
Flow, management, and use of online data: echo chambers and micro-targeted campaign strategies

Af Jens Koed Madsen, University of Oxford

Introduction

The exposure of Cambridge Analytica’s data mining of Facebook users for political gains instigated crucial debates in democratic societies such as the UK, the USA, and Denmark. Who owns the rights to our personally identifiable data? What can companies and governments do with our data? How should the data be kept and safeguarded, if it can be collected at all? More specifically, how can data be used strategically?

While these are essential questions for deliberative democracies in the 21st century, much of the debate eventually focussed, rather sensationally, on the specific methods and workings of Cambridge Analytica and on the potential culpability of Facebook (and Mark Zuckerberg more personally). This followed in the wake of the potential collusion between then president-elect Donald Trump and foreign powers (e.g. information assistance from Russia or technical assistance from UK-based companies such as Cambridge Analytica). The focus on very concrete companies and persons undoubtedly made for sexier and more dramatic coverage – for example, when media outlets live-tweeted Congress’ questioning of Mark Zuckerberg.

While such coverage is amusing and highly profitable in terms of clicks and tweets, the specific case should not detract from the general principles underpinning this problem. While they employed slightly more sophisticated strategic insights due to the access to consumer and psychological data, the aim of Cambridge Analytica is pedestrian and commonplace in politics: use available data or information to optimise message dissemination and improve persuasive efforts as much as possible. Basically, politicians want to win an election and use data to inform their strategy, much like Obama did in 2008 and 2012 (see e.g. Bimber, 2014).

Data can be used descriptively to identify traits of a specific situation after the fact. For example, after the 2016 election, Stephens-Davidowitz used data from Google to explore the connection between electoral support and racist language in the USA (Stephens-Davidowitz, 2017). This use of data looks back and explores possible causal links given a known outcome. However, frequently we aim to predict and affect peoples’ beliefs and behaviours rather than merely describe...
them after the fact. If a user has a realistic model of the target population, data can be used to segment voters and consumers, which allows for optimisation of messaging (known as micro-targeting).

While we are all very familiar with this in advertisement (seeing ads for hotels in Berlin after we book a flight to the city), the hubbub over Cambridge Analytica suggests people did not imagine data was used to influence their political opinions and actions. Data in politics point to a more fundamental issue in modern deliberative democracies: understanding how information can flow through social networks such as Facebook, Twitter, and Instagram. Given the bottom-up nature of social media, information can no longer just be tracked (or back-tracked) linearly, but has to be conceptualised as a complex system.

The paper explores three questions. One, how can we simulate and replicate how information flows in social media platforms? As an example of this, we will explore echo chamber formation. Two, how can data be used to intervene on complex information structures such as micro-target campaigns? In an entirely self-serving way, I will take point of departure in models that I have published. Finally, in the concluding remarks we will briefly consider culpability for the use of data in the wake of Cambridge Analytica. Before going down this route, however, we need to establish a minor, but crucial terminological difference, namely between complicated and complex systems.

**Complicated and complex systems**

Despite being virtually synonymous with each other in common parlance, there is a qualitative difference between complicated and complex systems. Complicated systems can involve any number of variables, but the system is inherently linear and can be modelled and described analytically. Landing an aeroplane is highly complicated – it involves gravity, velocity, weight of the plane, and a multitude of factors that I am not aware of. However, fundamentally, it is possible to predict the precise effect when changing key parameters such as the wing flaps and velocity. This allows pilots to land planes with predictive precision.

In contrast, a complex system has multiple actors who interact directly or indirectly with each other. Given these interactions, the impact of small changes to parameters cannot be calculated as feedback loops influence the qualitative state of the system. A demonstration turning riotous is a complex system: changes to parameters (e.g. density, presence of radicals, police presence, etc.) can cause a demonstration to turn violent. The shift may not be reducible
to a single actor, but found in how interactions cause feedback loops such as group panic. For this reason, complex systems require entirely different types of model solutions. Specifically, complicated systems can be solved analytically, but complex systems can only be solved numerically.

