies have investigated how behavior-based information can be used in product design to create more 'social' or 'viral' products (Aral et al., 2013; Aral & Walker, 2011; Bapna & Umyarov, 2015; Dou et al., 2013).

From a theoretical perspective, the use of behavior-based information in product design is interesting because of the basic human capability to learn from and be influenced by the behaviors of others, known as observational learning (Bandura, 1986). The observational learning perspective – and a number of related perspectives such as social contagion, peer influence, informational cascades, and information signaling theory - has been applied to the topic of behavior-based information (Aral & Walker, 2011; Bapna & Umyarov, 2015; Y. Chen et al., 2011; Cheung et al., 2014; Wenjing Duan et al., 2009; Thies et al., 2016).

Empirically, extant literature has generally found that the disclosure of information about other users' behaviors (e.g. link clicks, purchase decisions, actions taken within an online game, listening behaviors in a music streaming service etc.) within a digital product or service to have a significant impact on an individual user's choices, leading users to follow the choices of others (see Aral & Walker, 2011; Cheung et al., 2014; Salganik & Watts, 2008; Tucker & Zhang, 2011). A characteristic of the extant literature on the use of behavior-based information is that it has primarily focused on quantitative identification of the impact of behavior-based information on consumer decision-making and behavior. Only few studies take a user perspective, e.g. Luarn, Yang, & Chiu (2015) where users' motivations to share their behavioral

information on location-based services are identified. Moreover, the current knowledge-base has primarily taken an informational perspective on behavior-based information (Katrine Kunst & Vatrappu, 2018). That is, it is assumed that the user interprets and uses the behavior-based information as cues to make either better and/or easier decisions in line with observational learning theory. Building on with Freelon's (2014) call for more research into the user-perspective of digital traces of behavior, we posit that there is a need to go beyond this purely informational view and seek insights from the users themselves. That is, how users interpret this rather sterilized information, and how it is used in practice and finally how these insights can better inform the design of digital services with behavior-based information.

Theoretical Framework

Self-Determination Theory

This section briefly introduces the self-determination theory (SDT) and how it is applied in this study. Specifically, we focus on a central sub-theory of SDT, namely the theory of *basic psychological needs*. It posits that all individuals possess three basic psychological needs; autonomy, competence, and relatedness (Ryan & Deci, 2017). Each of these must be nurtured and satisfied for individuals to thrive. If deprived of satisfaction of these needs, the well-being of an individual will decrease, just as will any human being deprived of basic physiological needs such as sleep, food, and water.

The three needs are:

- 1) *Autonomy* refers to circumstances where “one’s behaviors are self-endorsed, or congruent with one’s authentic interests and values” (Ryan & Deci, 2017, p. 10). It has to do with freedom of decision and the personal meaningfulness of the task at hand (Sailer et al., 2017).
- 2) *Competence* refers to a basic need for being able to master something, be it sports, cooking, math, and generally operate efficiently within important life contexts (Ryan & Deci, 2017). It is what drives the golf player to practice small details again and again and the toddler to insist on doing things him/herself instead having the parents help.

3) Finally, the need for *relatedness* describes the human being's need for feeling cared for by others and to belong to social groups. An important component of relatedness is to give and contribute to significant others, be it close ties or larger social groups. This may explain for example the joy of giving a very personal gift for a family member for Christmas. The gift here becomes the signifier of the close relationship. Or why the voluntary soccer coach invests countless of hours in training kids and setting up tournaments. This hard work is gratified by a sense of belonging to some larger community.

SDT is especially well-suited for design topics as it emphasizes the active role of the environment in satisfying basic psychological needs (Ryan & Deci, 2017; Sheldon et al., 2011). Accordingly, we argue that by shedding light over how behavior-based information within a digital service satisfies basic psychological needs, designers will be able to develop services that better engage and retain users.

To the best of our knowledge, SDT has not previously been applied to behavior-based information in digital products and services. However, it has been successfully applied to related areas such as online gaming (Ryan et al., 2006), Facebook use (Sheldon et al., 2011) and the use of gamification design elements (Sailer et al., 2017) and in Q&A communities (Li et al., 2012). Further, while most often applied in experimental research, it has also proved to be a well-suited theoretical lens for qualitative research that explores the supportive role of the surrounding environment in satisfying basic human needs (Garn et al., 2010; Ryan & Niemiec, 2009).

Accordingly, we use SDT in this paper to discuss our findings and go beyond merely looking at behavior as a functional affordance that guides users towards popular music as prescribed in existing research. We hypothesize that being exposed to the behavior – in this case, the music-related behaviors – of friends as well as strangers affords higher, and more fundamental goals to be satisfied than merely guiding the choices of observing users.

Methodology

Semi-structured in-depth interviews using laddering techniques were conducted with users of Spotify. The semi-structured in-depth interview approach is well-suited for uncovering deep seated themes (Marshall & Rossman, 2006; Zaltman & Coulter, 1995) as it allows the researcher to explore a set of pre-determined topics while at the same time follow up on informants'

reasoning and emphasize certain topics depending on the individual relevance (Corbin & Strauss, 2015).

Empirical Context: Spotify Use

Spotify is an international music streaming service with over 170 million active users across 61 markets by March 31 2018²⁰. Spotify was chosen as the focal topic for our interviews because of Spotify’s extensive integration of behavior-based information in their service. As shown in Figure 1 Spotify displays, amongst others, aggregated information about the number of “listens” per song, number of monthly listeners per artist and the geographical location of these listeners plus – if connected with Facebook - information about what a user’s (specific) friends are listening to right now or have been recently.

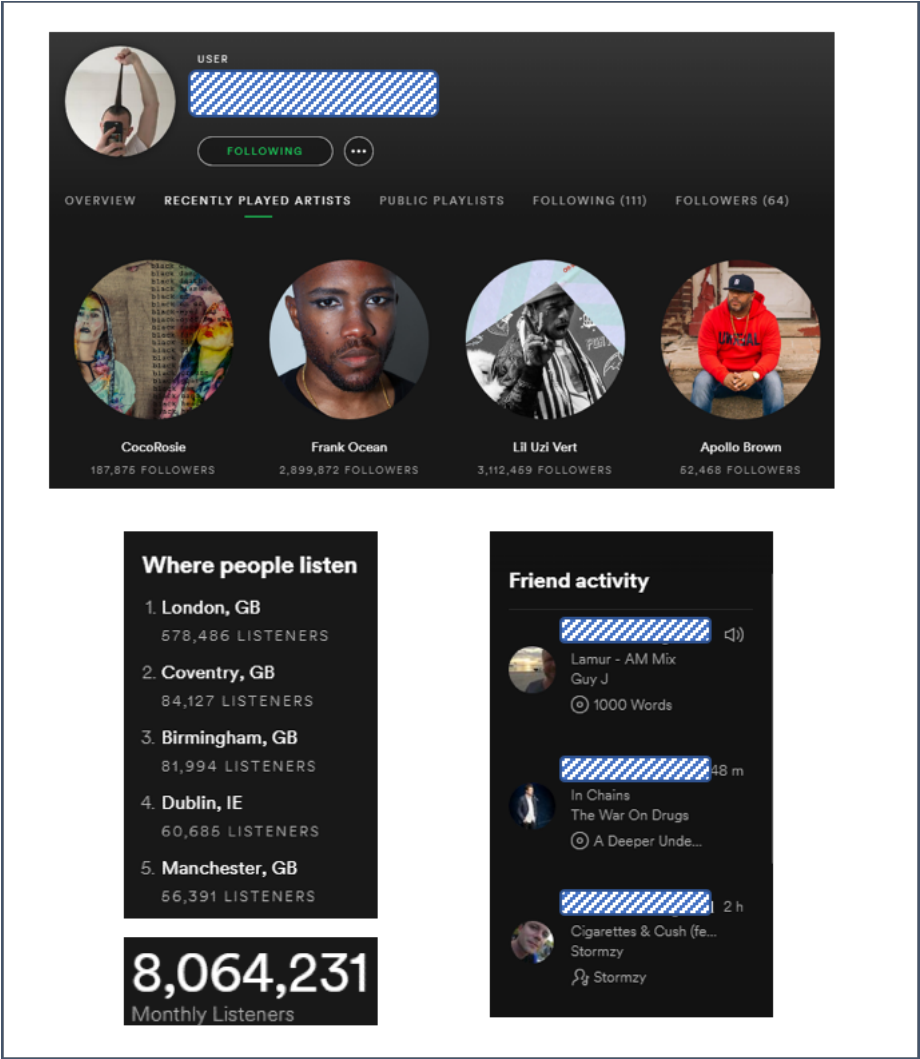


Figure 1. Examples of behavior-based information in Spotify (user names have been blurred)

²⁰ <https://newsroom.spotify.com/companyinfo/>

Sampling

Subjects were all employees of a large Scandinavian telecom company and represented a broad range of divisions and departments. We settled on this sampling approach because of one of the author's status as a part-time internal researcher in that company which allowed us to recruit a relatively homogeneous pool of informants, all of which could be interviewed in a neutral setting, familiar to both the interviewer and the informant. Further, although the sampling procedure made sure to include only informants with whom the interviewer was *not* acquainted, an initial bond of trust was established because of the researcher's semi-internal status. Trust and openness are especially important when conducting interviews using the laddering technique (T. J. Reynolds & Gutman, 1988). Despite the fact that all informants were employed by the same company, this affiliation was not at any point a topic in the interviews. In fact, the interviewer explicitly made it clear in the beginning of each interview that we were solely interested in their private use of Spotify.

The sampling was initiated by a post published on the company's intranet, seeking subjects "for interviews about music streaming". Several selection criteria were applied to ensure a balanced sample in terms of gender, whether the informant had enabled Spotify to connect with her/his Facebook account, and informant's general interest in music. Finally, informants had to be active users of Spotify Premium (paid version). Informants were rewarded with vouchers for a movie streaming service.

The Means-End Chain Approach

To fulfill our aim of uncovering deeper-lying interpretations and possibilities for action, it is pivotal to go beyond the immediate meaning-making of users, which might only uncover the more rational and conscious reasoning of subjects. Accordingly, the means-end chain (MEC) approach was chosen. The MEC approach is a widely used technique across disciplines (Y. Jung & Kang, 2010), especially within the consumer research and advertising fields, where it is recognized as an important tool for identifying meaningful end values. These insights have helped to create more effective marketing communications (Reynolds & Whitlark, 1995).

The MEC approach identifies links between concrete products and their attributes and higher-order benefits and end values satisfied by a particular product (Reynolds & Gutman, 1988; Walker & Olson, 1991). The "means" are the product/product attributes whereas the "ends"

are “valued states of being (Gutman, 1982, p. 60). From the most concrete to the most abstract level, a chain consists of four overall elements: *attributes*, *functional consequence(s)*, *psychosocial consequences*, and *values* (Reynolds & Whitlark, 1995), as illustrated in Figure 2.

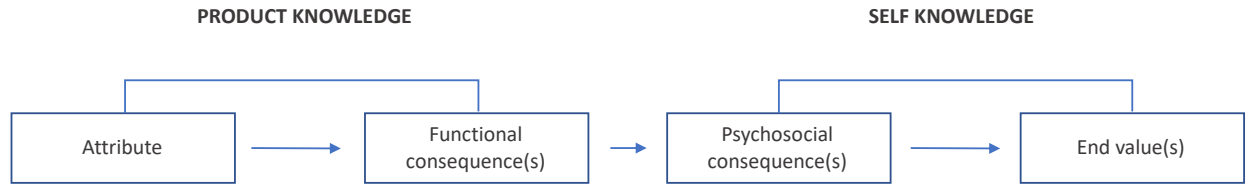


Figure 2. The means-end chain, adapted from Walker & Olson, 1991

The *attribute* is a concrete element of a product. It could be the red color of a Coca-Cola can or it could be the bubbling sensation when having the first sip. In this particular case, the attribute is the behavior-based information in Spotify. A *functional consequence* is the immediate, sometimes tangible, consequence of the attribute of interest. Moving one level of abstraction further one finds the *psychosocial consequences* representing how the particular aspect affects the individual emotionally and in relation to his/her social world. Finally, at the most abstract level we find *end values* which are characterized as desired end states of existence (Gutman, 1982) relating to the core of the self, such as happiness, relatedness, freedom (Walker & Olson, 1991). As such, MEC is particularly suitable in relation to the identification of the SDT values which are fulfilled through the deeper (and often subconscious) meanings that consumers ascribe to the use of products and services (Jung & Kang, 2010; Reynolds & Gutman, 1988), and in this particular case – the deeper lying interpretations and uses of behavior-based information within Spotify.

When planning to use MEC for the analysis of interview data it is pivotal that the interviews are conducted using laddering technique to ensure that the data is rich enough to construct “chains” (Reynolds & Gutman, 1988). Accordingly, a repertoire of probing questions is applied, which aids the interviewer in not biasing the interview as well as exploring deeper layers of informants’ experiences. The questioning process moves up and down the ladder having the informants establish the links between the rungs until a point of saturation (Y. Jung & Kang, 2010; Kjaergaard & Jensen, 2014). Questions such as “what do you mean by...?” and “tell me about a specific episode where this took place” serve to elaborate on the concept at hand. Questions such as “why is that important to you?” serve to ladder upwards toward the next rungs on the ladder, whereas questions such as “what circumstances normally lead to....?” serve to ladder downwards to uncover the antecedents. Finally, if negative issues were

mentioned, informants were probed with questions such as “why is that something you want to avoid?”

An initial interview guide was developed to explore the different perspectives of behavior-based information applied by Spotify users. This was tested in two pilot interviews, which lead to a few adjustments. Specifically, the pilot interviews revealed that the awareness of how one uses behavior-based information in Spotify is quite subtle, so it was important to spend additional time for informants to elaborate on concrete stories that illustrated their use of other’s behavior. Additionally, more laddering questions were added to create richer descriptions of each rung as well as the links between the rungs on the ladder.

Interview Procedure

21 interviews were conducted (see overview in Table 1) during the course of 1 ½ months in 2017.

Table 1. Informants

Interview No.	Informant	Gender	Age
1	KJ	M	29
2	CJE	M	26
3	CES	M	43
4	MGJ	M	26
5	LDO	F	25
6	RJ	M	29
7	HS	M	26
8	MJ	M	27
9	JC	M	38
10	MS	M	34
11	AA	F	28
12	GS	M	29
13	COHP	F	27
14	LTF	F	24
15	IR	F	27
16	CEA	F	44
17	AKP	F	56
18	CM	M	24
19	CH	F	34
20	MT	F	32
21	RH	F	30

The interviews were between 27 and 56 minutes long. Reflective notes were made (on the same day) following each interview. All interviews were conducted at the workplace of the informant in a meeting room. The interviews were audio recorded and later transcribed verbatim for analysis. The informants were instructed to bring along their device(s) used for Spotify, and the point of departure was the informants' own Spotify interface and their records of actual listening history on the Spotify platform. This approach was chosen to elicit concrete narratives about actual use behavior and to be able to better discuss the specific elements of interest. In line with Reynolds & Gutman's (1988) advice informants were told by the interviewer at the start of each interview that (s)he would probably ask a lot of questions for each topic, some of which might seem obvious and banal, but that this was important for the interview.

The documentation of user behavior is not emphasized in the Spotify interface; thus, informants were asked for concrete user stories. From these inferences could be made about the consequences behavior-based information (provided by Spotify) had in informants' lives. In some instances, informants would directly state such roles, for example in such phrases like "I (don't) use this to..." while in other cases they would recall a specific episode involving behavior-based information, and from that we were able to infer what consequences and/or values the behavior-based information had for the informant.

Data Analysis

Inspired by the grounded theory approach (Corbin & Strauss, 2015), the first step of the analysis was to read through all the post-interview memos as well as all the interviews to enable a rich understanding of the contents of the data. Next, the data was imported into the data analysis program MAXQDA and broken into smaller text segments. Specifically, data was coded with descriptive codes in terms of whether it contained the general topic of role of music in informants' lives or it contained talk about the behavior-based information elements in Spotify. Further, and in line with previous studies that have highlighted the differences in impact between observing the past actions of friends vs. strangers (J. Zhang, Liu, & Chen, 2015), we also coded the *granularity* of the behavior-based information: some instances were presented at the individual-specific level (i.e. information about specific Facebook friends' behaviors) whereas other information was presented in an anonymous and aggregated manner (e.g. that a song has been played 1 million times the past month).

This first round of descriptive coding enabled an identification of relevant segments from MAXQDA to be coded using the MEC approach. Excel was used for performing the MEC analysis as it proved to be the most flexible way of constructing chains. The following criteria assisted the coding process:

- **Attribute:** The type of behavior-based information present and how it is manifested (e.g. the number of monthly listeners for an artist).
- **Functional consequence:** The tangible, stated use (or non-use) of behavior-based information and/or the imagined use by oneself or others. Also, the non-use was coded as it typically included an explanation of what informants would not use it *for*, i.e. effectively stating their immediate interpretation of behavior-based information.
- **Psychosocial consequence:** More abstract uses, experiences, and emotions connected to the specific behavior-based information.
- **Values:** Overarching desired end states that can be said to be universally attractive to humans.

The coding process was an iterative process akin to the constant comparison method (Corbin & Strauss, 2015) where specific instances were reviewed against existing data. From that, new codes emerged and others were collapsed. Finally, once the links and chains were identified in Excel, the consequences and values identified were visualized in MAXQDA to highlight the chain structure and to identify common clusters of concepts. The result was a map visualizing the means-end chains for behavior-based information as perceived and acted upon by users.

Findings

We now present our findings from the MEC analysis and discuss them in relation to SDT and the three basic psychological needs. It should be noted that it was not possible in all cases to construct links all the way to the end value level. However, as the purpose of this research is to reach beyond the functional level the psychosocial level satisfies this goal. Many companies choose to position their brands toward the psycho-social level as it is here they can create a meaningful interaction with their customers. Figure 3 shows the map extracted from the MEC analysis. The number by each consequence or value represents the number of informants that fell into that particular thematic category.

At the functional consequence level, we notice from Figure 3 how ‘guidance’ seems to be the dominant interpretation of behavior-based information. This is in line with the extant literature in which the dominant way of referring to this type of information is ‘popularity information’ (e.g. Thies, Wessel, & Benlian, 2016; Tucker & Zhang, 2011; Zhang, Liu, & Chen, 2015). Here, ‘popularity information’ (i.e. observable information about other users’ behaviors) is – by drawing on the theoretical concepts of observational learning and herding - assumed to provide functional utility to the observing party guiding the user through an ongoing stream of consumer choices (Y. Chen et al., 2011; Cheung et al., 2014; Wenjing Duan et al., 2009).

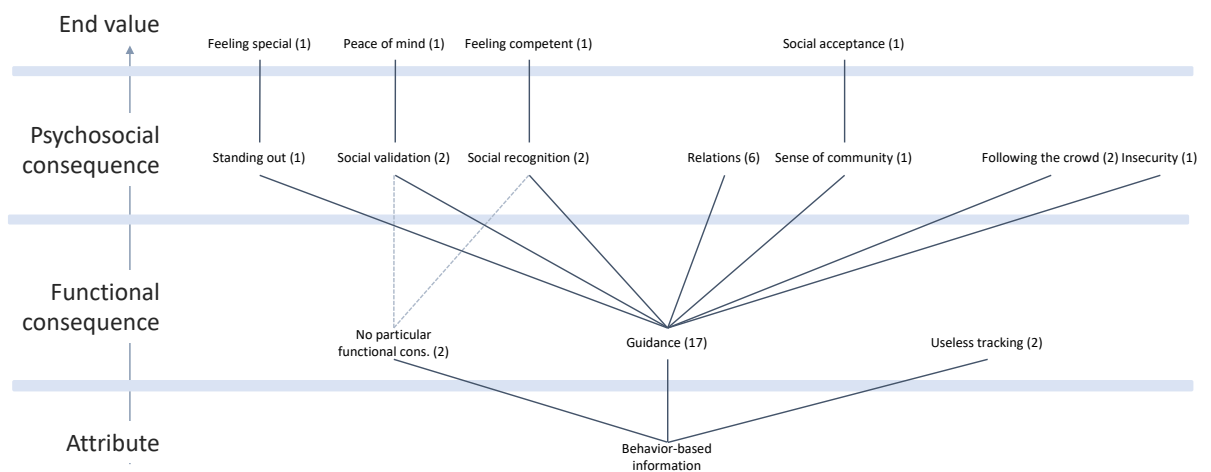


Figure 3. Means-end chain map

However, it is also evident that slight variations of this functional consequence exist.

Inspiration for *new* music is especially prevalent when it comes from friends. One informant explains when talking about a friend:

But yeah I can check and see what playlists he has, and even what he listened to last [...] And then I can listen to it to find out if it's something I'm also into. (MGJ, m, 26)

Similarly, JC mentions:

Spotify has this social feed so you can see what your friends are listening to. Sometimes it's like 'Ah right, that song - I haven't heard that in a super long time!' other times it's completely new music. (JC, m, 38).

Moreover, LTF elaborates:

I know that [name of a friend] for example has a completely different taste in music than me. So sometimes I check what he's been listening to lately, because he listens to a lot of heavy music I wouldn't

normally hear. Sometimes I find stuff that is really good (...) sometimes it's just good for inspiration. (LTF, f, 24).

Behavior-based information presented in anonymous format is typically interpreted as an indication of popularity and/or quality. This view is expressed, amongst others, by RJ who views the number of listens for a particular track as “a quality indicator” and IR (f, 27) who uses the number of listens to steer her away from niche music and towards popular music. In the following excerpt, she is looking at a song that has been played 10,000 times, which she regards as a low number of listens.

INT: *What does it tell you when you see how many times a song has been played? Like 10,000 times.*

IR: *I think that it must be something pretty niche and that it must be something special and I don't really analyze it too much because it's so special for me [glances at the screen] See this is where I think okay there are some really cool songs here, which I'll definitely like.*

INT: *Because it has a lot of plays?*

IR: *Yeah but it sounds a bit superficial when you say it like that.*

Similarly, KJ explains his use of aggregated behavior-based information as a way to find new music:

You can see, among other things, what's popular with other people right now. So you could say there's a pretty good chance of finding some good songs. (KJ, m, 29)

Taken together, our findings regarding informants' immediate interpretation of behavior-based is in line with the current literature that mainly describes behavior-based information as 'popularity information'. But what happens if we move beyond these immediate interpretations at the functional level towards subtler and less conscious interpretations and uses?

In the following we elaborate on which psychosocial consequences and desired end values stem from behavior-based information in Spotify. We use SDT's basic psychological needs as a lens to analyze our findings at the psychosocial and value levels and demonstrate how these are related to the basic psychological needs. Figure 4 provides an overview of our findings, organized according to how they are related to these needs.

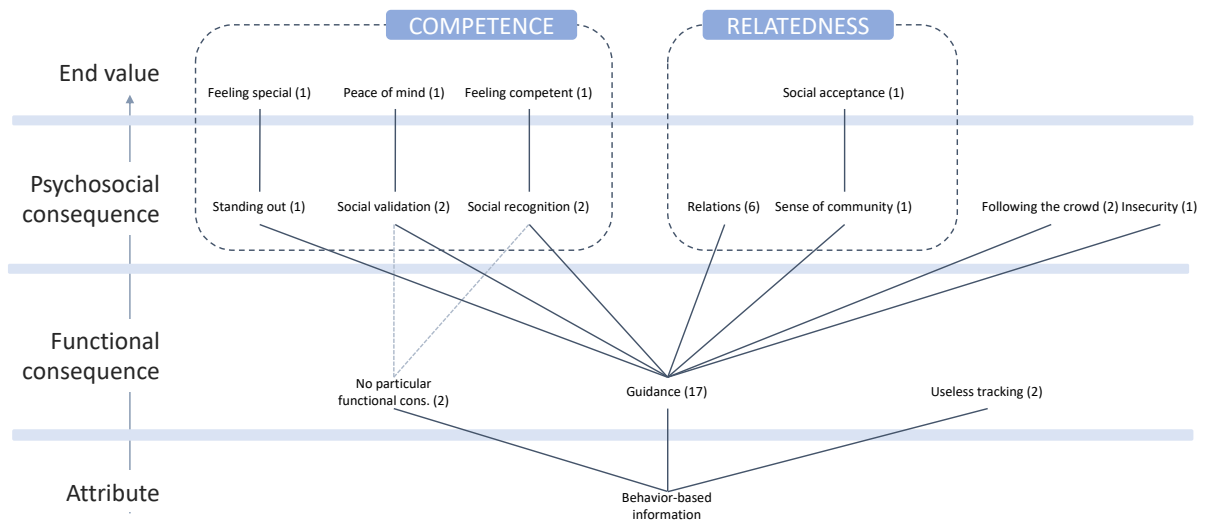


Figure 4. Means-end chain map & satisfaction of basic psychological needs

Relatedness

Our starting point will be the basic psychological need for *relatedness*. It describes the importance of feeling socially connected, cared for, and mutually respected, and involves the forming of strong, stable interpersonal relationships and the maintaining hereof (Baumeister & Leary, 1995; Luyckx, Vansteenkiste, Goossens, & Duriez, 2009; Ryan & Deci, 2017). Importantly, relatedness not only involves receiving care from important others, but also the experience of oneself as giving or contributing to others (Deci & Ryan, 2014).

As can be seen from Figure 4, many of the psychosocial consequences and values extracted from the interviews can be tied to the basic psychological need for relatedness. First and foremost, behavior-based information brings along various psychosocial consequences related to *relations*. This is especially prevalent for behavior-based information at the friend-specific level. Here, we notice how behavior-based information is being used by informants to maintain and/or expand relationships with peers through use of Spotify. In some cases, users are actively cultivating relationships for example by using the behavior-based information as a basis for future conversations with peers:

It could be one of my friends, who I would never imagine is into hip hop, because I consider her the 'pop type'. And then [I see] she listens to Kanye West a lot. So maybe the next time we catch up we have something to talk about if we talk about music. And in this way you get to know your friends in a different way than if you just sit and talk together. (MGJ, m, 26)

Several informants tell tales of social interactions stemming from behavior-based information which take the form of ‘friendly mocking’, i.e. a relation-building/-maintaining activity. One user, GS (m, 29) recalls:

GS: *For example, this guy I know, Alexander. I sometimes write him a message when I see he listens to something that isn't his typical style. Because then we can joke around and have some fun with that*

INT: *What could that be for example?*

GS: *One time he listened to a band from [specific city]. It was like this, sort of, high-pitched voice, and I couldn't understand why he listened to them. It didn't make sense. I tried to listen to it for myself, and then I wrote to ask him what the heck it was. And then, yes, I found out that he had listened to it while having dinner with his girlfriend, which meant that it was a little "out there". So you can use it like that once in a while.*

This active engagement in conversations with other users is in line with the perspectives of SDT, where people are thought to be actively seeking out and cultivating relationships (Baumeister & Leary, 1995). Interestingly, we also see that the behavior-based information can help maintain or expand relations by mere observation. One user explains:

It's, like, an ok way to follow what is going on but I don't know how much it's directly about the music. It's mostly just for the fun of it and to see what people listen to. [...] well, it might just be to keep up with what other people are up to and what they are listening to. (CJE, m, 26)

Here, one's music listening activity is used as a measure of what friends are “up to” and a way to keep up with the whereabouts of peers, akin to the typical use of social media (Sheldon et al., 2011). Further, behavior-based information is also used to get to know new sides of one's extant friends:

It's pretty fun to discover that your friend also like some of the music you're into, and to build a connection that you didn't know about. Then you somehow become a little closer to each other in that way. (MGJ, m, 26)

Additionally, one, very music-enthusiastic, user describes how being able to observe his friends' music consumption acts as a kind of virtual conversation:

I listen a lot to the people who share my taste in music. And they also happen to be people I know. So it becomes somewhat vital - that dimension. It is really a very clever thing they've made. It's almost, like, like a continuation of our conversation when we are not in the same room. (JC, m, 38)

Finally, the mere observation of the behaviors of similar others can give *sense of (virtual) community*, illustrated by one informant (LTF, f, 24) who talks about the number of monthly listens for one of her old-time favorite bands:

LTF: *It tells me that there is a good size fan base that also listens to the music, just like me. People that just go in [in Spotify] and put a [band name] album on then listen to it.*

INT: *And what do you think about that?*

LTF: *I mean I think that they're some extremely nice people that like the same music as me.*

Her way of describing the other listeners for this particular band as “extremely nice people” although they in reality are complete strangers to her, suggests that the behavior-based information disclosed to her creates a sense of community with the other users, which in turn arguably must satisfy the basic need for *Relatedness*. Further, an end value of *social acceptance* is detected when she elaborates on her knowing the number of listeners for this band:

LF: *I think it just gives me a bit of peace of mind.*

INT: *Why do you say that?*

LF: *Because I'm a huge fan of [name of band], and I think it's really nice to know that other people also really like to hear them. Maybe it's a bit of a lemming effect, to know that you are 'okay' and that you aren't the only person that still listens to something that is a little niche.*

Summarizing, we conclude that the existence of behavior-based information in Spotify can satisfy users' basic need for relatedness in a number of ways. First, users' existing relations are cultivated through behavior-based information about users' friends. Specifically, this can happen either through active interactions with friends which depart in the behavior-based information or through mere observation of friends' music listening behaviors. In this manner, behavior-based information is a tool for users to maintain and/or expand existing relations. Second, the existence of anonymous behavior-based information about Spotify users' behaviors can stimulate a sense of community and belonging, which feeds into an end value of social acceptance from like-minded users. This happens without any interaction with other users but solely by mere observation.

Competence

The basic psychologic need for *competence* refers to an individual's need to feel competent and successful in performing tasks (Luyckx et al., 2009). Further, being able to interact effectively

with and have an impact on one's environment is an important component of competence (White, 1959). In the view of SDT, this need is independent of the external rewards that might accrue from this competence (Ryan & Deci, 2017).

As can be seen from Figure 4, the human need for competence also plays an important role in Spotify users' interpretation and use of behavior-based information. At the psycho-social level we notice how users through behavior-based information strive towards *social recognition*, *social validation* and *standing out* from the crowd. These psychosocial consequences are progressed into desired end states (values) for users, namely a felt *peace of mind*, *feeling competent* and *feeling special*. To start with, it is evident that – as in the case of relatedness – Spotify's display of users' behavior-based information can satisfy the need for competence both by facilitating interactions with others and by mere observation of others' behaviors. Interestingly, the interviews reveal that the latter kind is more prevalent than the former. As one user explains when talking about Spotify's 'social feed' that displays the live or recent listening behaviors of one's connections:

I also have a good 'warm' feeling when I see my siblings, family, or close friends listen to music that I have sent them or something we have in common – I like that [...] It's just a kind of recognition that okay, I am not completely lost when it comes to music. I like music and it looks like you also like what I listen to. So that does make me happy. (IR, f, 27).

Here, the user is receiving *social recognition* from friends or family, albeit indirectly. She infers from observing their listening behaviors that she has had some sort of impact on them, in line with the need for having an impact on one's environment (White, 1959). When probed further about what she means by "warm", the user seems to derive some fundamental value of felt *competency* from such experiences:

Well, it's like, I do get happy – it warms me – because it might be that I don't play an instrument, and that I don't have a singer's voice, which I really wish I had, but then it's really nice to see that some of the music I like, that a person who is kind of, like, musically gifted, actually appreciates it. (IR, f, 27).

Behavior-based information can also satisfy the need for competence in an inverted manner, by guiding users towards what not to listen to, based on a high number of previous listens:

I don't know why, but I have a tendency to be like 'well it not so cool if everyone else thinks it is. (MJ, m, 27)

Here, the user uses the total (aggregated) number of listens of a song or artist as a filter against mainstream music, resulting in a psychosocial consequence of the feeling of *standing out*. This can further be argued to result in the end value of *feeling special*, where the user seems to pride himself of making competent choices, guided by (aggregated) behavior-based information:

I think it's pretty fun like that, if there's something that's really popular in Denmark for example and you're maybe, what should I say, a bit more out of the mainstream. (MJ, m, 27)

A similar case of inverted use of aggregated number of listens for a song or an artist reveals that the behavior-based information is also used to discover niche music (i.e. music with low number of listens), and that such discoveries can lead to offline interactions with friends, which in the end transcend into an end value of feeling *competent*:

But it's a little bit like getting a pat on the back when they say that what you've found is pretty good. (AKP, f, 56)

The above examples operate at the content or artist levels. However, behavior-based information can at the service level also act as a *social validation* of users' overall choice of Spotify. Simply speaking, by being able to observe a range of one's friends and their constantly updated listening behaviors, users are reminded that there are other users on the platform and that they continuously use Spotify. Thereby, the inclusion of behavior-based information can also act as a validation of the individual user's choice of Spotify as preferred music streaming service, making users stick to the service. One user explains:

If I reflect on this a little, then I'd say it gives me a sense of not being alone on this service – that I have somebody in my network who is also using it. So, in that way my use of Spotify is being validated. (CES, m, 43)

In this sense, being able to observe other users' behavior functions as a kind of continuous *social validation*, confirming that the user has made a competent choice, when signing up for Spotify.

Although CES stated in the beginning of the interview that he does not “use” the behavior-based information from friends, he does seem to ascribe a deeper meaning and use to it. He goes on:

I get a sense that there are a lot of people that use this service, you know? So it's not just me who is weird and actually paying for it, cause, you know, there just isn't a great alternative which is better, or which others are using meaning I am the only one left on Spotify. (CES, m, 43)

In this sense, CES seems to derive a fundamental end value from the behavior-based information that can best be labelled *peace of mind*, akin to the human propensity to strive for cognitive consonance, where one's choices and one's internal beliefs and attitudes are aligned (Festinger, 1957). The mere presence of others makes him feel that "there just isn't a great alternative" from which we can infer that he does not feel the need to go out and perform cumbersome research on alternatives. Seen from the perspective of SDT, we can say that he has completed the task of choosing a music streaming service in an effective manner, which we should thus expect to satisfy his basic need for competence.

Summarizing, we conclude that the existence of behavior-based information in Spotify can satisfy users' basic need for competence in a number of ways that require little, or no, interaction with other users. First, the ability to merely observe friends' listening behaviors as well as the behaviors of anonymous users, presented in aggregated form, can generate a sense of competence through, amongst others, indirect social recognition. Second, the presence of anonymous, aggregated behavior-based information can guide users towards the less popular artists, which leads to feelings of standing out and feeling special. This inverted function of behavior-based information stands in contrast to the empirical findings and theoretical apparatus applied in extant literature. Third, behavior-based information can also function at the service level and act as continuous social validation of service, which reassures users that they have made a competent choice and thus bring peace of mind.

Closing Remarks

In this study we have analyzed how the individual user interprets and reacts to information about other Spotify users' behaviors within the Spotify interface. As such, we have approached the user as being a receiver of behavior-based information from others. However, it was evident in the interviews that users' receipt of behavior-based information is also a reminder of one's *own* potential disclosure of one's own behaviors. This gave rise to user concerns about which behavior-based information is being sent out about oneself, to whom, and in which context. Specifically, some users expressed discomfort because they felt that one's music consumption was tightly knit with one's personality and/or mood. The prospect of revealing such information to others would, presumably, allow observers to infer personal details about

one's personality, mood, and whereabouts. This led some informants to entirely turn off the options for behavior disclosure (for example by disconnecting their Spotify and Facebook accounts or listening in "private mode") despite their enjoyment of receiving behavior-based information. Once turned off, opportunities for using behavior-based information as foundation for relatedness-satisfying interactions with peers are reduced. These - potentially needs thwarting - effects of behavior-based information will be further elaborated upon in the Discussion section.

Discussion

In this article we have taken a user-perspective and investigated how behavior-based information is being interpreted and acted upon by users when incorporated into a digital, content-based service. Through a means-end chain analysis of 21 interviews we derived the psychosocial consequences and values that pertain to users' interpretations and uses of behavior-based information. We related these findings to the theory of self-determination and found that although users' immediate interpretation of behavior-based information is in line with prior conceptualizations of behavior-based information as 'popularity information' with an intended inspirational value, behavior-based information also contributes to the satisfaction of the fundamental psychological needs of relatedness and competence. In the following section we discuss these results and their implications for theory and practice, derive design implications, and elaborate on the limitations of this study as well as avenues for further research.

Behavior-Based Information Beyond 'Popularity Information'

This study identifies a hitherto neglected, but important, role of observable behaviors in digital services. Mainly departing in observational learning and informational cascades theory, extant literature has so far treated behavior-based information as 'social cues' to provide guidance in users' decision-making in terms of purchase decisions (Y. Chen et al., 2011; Cheung et al., 2014; Tucker & Zhang, 2011) and the diffusion of technologies and content (Aral & Walker, 2011; Bapna & Umyarov, 2015; Wenjing Duan et al., 2009; Salganik & Watts, 2008). It has been empirically demonstrated, through primarily large-scale online experiments, that consumers across a range of product categories to a large degree follow the lead of others, and in some cases irrespectively of the behavior-based information being presented to them falsely depicts popularity (Salganik & Watts, 2008).

These findings in prior literature suggest that behavior-based information is a powerful force in influencing consumers' purchase and/or technology adoption decisions. Our research is in line with these findings, in that it shows that users do indeed, to a large degree, interpret behavior-based information as 'popularity information' and use it to follow the lead of others. The contribution of this particular research lies in the application of a user-perspective. Through this approach, we demonstrate how users of a digital, content-based service subscribe significant meaning and opportunities for action beyond the informational value suggested in extant literature. As such, behaviors are not just behaviors from which an observer can be inspired and/or derive informational value from. They also represent opportunities for conversations between individuals (satisfying the need for relatedness) and for feedback (satisfying the need for competence). And even the mere observation of others' behavior can satisfy these needs. In a sense, we can consider this digitally driven type of observable behaviors as a form of subtle but important communication, where mere behaviors are, from an ethnomethodological approach (Garfinkel, 1967), turned into "accountable social actions" that are "observable and reportable" (Katrine Kunst & Vatrappu, 2018).

Additionally, the finding that behavior-based information, albeit its subtle nature, can satisfy the basic psychological needs of relatedness and competence is important for practice as it links the design of digital services with users' well-being and potentially, we argue, user-retention. Self-determination theory's position that posits that the satisfaction of the basic psychological needs is important for the individual's general well-being has been demonstrated across a wide range of empirical settings e.g. among workers in work-related settings (Deci et al., 2001; Ilardi, Leone, Kasser, & Ryan, 1993), among residents in elderly care homes (Kasser & Ryan, 1999) and in friendships (Deci, La Guardia, Moller, Scheiner, & Ryan, 2006). As such, the inclusion of behavior-based information should also increase the well-being of users. Whether this leads to an increased loyalty from users is too premature to conclude and is an area for further research. However, given the empirically demonstrated close relationship between customer satisfaction, customer loyalty, and profitability (Gronholdt, Martensen, & Kristensen, 2000; Hallowell, 1996; Shankar, Smith, & Rangaswamy, 2003) it is reasonable to hypothesize that the inclusion of carefully designed elements of behavior-based services can have positive spill-over effects on user satisfaction and thus also on user retention and, in the end, profitability.

Especially worth highlighting is the finding that even anonymous and aggregated behavior-based information can provide users with a sense of community and competence through a

kind of ‘alone together’ experience. From a managerial point of view, this is positive as this type of data is more readily available than behaviors at the individual-specific level (that for example can require users to connect with Facebook). This is especially relevant given the recent Facebook data controversy where the data-driven marketing consultancy Cambridge Analytica illegally acquired Facebook user data and subsequently used it for political purposes, which subsequently led to it filing for bankruptcy²¹. As a consequence, Facebook has severely restricted third-party developers’ options to retrieve data from Facebook users²², which in turn decreases possibilities for online services to gain access to and display behavior-based information at the friend-level.

Moreover, this research questions whether more is always merrier. The interviews revealed that users do indeed, to a large degree, rely on behavior-based information to follow the lead of others, in line with extant literature. However, our study also shows that some users actually perform an inverted use of behavior-based information. Here, users are actively steering *away* from following the lead of many others. We speculate that this is rooted in differences in the user’s reference group(s) (Shibutani, 1955). The idea that the impact of observing someone’s behavior varies according to who performs the behavior and the interrelations between the person “modeling” and observing the behavior, respectively, is not new. It is a basic theoretical premise of observational learning theory (cf. Bandura, 1986) and social impact theory (Latané, 1981). Accordingly, several empirical studies have demonstrated that the impact of observing others’ behaviors is dependent on the strength of tie between the parties involved and their network embeddedness (cf. e.g. Aral & Walker, 2014; Bond et al., 2012). Following this line of reasoning, we might ask if there could also be scenarios where behavior-based information can be used by (more niche-orientated) users to actively steer away from following the choices of other users? This is not to say that these particular users are not susceptible to behavior-based information. Rather, for the observer it is a matter of determining whether the behaviors displayed are performed by users from his/her reference group(s). If not, the behaviors might be deemed irrelevant or even negative by the observing user. As such, our study suggests that more is not necessarily merrier.

Finally, we find it important to highlight the active role of design in the use of behavior-based information. User behaviors do not just disclose themselves online. The disclosure is dependent

²¹ <https://www.nytimes.com/2018/05/02/us/politics/cambridge-analytica-shut-down.html>

²² <https://www.theverge.com/2018/3/21/17148726/facebook-developer-data-crackdown-cambridge-analytica>

on deliberate design decisions by digital services, in line with SDT's emphasis on the importance of the surroundings in need satisfaction. Accordingly, digital services can actively design elements that seek to generate user well-being. But behavior-based information can be disclosed in many different ways, for example as behaviors of close vs. weak ties (cf. Aral & Walker, 2014; Bond et al., 2012), as aggregated behaviors (e.g. (Y. Chen et al., 2011; Wenjing Duan et al., 2009; Salganik & Watts, 2008; Thies et al., 2016; Tucker & Zhang, 2011), or as "recent" behaviors (as illustrated by Spotify). Although Spotify in its provision of behavior-based information can be said to satisfy some basic psychological needs, it is likely that there are more ways in which Spotify can use behavior-based information to further support users' satisfaction of basic psychological needs (and reduce potential need thwarting), which we will elaborate on in the following.

The Dark Side of Behavior-Based Information

As briefly alluded to in the Findings section, we noticed that the behavior-based information also gave rise to feelings of discomfort among some informants. We will in the following attempt to provide explanation for the underlying mechanisms of this discomfort.

Duality of Sender

Seen from the perspective of SDT, we can tie the discomfort experienced by some informants to the basic psychological need for autonomy. A tenet of autonomy is that behaviors are self-endorsed and congruent with informants' authentic interests (Ryan & Deci, 2017). Further, autonomy involves having ownership of one's actions and taking responsibility for them. In the case of Spotify usage, we assume that the informants' music listening behaviors in Spotify have been self-endorsed and congruent with their authentic interests, i.e. an autonomy-supporting activity. That is, no one forced them to listen to that music, and they put it on out of own pleasure. However, individuals' behaviors often differ depending on whether the setting is private or public (Snyder, 1987). Accordingly, when Spotify then makes information about users' privately enacted behaviors observable to others, the once self-endorsed, privately enacted, actions might not also be self-endorsed when publicly disclosed. The original behavior itself (music listening) might have been self-endorsed but the publishing hereof is not. The consequence is that the user partly loses ownership of the action because the medium/channel (in this case Spotify) is now partly "acting" as the user because it is publishing on behalf of the

user (Katrine Kunst & Vatrappu, 2018). Through the lens of SDT we argue that this loss of ownership and accountability of one's actions hinders autonomy satisfaction.

Lack of Audience Control and Feedback Options

Another issue related to the discomfort experienced when disclosing one's own behavior-based information can be that of the 'imagined audience'. The concept of an 'imagined audience' describes "a person's mental conceptualization of the people with whom he or she is communicating" (Litt, 2012, p. 330). However, in today's digital interconnected society the tendency of social media to collapse contexts and audiences means that it can be difficult to determine who is actually one's audience and how one should cater to very different people who in the offline realm belonged to distinct communities (Marwick & Boyd, 2010). Spotify is no exception as it does not offer users a way to control their audience besides entirely deactivating the option to disclose one's music behavior listening behaviors. Accordingly, informants' discomfort experienced at the prospect of disclosing behavior-based information can stem from this unclarity of audience and in which context one's behavior-based information will be received.

Moreover, a lack of 'common ground' due to missing feedback options can also help us understand the discomfort experienced. The concept of 'common ground' is commonly found in the Computer Supported Cooperative Work (CSCW) literature and refers to "the recursive knowledge that each has of the other, i.e. 'I know X' and 'You know X' and 'I know that you know X' and 'You know that I know X', recursively all the way down." (Tenenberg, Roth, & Socha, 2016, p. 242). Common ground affects how people communicate, because individuals shape their message under assumptions of the receiver's knowledge or context, however, not until the "receiver" provides a form of "acceptance" can the "sender" know how the message was received and understood (Tenenberg et al., 2016). In the case of behavior-based information this poses a challenge. First, as elaborated upon in the above, the behavior-based information is actually being disclosed by Spotify and not directly by the individual, albeit the core of the information (the behavior) stems from the individual. As a consequence, the individual user has not had the opportunity to "shape" the message to the audience. Second, when reviewing the Spotify interface, it is clear that Spotify does not provide any easy means for users to respond to the behavior-based information presented to them; (for example just a lightweight indicator of appreciation such as a 'like'). It is therefore difficult for users to provide an "acceptance", which we then expect hinders the sense of common ground. Third, as

seen in the interviews, informants instead turned to alternative channels to comment on friends' music listening behaviors, e.g. texting or offline conversations. This arguably increases the cognitive load (Sweller, 1988) on users who have to both i) identify an alternative channel for reacting to the behavior-based information and ii) decide whether contact over the chosen channel is appropriate given the sender and the receiver's normal mode of interpersonal communication. This increased effort required might lead some users to refrain from initiating such action at all, and thus reducing the opportunities for social interactions that would otherwise have been relatedness-satisfying. Further, prior research has empirically demonstrated that the receipt of positive feedback on one's social media postings can stimulate a feeling of connectedness and sense of community (Maruyama, Robertson, Douglas, Raine, & Semaan, 2017). Building on this, our findings suggest that there might also be an untapped potential for satisfying the basic need for relatedness if more options for feedback were introduced in Spotify. Finally, as the receipt of positive feedback has been found to satisfy the basic psychological need for competence (Ryan, Rigby, & Przybylski, 2006), we might also expect the lack of feedback options to potentially thwart competence satisfaction.

In other cases, informants stated that they might alter their behaviors if observable by other users, akin to the mechanisms known from Self-Monitoring Theory (Snyder, 1987). Here, the prospect of having other users observe one's behavior creates a "chilling effect" (Marder et al., 2016), where users might modify their behaviors to match the expectations of the observers or to perform impression management (Leary et al., 1990). This pattern resembles what in SDT is referred to as "introjected regulation", where individuals take in a regulation but without fully accepting it as their own (Ryan & Deci, 2000). In such cases the need for relatedness would actually come at the expense of autonomy need satisfaction because of lack of audience control. Further, such behavior-altering or what we could call "curated behaviors", where - potentially - only the desirable behaviors are disclosed, can clash with the common perception that "actions are stronger than words". This view of behaviors is questionable, especially in the digital environment, where users in some cases self-report behaviors, e.g. past purchases in Cheung et al. (2014) and voting behavior in Bond et al. (2012). In these cases, behaviors are not neutral accounts of what has happened as it might disguise behaviors that *also* happened. Or even falsely report behaviors that actually did not happen. In this manner, one can question the trustworthiness of behaviors when they are filtered to only disclose those that portray a positive image, similar to the mechanisms of conspicuous consumption (Veblen, 1899).

Another potential negative consequence of behavior-based information found in the interviews is when users are faced with their *own* past behaviors. Here, some informants expressed confusion over their own past listening behaviors, not being able to recognize what they had been listening to. And in such a manner that we argue it comes with a risk of thwarting users’ competence needs. Although only explicitly prevalent in two interviews, we find that this consequence highly relevant in today’s digitalized and algorithm-driven world, especially when viewed from a SDT perspective. Let us elaborate. One of the key features of Spotify highlighted by a majority of the informants as providing them with value is the recommendation engine of Spotify. Specifically, the weekly playlist provided by Spotify, personalized to each specific user, was highlighted as useful. While this use of an algorithm-based playlist arguably is highly convenient for users, it can conversely also be viewed as an outsourcing of one’s music competence. By doing so, the algorithm, or Spotify, becomes the competent party within the realm of music. From a SDT perspective this can stifle users’ felt competence as they no longer have the full ownership of their activities – a central requirement for individuals to experience competence (Deci & Ryan, 1985). As such, their music listening behaviors can no longer be attributed to their own music competence. Nor can it be viewed as a personal accomplishment because the music was served to the user without the user having to invest any effort, and for music enthusiasts not knowing what one has listened to might actually then be viewed as a personal failure. It thus follows that that Spotify risks facilitating a dwelling on users’ failures, something known to harm one’s sense of competence (Bandura, 1991), when they prominently display one’s own ‘recently played’ songs. Finally, it is worth noticing that, according to SDT, the feeling of competence is also tightly knit with individuals’ perceptions of their selves, and competence has been posited to “nourish people’s selves” (Ryan & Deci, 2017). Thus, not being able to recognize and be knowledgeable about one’s past music listening can be thought to impact individuals’ self-perception.