Given feedback loops, heterogeneity and non-linear patterns, it is not possible to scale analytical cognitive models from the single to the plural (Johnson, 2007). This poses a methodological challenge. To address this challenge, we present an approach, namely agent-based modelling (ABM, Gilbert, 2008), that can implement and test computational cognitive models for complex systems. ABMs typically consist of agents, an environment, and interactions between agents.

*Agents* can be endowed with any cognitive computational model that is algorithmically expressible, and in this case relevant to solving a particular task (e.g. belief revision given new information). ABMs allow for different classes of agents, and parameters can be heterogeneous within a class of agents. This makes ABMs ideal for testing cognitive models where individual differences are crucial.

The *environment* is the synthetic world in which the agents (inter)act. Again, they can include any algorithmically expressible features. Environmental features may enable or disable cognitive tasks (e.g. in a city model, roads may enable movement of agents whilst buildings may disable it).

*Interactions* represent connections between agents. Again, any interaction that is algorithmically expressible can be introduced. Interactions can be direct and/or indirect.

Having described the synthetic world, ABMs simulate how the system evolves step by step. The models can capture sudden shifts (such as demonstrations turning riotous) and can track the actions of each individual over time. Without going into detail, researchers can identify which variables are most influential (which may not be intuitively obvious given feedback loops), they can test the influence of interventions (such as identification of fake news), and they can track development of aggregate patterns. In a way, the numerical models provide a bridge where individual models (often explored in cognitive psychology) can grow into social models (typically described in sociology).

ABMs have been used in economics (Grazzini & Richiardi, 2015) and social sciences (Epstein & Axtell, 1996; Schelling, 2006, see Heath et al. 2009 for a survey). They are interactive
systems (Bonabeau, 2002) with self-organising capacities (Niazi & Hussain, 2009). In this case we are concerned about the flow of information and the use of data to influence elections. To exemplify how we can model information flow using an ABM, we turn to echo chamber formation in social networks.

**Information flow in social networks:**

**Echo chamber formation**

Echo chambers (ECs) can be defined as “...enclosed epistemic circles where people engage with like-minded others and reinforce their shared pre-existing beliefs” (Madsen et al., 2018, p. 1). While the degree to which this is a problem remains hotly debated, ECs have been identified on social media such as Facebook (e.g. Bakshy et al., 2015) and are potentially problematic if it restricts users from access to competing perspectives (negating the so-called marketplace of ideas) or if the information shared in these chambers is poor, misguided, or downright manipulative.

Echo chambers may include people on the fringe of the political or epistemic spectrum. For example, some people earnestly believe vaccinations cause autism, that the Americans did not land on the moon, or that the earth is flat. Despite the fact that there is ample evidence to refute these arguments, people still maintain them – often fervently. This has caused some to argue that proponents of conspiracy theories (or conspiracy-like theories) require special cognitive properties such as over-generation of causal links, belief in concealed actors (e.g. the FBI), or a propensity for fallacious reasoning (see e.g. Barkun, 2003; Birchall, 2006). While this may be true, a complex model of systems where agents can share information with each other can test if it is necessarily true. That is, are these traits a necessary or an auxiliary component for the formation of echo chambers?

Inherently, information systems are complex. People interact with each other in a bottom-up manner and pieces of information can be spread exponentially fast if people decide to share them. Therefore, Madsen et al. (2018) use an ABM to explore the minimal requirements for echo chambers to emerge and to be able to engender people with objectively mistaken beliefs (in their model, there is an objective truth that all agents seek). In order to see if people require special cognitive components to become trapped in echo chambers:

---

1 ABMs can be developed in multiple languages, e.g. MASON toolkit (Luke et al., 2003) and NetLogo (Wilensky & Rand, 2015). For model protocols, see Polhill et al. (2008), Grimm et al. (2010), and Muller et al (2013). See Miller & Page (2007, appendix B) for a list of methodological questions to consider.