Implications for Design

To further tap into the basic needs satisfaction provided by behavior-based information and to accommodate the above described user concerns, we derive a number of design implications of relevance for Spotify and similar digital, content-based services (see Table 2).

Table 2. Implications for design

Design implication	Exemplification	Expected need satisfaction
Provide user control of disclosure	E.g. acceptance of followers, easy control of private vs. public mode, segmentation of followers, etc. Options for signaling context of music listening.	Autonomy
Provide feedback options	Option to 'like' or comment on users' listening behaviors	Relatedness & competence
Provide educational information	Detailed information about artists in users' personal listening overview	Competence
Provide user control of recommendations	Option to select elements of a 'recently played' track that one wants to listen more to	Competence

First, we suggest that product designers should provide more user control over to whom and in which context one's behavior is disclosed and means enabling easy response to the behavior-based information. This would lead to increased ownership of the disclosed behaviors, and as such provide support for users' autonomy, albeit it might also harm the trustworthiness of behaviors as pure and neutral accounts of what has happened. Further, product designers should provide easy means of responding to behavior-based information which is expected to increase the sense of common ground and thus reduce user discomfort. Finally, providing such means of responding would arguably also heighten the potential for social interactions between users and thus the satisfaction of relatedness as well as competence. In terms of the display of users' *own* music listening behaviors we saw how behavior-based information can potentially thwart feelings of competence in cases where users rely heavily on Spotify's recommendation engine as users are in effect faced with their own incompetence. To accommodate such negative consequences we suggest that digital, content-based services that use algorithms should provide opportunities for users to educate themselves about the music recommended by the algorithm. Thereby we should expect users to increase awareness and ownership of their music consumption. For example, Spotify could provide easily accessible information about artists to make users more knowledgeable about their own music consumption. Further, to increase users' awareness about their music listening (and thus spur a sense of competence) Spotify could provide ways for the user to have more influence over the algorithm. For example, by letting the user select which elements of a particular track "recently played" (by the user) that that the user appreciates, and what (s)he then wants to hear more of.

Limitations & Further Research

Naturally, this study is not without limitations. It is a single-case study on a digital, content-based service that operates as a "all you can eat-service". The user interpretations and uses of

behavior-based information might work differently in other product categories, and especially in cases where the online content is paid for per unit. Arguably, there is less tendency to perform spontaneous and/or explorative behaviors when each piece of content consumed (i.e. behavior) is paid individually. In such cases behaviors might carry more weight as users must be assumed to do more research before they engage in consuming a piece of content. Further, the study was conducted in Scandinavia. Other cultural contexts might yield different insights, especially in more collectively-orientated cultures where we should expect users to pay more attention to the behaviors of others. Finally, the use of self-determination theory naturally sets the stage for a focus on the role of behavior-based information as a means to satisfy basic psychological needs. Other theoretical approaches can help uncover additional relevant aspects of this topic.

We encourage scholars to further investigate elements of this exciting research theme of behavior-based information in products and services. We have provided qualitative insights that would be obvious to empirically validate in future quantitative studies. Further, the area of disclosing behavior-based information about users' *own* behaviors warrants further exploration. This is especially relevant in today's highly digitalized society where more and more physical products – and thus the consumption behaviors hereof – become digital. Given the widely acknowledged role of consumption in expressing personality, values etc. (cf. Belk, 2013; McCracken, 1990), consumers might experience a loss in opportunity to define and express themselves when products are digitalized, given the relative invisibility of digital products. Product designers should then take this into account when designing digital products and services and future research should explore this dimension. For example, can a digital service create the same – or even more – opportunities for sense of self and self-expression? Moreover, the use of SDT to explain the use of behavior-based information should be extended to other product categories and business models that do not operate on the “all you can eat” model. Finally, in this study we hypothesize a relationship between satisfaction of basic psychological needs through behavior-based information and the ability for a service to continuously engage and retain users. This, too, is a natural topic for further empirical validation.

References

- Aral, S., Dellarocas, C., & Godes, D. (2013). Introduction to the Special Issue —Social Media and Business Transformation: A Framework for Research. *Information Systems Research*, 24(1), 3–13. <https://doi.org/10.1287/isre.1120.0470>
- Aral, S., & Walker, D. (2011). Creating Social Contagion Through Viral Product Design: A Randomized Trial of Peer Influence in Networks. *Management Science*, 57(9), 1623–1639.
- Aral, S., & Walker, D. (2014). Tie Strength, Embeddedness, and Social Influence: A Large-Scale Networked Experiment. *Management Science*, 60(6), 1352–1370. <https://doi.org/10.1287/mnsc.2014.1936>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1991). Social Cognitive Theory of Self-Regulation. *Organizational Behavior and Human Decision Processes*, 50(2), 248–287.
- Bapna, R., & Umyarov, A. (2015). Do Your Online Friends Make You Pay? A Randomized Field Experiment on Peer Influence in Online Social Networks. *Management Science*, 61(8), 1902–1920.
- Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Belk, R. W. (1988). Possessions and the Extended Self. *Journal of Consumer Research*, 15(2), 139–168.
- Belk, R. W. (2013). Extended Self in a Digital World. *Journal of Consumer Research*, 40(3), 477–500.
- Bikhchandani, S., Hirshleifer, D., & Welch, I. (1998). Learning from the Behavior of Others: Conformity, Fads and Informational Cascades. *Journal of Economic Perspectives*, 12(3), 151–170.
- Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D. I., Marlow, C., Settle, J. E., & Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), 295–298.
- Chen, Y., Wang, Q., & Xie, J. (2011). Online Social Interactions: A Natural Experiment on Word of Mouth Versus Observational Learning. *Journal of Marketing Research*, 48(2), 238–254.
- Cheung, C. M. K., Xiao, B. S., & Liu, I. L. B. (2014). Do actions speak louder than voices? The signaling role of social information cues in influencing consumer purchase decisions. *Decision Support Systems*, 65, 50–58.
- Clemmensen, T., Kaptelinin, V., & Nardi, B. (2016). Making HCI theory work: an analysis of the use of activity theory in HCI research. *Behaviour and Information Technology*, 35(8), 608–627. <https://doi.org/10.1080/0144929X.2016.1175507>
- Corbin, J., & Strauss, A. (2015). *Basics of Qualitative Research* (Fourth). Thousand Oaks: SAGE Publications, Inc.
- Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the Benefits of Giving as Well as Receiving Autonomy Support: Mutuality in Close Friendships. *Personality and Social Psychology Bulletin*, 32(3), 313–327. <https://doi.org/10.1177/0146167205282148>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (2014). Autonomy and Need Satisfaction in Close Relationships: Relationships Motivation Theory. In Weinstein N. (eds) (Ed.), *Human Motivation and Interpersonal Relationships* (pp. 53–73). Dordrecht: Springer. https://doi.org/10.1007/978-94-017-8542-6_3
- Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need Satisfaction, Motivation, and Well-Being in the Work Organizations of a Former Eastern Bloc Country: A Cross-Cultural Study of Self-Determination. *Personality and Social Psychology Bulletin*, 27(8), 930–942.
- Dou, Y., Niculescu, M. F., & Wu, D. J. (2013). Engineering Optimal Network Effects via Social Media Features and Seeding in Markets for Digital Goods and Services. *Information Systems Research*, 24(1), 164–185.
- Dourish, P. (2006). Implications for design. *SIGCHI Conference on Human Factors in Computing Systems (CHI'06)*, 541–550. <https://doi.org/10.1145/1124772.1124855>
- Duan, W., Gu, B., & Whinston, A. B. (2009). INFORMATIONAL CASCADES AND SOFTWARE ADOPTION ON THE INTERNET: AN EMPIRICAL INVESTIGATION. *MIS Quarterly*, 33(1), 23–48.
- Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford, California: Stanford University Press.
- Freelon, D. (2014). On the Interpretation of Digital Trace Data in Communication and Social Computing Research. *Journal of Broadcasting & Electronic Media*, 58(1), 59–75. <https://doi.org/10.1080/08838151.2013.875018>
- Garfinkel, H. (1967). *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.
- Garn, A. C., Matthews, M. S., & Jolly, J. L. (2010). Parental Influences on the Academic Motivation of Gifted Students: A Self-Determination Theory Perspective. *Gifted Child Quarterly*, 54(4), 263–272. <https://doi.org/10.1177/0016986210377657>
- Gronholdt, L., Martensen, A., & Kristensen, K. (2000). The relationship between customer satisfaction and loyalty: Cross-industry differences. *Total Quality Management*, 11(4–6), 509–514. <https://doi.org/10.1080/09544120050007823>
- Gutman, J. (1982). A Means-End Chain Model Based on Consumer Categorization Processes. *Journal of Marketing*, 46(2), 60–72.
- Hallowell, R. (1996). The relationships of customer satisfaction, customer loyalty, and profitability: an empirical

- study. *International Journal of Service Industry Management*, 7(4), 27–42.
<https://doi.org/10.1108/09564239610129931>
- Ilardi, B. C., Leone, D., Kasser, T., & Ryan, R. M. (1993). Employee and Supervisor Ratings of Motivation: Main Effects and Discrepancies Associated with Job Satisfaction and Adjustment in a Factory Setting. *Journal of Applied Social Psychology*, 23(21), 1789–1805. <https://doi.org/10.1111/j.1559-1816.1993.tb01066.x>
- Jung, Y., & Kang, H. (2010). User goals in social virtual worlds: A means-end chain approach. *Computers in Human Behavior*, 26, 218–225. <https://doi.org/10.1016/j.chb.2009.10.002>
- Kasser, V. G., & Ryan, R. M. (1999). The Relation of Psychological Needs for Autonomy and Relatedness to Vitality, Well-Being, and Mortality in a Nursing Home. *Journal of Applied Social Psychology*, 29(5), 935–954.
<https://doi.org/10.1111/j.1559-1816.1999.tb00133.x>
- Kjaergaard, A. L., & Jensen, T. B. (2014). Using cognitive mapping to represent and share users' interpretations of technology. *Communications of the Association for Information Systems*, 34(1), 1097–1114.
- Kunst, K., & Vatrappu, R. (2018). Understanding electronic word of behavior: conceptualization of the observable digital traces of consumers' behaviors. *Electronic Markets*, (Advance online publication).
<https://doi.org/10.1007/s12525-018-0301-x>
- Latané, B. (1981). The Psychology of Social Impact. *American Psychologist*, 34(4), 343–356.
- Leary, M. R., Kowalski, R. M., & Leary, R. (1990). Impression Management: A Literature Review and Two-Component Model. *Psychological Bulletin*, 107(1), 34–47.
- Lehdonvirta, V. (2009). *Virtual Consumption*. Turku School of Economics. Retrieved from
<http://papers.ssrn.com/sol3/Delivery.cfm?abstractid=1630382#page=183>
- Li, Z., Huang, K.-W., & Cavusoglu, H. (2012). QUANTIFYING THE IMPACT OF BADGES ON USER ENGAGEMENT IN ONLINE Q&A COMMUNITIES. In *Proceedings of the Thirty Third International Conference on Information Systems*.
- Litt, E. (2012). Knock, Knock . Who's There? The Imagined Audience. *Journal of Broadcasting & Electronic Media*, 56(3), 330–345. <https://doi.org/10.1080/08838151.2012.705195>
- Luyckx, K., Vansteenkiste, M., Goossens, L., & Duriez, B. (2009). Basic Need Satisfaction and Identity Formation: Bridging Self-Determination Theory and Process-Oriented Identity Research. *Journal of Counseling Psychology*, 56(2), 276–288. <https://doi.org/10.1037/a0015349>
- Marder, B., Joinson, A., Shankar, A., & Houghton, D. (2016). The extended 'chilling' effect of Facebook: The cold reality of ubiquitous social networking. *Computers in Human Behavior*, 60, 582–592.
<https://doi.org/10.1016/j.chb.2016.02.097>
- Marshall, C., & Rossman, G. B. (2006). *Designing Qualitative Research*. Thousand Oaks: SAGE Publications Ltd.
- Maruyama, M., Robertson, S. P., Douglas, S., Raine, R., & Semaan, B. (2017). "Social watching" a Civic Broadcast: Understanding the Effects of Positive Feedback and Other Users' Opinions. In *Proceedings of the 20th ACM Conference on Computer Supported Cooperative Work (CSCW'17)*. New York, NY: ACM.
<https://doi.org/10.1145/2998181.2998340>
- Marwick, A. E., & Boyd, D. (2010). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society*, 13(1), 114–133. <https://doi.org/10.1177/1461444810365313>
- McCracken, G. D. (1990). *Culture and Consumption: New Approaches to the Symbolic Character of Consumer Goods and Activities* (First). Bloomington: Indiana University Press.
- Oinas-Kukkonen, H., & Harjumaa, M. (2009). Persuasive Systems Design: Key Issues, Process Model, and System Features. *Communications of the Association for Information Systems*, 24(28), 485–500.
- Reynolds, T. J., & Gutman, J. (1988). LADDERING THEORY, METHOD, ANALYSIS, AND INTERPRETATION. *Journal of Advertising Research*, 28(1).
- Reynolds, T., & Whitlark, D. (1995). Laddering data to communications strategy and advertising practice. *Journal of Advertising Research*, 35(4), 9–18.
- Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, 55(1), 68–78.
- Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. New York: The Guildford Press.
- Ryan, R. M., & Niemiec, C. P. (2009). Self-determination theory in schools of education. *Theory and Research in Education*, 7(2), 263–272. <https://doi.org/10.1177/1477878509104331>
- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The Motivational Pull of Video Games: A Self-Determination Theory Approach. *Motivation & Emotion*, 30(4), 344–360. <https://doi.org/10.1007/s11031-006-9051-8>
- Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*, 69, 371–380. <https://doi.org/10.1016/j.chb.2016.12.033>
- Salganik, M. J., & Watts, D. J. (2008). Leading the Herd Astray: An Experimental Study of Self-fulfilling Prophecies in an Artificial Cultural Market. *Social Psychology Quarterly*, 71(4), 338–355.
- Sasaki, T., Becker, D. V., Janssen, M. A., & Neel, R. (2011). Does greater product information actually inform consumer decisions? The relationship between product information quantity and diversity of consumer decisions. *Journal of Economic Psychology*, 32, 391–398. <https://doi.org/10.1016/j.joep.2011.02.010>

- Shankar, V., Smith, A. K., & Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, 20(2), 153–175. [https://doi.org/10.1016/S0167-8116\(03\)00016-8](https://doi.org/10.1016/S0167-8116(03)00016-8)
- Sheldon, K. M., Abad, N., & Hinsch, C. (2011). A Two-Process View of Facebook Use and Relatedness Need-Satisfaction: Disconnection Drives Use, and Connection Rewards It. *Psychology of Popular Media Culture*, 1(S), 2–15. <https://doi.org/10.1037/2160-4134.1.S.2>
- Shibutani, T. (1955). Reference Groups as Perspectives. *American Journal of Sociology*, 60(6), 562–569.
- Snyder, M. (1987). *Public appearances, private realities: The psychology of self-monitoring*. New York, NY, USA: WH Freeman/Times Books/Henry Holt & Co.
- Sweller, J. (1988). Cognitive Load During Problem Solving: Effects on Learning. *COGNITIVE SCIENCE*, 12, 257–285.
- Tenenberg, J., Roth, W.-M., & Socha, D. (2016). From I-Awareness to We-Awareness in CSCW. *Computer Supported Cooperative Work (CSCW)*, 25(4–5), 235–278. <https://doi.org/10.1007/s10606-014-9215-0>
- Thies, F., Wessel, M., & Benlian, A. (2016). Effects of Social Interaction Dynamics on Platforms. *Journal of Management Information Systems*, 33(3), 843–873. <https://doi.org/10.1080/07421222.2016.1243967>
- Tucker, C., & Zhang, J. (2011). How Does Popularity Information Affect Choices? A Field Experiment. *Management Science*, 57(5), 828–842.
- Veblen, T. (1899). *The theory of the leisure class: An economic study in the evolution of institutions*. Oxford: Oxford University Press.
- Walker, B. A., & Olson, J. C. (1991). Means-end chains: Connecting products with self. *Journal of Business Research*, 22(2), 111–118. [https://doi.org/10.1016/0148-2963\(91\)90045-Y](https://doi.org/10.1016/0148-2963(91)90045-Y)
- White, R. W. (1959). MOTIVATION RECONSIDERED: THE CONCEPT OF COMPETENCE. *Psychological Review*, 66(5), 297–333.
- Zaltman, G., & Coulter, R. H. (1995). Seeing the Voice of the Customer: Metaphor-Based Advertising Research. *Journal of ADVERTISING RESEARCH*, 35(4).
- Zhang, J., Liu, Y., & Chen, Y. (2015). Social Learning in Networks of Friends versus Strangers. *Marketing Science*, 34(4), 573–589. <https://doi.org/10.1287/mksc.2015.0902>

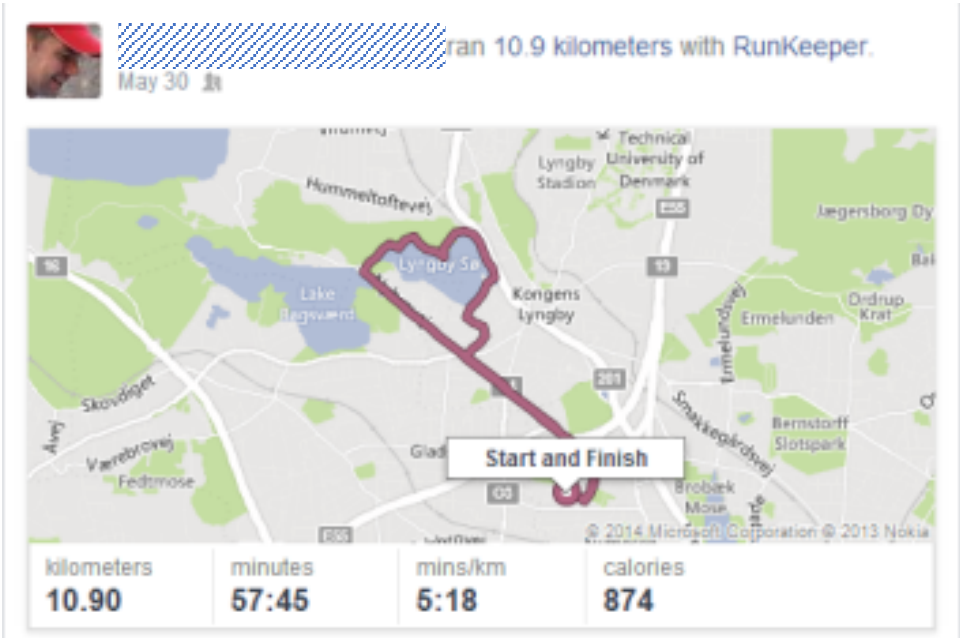
8.6 Appendix: Sample of eWOB database



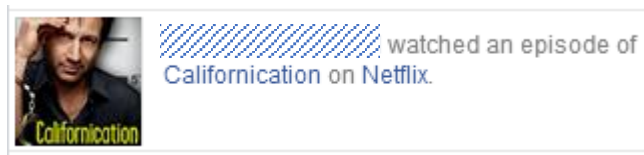
Tripadvisor: Planned (traveling) behavior



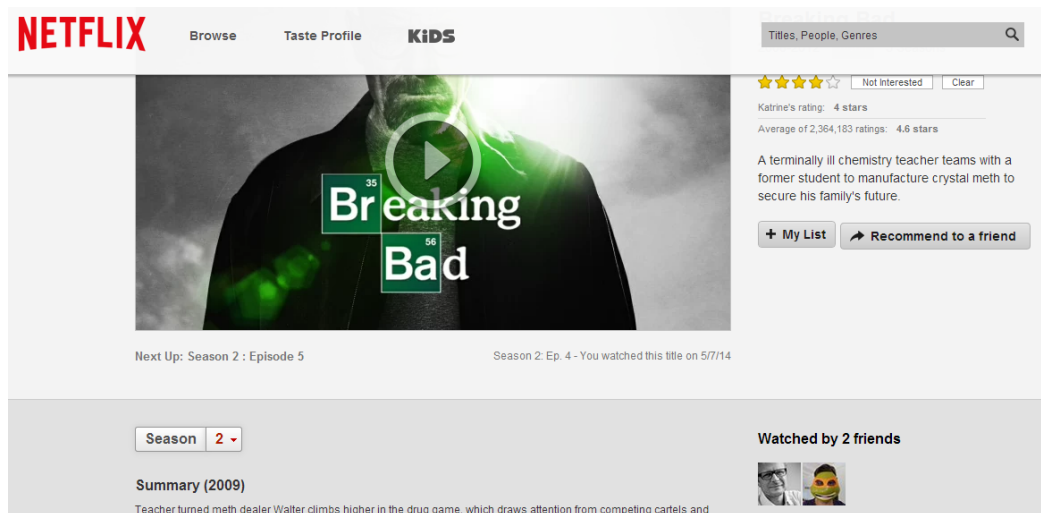
Amazon.com: Purchase behavior



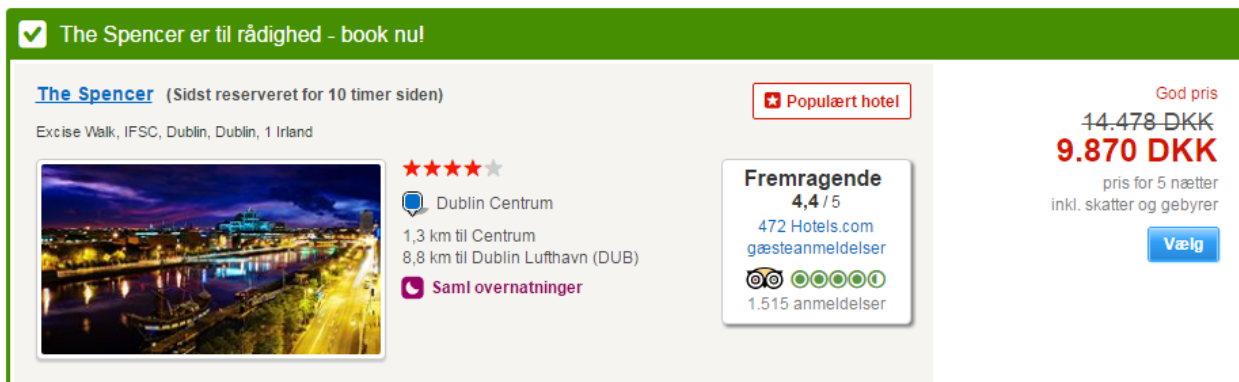
RunKeeper via Facebook: Running behaviors



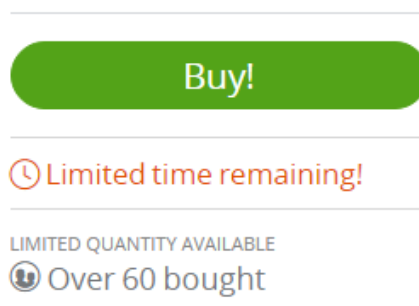
Netflix via Facebook: Movie watching behaviors



Netflix: Movie watching behaviors



Hotels.com: Hotel booking behaviors



Groupon: Purchase behaviors

MEST HØRTE UDSENDELSE



LIGA

31. JUL. 2016 KL. 12:03



P3 med Nicholas Kawamura

27. JUL. 2016 KL. 09:04



SommerMorgen

02. AUG. 2016 KL. 06:04



SommerMorgen

KL. 06:04



SommerMorgen

01. AUG. 2016 KL. 06:04

DET ANDRE HØRER NU



SommerMorgen

02. AUG. 2016 KL. 06:04



SommerMorgen

28. JUL. 2016 KL. 06:04



P3 med Andrew Moyo

02. AUG. 2016 KL. 09:04



P1 Morgen

28. JUL. 2016 KL. 06:06



P3 med Andrew Moyo

28. JUL. 2016 KL. 09:04

MEST HØRTE PODCAST



Mads & Monopolet

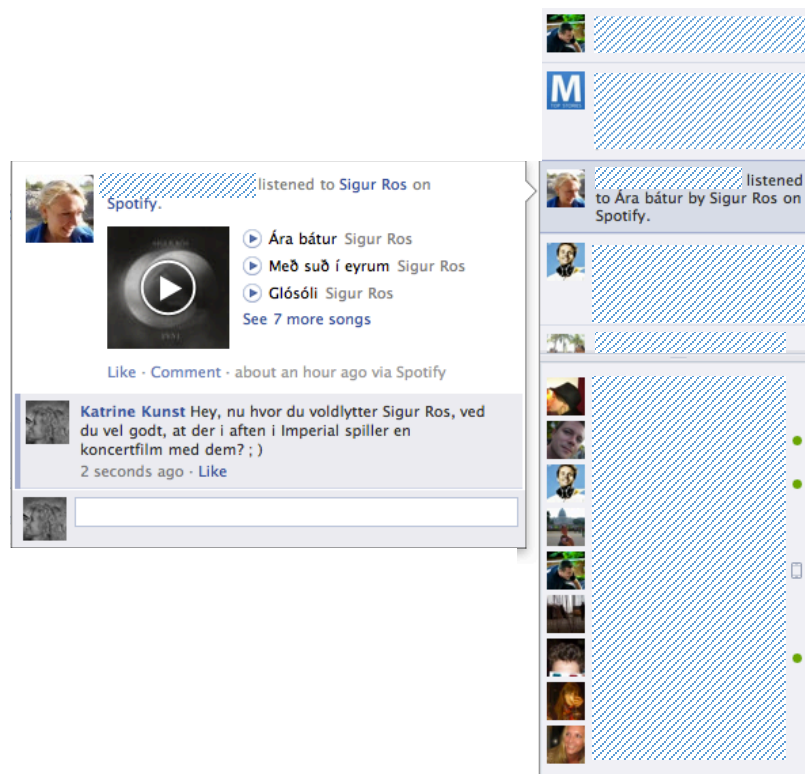
[ITUNES](#) [XML](#)