2 Related ABMs have looked at belief diffusion (Duggins et al., 2016), belief cascading (Pilditch, 2017) or network pruning (Ngampruetikorn & Stephens, 2015).
with wrong information, their model is an idealised version of communication.

Once the model starts, the agents begin to share information with each other. As they encounter more and more information, they become increasingly convinced that their subjective view of the world (mistaken or true) is a true representation of the true state of the world. As agents have identical cognitive functions, it shows people do not need special cognitive components (e.g. over-generation of causality, skewed data search, or skewed memory) to be caught in echo chambers. Rather, it can be a product of the social network itself.

The model exemplifies that complex information systems can be modelled and described quantitatively. This allows researchers to interrogate interventions, system properties, and how humans are influenced by their social system and vice versa as well as predictions of how the system adapts to specific changes or interventions. If we want to test interventions to, say, reduce the impact of misinformation or the emergence of echo chambers, we can use numerical models.

Political use of data: Micro-targeted campaigns
Numerical models can be used to describe and predict system dynamics. However, they can also be used to manage and use knowledge about the system strategically. Micro-targeted campaigns (MTCs) use data to segment the voting population in order to increase efficiency of persuasion and reduce spending money on lost causes (like approaching voters who seriously hate your views and candidate). Segmenting in terms of beliefs, likelihood of voting, and – as Cambridge Analytica did – psychologically allows in principle for increased campaign efficiency. However, the relative efficiency of MTCs compared with more stochastic campaigns is unknown.

To test the efficiency in principle, Madsen & Pilditch (2018) built an ABM where stochastic and MTC politicians vie for public support. The MTC can use data concerning individual citizen beliefs (credibility of each candidate and prior support) as well as likelihood to vote in the eventual election. Madsen & Pilditch show that MTC candidates who are, on average, disliked can still beat likable stochastic candidates due to the increased efficiency of their communication. Indeed, the reach (how many people the candidate can contact each week, representing the size of the campaign budget) of the likable stochastic candidate needs roughly 2.3 times as large to break even with the generally disliked MTC candidate.
The model only tests one candidate against another for one policy question – in other words, it is a gross simplification. However, as elections become increasingly complicated (diversification of voters, multiple policy questions, differing weights to policy questions, etc.), MTCs should become increasingly useful if (and only if) the data is used correctly and identify signals rather than noise (see e.g. Silver, 2013).

Concluding remarks
We live in a complex world of bottom-up mass media. In order to understand how information can flow, be used and how the systems can be managed (or mismanaged), we need complex rather than complicated models. In such a system, one cannot simply point to one actor in the system in search for control or culpability, but we need to appreciate the dynamics of the system. Indeed, if we are not careful data can intentionally or unintentionally become a discriminatory function (O’Neil, 2016)

Concerning responsibility, we have to question whether we, as users of Facebook, Twitter, and other social media, are culpable to some degree. The services are typically free to download and do not (in general) provide in-app purchases. However, as businesses their operative function is to make money. If users do not pay for the goods and services, companies will find alternative means of income. For example, when asked by Senator Dick Durbin how Facebook made money given the fact that it is a free service, a flabbergasted Mark Zuckerberg simply said: “senator, we sell ads”. In this way, a Facebook user is not the customer, but the product.

The main question for users: would we pay a nominal fee per year (e.g. 20 dollars) to use Facebook with the guarantee that they did not collect and use your personal data for advertisement? If yes, that is a viable alternative business model, as you can purchase their service. If no, the user will have to accept money is going to be made elsewhere and that the user becomes part of the consumable product. This question extends to every free social media platform including Twitter, Instagram, Tinder, and Bumblr. If we wish to use the commodity for free, we should not be surprised if revenue is sought elsewhere.