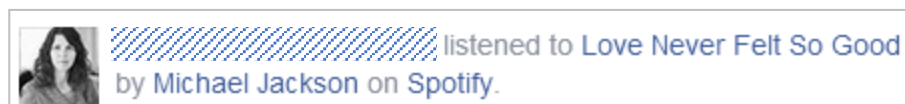
Monte Carlo

[ITUNES](#) [XML](#)

Dr.dk (Danish public radio): Radio listening habits



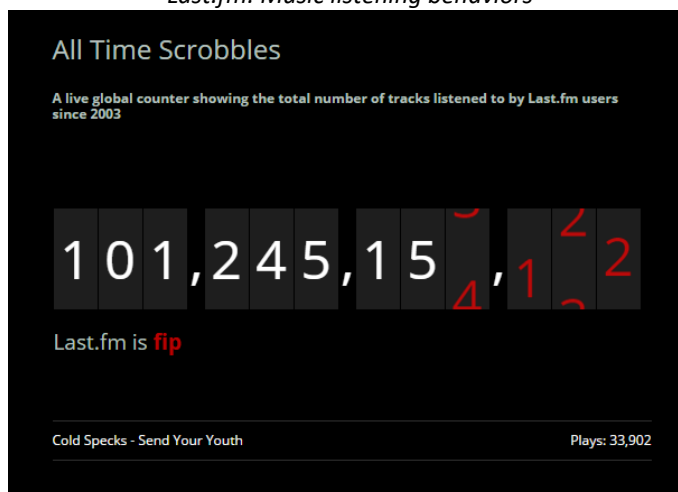
Spotify via Facebook: Music listening behaviors



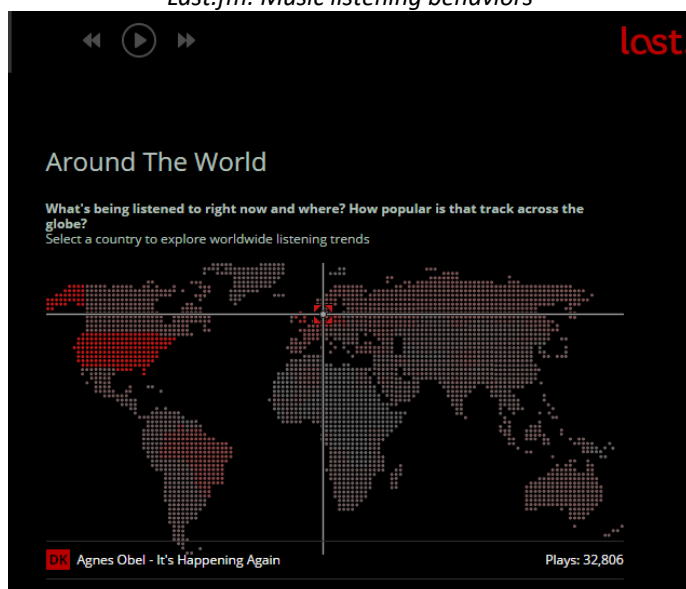
Spotify via Facebook: Music listening behaviors



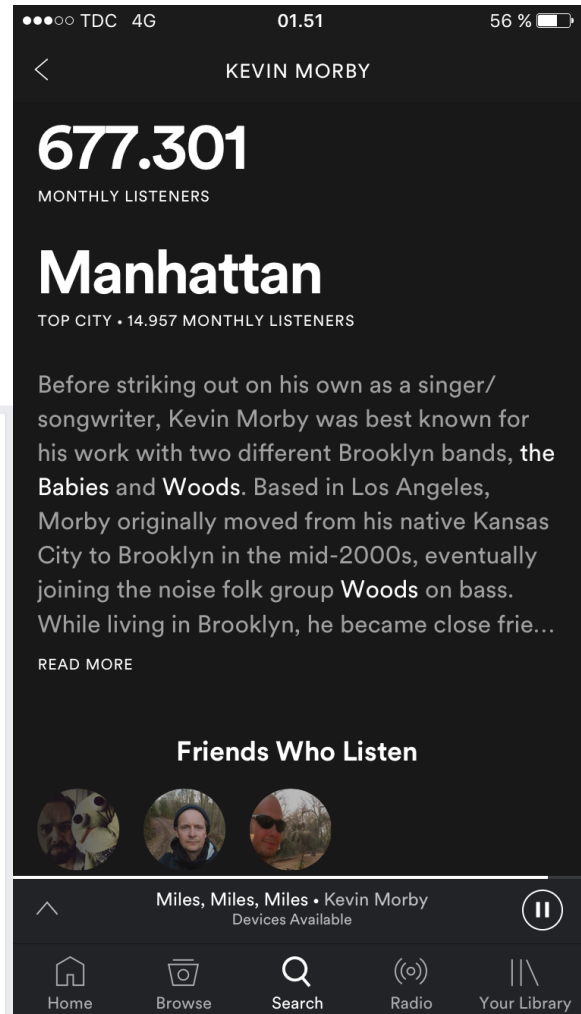
Last.fm: Music listening behaviors



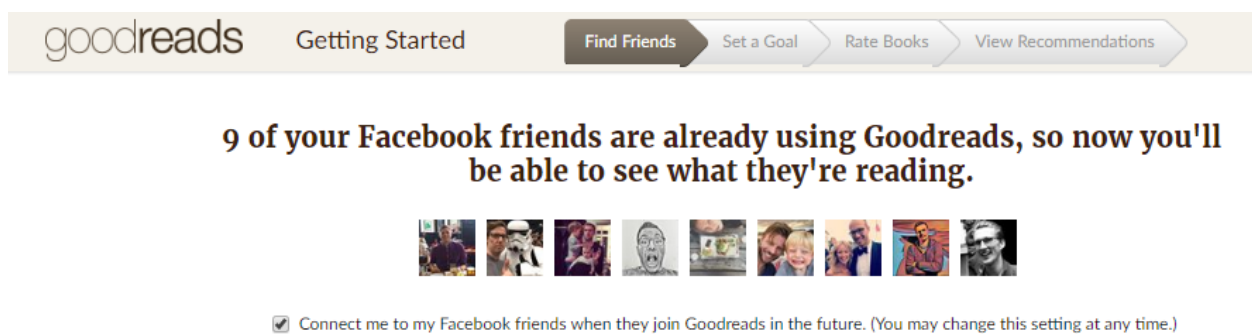
Last.fm: Music listening behaviors



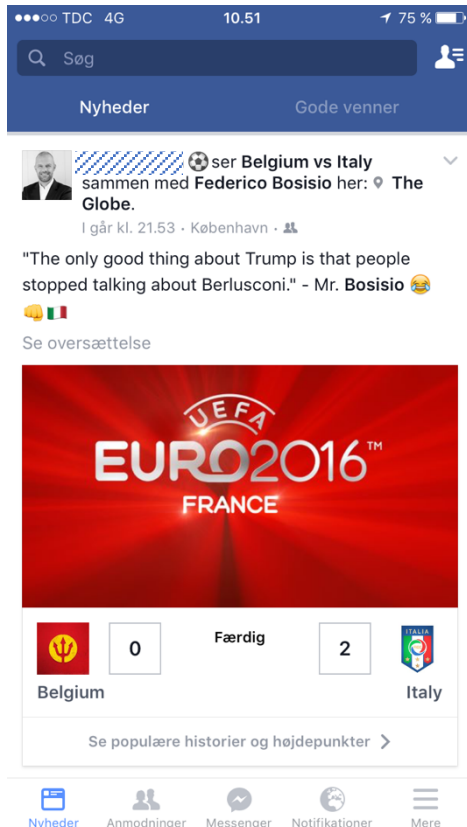
Last.fm: Music listening behaviors



Spotify: Music listening behaviors



Goodreads: Book reading behaviors



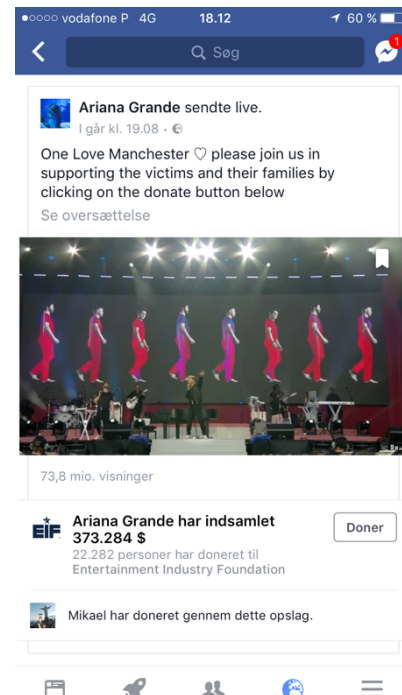
TV watching behaviors via Facebook.



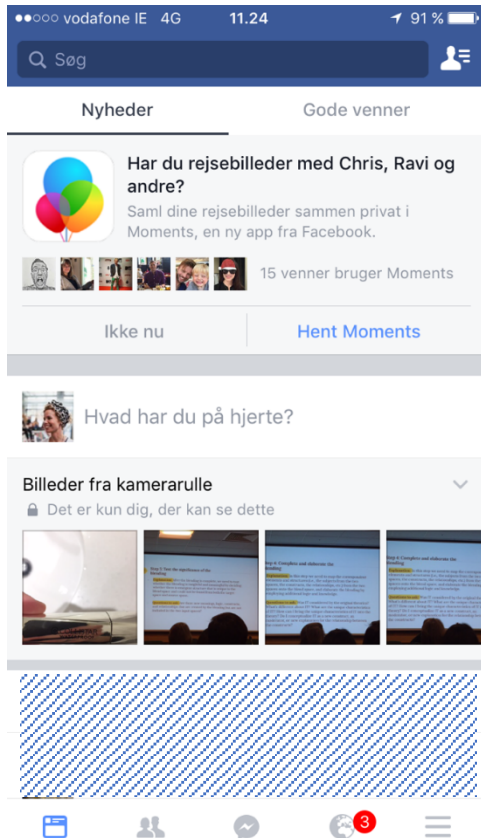
Traveling behaviors via Facebook



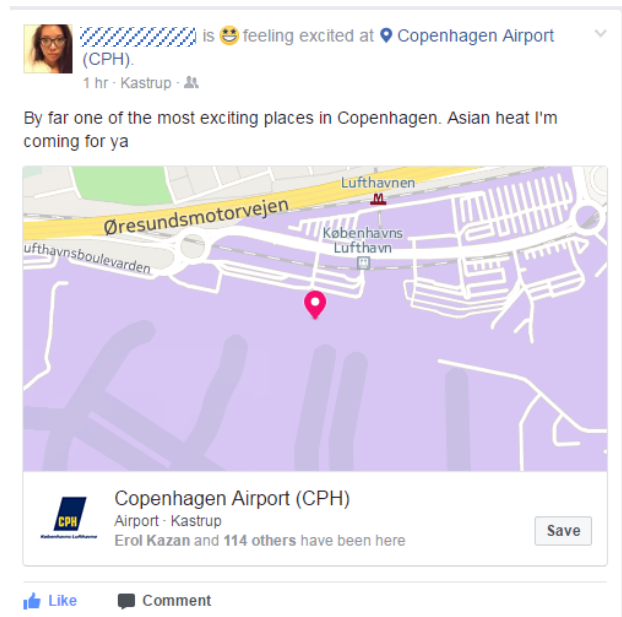
Photoshop Mix: App-usage via Facebook



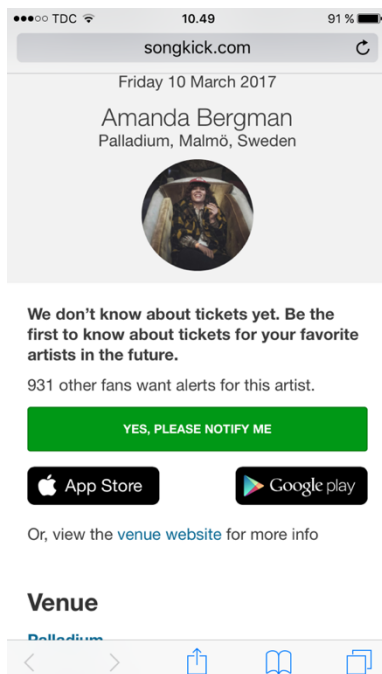
Donation behaviors via Facebook



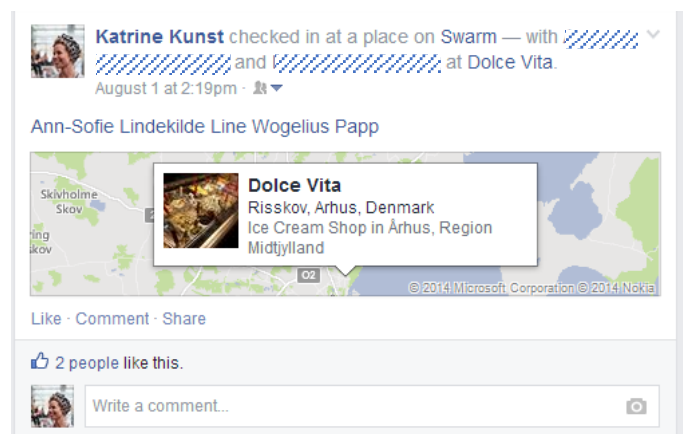
Moments via Facebook: App-usage behaviors




Location-based behaviors via Facebook



Songkick: Notification sign-ups




Behaviors based on information via Facebook







COMPLEJO MAR Y MONTAÑA 1

Helt hjem
Vært: **Maria**



Folk kigger på denne bolig. 9 andre kigger på det for disse datoer.

 6 gæster
  2 værelser
  4 senge
  1 badeværelse...

996 kr. per nat
★★★★★ 10

Anmod om at booke

TDC 4G 14.59 98 %

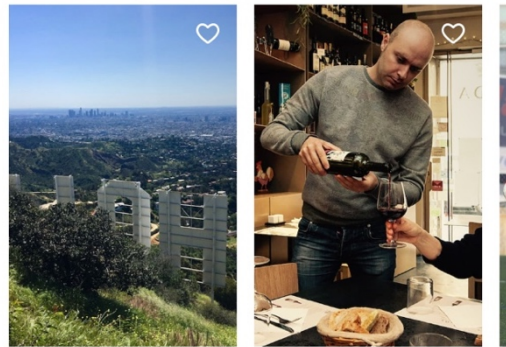
Hvor som helst

Når som helst

1 gæst

TIL DIG BOLIGER OPLEVELSER STEDER

Lige blevet booket



Fotos Om dette opslag Omtaler Værten Placering

698kr DKK Per Nat

Indtjekning 13.10.2016 Udtjekning 16.10.2016 Gæster 1

698 kr x 3 nætter 2095kr

Rengøringsgebyr 70kr

Servicegebyr 349kr

Total 2514kr DKK

Øjeblikkelig booking

Der vil ikke blive opkrævet noget fra dit kreditkort

Det her er et sjældent fund.
Nanettes bolig er som regel booket.

Gem på Wish List

237 rejsende har gemt denne bolig

Email Messenger Mere

Anmeld dette opslag

185 omtaler ★★★★★

Sag omtaler

Resumé

Nøjagtighed ★★★★★

Kommunikation ★★★★★

Renhed ★★★★★

Beliggenhed ★★★★★

Indtjekning ★★★★★

Værdi ★★★★★

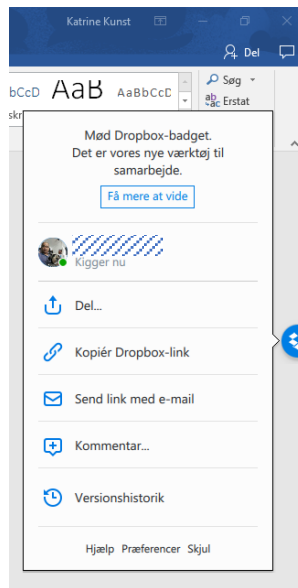
Oversæt omtaler til Dansk

Sabrina
Lovely place and very comfortable; I liked staying there. It's the perfect location between Boston and Harvard; both are easily accessible with the Red line. Nanette and Thurman are very friendly and helpful. Thanks a lot!
juli 2016 Nyttig

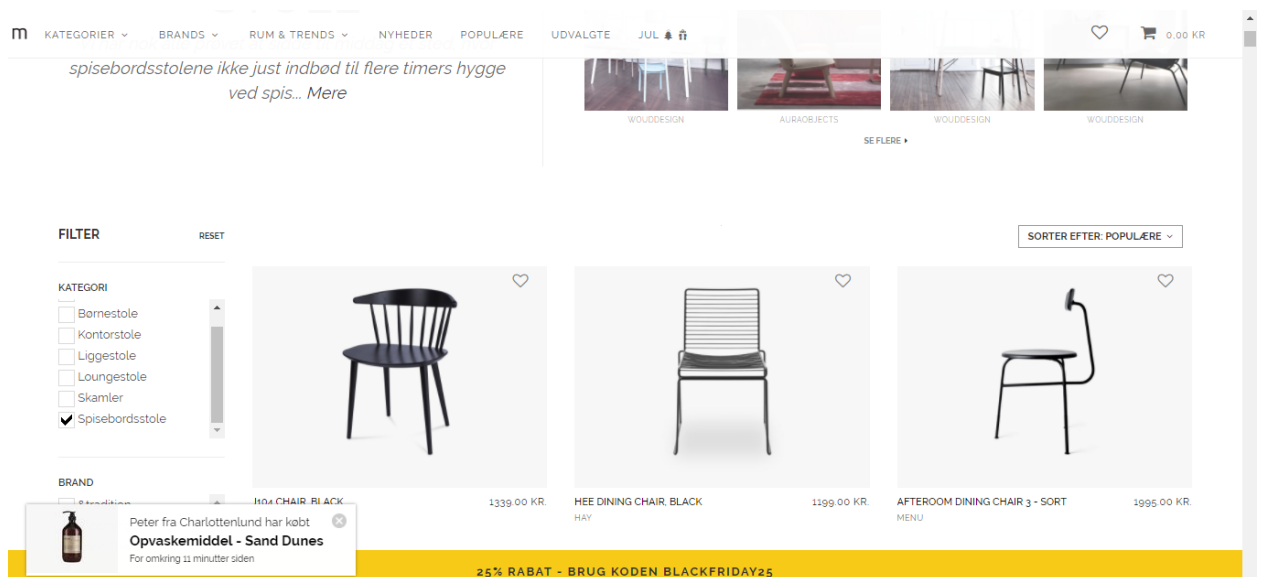
Anne
Nanette and Thurman were great hosts! The room was exceptionally clean and well furnished. It was very relaxing to be there amidst such an aesthetic environment.
juli 2016 Nyttig

Hajera
Nanette and Thurman were very nice and friendly. I was only at their place for a night but they made sure to accommodate my travel plans. The place is cozy and clean and looks as it is shown. The half bathroom was a bonus. A good location if you have plans around Cambridge.
juli 2016 Nyttig

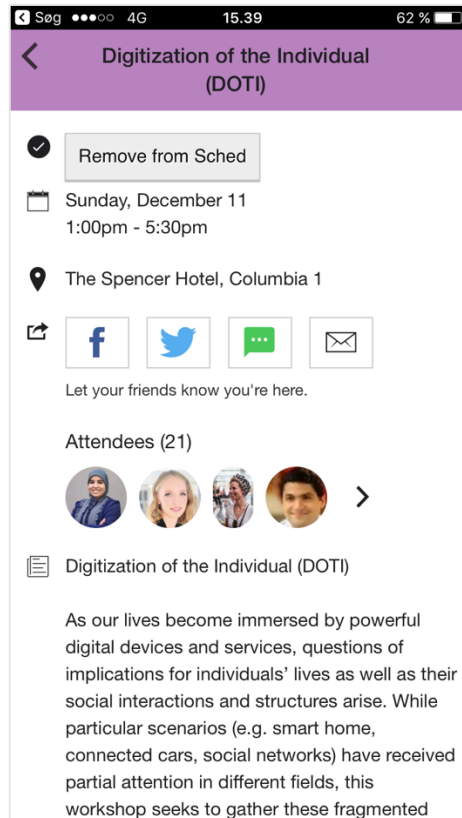
Airbnb: Booking and browsing behaviors



Dropbox/Microsoft Word: Editing behaviors



Moodings.com: Purchase behaviors



ICIS 2016 mobile app via Sched: Sign-ups for an event

<div> <div>REGISTER</div> </div>	
<p>DESCRIPTION</p> <p>Siteimprove invites Tech Community to a free talk by Sir Tim Berners-Lee at Det Kongelige Teater</p> <p>Siteimprove, a world leading SaaS provider, is excited to invite the Scandinavian tech and development community to a free talk by Sir Tim Berners-Lee, inventor of the World Wide Web and recipient of the prestigious Association for Computing Machinery (ACM) A.M. Turing Award, often referred to as "the Nobel Prize of computing".</p> <p>The event will take place on Thursday 18 May 2017 from 14:45-17:00 at the historic 'Kongelige Teater' in central Copenhagen. With seating for 1200 people, this exclusive event will be the first chance for tech enthusiasts to see Sir Tim live in Denmark. While the exact topic of his talk is yet to be announced, there will be plenty of opportunities to ask him about any of the industry's burning topics.</p> <p>Agenda: 14:30: Doors open, ticket required for entry 15:00 - 15:10: Introduction to event 15:10 - 15:40: Sir Tim 'Live Tech Talk' 15:40 - 16:00: Live Audience Q&A 16:00 - 17:00: Siteimprove A/S will provide complimentary drinks and beverages in the lobby</p>	<p>DATE AND TIME</p> <p>Thu, May 18, 2017 2:30 PM – 5:00 PM CEST Add to Calendar</p> <p>LOCATION</p> <p>Det Kongelige Teater August Bournonvilles Passage 2-8 1017 Copenhagen View Map</p> <p>FRIENDS ATTENDING</p> <div> </div>


Eventbrite: Sign-ups for an event

[dr.fone - Backup & Restore \(iOS\)](#)

Selectively backup your iPhone contacts in 3 minutes!

- One click to backup the whole iOS device to your computer.
- Allow to preview and selectively export contacts from iPhone to your computer.
- No data loss on devices during the restore.
- Supports iPhone X/iPhone 8/7 (Plus)/SE/6s (Plus)/6s/5s/5c/5 that run iOS 11/10/9/8 **NEW**
- Fully compatible with Windows 10 or Mac 10.13

Available on:  

[Start Download](#) 

4 people have downloaded it

Dr. Fone: Software download behaviors

Q

Search software, apps, games, & more...

Popular Apps

Best Apps

Guides

File Size

112MB

File Name

External File

POPULARITY

Total Downloads

168,776

Downloads Last Week

215

PRICING

License Model

Free to try

Limitations

Recovery disabled

Price

\$49.95

REPORT A PROBLEM

CNET.com: Software download behaviors

8.7 Appendix: Screen dumps from Blockbuster experiment

BLOCKBUSTER

CBS

COPENHAGEN
BUSINESS SCHOOL

Velkommen

Tak fordi du vil deltage i vores undersøgelse om den nye film streaming-tjeneste Blockbuster. Blockbuster var tidligere en kæde af fysiske butikker, hvor du kunne leje film. I dag er Blockbuster i Danmark udelukkende en digital tjeneste, hvor du kan se film på f.eks. computer, tablet og smart-tv.

Formål med undersøgelsen

Undersøgelsen gennemføres af Blockbuster i Danmark i samarbejde med en gruppe forskere på Copenhagen Business School. Vi vil bede dig se på et film-website og bagefter fortælle os din mening om det. Undersøgelsen tager ca. 10 minutter at gennemføre. Som tak for din tid vil du deltage i lodtrækningen om et gavekort til gavekortet.dk til en værdi af 1.000 kr. og en række andre præmier.

Forløb

Du starter ved at trykke på Start-knappen nedenfor, hvorefter vi vil stille dig nogle indledende spørgsmål. Så vil vi bede dig se på nogle forskellige dele af et film-website og derefter svare på et par spørgsmål. Og så er du færdig!

Skulle du have nogen spørgsmål til undersøgelsen, er du meget velkommen til at skrive til os på kalk.itm@cbs.dk

Næste

Når du deltager, accepterer du samtidig, at din deltagelse logges af software stillet til rådighed af firmaet Inspectlet, som bl.a. gør brug af cookies. Du kan læse mere om Inspectlet's politik til beskyttelse af personlige oplysninger [her](#). Dine svar forbliver anonyme, og vi identificerer ikke enkeltpersoner.

a) Welcome screen for control group participants - upon clicking Blockbuster's Facebook post

BLOCKBUSTER

CBS

COPENHAGEN
BUSINESS SCHOOL

Velkommen

Tak fordi du vil deltage i vores undersøgelse om den nye film streaming-tjeneste Blockbuster. Blockbuster var tidligere en kæde af fysiske butikker, hvor du kunne leje film. I dag er Blockbuster i Danmark udelukkende en digital tjeneste, hvor du kan se film på f.eks. computer, tablet og smart-tv.

Formål med undersøgelsen

Undersøgelsen gennemføres af Blockbuster i Danmark i samarbejde med en gruppe forskere på Copenhagen Business School. Vi vil bede dig se på et film-website og bagefter fortælle os din mening om det. Undersøgelsen tager ca. 10 minutter at gennemføre. Som tak for din tid vil du deltage i lodtrækningen om et gavekort til gavekortet.dk til en værdi af 1.000 kr. og en række andre præmier.

Forløb

Du starter ved at trykke på Start-knappen nedenfor, hvorefter vi vil stille dig et nogle indledende spørgsmål. Herefter vil du blive bedt om tilladelse til at forbinde din Facebook-konto med Facebook-app'en "CSSL Survey Tool". Denne tilladelse er nødvendig for at kunne gennemføre resten af undersøgelsen. Når du har accepteret, vil app'en udelukkende få adgang til dine offentligt tilgængelige Facebook oplysninger og en liste over dine Facebook venner. Den vil ikke kunne poste opslag på hverken din eller dine venners sider, og vi vil ikke kontakte dine venner. Informationerne vil udelukkende blive brugt i denne undersøgelse og vil - ligesom dine svar i resten af undersøgelsen - blive behandlet fortroligt og uden at identificere enkeltpersoner. Når du har klikket ok, vil vi bede dig se på et film-website og derefter svare på et par spørgsmål. Og så er du færdig!

Skulle du have nogen spørgsmål til undersøgelsen, er du meget velkommen til at skrive til os på kalk.itm@cbs.dk

Næste

Når du deltager, accepterer du samtidig, at din deltagelse logges af software stillet til rådighed af firmaet Inspectlet, som bl.a. gør brug af cookies. Du kan læse mere om Inspectlet's politik til beskyttelse af personlige oplysninger [her](#). Dine svar forbliver anonyme, og vi identificerer ikke enkeltpersoner.

b) Welcome screen for treatment group participants - upon clicking Blockbuster's Facebook post

I det følgende vil du se en liste over dine Facebook-venner.

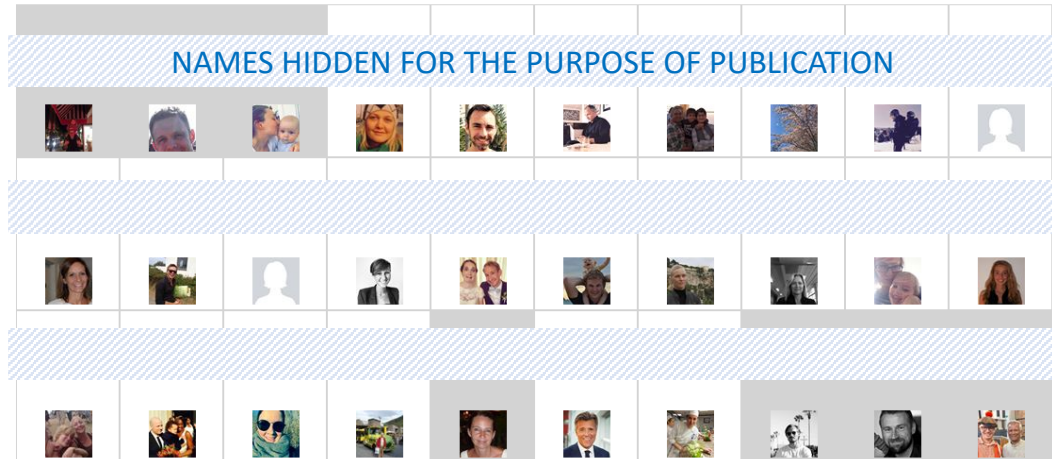
Kig på listen og markér minimum 10 personer (men gerne flere), som du tror, har en interessant film-smag.

Dine venner vil ikke få at vide, at du har markeret dem her.

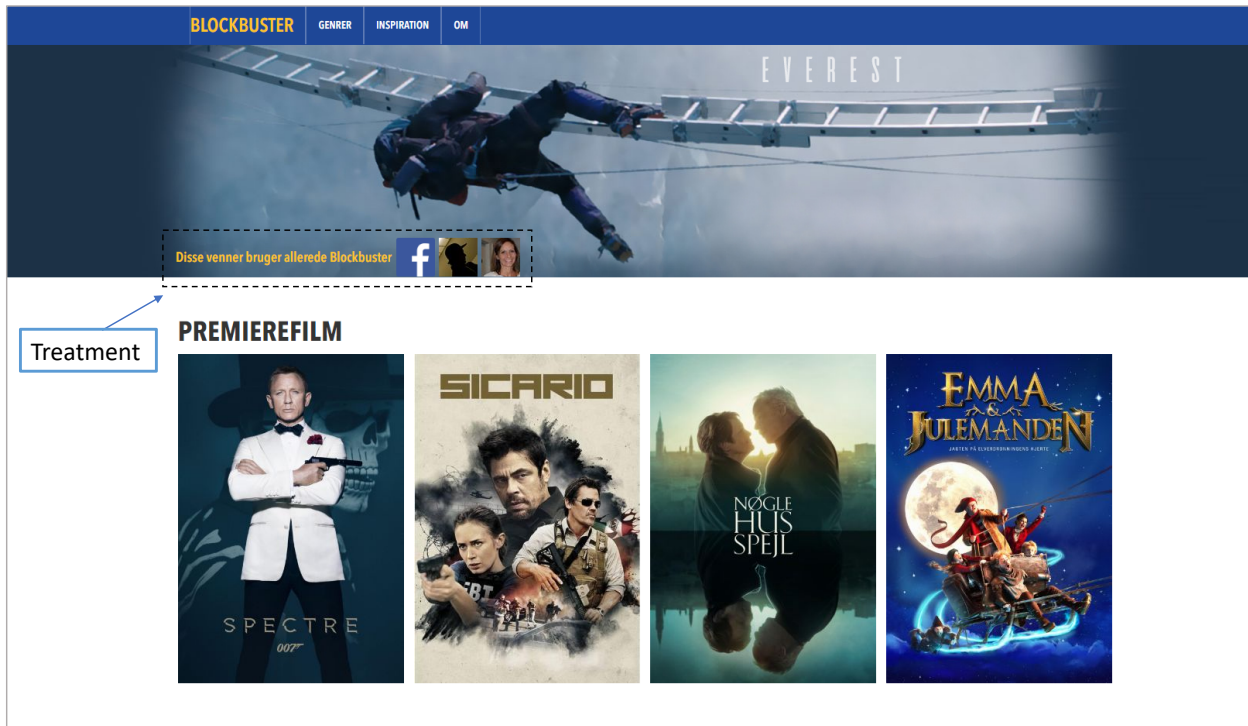
Når du er færdig, så tryk på knappen "Næste" nederst på siden.

Søg **Antal venner valgt**

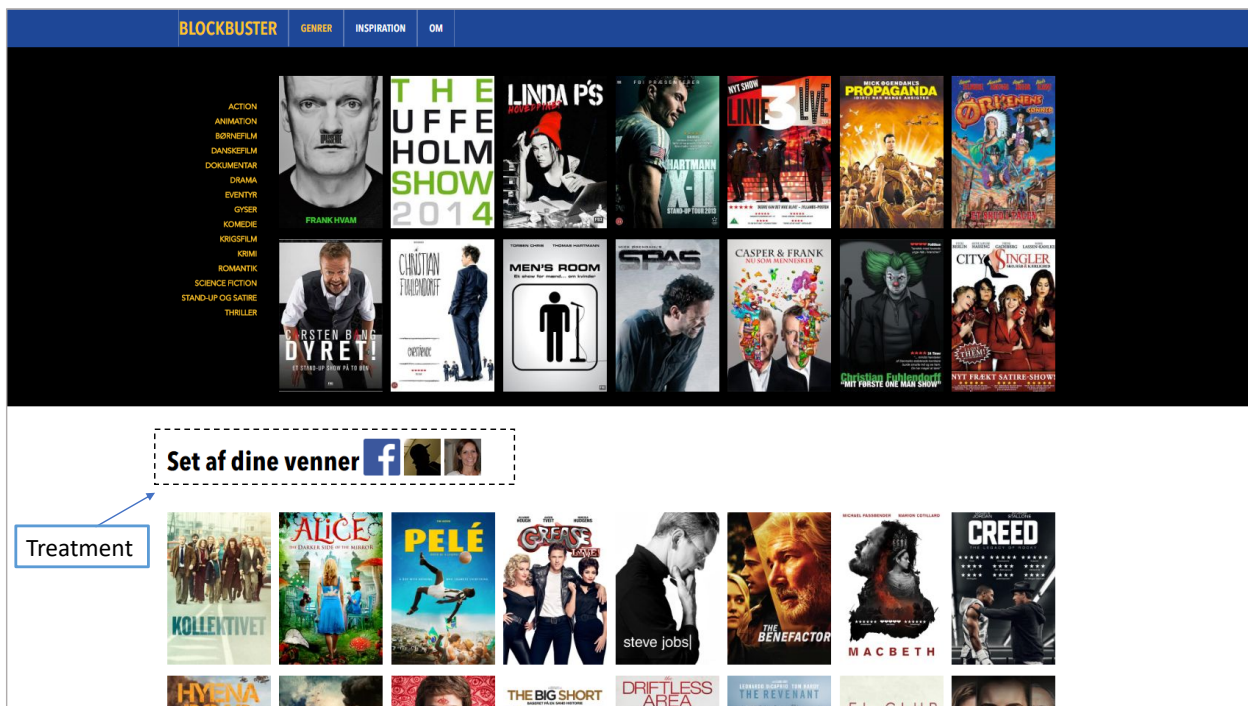
7 valgt

NAMES HIDDEN FOR THE PURPOSE OF PUBLICATION

c) Experiment page – selection of category-specific influential friends



d) Blockbuster experiment site front page. Example of treatment with behavior-based information and a low number of friends. Text: "These friends already use Blockbuster". In the opinion-based treatment only the text differed and stated "These friends like Blockbuster"



e) Blockbuster experiment site - subpage. Example of treatment with behavior-based information and a low number of friends. Text: "Seen by your friends". In the opinion-based treatment only the text differed and stated "Liked by your friends"

BLOCKBUSTER
CBS COPENHAGEN BUSINESS SCHOOL

Vi vil nu stille dig et par spørgsmål om dit indtryk af det website, som du lige har set.
Hvor enig er du i følgende udsagn om det Blockbuster website, du lige har set?

	Fuldstændig uenig	Uenig	Til dels uenig	Hverken enig eller uenig	Til dels enig	Enig	Fuldstændig enig
Jeg kan godt lide websitet	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Websitet gør det nemt at finde en film, jeg gerne vil se	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg synes, det virker som en god filmtjeneste	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Uddyb gerne din oplevelse af websitet. Var der f.eks. nogen elementer eller funktioner, som særligt vakte din opmærksomhed, gjorde dig interesseret eller irriteret?

f) Experiment page – measuring attitude

BLOCKBUSTER
CBS COPENHAGEN BUSINESS SCHOOL

Angiv venligst hvor enig du er i nedenstående udsagn.

	Fuldstændig uenig	Uenig	Til dels uenig	Hverken enig eller uenig	Til dels enig	Enig	Fuldstændig enig
Hvis jeg skulle se en film, som ikke går i biografen, så ville jeg overveje at se den via Blockbuster (enten via blockbuster.dk eller en af de andre måder man kan se Blockbuster på, f.eks. på tablet eller smart tv)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvis jeg skulle se en film, som ikke går i biografen, så ville jeg foretrække at se den via Blockbuster (enten via blockbuster.dk eller en af de andre måder man kan se Blockbuster på, f.eks. på tablet eller smart tv)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

g) Experiment page – measuring intention to use (1)

BLOCKBUSTER
CBS COPENHAGEN BUSINESS SCHOOL

Nedenstående spørgsmål handler om sandsynligheden for, at du vil bruge Blockbuster (enten via blockbuster.dk eller en af de andre måder man kan se Blockbuster på, f.eks. på tablet eller smart tv).

Besvar venligst alle spørgsmål

	Meget usandsynligt	Usandsynligt	Til dels usandsynligt	Hverken eller	Til dels sandsynligt	Sandsynligt	Meget sandsynligt
Hvad er sandsynligheden for, at du vil bruge Blockbuster inden for de næste tre måneder?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hvad er sandsynligheden for, at du vil bruge Blockbuster næste gang, du vil se en film, som ikke går i biografen?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

h) Experiment page – measuring intention to use (2)

Information

Vær opmærksom, at den version af Blockbuster.dk, som du har set i denne undersøgelse, ikke er den nuværende version af Blockbuster.dk. Det betyder også, at informationen om dine Facebook-venners brug af Blockbuster er fiktiv og har haft til formål at illustrere, hvordan information fra Facebook kan integreres i en film streaming-tjeneste.

Næste

i) Experiment page – debriefing participants on experiment’s real purpose (upon completion of experiment)

8.8 Appendix: Check for confounding variables

Appendix 8.8a

Tests of Between-Subjects Effects

Dependent Variable: DV 1_Attitude

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	62.884 ^a	17	3.699	2.192	.005
Intercept	70.099	1	70.099	41.538	.000
Age	2.859	1	2.859	1.694	.194
Gender	19.454	1	19.454	11.527	.001
MaritalStatus	.000	1	.000	.000	.990
ChildrenCount	.691	1	.691	.409	.523
FilmCountPerMonth	7.526	1	7.526	4.460	.036
HowSeeFilm	2.637	1	2.637	1.563	.212
FilmType	17.763	1	17.763	10.526	.001
PaymentType	.009	1	.009	.005	.943
UseFilmTvSerial	1.954	1	1.954	1.158	.283
Inspiration_FriendsRecommendation	.881	1	.881	.522	.471
Typeoffriends	1.525	1	1.525	.903	.343
No.Offriends	.157	1	.157	.093	.761
Typeofinformation	.640	1	.640	.379	.538
Typeoffriends * No.Offriends	.765	1	.765	.453	.501
Typeoffriends * Typeofinformation	1.168	1	1.168	.692	.406
No.Offriends * Typeofinformation	.081	1	.081	.048	.827
Typeoffriends * No.Offriends * Typeofinformation	.736	1	.736	.436	.510
Error	491.095	291	1.688		
Total	8537.778	309			
Corrected Total	553.979	308			

Appendix 8.8b

Tests of Between-Subjects Effects

Dependent Variable: DV 2_Intention to use

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	109.353 ^a	17	6.433	3.389	.000
Intercept	50.762	1	50.762	26.741	.000
Age	7.699	1	7.699	4.056	.045
Gender	46.633	1	46.633	24.566	.000
MaritalStatus	.116	1	.116	.061	.805
ChildrenCount	8.660	1	8.660	4.562	.034
FilmCountPerMonth	1.119	1	1.119	.590	.443
HowSeeFilm	.127	1	.127	.067	.796
FilmType	10.474	1	10.474	5.518	.019
PaymentType	5.547	1	5.547	2.922	.088
UseFilmTvSerial	.265	1	.265	.140	.709
Inspiration_FriendsRecommendation	.000	1	.000	.000	.987
Typeoffriends	3.141	1	3.141	1.654	.199
No.Offriends	.057	1	.057	.030	.862
Typeofinformation	.279	1	.279	.147	.702
Typeoffriends * No.Offriends	1.082	1	1.082	.570	.451
Typeoffriends * Typeofinformation	.435	1	.435	.229	.633
No.Offriends * Typeofinformation	4.283	1	4.283	2.256	.134
Typeoffriends * No.Offriends * Typeofinformation	.427	1	.427	.225	.636
Error	552.406	291	1.898		
Total	5139.313	309			
Corrected Total	661.759	308			

8.9 Appendix: Interview guide used

INTERVIEW GUIDE

Intro to interview setup

Check mikrofon. Tilladelse til at optage. Hjælper mig med at holde fokus.

Tre sektioner: først lidt intro til hvem du er, dernæst lidt generelt om dig og musik og Spotify, og til sidst går vi mere i detaljer og går ind og kigger på Spotify billeder, hvor jeg er interesseret i at høre om din brug af Spotify og din oplevelse af forskellige elementer

Jeg har en række punkter jeg gerne vil omkring, men der er plads til detours. Og der er ingen rigtige/forkerte svar eller rigtige/forkerte emner at bringe op.

Fortrolighed: Jeg kommer til at transskribere dette bagefter og måske bruge citater i artikler som skal udgives i tidsskrifter. Ingen rigtige navne.

I løbet af interviewet kommer jeg måske til at gentage nogle ting og spørge ind til det du fortæller. Det er altså ikke fordi jeg ikke lytter efter det du siger, men simpelthen fordi jeg søger at forstå, hvad du mener.

1a) Intro to participant & role of music

Lad os starte blødt ud med at du fortæller mig dit navn, alder, hvor længe du har været i TDC Group, og hvad du laver her...

Du skrev til mig, at du på en skala fra 1-10 ligger på et XX-tal ifht. hvor meget du går op i musik. Kan du ikke prøve at sætte lidt ord på det? Hvilken rolle musik spiller i dit liv, og hvordan du bruger det?

- I hvilke settings hører du musik?

- Hvordan finder du den musik du hører?

- Hvad gør du, når du finder noget, som du er begejstret for?

2a) Story of you & Spotify

Lad os så rykke videre til Spotify. Hvad med, at du fortæller mig historien om dig og Spotify. Hvor længe har du brugt det, hvad fik dig i gang med at bruge det og sådan?

2b) Comparison - CDs & iTunes

Nu hvor vi har fået talt lidt om dig og Spotify, hvad siger du så til de her billeder af CD'er og iTunes?

- Hvad får det dig til at tænke på eller hvilke følelser eller associationer får det frem?

- Prøv at sætte nogle ord på de tre billeder, som du synes beskriver dem

3a) Behavior-based information

Lad os se lidt på din Spotify app...

FRONT PAGE & OWN INFO

Front page: Fortæl mig lidt om, hvad du ser her. Prøv at forklar mig om den her side og om hvordan du plejer at bruge den.

PC: Lad os nu prøve at gå til din egen side. Og så "Recently played artists".

MOBIL: Lad os nu prøve at gå til din egen samling ("Library"). Fortæl mig lidt om, hvad du ser her.

- hvad har du lyttet til

- hvordan fandt du den musik?

- hvad giver det dig at have den her side?

ARTISTS & OTHERS

PC: Prøv nu at gå ind på en specifik kunstners side. Og så "About". Fortæl mig lidt om, hvad du ser her.

MOBIL: Prøv nu at gå ind på en specifik kunstner og scroll igennem siden. Fortæl mig lidt om, hvad du ser her.

- hvad giver den her side dig?

3b) Social login (for users)

Du har forbundet din Spotify konto med din Facebook konto. Hvad er årsagen til dette?

- hvorfor er det vigtigt for dig?

- hvilken rolle spiller det for din brug af Spotify?

3c) Social login (for non-users)

Du har ikke forbundet din Spotify konto med din Facebook konto. Fortæl mig lidt om det. / Hvad er årsagen til dette?

.. hvorfor er det vigtigt for dig at undgå?

... hvad giver det dig at... ?

... er der nogen, som følger dig? Hvad giver det dig?

3d) Followers and followees

(MOBIL: "Your Library" og klik på dit billede/PC: Klik på profilbillede).

Social-users: Lad os tale lidt om, hvem du følger. Prøv at fortælle mig om dem.

Non-social users: Har du valgt at følge nogen herinde alligevel?

- Ved du, hvor mange du følger?

- Ved du hvem du følger?

- Prøv at fortælle mig om dem. Hvem er de, hvorfor har du valgt at følge ham/hende (ask about 2-3 specific friends)

- Hvad giver det dig at følge dem/xx?

- hvad giver det dig at kunne se, hvad XX lytter til... ?

- Kan du huske, hvornår du sidst har tilføjet nogen?

Lad os så lidt tale om dem, som følger dig.

- Ved du hvem det er?

- Prøv at fortælle mig om dem. Hvem er de?

- Kan de se, hvad du lytter til? /ved du om de kigger med?

- hvad tænker du om det/hvad giver det dig?

If social features are not valued:

- Hvad er årsagen til, at du ikke har slået de sociale funktioner fra? Så tickeren forsvinder.

If a lot people are followed whom the user does not value, ask:

- Hvad er årsagen til, at du ikke har slettet dem?

8.10 Appendix: List of laddering questions used interviews

ELABORATION ON KEY CONCEPTS

- *Kan du hjælpe mig med at forstå, hvad du mener med?*
- *Kan du fortælle mig, om en gang/en konkret episode, hvor dette er sket?*
- *Hvad mener du med...?*
- *Prøv at fortælle mig, hvad du mener med...*
- *Eller repetér konceptet som et spørgsmål, Ex: Så du mener at XX er ligesom en XXX?*

LADDER UP FROM KEY CONCEPTS – impact

- *Hvorfor er XX vigtigt for dig?*
- *Hvad giver XX dig?*

LADDER DOWNWARD FROM KEY CONCEPTS – antecedents

- *Hvilke ting eller begivenheder leder til XX?*
- *Hvad skaber XX?*
- *Hvad gør at du får XX?*
- *Hvad skal der til, for at XX sker?*

NEGATIVE KONCEPTER

- *Hvorfor er XX noget du gerne vil undgå?*
- *Hvad er dårligt/negativt ved XX?*

8.11 Appendix: Visual materials used in interviews



a) CD collection



b) Screenshot of music collection in an old version of iTunes

Informant	BB info (attribute)	Functional consequence	Exemplification	Psychosocial consequence	Exemplification	End value	Exemplification
LTF	# of monthly listeners	Guidance	The no. Of monthly listener for one of her favourite bands tells her that it is a popular band, and even more than she expected: KK: der er 103.000. Hvad tænker du om det? LF: Det er overraskende, jeg tænkte det var mindre, for de jo ikke så aktuelle længere. De har ikke udgivet et album i, ja hvad er det, snart 5 år.	Sense of community (by observation)	"Det siger mig også at der er en ret stor base af sådan fans, der bare lytter til det, ligesom mig. Der bare gå ind og sætter et Kashmir album på og så hører det." And she infers some likeability on the other fans - expects them to be "nice people" because they like the same music as her: "Jamen jeg synes da at det er nogle fantastisk rare mennesker, at de også kan lide det samme musik som mig."	Feeling socially accepted	LF: Jeg tror bare det giver mig lidt ro i sindet. KK: Hvorfor det? LF: Fordi jeg er kæmpe Kashmir fan, og så synes jeg det er rart at vide at folk de godt kan lide at høre det. Der er måske sådan lidt lerming effekt, at se at man er okay, at du er ikke den eneste der stadig hører en eller anden lille niche.
Informant	Attribute	Functional consequence	Exemplification	Psychosocial consequence	Exemplification	End value	Exemplification
JC	Spotify's 'ticker'/newsfeed	Guidance	He explicitly argues that one of the reasons he is still on Spotify is the social elements, and explains how he uses the live feed to (re-)discover music: "Spotify har jo den her, social feed, så man kan se hvad ens venner lytter på, nogen gange så er der: 'Wår, ja det var dette nummer som jeg ikke har hørt i rigtig lang tid, andre gange er der noget helt nyt musik eller det er en plade som man ikke har hørt fra en kunstner som man måske godt kender kunstnere med man kender ikke den specifikke plade fra bagkataloget.'"	Relations (by observation)	Exemplification Spotify makes it easier for him to interact with his friends over music. KK: Hvilken værdi har det for dig at dine venner er på en tjeneste som Apple Music eller Spotify? Hvad er det betyder for dig eller hvad tilføjer det prøver jeg at spørge? JC: Ja, ja, men det tilføjer, jeg lytter jo meget til de personer omkring mig som, som er, dem som jeg ved deler min musiksmag og det, altså de personer, jeg kender, så det er jo det er ret afgørende den der dimension, det er virkelig en rigtig smart ting de har lavet, man kan sige det er sådan en, sådan en forlængelse af vores samtale når vi når vi ikke er i rummet sammen, så er det en forlængelse af samtalen.	End value	Exemplification
Informant	Attribute	Functional consequence	Exemplification	Psychosocial consequence	Exemplification	End value	Exemplification
MGJ	Friends' Recently Played & playlists	Guidance	Tells about how he might (but is it imagined use?); check out his friend's collection to get inspiration - but also to find out things in common (see psychosocial cons.) "Jeg tror ikke jeg bruger ikke så meget det der med at følge mine venner, men nu, jeg har prøvet, jeg har en kammerat som hører noget musik som, han har en generel smag som jeg godt kan lide nogle gange. Det er sådan igen, noget med humor, hvad man lige har lyst til, så nogle gange kan jeg godt, kunne jeg godt finde på at gå ind og finde min kammerat der og så se hvad lytter han til for tiden. Jamen så kunne jeg finde på at se hvad han har playlister, og hvad han har lytte til sidst, det synes jeg at jeg kan huske, men, og så vil jeg lytte til det, og finde ud af om det var noget jeg også kunne lide" And further: "Men jeg har for eksempel min kammerat, der var Trevor, så hvis jeg går ind på ham, for at se, hvad har han af public playlister (...) Han har noget specielt musik. Jeg har aldrig hørt om de her før, men så kunne jeg sidde og prøve at lytte til nogle af de sange, finde ud af er det for langt ude eller er det noget at jeg også kunne lide på." And of his cousin he says: "Jeg tror jeg følger ham fordi han er lidt yngre, og han er forbundet til fest og fester stadigvæk, så han har måske det der netværk af nye, jeg kan huske i gymnasiet, det fandt man jo nemt musik, fordi der kom der altid nogen og sagde, har du hørt den her, så høre man noget musik som man ikke bare lige finder månstær om fordi det er lidt måske lidt obskurt at finde nogle gange."	Relations (by observation)	Exemplification Getting to know others & as an offset for conversations: "Og på den måde ligesom, ja se om vi kunne, så har vi ligesom lidt mere til fælles kan man sige" (about his friend with whom he shares taste). And further: MGJ: så måske finder man, ja man finder måske en person man ikke vidste var, det kunne godt være jeg havde en veninde, som jeg aldrig nogensinde havde forestillet mig ville høre hip hop, hun er måske en pop type, og så høre hun måske meget Kanye West. Så kan man sige, så har vi måske noget at snakke om næste gang vi ses på den hvis vi snakker musik, det så på den måde kan man også lære sine venner at kende på en anden måde end når man bare lige sidder og snakker sammen. (...) MGJ: Og så kan det nogle gange kan det godt være rart at have noget, ikke fordi jeg sidder og tjekker sange, hvem kender jeg kan lide det her, og så skriver det bag øret, men det er meget svært lige at finde ud af hvis nu det er noget musik man godt selv kan lide, og så finder man ud af at man har en forbindelse med en anden end sin venner som man ikke vidst. Så kommer, ja lidt tættere på hindanden på den måde.	End value	Exemplification

TITLER I PH.D.SERIEN:

– *a Field Study of the Rise and Fall of a Bottom-Up Process*

2004

1. Martin Grieger
Internet-based Electronic Marketplaces and Supply Chain Management
2. Thomas Basbøll
*LIKENESS
A Philosophical Investigation*
3. Morten Knudsen
*Beslutningens vaklen
En systemteoretisk analyse af moderniseringen af et amtskommunalt sundhedsvæsen 1980-2000*
4. Lars Bo Jeppesen
*Organizing Consumer Innovation
A product development strategy that is based on online communities and allows some firms to benefit from a distributed process of innovation by consumers*
5. Barbara Dragsted
*SEGMENTATION IN TRANSLATION AND TRANSLATION MEMORY SYSTEMS
An empirical investigation of cognitive segmentation and effects of integrating a TM system into the translation process*
6. Jeanet Hardis
*Sociale partnerskaber
Et socialkonstruktivistisk casestudie af partnerskabsaktørers virkelighedsopfattelse mellem identitet og legitimitet*
7. Henriette Hallberg Thygesen
System Dynamics in Action
8. Carsten Mejer Plath
Strategisk Økonomistyring
9. Annemette Kjærgaard
Knowledge Management as Internal Corporate Venturing
10. Knut Arne Hovdal
*De professionelle i endring
Norsk ph.d., ej til salg gennem Samfundslitteratur*
11. Søren Jeppesen
*Environmental Practices and Greening Strategies in Small Manufacturing Enterprises in South Africa
– A Critical Realist Approach*
12. Lars Frode Frederiksen
*Industriel forskningsledelse
– på sporet af mønstre og samarbejde i danske forskningsintensive virksomheder*
13. Martin Jes Iversen
*The Governance of GN Great Nordic
– in an age of strategic and structural transitions 1939-1988*
14. Lars Pynt Andersen
*The Rhetorical Strategies of Danish TV Advertising
A study of the first fifteen years with special emphasis on genre and irony*
15. Jakob Rasmussen
Business Perspectives on E-learning
16. Sof Thrane
*The Social and Economic Dynamics of Networks
– a Weberian Analysis of Three Formalised Horizontal Networks*
17. Lene Nielsen
Engaging Personas and Narrative Scenarios – a study on how a user-centered approach influenced the perception of the design process in the e-business group at AstraZeneca
18. S.J Valstad
*Organisationsidentitet
Norsk ph.d., ej til salg gennem Samfundslitteratur*

19. Thomas Lyse Hansen
Six Essays on Pricing and Weather risk in Energy Markets
 20. Sabine Madsen
Emerging Methods – An Interpretive Study of ISD Methods in Practice
 21. Evis Sinani
The Impact of Foreign Direct Investment on Efficiency, Productivity Growth and Trade: An Empirical Investigation
 22. Bent Meier Sørensen
Making Events Work Or, How to Multiply Your Crisis
 23. Pernille Schnoor
Brand Ethos
Om troværdige brand- og virksomhedsidentiteter i et retorisk og diskursteoretisk perspektiv
 24. Sidsel Fabech
Von welchem Österreich ist hier die Rede?
Diskursive forhandlinger og magtkampe mellem rivaliserende nationale identitetskonstruktioner i østrigske pressediskurser
 25. Klavs Odgaard Christensen
Sprogpolitik og identitetsdannelse i flersprogede forbundsstater
Et komparativt studie af Schweiz og Canada
 26. Dana B. Minbaeva
Human Resource Practices and Knowledge Transfer in Multinational Corporations
 27. Holger Højlund
Markedets politiske fornuft
Et studie af velfærdens organisering i perioden 1990-2003
 28. Christine Mølgaard Frandsen
A.s erfaring
Om mellemværendets praktik i en transformation af mennesket og subjektiviteten
 29. Sine Nørholm Just
The Constitution of Meaning – A Meaningful Constitution?
Legitimacy, identity, and public opinion in the debate on the future of Europe
- 2005**
1. Claus J. Varnes
Managing product innovation through rules – The role of formal and structured methods in product development
 2. Helle Hedegaard Hein
Mellem konflikt og konsensus
– Dialogudvikling på hospitalsklinikker
 3. Axel Rosenø
Customer Value Driven Product Innovation – A Study of Market Learning in New Product Development
 4. Søren Buhl Pedersen
Making space
An outline of place branding
 5. Camilla Funck Ellehave
Differences that Matter
An analysis of practices of gender and organizing in contemporary workplaces
 6. Rigmor Madeleine Lond
Styring af kommunale forvaltninger
 7. Mette Aagaard Andreassen
Supply Chain versus Supply Chain Benchmarking as a Means to Managing Supply Chains
 8. Caroline Aggestam-Pontoppidan
From an idea to a standard
The UN and the global governance of accountants' competence
 9. Norsk ph.d.
 10. Vivienne Heng Ker-ni
An Experimental Field Study on the

- Effectiveness of Grocer Media Advertising*
Measuring Ad Recall and Recognition, Purchase Intentions and Short-Term Sales
11. Allan Mortensen
Essays on the Pricing of Corporate Bonds and Credit Derivatives
 12. Remo Stefano Chiari
Figure che fanno conoscere
Itinerario sull'idea del valore cognitivo e espressivo della metafora e di altri troppi da Aristotele e da Vico fino al cognitivismo contemporaneo
 13. Anders McIlquham-Schmidt
Strategic Planning and Corporate Performance
An integrative research review and a meta-analysis of the strategic planning and corporate performance literature from 1956 to 2003
 14. Jens Geersbro
The TDF – PMI Case
Making Sense of the Dynamics of Business Relationships and Networks
 15. Mette Andersen
Corporate Social Responsibility in Global Supply Chains
Understanding the uniqueness of firm behaviour
 16. Eva Boxenbaum
Institutional Genesis: Micro – Dynamic Foundations of Institutional Change
 17. Peter Lund-Thomsen
Capacity Development, Environmental Justice NGOs, and Governance: The Case of South Africa
 18. Signe Jarlov
Konstruktioner af offentlig ledelse
 19. Lars Stæhr Jensen
Vocabulary Knowledge and Listening Comprehension in English as a Foreign Language
 20. Christian Nielsen
Essays on Business Reporting
Production and consumption of strategic information in the market for information
 21. Marianne Thejls Fischer
Egos and Ethics of Management Consultants
 22. Annie Bekke Kjær
Performance management i Process-innovation
– belyst i et social-konstruktivistisk perspektiv
 23. Suzanne Dee Pedersen
GENTAGELSENS METAMORFOSE
Om organisering af den kreative gøren i den kunstneriske arbejdspraksis
 24. Benedikte Dorte Rosenbrink
Revenue Management
Økonomiske, konkurrencemæssige & organisatoriske konsekvenser
 25. Thomas Riise Johansen
Written Accounts and Verbal Accounts
The Danish Case of Accounting and Accountability to Employees
 26. Ann Fogelgren-Pedersen
The Mobile Internet: Pioneering Users' Adoption Decisions
 27. Birgitte Rasmussen
Ledelse i fællesskab – de tillidsvalgtes fornyende rolle
 28. Gitte Thit Nielsen
Remerger
– skabende ledelseskrafter i fusion og opkøb
 29. Carmine Gioia
A MICROECONOMETRIC ANALYSIS OF MERGERS AND ACQUISITIONS

30. Ole Hinz
Den effektive forandringsleder: pilot, pædagog eller politiker?
Et studie i arbejdslederes meningstilskrivninger i forbindelse med vellykket gennemførelse af ledelsesinitierede forandringsprojekter
31. Kjell-Åge Gotvassli
Et praksisbasert perspektiv på dynamiske læringsnettverk i toppidretten
Norsk ph.d., ej til salg gennem Samfundslitteratur
32. Henriette Langstrup Nielsen
Linking Healthcare
An inquiry into the changing performances of web-based technology for asthma monitoring
33. Karin Tweddell Levinsen
Virtuel Uddannelsespraksis
Master i IKT og Læring – et casestudie i hvordan proaktiv proceshåndtering kan forbedre praksis i virtuelle læringsmiljøer
34. Anika Liversage
Finding a Path
Labour Market Life Stories of Immigrant Professionals
35. Kasper Elmquist Jørgensen
Studier i samspillet mellem stat og erhvervsliv i Danmark under 1. verdenskrig
36. Finn Janning
A DIFFERENT STORY
Seduction, Conquest and Discovery
37. Patricia Ann Plackett
Strategic Management of the Radical Innovation Process
Leveraging Social Capital for Market Uncertainty Management
2. Niels Rom-Poulsen
Essays in Computational Finance
3. Tina Brandt Husman
Organisational Capabilities, Competitive Advantage & Project-Based Organisations
The Case of Advertising and Creative Good Production
4. Mette Rosenkrands Johansen
Practice at the top
– how top managers mobilise and use non-financial performance measures
5. Eva Parum
Corporate governance som strategisk kommunikations- og ledelsesværktøj
6. Susan Aagaard Petersen
Culture's Influence on Performance Management: The Case of a Danish Company in China
7. Thomas Nicolai Pedersen
The Discursive Constitution of Organizational Governance – Between unity and differentiation
The Case of the governance of environmental risks by World Bank environmental staff
8. Cynthia Selin
Volatile Visions: Transactions in Anticipatory Knowledge
9. Jesper Banghøj
Financial Accounting Information and Compensation in Danish Companies
10. Mikkel Lucas Overby
Strategic Alliances in Emerging High-Tech Markets: What's the Difference and does it Matter?
11. Tine Aage
External Information Acquisition of Industrial Districts and the Impact of Different Knowledge Creation Dimensions

2006

1. Christian Vintergaard
Early Phases of Corporate Venturing

- A case study of the Fashion and Design Branch of the Industrial District of Montebelluna, NE Italy*
12. Mikkel Flyverbom
Making the Global Information Society Governable
On the Governmentality of Multi-Stakeholder Networks
 13. Anette Grønning
Personen bag
Tilstedevær i e-mail som interaktionsform mellem kunde og medarbejder i dansk forsikringskontekst
 14. Jørn Helder
One Company – One Language?
The NN-case
 15. Lars Bjerregaard Mikkelsen
Differing perceptions of customer value
Development and application of a tool for mapping perceptions of customer value at both ends of customer-supplier dyads in industrial markets
 16. Lise Granerud
Exploring Learning
Technological learning within small manufacturers in South Africa
 17. Esben Rahbek Pedersen
Between Hopes and Realities: Reflections on the Promises and Practices of Corporate Social Responsibility (CSR)
 18. Ramona Samson
The Cultural Integration Model and European Transformation.
The Case of Romania
- 2007**
1. Jakob Vestergaard
Discipline in The Global Economy
Panopticism and the Post-Washington Consensus
 2. Heidi Lund Hansen
Spaces for learning and working
A qualitative study of change of work, management, vehicles of power and social practices in open offices
 3. Sudhanshu Rai
Exploring the internal dynamics of software development teams during user analysis
A tension enabled Institutionalization Model; "Where process becomes the objective"
 4. Norsk ph.d.
Ej til salg gennem Samfundslitteratur
 5. Serden Ozcan
EXPLORING HETEROGENEITY IN ORGANIZATIONAL ACTIONS AND OUTCOMES
A Behavioural Perspective
 6. Kim Sundtoft Hald
Inter-organizational Performance Measurement and Management in Action
– An Ethnography on the Construction of Management, Identity and Relationships
 7. Tobias Lindeberg
Evaluative Technologies
Quality and the Multiplicity of Performance
 8. Merete Wedell-Wedellsborg
Den globale soldat
Identitetsdannelse og identitetsledelse i multinationale militære organisationer
 9. Lars Frederiksen
Open Innovation Business Models
Innovation in firm-hosted online user communities and inter-firm project ventures in the music industry
– A collection of essays
 10. Jonas Gabrielsen
Retorisk toposlære – fra statisk 'sted' til persuasiv aktivitet

11. Christian Moldt-Jørgensen
Fra meningsløs til meningsfuld evaluering.
Anvendelsen af studentertilfredsheds-målinger på de korte og mellemlange videregående uddannelser set fra et psykodynamisk systemperspektiv
12. Ping Gao
Extending the application of actor-network theory
Cases of innovation in the telecommunications industry
13. Peter Mejlby
Frihed og fængsel, en del af den samme drøm?
Et phronetisk baseret casestudie af frigørelsens og kontrollens sam-eksistens i værdibaseret ledelse!
14. Kristina Birch
Statistical Modelling in Marketing
15. Signe Poulsen
Sense and sensibility:
The language of emotional appeals in insurance marketing
16. Anders Bjerre Trolle
Essays on derivatives pricing and dynamic asset allocation
17. Peter Feldhütter
Empirical Studies of Bond and Credit Markets
18. Jens Henrik Eggert Christensen
Default and Recovery Risk Modeling and Estimation
19. Maria Theresa Larsen
Academic Enterprise: A New Mission for Universities or a Contradiction in Terms?
Four papers on the long-term implications of increasing industry involvement and commercialization in academia
20. Morten Wellendorf
Postimplementering af teknologi i den offentlige forvaltning
Analyser af en organisations kontinuerlige arbejde med informations-teknologi
21. Ekaterina Mhaanna
Concept Relations for Terminological Process Analysis
22. Stefan Ring Thorbjørnsen
Forsvaret i forandring
Et studie i officerers kapabiliteter under påvirkning af omverdenens forandringspres mod øget styring og læring
23. Christa Breum Amhøj
Det selvskabte medlemskab om managementstaten, dens styringsteknologier og indbyggere
24. Karoline Bromose
Between Technological Turbulence and Operational Stability
– An empirical case study of corporate venturing in TDC
25. Susanne Justesen
Navigating the Paradoxes of Diversity in Innovation Practice
– A Longitudinal study of six very different innovation processes – in practice
26. Luise Noring Henler
Conceptualising successful supply chain partnerships
– Viewing supply chain partnerships from an organisational culture perspective
27. Mark Mau
Kampen om telefonen
Det danske telefonvæsen under den tyske besættelse 1940-45
28. Jakob Halskov
The semiautomatic expansion of existing terminological ontologies using knowledge patterns discovered

- on the WWW – an implementation and evaluation*
29. Gergana Koleva
European Policy Instruments Beyond Networks and Structure: The Innovative Medicines Initiative
 30. Christian Geisler Asmussen
Global Strategy and International Diversity: A Double-Edged Sword?
 31. Christina Holm-Petersen
*Stolthed og fordom
Kultur- og identitetsarbejde ved skabelsen af en ny sengeafdeling gennem fusion*
 32. Hans Peter Olsen
*Hybrid Governance of Standardized States
Causes and Contours of the Global Regulation of Government Auditing*
 33. Lars Bøge Sørensen
Risk Management in the Supply Chain
 34. Peter Aagaard
*Det unikkes dynamikker
De institutionelle mulighedsbetingelser bag den individuelle udforskning i professionelt og frivilligt arbejde*
 35. Yun Mi Antorini
*Brand Community Innovation
An Intrinsic Case Study of the Adult Fans of LEGO Community*
 36. Joachim Lynggaard Boll
*Labor Related Corporate Social Performance in Denmark
Organizational and Institutional Perspectives*
- 2008**
1. Frederik Christian Vinten
Essays on Private Equity
 2. Jesper Clement
Visual Influence of Packaging Design on In-Store Buying Decisions
 3. Marius Brostrøm Kousgaard
*Tid til kvalitetsmåling?
– Studier af indrulleringsprocesser i forbindelse med introduktionen af kliniske kvalitetsdatabaser i speciallægepraksissektoren*
 4. Irene Skovgaard Smith
*Management Consulting in Action
Value creation and ambiguity in client-consultant relations*
 5. Anders Rom
*Management accounting and integrated information systems
How to exploit the potential for management accounting of information technology*
 6. Marina Candi
Aesthetic Design as an Element of Service Innovation in New Technology-based Firms
 7. Morten Schnack
*Teknologi og tværfaglighed
– en analyse af diskussionen omkring indførelse af EPJ på en hospitalsafdeling*
 8. Helene Balslev Clausen
Juntos pero no revueltos – un estudio sobre emigrantes norteamericanos en un pueblo mexicano
 9. Lise Justesen
*Kunsten at skrive revisionsrapporter.
En beretning om forvaltningsrevisions beretninger*
 10. Michael E. Hansen
The politics of corporate responsibility: CSR and the governance of child labor and core labor rights in the 1990s
 11. Anne Roepstorff
Holdning for handling – en etnologisk undersøgelse af Virksomheders Sociale Ansvar/CSR

12. Claus Bajlum
Essays on Credit Risk and Credit Derivatives
 13. Anders Bojesen
The Performative Power of Competence – an Inquiry into Subjectivity and Social Technologies at Work
 14. Satu Reijonen
*Green and Fragile
A Study on Markets and the Natural Environment*
 15. Ilduara Busta
*Corporate Governance in Banking
A European Study*
 16. Kristian Anders Hvass
*A Boolean Analysis Predicting Industry Change: Innovation, Imitation & Business Models
The Winning Hybrid: A case study of isomorphism in the airline industry*
 17. Trine Paludan
*De uvidende og de udviklingsparate
Identitet som mulighed og restriktion
blandt fabriksarbejdere på det aftayloriserede fabriksgulv*
 18. Kristian Jakobsen
Foreign market entry in transition economies: Entry timing and mode choice
 19. Jakob Elming
Syntactic reordering in statistical machine translation
 20. Lars Brømsøe Termansen
*Regional Computable General Equilibrium Models for Denmark
Three papers laying the foundation for regional CGE models with agglomeration characteristics*
 21. Mia Reinholt
The Motivational Foundations of Knowledge Sharing
 22. Frederikke Krogh-Meibom
*The Co-Evolution of Institutions and Technology
– A Neo-Institutional Understanding of Change Processes within the Business Press – the Case Study of Financial Times*
 23. Peter D. Ørberg Jensen
OFFSHORING OF ADVANCED AND HIGH-VALUE TECHNICAL SERVICES: ANTECEDENTS, PROCESS DYNAMICS AND FIRMLEVEL IMPACTS
 24. Pham Thi Song Hanh
Functional Upgrading, Relational Capability and Export Performance of Vietnamese Wood Furniture Producers
 25. Mads Vangkilde
*Why wait?
An Exploration of first-mover advantages among Danish e-grocers through a resource perspective*
 26. Hubert Buch-Hansen
*Rethinking the History of European Level Merger Control
A Critical Political Economy Perspective*
- 2009**
1. Vivian Lindhardsen
From Independent Ratings to Communal Ratings: A Study of CWA Raters' Decision-Making Behaviours
 2. Guðrið Weihe
Public-Private Partnerships: Meaning and Practice
 3. Chris Nøkkentved
*Enabling Supply Networks with Collaborative Information Infrastructures
An Empirical Investigation of Business Model Innovation in Supplier Relationship Management*
 4. Sara Louise Muhr
Wound, Interrupted – On the Vulnerability of Diversity Management

5. Christine Sestoft
Forbrugeradfærd i et Stats- og Livsformsteoretisk perspektiv
6. Michael Pedersen
Tune in, Breakdown, and Reboot: On the production of the stress-fit self-managing employee
7. Salla Lutz
Position and Reposition in Networks – Exemplified by the Transformation of the Danish Pine Furniture Manufacturers
8. Jens Forssbæk
Essays on market discipline in commercial and central banking
9. Tine Murphy
Sense from Silence – A Basis for Organised Action
How do Sensemaking Processes with Minimal Sharing Relate to the Reproduction of Organised Action?
10. Sara Malou Strandvad
Inspirations for a new sociology of art: A sociomaterial study of development processes in the Danish film industry
11. Nicolaas Mouton
On the evolution of social scientific metaphors: A cognitive-historical enquiry into the divergent trajectories of the idea that collective entities – states and societies, cities and corporations – are biological organisms.
12. Lars Andreas Knutsen
Mobile Data Services: Shaping of user engagements
13. Nikolaos Theodoros Korfiatis
Information Exchange and Behavior
A Multi-method Inquiry on Online Communities
14. Jens Albæk
Forestillinger om kvalitet og tværfaglighed på sygehuse
– skabelse af forestillinger i læge- og plejegrupperne angående relevans af nye idéer om kvalitetsudvikling gennem tolkningsprocesser
15. Maja Lotz
The Business of Co-Creation – and the Co-Creation of Business
16. Gitte P. Jakobsen
Narrative Construction of Leader Identity in a Leader Development Program Context
17. Dorte Hermansen
“Living the brand” som en brandorienteret dialogisk praxis: Om udvikling af medarbejdernes brandorienterede dømmekraft
18. Aseem Kinra
Supply Chain (logistics) Environmental Complexity
19. Michael Nørager
How to manage SMEs through the transformation from non innovative to innovative?
20. Kristin Wallevik
Corporate Governance in Family Firms
The Norwegian Maritime Sector
21. Bo Hansen Hansen
Beyond the Process
Enriching Software Process Improvement with Knowledge Management
22. Annemette Skot-Hansen
Franske adjektivisk afledte adverbier, der tager præpositionssyntagmer indledt med præpositionen à som argumenter
En valensgrammatisk undersøgelse
23. Line Gry Knudsen
Collaborative R&D Capabilities
In Search of Micro-Foundations

- | | |
|--|---|
| <p>24. Christian Scheuer
<i>Employers meet employees
Essays on sorting and globalization</i></p> | <p><i>End User Participation between Processes of Organizational and Architectural Design</i></p> |
| <p>25. Rasmus Johnsen
<i>The Great Health of Melancholy
A Study of the Pathologies of Performativity</i></p> | <p>7. Rex Degnegaard
<i>Strategic Change Management
Change Management Challenges in the Danish Police Reform</i></p> |
| <p>26. Ha Thi Van Pham
<i>Internationalization, Competitiveness Enhancement and Export Performance of Emerging Market Firms: Evidence from Vietnam</i></p> | <p>8. Ulrik Schultz Brix
<i>Værdi i rekruttering – den sikre beslutning
En pragmatisk analyse af perception og synliggørelse af værdi i rekrutterings- og udvælgelsesarbejdet</i></p> |
| <p>27. Henriette Balieu
<i>Kontrolbegrebets betydning for kausalalternationen i spansk
En kognitiv-typologisk analyse</i></p> | <p>9. Jan Ole Similä
<i>Kontraktsledelse
Relasjonen mellom virksomhetsledelse og kontraktshåndtering, belyst via fire norske virksomheter</i></p> |
| 2010 | |
| <p>1. Yen Tran
<i>Organizing Innovation in Turbulent Fashion Market
Four papers on how fashion firms create and appropriate innovation value</i></p> | <p>10. Susanne Boch Waldorff
<i>Emerging Organizations: In between local translation, institutional logics and discourse</i></p> |
| <p>2. Anders Raastrup Kristensen
<i>Metaphysical Labour
Flexibility, Performance and Commitment in Work-Life Management</i></p> | <p>11. Brian Kane
<i>Performance Talk
Next Generation Management of Organizational Performance</i></p> |
| <p>3. Margrét Sigrún Sigurdardóttir
<i>Dependently independent
Co-existence of institutional logics in the recorded music industry</i></p> | <p>12. Lars Ohnemus
<i>Brand Thrust: Strategic Branding and Shareholder Value
An Empirical Reconciliation of two Critical Concepts</i></p> |
| <p>4. Ásta Dis Óladóttir
<i>Internationalization from a small domestic base:
An empirical analysis of Economics and Management</i></p> | <p>13. Jesper Schlamovitz
<i>Håndtering af usikkerhed i film- og byggeprojekter</i></p> |
| <p>5. Christine Secher
<i>E-deltagelse i praksis – politikernes og forvaltningens medkonstruktion og konsekvenserne heraf</i></p> | <p>14. Tommy Moesby-Jensen
<i>Det faktiske livs forbindtlighed
Førsokratisk informeret, ny-aristotelisk ήθος-tænkning hos Martin Heidegger</i></p> |
| <p>6. Marianne Stang Våland
<i>What we talk about when we talk about space:</i></p> | <p>15. Christian Fich
<i>Two Nations Divided by Common Values
French National Habitus and the Rejection of American Power</i></p> |

16. Peter Beyer
Processer, sammenhængskraft og fleksibilitet
Et empirisk casestudie af omstillingsforløb i fire virksomheder
17. Adam Buchhorn
Markets of Good Intentions
Constructing and Organizing Biogas Markets Amid Fragility and Controversy
18. Cecilie K. Moesby-Jensen
Social læring og fælles praksis
Et mixed method studie, der belyser læringskonsekvenser af et lederkursus for et praksisfællesskab af offentlige mellemledere
19. Heidi Boye
Fødevarer og sundhed i sen-modernismen
– En indsiget i hyggefænomenet og de relaterede fødevarerpraksisser
20. Kristine Munkgård Pedersen
Flygtige forbindelser og midlertidige mobiliseringer
Om kulturel produktion på Roskilde Festival
21. Oliver Jacob Weber
Causes of Intercompany Harmony in Business Markets – An Empirical Investigation from a Dyad Perspective
22. Susanne Ekman
Authority and Autonomy
Paradoxes of Modern Knowledge Work
23. Anette Frey Larsen
Kvalitetsledelse på danske hospitaler
– Ledelsernes indflydelse på introduktion og vedligeholdelse af kvalitetsstrategier i det danske sundhedsvæsen
24. Toyoko Sato
Performativity and Discourse: Japanese Advertisements on the Aesthetic Education of Desire
25. Kenneth Brinch Jensen
Identifying the Last Planner System
Lean management in the construction industry
26. Javier Busquets
Orchestrating Network Behavior for Innovation
27. Luke Patey
The Power of Resistance: India's National Oil Company and International Activism in Sudan
28. Mette Vedel
Value Creation in Triadic Business Relationships. Interaction, Interconnection and Position
29. Kristian Tørning
Knowledge Management Systems in Practice – A Work Place Study
30. Qingxin Shi
An Empirical Study of Thinking Aloud
Usability Testing from a Cultural Perspective
31. Tanja Juul Christiansen
Corporate blogging: Medarbejderes kommunikative handlekraft
32. Malgorzata Ciesielska
Hybrid Organisations.
A study of the Open Source – business setting
33. Jens Dick-Nielsen
Three Essays on Corporate Bond Market Liquidity
34. Sabrina Speiermann
Modstandens Politik
Kampagnestyling i Velfærdsstaten.
En diskussion af trafikcampagners styringspotentiale
35. Julie Uldam
Fickle Commitment. Fostering political engagement in 'the flighty world of online activism'

36. Annegrete Juul Nielsen
Traveling technologies and transformations in health care
37. Athur Mühlen-Schulte
Organising Development Power and Organisational Reform in the United Nations Development Programme
38. Louise Rygaard Jonas
Branding på butiksgulvet Et case-studie af kultur- og identitets-arbejdet i Kvickly
8. Ole Helby Petersen
Public-Private Partnerships: Policy and Regulation – With Comparative and Multi-level Case Studies from Denmark and Ireland
9. Morten Krogh Petersen
'Good' Outcomes. Handling Multiplicity in Government Communication
10. Kristian Tangsgaard Hvelplund
Allocation of cognitive resources in translation - an eye-tracking and key-logging study

2011

1. Stefan Fraenkel
Key Success Factors for Sales Force Readiness during New Product Launch A Study of Product Launches in the Swedish Pharmaceutical Industry
2. Christian Plesner Rossing
International Transfer Pricing in Theory and Practice
3. Tobias Dam Hede
Samtalekunst og ledelsesdisciplin – en analyse af coachingsdiskursens genealogi og governmentality
4. Kim Pettersson
Essays on Audit Quality, Auditor Choice, and Equity Valuation
5. Henrik Merkelsen
The expert-lay controversy in risk research and management. Effects of institutional distances. Studies of risk definitions, perceptions, management and communication
6. Simon S. Torp
Employee Stock Ownership: Effect on Strategic Management and Performance
7. Mie Harder
Internal Antecedents of Management Innovation
11. Moshe Yonatany
The Internationalization Process of Digital Service Providers
12. Anne Vestergaard
Distance and Suffering Humanitarian Discourse in the age of Mediatization
13. Thorsten Mikkelsen
Personlighedens indflydelse på forretningsrelationer
14. Jane Thostrup Jagd
Hvorfor fortsætter fusionsbølgen ud-over "the tipping point"? – en empirisk analyse af information og kognitioner om fusioner
15. Gregory Gimpel
Value-driven Adoption and Consumption of Technology: Understanding Technology Decision Making
16. Thomas Stengade Sønderskov
Den nye mulighed Social innovation i en forretningsmæssig kontekst
17. Jeppe Christoffersen
Donor supported strategic alliances in developing countries
18. Vibeke Vad Baunsgaard
Dominant Ideological Modes of Rationality: Cross functional

- integration in the process of product innovation*
19. Throstur Olaf Sigurjonsson
Governance Failure and Iceland's Financial Collapse
 20. Allan Sall Tang Andersen
Essays on the modeling of risks in interest-rate and inflation markets
 21. Heidi Tscherning
Mobile Devices in Social Contexts
 22. Birgitte Gorm Hansen
*Adapting in the Knowledge Economy
Lateral Strategies for Scientists and Those Who Study Them*
 23. Kristina Vaarst Andersen
*Optimal Levels of Embeddedness
The Contingent Value of Networked Collaboration*
 24. Justine Grønbæk Pors
*Noisy Management
A History of Danish School Governing from 1970-2010*
 25. Stefan Linder
*Micro-foundations of Strategic Entrepreneurship
Essays on Autonomous Strategic Action*
 26. Xin Li
*Toward an Integrative Framework of National Competitiveness
An application to China*
 27. Rune Thorbjørn Clausen
*Værdifuld arkitektur
Et eksplorativt studie af bygningers rolle i virksomheders værdiskabelse*
 28. Monica Viken
Markedsundersøkelser som bevis i varemerke- og markedsføringsrett
 29. Christian Wymann
*Tattooing
The Economic and Artistic Constitution of a Social Phenomenon*
 30. Sanne Frandsen
*Productive Incoherence
A Case Study of Branding and Identity Struggles in a Low-Prestige Organization*
 31. Mads Stenbo Nielsen
Essays on Correlation Modelling
 32. Ivan Häuser
*Følelse og sprog
Etablering af en ekspressiv kategori, eksemplificeret på russisk*
 33. Sebastian Schwenen
Security of Supply in Electricity Markets
- 2012**
1. Peter Holm Andreasen
*The Dynamics of Procurement Management
- A Complexity Approach*
 2. Martin Haulrich
Data-Driven Bitext Dependency Parsing and Alignment
 3. Line Kirkegaard
*Konsulent i den anden nat
En undersøgelse af det intense arbejdsliv*
 4. Tonny Stenheim
Decision usefulness of goodwill under IFRS
 5. Morten Lind Larsen
*Produktivit, vækst og velfærd
Industrirådet og efterkrigstidens Danmark 1945 - 1958*
 6. Petter Berg
Cartel Damages and Cost Asymmetries
 7. Lynn Kahle
*Experiential Discourse in Marketing
A methodical inquiry into practice and theory*
 8. Anne Roelsgaard Obling
*Management of Emotions
in Accelerated Medical Relationships*

9. Thomas Frandsen
Managing Modularity of Service Processes Architecture
10. Carina Christine Skovmøller
*CSR som noget særligt
Et casestudie om styring og menings-
skabelse i relation til CSR ud fra en
intern optik*
11. Michael Tell
*Fradragsbeskæring af selskabers
finansieringsudgifter
En skatteretlig analyse af SEL §§ 11,
11B og 11C*
12. Morten Holm
*Customer Profitability Measurement
Models
Their Merits and Sophistication
across Contexts*
13. Katja Joo Dyppel
*Beskatning af derivater
En analyse af dansk skatteret*
14. Esben Anton Schultz
*Essays in Labor Economics
Evidence from Danish Micro Data*
15. Carina Risvig Hansen
*"Contracts not covered, or not fully
covered, by the Public Sector Directive"*
16. Anja Svejgaard Pors
*Iværksættelse af kommunikation
- patientfigurer i hospitalets strategiske
kommunikation*
17. Frans Bévort
*Making sense of management with
logics
An ethnographic study of accountants
who become managers*
18. René Kallestrup
*The Dynamics of Bank and Sovereign
Credit Risk*
19. Brett Crawford
*Revisiting the Phenomenon of Interests
in Organizational Institutionalism
The Case of U.S. Chambers of
Commerce*
20. Mario Daniele Amore
Essays on Empirical Corporate Finance
21. Arne Stjernholm Madsen
*The evolution of innovation strategy
Studied in the context of medical
device activities at the pharmaceutical
company Novo Nordisk A/S in the
period 1980-2008*
22. Jacob Holm Hansen
*Is Social Integration Necessary for
Corporate Branding?
A study of corporate branding
strategies at Novo Nordisk*
23. Stuart Webber
*Corporate Profit Shifting and the
Multinational Enterprise*
24. Helene Ratner
*Promises of Reflexivity
Managing and Researching
Inclusive Schools*
25. Therese Strand
*The Owners and the Power: Insights
from Annual General Meetings*
26. Robert Gavin Strand
*In Praise of Corporate Social
Responsibility Bureaucracy*
27. Nina Sormunen
*Auditor's going-concern reporting
Reporting decision and content of the
report*
28. John Bang Mathiasen
*Learning within a product development
working practice:
- an understanding anchored
in pragmatism*
29. Philip Holst Riis
*Understanding Role-Oriented Enterprise
Systems: From Vendors to Customers*
30. Marie Lisa Dacanay
*Social Enterprises and the Poor
Enhancing Social Entrepreneurship and
Stakeholder Theory*

- | | |
|---|--|
| <p>31. Fumiko Kano Glückstad
<i>Bridging Remote Cultures: Cross-lingual concept mapping based on the information receiver's prior-knowledge</i></p> <p>32. Henrik Barslund Fosse
<i>Empirical Essays in International Trade</i></p> <p>33. Peter Alexander Albrecht
<i>Foundational hybridity and its reproduction</i>
<i>Security sector reform in Sierra Leone</i></p> <p>34. Maja Rosenstock
<i>CSR - hvor svært kan det være?</i>
<i>Kulturanalytisk casestudie om udfordringer og dilemmaer med at forankre Coops CSR-strategi</i></p> <p>35. Jeanette Rasmussen
<i>Tweens, medier og forbrug</i>
<i>Et studie af 10-12 årige danske børns brug af internettet, opfattelse og forståelse af markedsføring og forbrug</i></p> <p>36. Ib Tunby Gulbrandsen
<i>'This page is not intended for a US Audience'</i>
<i>A five-act spectacle on online communication, collaboration & organization.</i></p> <p>37. Kasper Aalling Teilmann
<i>Interactive Approaches to Rural Development</i></p> <p>38. Mette Mogensen
<i>The Organization(s) of Well-being and Productivity</i>
<i>(Re)assembling work in the Danish Post</i></p> <p>39. Søren Friis Møller
<i>From Disinterestedness to Engagement</i>
<i>Towards Relational Leadership In the Cultural Sector</i></p> <p>40. Nico Peter Berhausen
<i>Management Control, Innovation and Strategic Objectives – Interactions and Convergence in Product Development Networks</i></p> | <p>41. Balder Onarheim
<i>Creativity under Constraints</i>
<i>Creativity as Balancing 'Constrainedness'</i></p> <p>42. Haoyong Zhou
<i>Essays on Family Firms</i></p> <p>43. Elisabeth Naima Mikkelsen
<i>Making sense of organisational conflict</i>
<i>An empirical study of enacted sense-making in everyday conflict at work</i></p> <p>2013</p> <p>1. Jacob Lyngsie
<i>Entrepreneurship in an Organizational Context</i></p> <p>2. Signe Groth-Brodersen
<i>Fra ledelse til selvet</i>
<i>En socialpsykologisk analyse af forholdet imellem selvledelse, ledelse og stress i det moderne arbejdsliv</i></p> <p>3. Nis Høyrup Christensen
<i>Shaping Markets: A Neoinstitutional Analysis of the Emerging Organizational Field of Renewable Energy in China</i></p> <p>4. Christian Edelvold Berg
<i>As a matter of size</i>
<i>THE IMPORTANCE OF CRITICAL MASS AND THE CONSEQUENCES OF SCARCITY FOR TELEVISION MARKETS</i></p> <p>5. Christine D. Isakson
<i>Coworker Influence and Labor Mobility</i>
<i>Essays on Turnover, Entrepreneurship and Location Choice in the Danish Maritime Industry</i></p> <p>6. Niels Joseph Jerne Lennon
<i>Accounting Qualities in Practice</i>
<i>Rhizomatic stories of representational faithfulness, decision making and control</i></p> <p>7. Shannon O'Donnell
<i>Making Ensemble Possible</i>
<i>How special groups organize for collaborative creativity in conditions of spatial variability and distance</i></p> |
|---|--|

8. Robert W. D. Veitch
Access Decisions in a Partly-Digital World
Comparing Digital Piracy and Legal Modes for Film and Music
9. Marie Mathiesen
Making Strategy Work
An Organizational Ethnography
10. Arisa Shollo
The role of business intelligence in organizational decision-making
11. Mia Kaspersen
The construction of social and environmental reporting
12. Marcus Møller Larsen
The organizational design of offshoring
13. Mette Ohm Rørdam
EU Law on Food Naming
The prohibition against misleading names in an internal market context
14. Hans Peter Rasmussen
GIV EN GED!
Kan giver-idealtyper forklare støtte til vælgørenhed og understøtte relationsopbygning?
15. Ruben Schachtenhaufen
Fonetisk reduktion i dansk
16. Peter Koerver Schmidt
Dansk CFC-beskatning
I et internationalt og komparativt perspektiv
17. Morten Froholdt
Strategi i den offentlige sektor
En kortlægning af styringsmæssig kontekst, strategisk tilgang, samt anvendte redskaber og teknologier for udvalgte danske statslige styrelser
18. Annette Camilla Sjørup
Cognitive effort in metaphor translation
An eye-tracking and key-logging study
19. Tamara Stucchi
The Internationalization of Emerging Market Firms: A Context-Specific Study
20. Thomas Lopdrup-Hjorth
"Let's Go Outside": The Value of Co-Creation
21. Ana Alačovska
Genre and Autonomy in Cultural Production
The case of travel guidebook production
22. Marius Gudmand-Høyer
Stemningssindssygdommenes historie i det 19. århundrede
Omtydningen af melankolien og manien som bipolære stemningslidelser i dansk sammenhæng under hensyn til dannelsen af det moderne følelseslivs relative autonomi.
En problematiserings- og erfarings-analytisk undersøgelse
23. Lichen Alex Yu
Fabricating an S&OP Process
Circulating References and Matters of Concern
24. Esben Alfort
The Expression of a Need
Understanding search
25. Trine Pallesen
Assembling Markets for Wind Power
An Inquiry into the Making of Market Devices
26. Anders Koed Madsen
Web-Visions
Repurposing digital traces to organize social attention
27. Lærke Højgaard Christiansen
BREWING ORGANIZATIONAL RESPONSES TO INSTITUTIONAL LOGICS
28. Tommy Kjær Lassen
EGENTLIG SELVLEDELSE
En ledelsesfilosofisk afhandling om selvledelsens paradoksale dynamik og eksistentielle engagement

- | | |
|--|---|
| <p>29. Morten Rossing
<i>Local Adaption and Meaning Creation in Performance Appraisal</i></p> <p>30. Søren Obed Madsen
<i>Lederen som oversætter
Et oversættelsesteoretisk perspektiv på strategisk arbejde</i></p> <p>31. Thomas Høgenhaven
<i>Open Government Communities
Does Design Affect Participation?</i></p> <p>32. Kirstine Zinck Pedersen
<i>Failsafe Organizing?
A Pragmatic Stance on Patient Safety</i></p> <p>33. Anne Petersen
<i>Hverdagslogikker i psykiatrisk arbejde
En institutionsetnografisk undersøgelse af hverdagen i psykiatriske organisationer</i></p> <p>34. Didde Maria Humle
<i>Fortællinger om arbejde</i></p> <p>35. Mark Holst-Mikkelsen
<i>Strategieksekverering i praksis – barrierer og muligheder!</i></p> <p>36. Malek Maalouf
<i>Sustaining lean
Strategies for dealing with organizational paradoxes</i></p> <p>37. Nicolaj Tofte Brenneche
<i>Systemic Innovation In The Making
The Social Productivity of Cartographic Crisis and Transitions in the Case of SEEIT</i></p> <p>38. Morten Gylling
<i>The Structure of Discourse
A Corpus-Based Cross-Linguistic Study</i></p> <p>39. Binzhang YANG
<i>Urban Green Spaces for Quality Life - Case Study: the landscape architecture for people in Copenhagen</i></p> | <p>40. Michael Friis Pedersen
<i>Finance and Organization:
The Implications for Whole Farm Risk Management</i></p> <p>41. Even Fallan
<i>Issues on supply and demand for environmental accounting information</i></p> <p>42. Ather Nawaz
<i>Website user experience
A cross-cultural study of the relation between users' cognitive style, context of use, and information architecture of local websites</i></p> <p>43. Karin Beukel
<i>The Determinants for Creating Valuable Inventions</i></p> <p>44. Arjan Markus
<i>External Knowledge Sourcing and Firm Innovation
Essays on the Micro-Foundations of Firms' Search for Innovation</i></p> <p>2014</p> <p>1. Solon Moreira
<i>Four Essays on Technology Licensing and Firm Innovation</i></p> <p>2. Karin Strzeletz Ivertsen
<i>Partnership Drift in Innovation Processes
A study of the Think City electric car development</i></p> <p>3. Kathrine Hoffmann Pii
<i>Responsibility Flows in Patient-centred Prevention</i></p> <p>4. Jane Bjørn Vedel
<i>Managing Strategic Research
An empirical analysis of science-industry collaboration in a pharmaceutical company</i></p> <p>5. Martin Gylling
<i>Processuel strategi i organisationer
Monografi om dobbeltheden i tænkning af strategi, dels som vidensfelt i organisationsteori, dels som kunstnerisk tilgang til at skabe i erhvervsmæssig innovation</i></p> |
|--|---|

6. Linne Marie Lauesen
Corporate Social Responsibility in the Water Sector: How Material Practices and their Symbolic and Physical Meanings Form a Colonising Logic
7. Maggie Qiuzhu Mei
LEARNING TO INNOVATE: The role of ambidexterity, standard, and decision process
8. Inger Høedt-Rasmussen
Developing Identity for Lawyers Towards Sustainable Lawyering
9. Sebastian Fux
Essays on Return Predictability and Term Structure Modelling
10. Thorbjørn N. M. Lund-Poulsen
Essays on Value Based Management
11. Oana Brindusa Albu
Transparency in Organizing: A Performative Approach
12. Lena Olaison
Entrepreneurship at the limits
13. Hanne Sørum
DRESSED FOR WEB SUCCESS? An Empirical Study of Website Quality in the Public Sector
14. Lasse Folke Henriksen
Knowing networks How experts shape transnational governance
15. Maria Halbinger
Entrepreneurial Individuals Empirical Investigations into Entrepreneurial Activities of Hackers and Makers
16. Robert Spliid
Kapitalfondenes metoder og kompetencer
17. Christiane Stelling
Public-private partnerships & the need, development and management of trusting A processual and embedded exploration
18. Marta Gasparin
Management of design as a translation process
19. Kåre Moberg
Assessing the Impact of Entrepreneurship Education From ABC to PhD
20. Alexander Cole
Distant neighbors Collective learning beyond the cluster
21. Martin Møller Boje Rasmussen
Is Competitiveness a Question of Being Alike? How the United Kingdom, Germany and Denmark Came to Compete through their Knowledge Regimes from 1993 to 2007
22. Anders Ravn Sørensen
Studies in central bank legitimacy, currency and national identity Four cases from Danish monetary history
23. Nina Bellak
Can Language be Managed in International Business? Insights into Language Choice from a Case Study of Danish and Austrian Multinational Corporations (MNCs)
24. Rikke Kristine Nielsen
Global Mindset as Managerial Meta-competence and Organizational Capability: Boundary-crossing Leadership Cooperation in the MNC The Case of 'Group Mindset' in Solar A/S.
25. Rasmus Koss Hartmann
User Innovation inside government Towards a critically performative foundation for inquiry

- | | |
|---|---|
| <p>26. Kristian Gylling Olesen
<i>Flertydig og emergerende ledelse i folkeskolen</i>
<i>Et aktør-netværksteoretisk ledelsesstudie af politiske evalueringsreformers betydning for ledelse i den danske folkeskole</i></p> <p>27. Troels Riis Larsen
<i>Kampen om Danmarks omdømme 1945-2010</i>
<i>Omdømmearbejde og omdømmepolitik</i></p> <p>28. Klaus Majgaard
<i>Jagten på autenticitet i offentlig styring</i></p> <p>29. Ming Hua Li
<i>Institutional Transition and Organizational Diversity: Differentiated internationalization strategies of emerging market state-owned enterprises</i></p> <p>30. Sofie Blinkenberg Federspiel
<i>IT, organisation og digitalisering: Institutionelt arbejde i den kommunale digitaliseringsproces</i></p> <p>31. Elvi Weinreich
<i>Hvilke offentlige ledere er der brug for når velfærdstænkningen flytter sig – er Diplomuddannelsens lederprofil svaret?</i></p> <p>32. Ellen Mølgaard Korsager
<i>Self-conception and image of context in the growth of the firm</i>
<i>– A Penrosian History of Fiberline Composites</i></p> <p>33. Else Skjold
<i>The Daily Selection</i></p> <p>34. Marie Louise Conradsen
<i>The Cancer Centre That Never Was</i>
<i>The Organisation of Danish Cancer Research 1949-1992</i></p> <p>35. Virgilio Failla
<i>Three Essays on the Dynamics of Entrepreneurs in the Labor Market</i></p> | <p>36. Nicky Nedergaard
<i>Brand-Based Innovation</i>
<i>Relational Perspectives on Brand Logics and Design Innovation Strategies and Implementation</i></p> <p>37. Mads Gjedsted Nielsen
<i>Essays in Real Estate Finance</i></p> <p>38. Kristin Martina Brandl
<i>Process Perspectives on Service Offshoring</i></p> <p>39. Mia Rosa Koss Hartmann
<i>In the gray zone</i>
<i>With police in making space for creativity</i></p> <p>40. Karen Ingerslev
<i>Healthcare Innovation under The Microscope</i>
<i>Framing Boundaries of Wicked Problems</i></p> <p>41. Tim Neerup Thomsen
<i>Risk Management in large Danish public capital investment programmes</i></p> <p>2015</p> <p>1. Jakob Ion Wille
<i>Film som design</i>
<i>Design af levende billeder i film og tv-serier</i></p> <p>2. Christiane Mossin
<i>Interzones of Law and Metaphysics</i>
<i>Hierarchies, Logics and Foundations of Social Order seen through the Prism of EU Social Rights</i></p> <p>3. Thomas Tøth
<i>TRUSTWORTHINESS: ENABLING GLOBAL COLLABORATION</i>
<i>An Ethnographic Study of Trust, Distance, Control, Culture and Boundary Spanning within Offshore Outsourcing of IT Services</i></p> <p>4. Steven Højlund
<i>Evaluation Use in Evaluation Systems – The Case of the European Commission</i></p> |
|---|---|

5. Julia Kirch Kirkegaard
AMBIGUOUS WINDS OF CHANGE – OR FIGHTING AGAINST WINDMILLS IN CHINESE WIND POWER
A CONSTRUCTIVIST INQUIRY INTO CHINA'S PRAGMATICS OF GREEN MARKETISATION MAPPING
CONTROVERSIES OVER A POTENTIAL TURN TO QUALITY IN CHINESE WIND POWER
6. Michelle Carol Antero
A Multi-case Analysis of the Development of Enterprise Resource Planning Systems (ERP) Business Practices

Morten Friis-Olivarius
The Associative Nature of Creativity
7. Mathew Abraham
New Cooperativism: A study of emerging producer organisations in India
8. Stine Hedegaard
Sustainability-Focused Identity: Identity work performed to manage, negotiate and resolve barriers and tensions that arise in the process of constructing or ganizational identity in a sustainability context
9. Cecilie Glerup
Organizing Science in Society – the conduct and justification of resposible research
10. Allan Salling Pedersen
Implementering af ITIL® IT-governance - når best practice konflikter med kulturen Løsning af implementerings-problemer gennem anvendelse af kendte CSF i et aktionsforskningsforløb.
11. Nihat Misir
A Real Options Approach to Determining Power Prices
12. Mamdouh Medhat
MEASURING AND PRICING THE RISK OF CORPORATE FAILURES
13. Rina Hansen
Toward a Digital Strategy for Omnichannel Retailing
14. Eva Pallesen
In the rhythm of welfare creation
A relational processual investigation moving beyond the conceptual horizon of welfare management
15. Gouya Harirchi
In Search of Opportunities: Three Essays on Global Linkages for Innovation
16. Lotte Holck
Embedded Diversity: A critical ethnographic study of the structural tensions of organizing diversity
17. Jose Daniel Balarezo
Learning through Scenario Planning
18. Louise Pram Nielsen
Knowledge dissemination based on terminological ontologies. Using eye tracking to further user interface design.
19. Sofie Dam
PUBLIC-PRIVATE PARTNERSHIPS FOR INNOVATION AND SUSTAINABILITY TRANSFORMATION
An embedded, comparative case study of municipal waste management in England and Denmark
20. Ulrik Hartmyer Christiansen
Follwoing the Content of Reported Risk Across the Organization
21. Guro Refsum Sanden
Language strategies in multinational corporations. A cross-sector study of financial service companies and manufacturing companies.
22. Linn Gevoll
Designing performance management for operational level
- A closer look on the role of design choices in framing coordination and motivation

23. Frederik Larsen
*Objects and Social Actions
– on Second-hand Valuation Practices*
24. Thorhildur Hansdottir Jetzek
*The Sustainable Value of Open
Government Data
Uncovering the Generative Mechanisms
of Open Data through a Mixed
Methods Approach*
25. Gustav Toppenberg
*Innovation-based M&A
– Technological-Integration
Challenges – The Case of
Digital-Technology Companies*
26. Mie Plotnikof
*Challenges of Collaborative
Governance
An Organizational Discourse Study
of Public Managers' Struggles
with Collaboration across the
Daycare Area*
27. Christian Garmann Johnsen
*Who Are the Post-Bureaucrats?
A Philosophical Examination of the
Creative Manager, the Authentic Leader
and the Entrepreneur*
28. Jacob Brogaard-Kay
*Constituting Performance Management
A field study of a pharmaceutical
company*
29. Rasmus Ploug Jenle
*Engineering Markets for Control:
Integrating Wind Power into the Danish
Electricity System*
30. Morten Lindholst
*Complex Business Negotiation:
Understanding Preparation and
Planning*
31. Morten Grynings
*TRUST AND TRANSPARENCY FROM AN
ALIGNMENT PERSPECTIVE*
32. Peter Andreas Norn
*Byregimer og styringsevne: Politisk
lederskab af store byudviklingsprojekter*
33. Milan Miric
*Essays on Competition, Innovation and
Firm Strategy in Digital Markets*
34. Sanne K. Hjordrup
*The Value of Talent Management
Rethinking practice, problems and
possibilities*
35. Johanna Sax
*Strategic Risk Management
– Analyzing Antecedents and
Contingencies for Value Creation*
36. Pernille Rydén
Strategic Cognition of Social Media
37. Mimmi Sjöklint
*The Measurable Me
- The Influence of Self-tracking on the
User Experience*
38. Juan Ignacio Staricco
*Towards a Fair Global Economic
Regime? A critical assessment of Fair
Trade through the examination of the
Argentinean wine industry*
39. Marie Henriette Madsen
*Emerging and temporary connections
in Quality work*
40. Yangfeng CAO
*Toward a Process Framework of
Business Model Innovation in the
Global Context
Entrepreneurship-Enabled Dynamic
Capability of Medium-Sized
Multinational Enterprises*
41. Carsten Scheibye
*Enactment of the Organizational Cost
Structure in Value Chain Configuration
A Contribution to Strategic Cost
Management*

2016

1. Signe Sofie Dyrby
Enterprise Social Media at Work
2. Dorte Boesby Dahl
*The making of the public parking attendant
Dirt, aesthetics and inclusion in public service work*
3. Verena Girschik
*Realizing Corporate Responsibility
Positioning and Framing in Nascent Institutional Change*
4. Anders Ørding Olsen
*IN SEARCH OF SOLUTIONS
Inertia, Knowledge Sources and Diversity in Collaborative Problem-solving*
5. Pernille Steen Pedersen
*Udkast til et nyt copingbegreb
En kvalifikation af ledelsesmuligheder for at forebygge sygefravær ved psykiske problemer.*
6. Kerli Kant Hvass
*Weaving a Path from Waste to Value:
Exploring fashion industry business models and the circular economy*
7. Kasper Lindskow
*Exploring Digital News Publishing
Business Models – a production network approach*
8. Mikkel Mouritz Marfelt
*The chameleon workforce:
Assembling and negotiating the content of a workforce*
9. Marianne Bertelsen
*Aesthetic encounters
Rethinking autonomy, space & time in today's world of art*
10. Louise Hauberg Wilhelmsen
EU PERSPECTIVES ON INTERNATIONAL COMMERCIAL ARBITRATION
11. Abid Hussain
On the Design, Development and Use of the Social Data Analytics Tool (SODATO): Design Propositions, Patterns, and Principles for Big Social Data Analytics
12. Mark Bruun
Essays on Earnings Predictability
13. Tor Bøe-Lillegraven
BUSINESS PARADOXES, BLACK BOXES, AND BIG DATA: BEYOND ORGANIZATIONAL AMBIDEXTERITY
14. Hadis Khonsary-Atighi
ECONOMIC DETERMINANTS OF DOMESTIC INVESTMENT IN AN OIL-BASED ECONOMY: THE CASE OF IRAN (1965-2010)
15. Maj Lervad Grasten
*Rule of Law or Rule by Lawyers?
On the Politics of Translation in Global Governance*
16. Lene Granzau Juel-Jacobsen
SUPERMARKEDETS MODUS OPERANDI – en hverdagssociologisk undersøgelse af forholdet mellem rum og handlen og understøtte relationsopbygning?
17. Christine Thalsgård Henriques
In search of entrepreneurial learning – Towards a relational perspective on incubating practices?
18. Patrick Bennett
Essays in Education, Crime, and Job Displacement
19. Søren Korsgaard
Payments and Central Bank Policy
20. Marie Kruse Skibsted
Empirical Essays in Economics of Education and Labor
21. Elizabeth Benedict Christensen
*The Constantly Contingent Sense of Belonging of the 1.5 Generation
Undocumented Youth
An Everyday Perspective*

22. Lasse J. Jessen
Essays on Discounting Behavior and Gambling Behavior
23. Kalle Johannes Rose
*Når stiftertiljen dør...
Et retsøkonomisk bidrag til 200 års
juridisk konflikt om ejendomsretten*
24. Andreas Søeborg Kirkedal
*Danish Stød and Automatic Speech
Recognition*
25. Ida Lunde Jørgensen
*Institutions and Legitimations in
Finance for the Arts*
26. Olga Rykov Ibsen
*An empirical cross-linguistic study of
directives: A semiotic approach to the
sentence forms chosen by British,
Danish and Russian speakers in native
and ELF contexts*
27. Desi Volker
Understanding Interest Rate Volatility
28. Angeli Elizabeth Weller
*Practice at the Boundaries of Business
Ethics & Corporate Social Responsibility*
29. Ida Danneskiold-Samsøe
*Levende læring i kunstneriske
organisationer
En undersøgelse af læringsprocesser
mellem projekt og organisation på
Aarhus Teater*
30. Leif Christensen
*Quality of information – The role of
internal controls and materiality*
31. Olga Zarzecka
Tie Content in Professional Networks
32. Henrik Mahncke
*De store gaver
- Filantropiens gensidighedsrelationer i
teori og praksis*
33. Carsten Lund Pedersen
*Using the Collective Wisdom of
Frontline Employees in Strategic Issue
Management*
34. Yun Liu
Essays on Market Design
35. Denitsa Hazarbassanova Blagoeva
The Internationalisation of Service Firms
36. Manya Jaura Lind
*Capability development in an off-
shoring context: How, why and by
whom*
37. Luis R. Boscán F.
*Essays on the Design of Contracts and
Markets for Power System Flexibility*
38. Andreas Philipp Distel
*Capabilities for Strategic Adaptation:
Micro-Foundations, Organizational
Conditions, and Performance
Implications*
39. Lavinia Bleoca
*The Usefulness of Innovation and
Intellectual Capital in Business
Performance: The Financial Effects of
Knowledge Management vs. Disclosure*
40. Henrik Jensen
*Economic Organization and Imperfect
Managerial Knowledge: A Study of the
Role of Managerial Meta-Knowledge
in the Management of Distributed
Knowledge*
41. Stine Mosekjær
*The Understanding of English Emotion
Words by Chinese and Japanese
Speakers of English as a Lingua Franca
An Empirical Study*
42. Hallur Tor Sigurdarson
*The Ministry of Desire - Anxiety and
entrepreneurship in a bureaucracy*
43. Kätlin Pulk
*Making Time While Being in Time
A study of the temporality of
organizational processes*
44. Valeria Giacomini
*Contextualizing the cluster Palm oil in
Southeast Asia in global perspective
(1880s–1970s)*

- | | | |
|--|--------------------|--|
| <p>45. Jeanette Willert
<i>Managers' use of multiple Management Control Systems: The role and interplay of management control systems and company performance</i></p> <p>46. Mads Vestergaard Jensen
<i>Financial Frictions: Implications for Early Option Exercise and Realized Volatility</i></p> <p>47. Mikael Reimer Jensen
<i>Interbank Markets and Frictions</i></p> <p>48. Benjamin Faigen
<i>Essays on Employee Ownership</i></p> <p>49. Adela Michea
<i>Enacting Business Models An Ethnographic Study of an Emerging Business Model Innovation within the Frame of a Manufacturing Company.</i></p> <p>50. Iben Sandal Stjerne
<i>Transcending organization in temporary systems Aesthetics' organizing work and employment in Creative Industries</i></p> <p>51. Simon Krogh
<i>Anticipating Organizational Change</i></p> <p>52. Sarah Netter
<i>Exploring the Sharing Economy</i></p> <p>53. Lene Tolstrup Christensen
<i>State-owned enterprises as institutional market actors in the marketization of public service provision: A comparative case study of Danish and Swedish passenger rail 1990–2015</i></p> <p>54. Kyoung(Kay) Sun Park
<i>Three Essays on Financial Economics</i></p> | <p>2017</p> | <p>1. Mari Bjerck
<i>Apparel at work. Work uniforms and women in male-dominated manual occupations.</i></p> <p>2. Christoph H. Flöthmann
<i>Who Manages Our Supply Chains? Backgrounds, Competencies and Contributions of Human Resources in Supply Chain Management</i></p> <p>3. Aleksandra Anna Rzeźnik
<i>Essays in Empirical Asset Pricing</i></p> <p>4. Claes Bäckman
<i>Essays on Housing Markets</i></p> <p>5. Kirsti Reitan Andersen
<i>Stabilizing Sustainability in the Textile and Fashion Industry</i></p> <p>6. Kira Hoffmann
<i>Cost Behavior: An Empirical Analysis of Determinants and Consequences of Asymmetries</i></p> <p>7. Tobin Hanspal
<i>Essays in Household Finance</i></p> <p>8. Nina Lange
<i>Correlation in Energy Markets</i></p> <p>9. Anjum Fayyaz
<i>Donor Interventions and SME Networking in Industrial Clusters in Punjab Province, Pakistan</i></p> <p>10. Magnus Paulsen Hansen
<i>Trying the unemployed. Justification and critique, emancipation and coercion towards the 'active society'. A study of contemporary reforms in France and Denmark</i></p> <p>11. Sameer Azizi
<i>Corporate Social Responsibility in Afghanistan – a critical case study of the mobile telecommunications industry</i></p> |
|--|--------------------|--|

12. Malene Myhre
The internationalization of small and medium-sized enterprises: A qualitative study
13. Thomas Presskorn-Thygesen
The Significance of Normativity – Studies in Post-Kantian Philosophy and Social Theory
14. Federico Clementi
Essays on multinational production and international trade
15. Lara Anne Hale
Experimental Standards in Sustainability Transitions: Insights from the Building Sector
16. Richard Pucci
*Accounting for Financial Instruments in an Uncertain World
Controversies in IFRS in the Aftermath of the 2008 Financial Crisis*
17. Sarah Maria Denta
*Kommunale offentlige private partnerskaber
Regulering i skyggen af Farumsagen*
18. Christian Östlund
Design for e-training
19. Amalie Martinus Hauge
Organizing Valuations – a pragmatic inquiry
20. Tim Holst Celik
Tension-filled Governance? Exploring the Emergence, Consolidation and Reconfiguration of Legitimatory and Fiscal State-crafting
21. Christian Bason
Leading Public Design: How managers engage with design to transform public governance
22. Davide Tomio
Essays on Arbitrage and Market Liquidity
23. Simone Stæhr
*Financial Analysts' Forecasts
Behavioral Aspects and the Impact of Personal Characteristics*
24. Mikkel Godt Gregersen
*Management Control, Intrinsic Motivation and Creativity
– How Can They Coexist*
25. Kristjan Johannes Suse Jespersen
Advancing the Payments for Ecosystem Service Discourse Through Institutional Theory
26. Kristian Bondo Hansen
Crowds and Speculation: A study of crowd phenomena in the U.S. financial markets 1890 to 1940
27. Lars Balslev
Actors and practices – An institutional study on management accounting change in Air Greenland
28. Sven Klingler
Essays on Asset Pricing with Financial Frictions
29. Klement Ahrensbach Rasmussen
*Business Model Innovation
The Role of Organizational Design*
30. Giulio Zichella
*Entrepreneurial Cognition.
Three essays on entrepreneurial behavior and cognition under risk and uncertainty*
31. Richard Ledborg Hansen
En forkærlighed til det eksisterende – mellemlederens oplevelse af forandringsmodstand i organisatoriske forandringer
32. Vilhelm Stefan Holsting
Militært chefvirke: Kritik og retfærdiggørelse mellem politik og profession

- | | | |
|---|--------------------|--|
| <p>33. Thomas Jensen
<i>Shipping Information Pipeline: An information infrastructure to improve international containerized shipping</i></p> <p>34. Dzmitry Bartalevich
<i>Do economic theories inform policy? Analysis of the influence of the Chicago School on European Union competition policy</i></p> <p>35. Kristian Roed Nielsen
<i>Crowdfunding for Sustainability: A study on the potential of reward-based crowdfunding in supporting sustainable entrepreneurship</i></p> <p>36. Emil Husted
<i>There is always an alternative: A study of control and commitment in political organization</i></p> <p>37. Anders Ludvig Sevelsted
<i>Interpreting Bonds and Boundaries of Obligation. A genealogy of the emergence and development of Protestant voluntary social work in Denmark as shown through the cases of the Copenhagen Home Mission and the Blue Cross (1850 – 1950)</i></p> <p>38. Niklas Kohl
<i>Essays on Stock Issuance</i></p> <p>39. Maya Christiane Flensburg Jensen
<i>BOUNDARIES OF PROFESSIONALIZATION AT WORK An ethnography-inspired study of care workers' dilemmas at the margin</i></p> <p>40. Andreas Kamstrup
<i>Crowdsourcing and the Architectural Competition as Organisational Technologies</i></p> <p>41. Louise Lyngfeldt Gorm Hansen
<i>Triggering Earthquakes in Science, Politics and Chinese Hydropower - A Controversy Study</i></p> | <p>2018</p> | <p>1. Vishv Priya Kohli
<i>Combatting Falsification and Counterfeiting of Medicinal Products in the European Union – A Legal Analysis</i></p> <p>2. Helle Haurum
<i>Customer Engagement Behavior in the context of Continuous Service Relationships</i></p> <p>3. Nis Grünberg
<i>The Party-state order: Essays on China's political organization and political economic institutions</i></p> <p>4. Jesper Christensen
<i>A Behavioral Theory of Human Capital Integration</i></p> <p>5. Poula Marie Helth
<i>Learning in practice</i></p> <p>6. Rasmus Vendler Toft-Kehler
<i>Entrepreneurship as a career? An investigation of the relationship between entrepreneurial experience and entrepreneurial outcome</i></p> <p>7. Szymon Furtak
<i>Sensing the Future: Designing sensor-based predictive information systems for forecasting spare part demand for diesel engines</i></p> <p>8. Mette Brehm Johansen
<i>Organizing patient involvement. An ethnographic study</i></p> <p>9. Iwona Sulinska
<i>Complexities of Social Capital in Boards of Directors</i></p> <p>10. Cecilie Fanøe Petersen
<i>Award of public contracts as a means to conferring State aid: A legal analysis of the interface between public procurement law and State aid law</i></p> <p>11. Ahmad Ahmad Barirani
<i>Three Experimental Studies on Entrepreneurship</i></p> |
|---|--------------------|--|

12. Carsten Allerslev Olsen
Financial Reporting Enforcement: Impact and Consequences
13. Irene Christensen
New product fumbles – Organizing for the Ramp-up process
14. Jacob Taarup-Esbensen
Managing communities – Mining MNEs' community risk management practices
15. Lester Allan Lasrado
Set-Theoretic approach to maturity models
16. Mia B. Münster
Intention vs. Perception of Designed Atmospheres in Fashion Stores
17. Anne Sluhan
Non-Financial Dimensions of Family Firm Ownership: How Socioemotional Wealth and Familiness Influence Internationalization
18. Henrik Yde Andersen
Essays on Debt and Pensions
19. Fabian Heinrich Müller
Valuation Reversed – When Valuators are Valuated. An Analysis of the Perception of and Reaction to Reviewers in Fine-Dining
20. Martin Jarmatz
Organizing for Pricing
21. Niels Joachim Christfort Gormsen
Essays on Empirical Asset Pricing
22. Diego Zunino
Socio-Cognitive Perspectives in Business Venturing
23. Benjamin Asmussen
Networks and Faces between Copenhagen and Canton, 1730-1840
24. Dalia Bagdziunaite
Brains at Brand Touchpoints A Consumer Neuroscience Study of Information Processing of Brand Advertisements and the Store Environment in Compulsive Buying
25. Erol Kazan
Towards a Disruptive Digital Platform Model
26. Andreas Bang Nielsen
Essays on Foreign Exchange and Credit Risk
27. Anne Krebs
Accountable, Operable Knowledge Toward Value Representations of Individual Knowledge in Accounting
28. Matilde Fogh Kirkegaard
A firm- and demand-side perspective on behavioral strategy for value creation: Insights from the hearing aid industry
29. Agnieszka Nowinska
SHIPS AND RELATION-SHIPS Tie formation in the sector of shipping intermediaries in shipping
30. Stine Evald Bentsen
The Comprehension of English Texts by Native Speakers of English and Japanese, Chinese and Russian Speakers of English as a Lingua Franca. An Empirical Study.
31. Stine Louise Daetz
Essays on Financial Frictions in Lending Markets
32. Christian Skov Jensen
Essays on Asset Pricing
33. Anders Kryger
Aligning future employee action and corporate strategy in a resource-scarce environment

34. Maitane Elorriaga-Rubio
The behavioral foundations of strategic decision-making: A contextual perspective
35. Roddy Walker
Leadership Development as Organisational Rehabilitation: Shaping Middle-Managers as Double Agents
36. Jinsun Bae
Producing Garments for Global Markets Corporate social responsibility (CSR) in Myanmar's export garment industry 2011–2015
37. Queralt Prat-i-Pubill
Axiological knowledge in a knowledge driven world. Considerations for organizations.
38. Pia Mølgaard
Essays on Corporate Loans and Credit Risk
39. Marzia Aricò
Service Design as a Transformative Force: Introduction and Adoption in an Organizational Context
40. Christian Dyrland Wåhlin-Jacobsen
Constructing change initiatives in workplace voice activities Studies from a social interaction perspective
41. Peter Kalum Schou
Institutional Logics in Entrepreneurial Ventures: How Competing Logics arise and shape organizational processes and outcomes during scale-up
42. Per Henriksen
Enterprise Risk Management Rationaler og paradokser i en moderne ledelsesteknologi
43. Maximilian Schellmann
The Politics of Organizing Refugee Camps
44. Jacob Halvas Bjerre
Excluding the Jews: The Aryanization of Danish-German Trade and German Anti-Jewish Policy in Denmark 1937-1943
45. Ida Schrøder
Hybridising accounting and caring: A symmetrical study of how costs and needs are connected in Danish child protection work
46. Katrine Kunst
Electronic Word of Behavior: Transforming digital traces of consumer behaviors into communicative content in product design

TITLER I ATV PH.D.-SERIEN

1992

1. Niels Kornum
Servicesamkørsel – organisation, økonomi og planlægningsmetode

1995

2. Verner Worm
*Nordiske virksomheder i Kina
Kulturspecifikke interaktionsrelationer
ved nordiske virksomhedsetableringer i Kina*

1999

3. Mogens Bjerre
*Key Account Management of Complex Strategic Relationships
An Empirical Study of the Fast Moving Consumer Goods Industry*

2000

4. Lotte Darsø
*Innovation in the Making
Interaction Research with heterogeneous Groups of Knowledge Workers
creating new Knowledge and new Leads*

2001

5. Peter Hobolt Jensen
*Managing Strategic Design Identities
The case of the Lego Developer Network*

2002

6. Peter Lohmann
The Deleuzian Other of Organizational Change – Moving Perspectives of the Human
7. Anne Marie Jess Hansen
To lead from a distance: The dynamic interplay between strategy and strategizing – A case study of the strategic management process

2003

8. Lotte Henriksen
*Videndeling
– om organisatoriske og ledelsesmæssige udfordringer ved videndeling i praksis*
9. Niels Christian Nickelsen
Arrangements of Knowing: Coordinating Procedures Tools and Bodies in Industrial Production – a case study of the collective making of new products

2005

10. Carsten Ørts Hansen
Konstruktion af ledelsesteknologier og effektivitet

TITLER I DBA PH.D.-SERIEN

2007

1. Peter Kastrup-Misir
Endeavoring to Understand Market Orientation – and the concomitant co-mutation of the researched, the researcher, the research itself and the truth

2009

1. Torkild Leo Thellefsen
*Fundamental Signs and Significance effects
A Semeiotic outline of Fundamental Signs, Significance-effects, Knowledge Profiling and their use in Knowledge Organization and Branding*
2. Daniel Ronzani
When Bits Learn to Walk Don't Make Them Trip. Technological Innovation and the Role of Regulation by Law in Information Systems Research: the Case of Radio Frequency Identification (RFID)

2010

1. Alexander Carnera
*Magten over livet og livet som magt
Studier i den biopolitiske ambivalens*