This does not mean Facebook does not bear responsibility, but it suggests that pointing a finger at one component of a complex system betrays a fundamental misunderstanding of system dynamics as well as of market economics. If you take out a predatory species from a biological system, the system will change and adapt – not necessarily for the better. But the predator is not the system – it’s just part of the system.
The models showcase some examples of how we can use these numerical models to interrogate system properties, information flow, and systems management. Rather than merely describe system dynamics or test specific intervention parameters, the models can be used to optimise any number of regulatory and legislative interventions to manage these human-environment systems (Bailey et al., 2018). I suggest we look to numerical models in order to safeguard deliberative democracies against wilful dissemination of misinformation. This modelling challenge has only just begun.

Biography
Jens Koed Madsen is a post-doctoral researcher at and lab manager of the Complex Human-Environmental Systems Simulations Laboratory (CoHeSyS) at the University of Oxford as well as a fellow at Oxford Martin School and St Catherine’s College. He works on Bayesian reasoning and decision models, complex systems simulations, and intervention optimisation.

Bibliography


Af Jens Geersbro, lektor, CBS

For godt to år siden nævnte jeg kort begrebet Multi Stage Marketing (MSM) i en artikel i dette tidsskrift. Siden er der kommet mere fokus på dette begreb i forskningskredse, men som altid må man sørge sig selv, om dette begreb nu virkelig er noget nyt og epokegørende, eller om der er tale om kendte fænomener blot med en ny betegnelse. I forskningskredse er vi jo ofte arrogante nok til at mene, at noget er helt nyt, blot fordi vi lige har fået øje på det.

Men selvom noget ikke er grundlæggende nyt, kan der jo være god mening i at anlægge et andet perspektiv, herunder en anden betegnelse eller en anden gruppering af kendte emner. I det følgende vil jeg se lidt nærmere på dette begreb, og så må den enkelte læser drage sine egne konklusioner.

Behov for at se på mere end blot den direkte kunde
MSM er inspireret af tidligere bidrag såsom Market Orientation (Narver and Slater, 1990; Day, 1994), der beskriver, hvordan en virksomhed kan (bor) orientere sig mod sit marked fremfor et internet fokus på egne produkter og organisation, samt ideen om Branded Goods (Hultman et al., 2008), der som navnet siger drejer sig om, hvordan en virksomhed kan brande sine produkter.

Men både Market Orientation og Branded Goods idéerne er kommet under et stigende pres i takt med, at de store detailhandlere også har egne produkter og i høj grad også brander disse. For producenter af brandede produkter er det derfor nødvendigt at tænke nyt og bredere.

I stigende grad skal producenter forstå ikke blot deres kunder men hele forsyningskæden (der i mange tilfælde er et helt netværk) for at kunne levere værdi til de nødvendige led. I sin simpleste form er MSM forhandlere og slutkunder. Når f.eks. Carlsberg eller Toms chokolade ønsker at sælge deres produkter kræver det, at de skaber et pull fra deres slutkunder via branding aktiviteter og reklametiltag, som efterfølgende skaber en interesse i forhandlereledne, der tillader producenten en push strategi til disse.

Mere sofistikeret bliver det når vi taler om ingredient branding (e.g.: Desai and Keller, 2002, Erevelles et al., 2008). Nogle klassiske eksempler er f.eks. GoreTex, Intel Inside, NutraSweet etc. Her brandes indholdet i et slutprodukt, en jakke, et par sko, en computer eller en soft drink så slutkunden får en præference og loyalitet for sådanne produkter, og eller er villige til at betale mere for
slutproduktet (Geiger et al., 2015). Paradoksalt nok er de fleste af os som slutkunder ikke i stand til at forklare, hvad f.eks. Intel Inside betyder, eller hvorfor GoreTex skulle være bedre end alternativerne.

Multi Stage Marketing handler også om forskellige kompetencer

Og når produkterne er producerer leveres de direkte til byggepladsen og ikke via tømrerhandlen. Nu kunne man så formode, at tømrerhandlerne ville blive klemt ud af forsyningskæden, men det sker ikke fordi producenterne fortsat er afhængige af tømrerhandlerne til at distribuere og forhandle standerdøre og -vinduer. For de ordreproducerede varer er der ikke behov for tømrerhandlernes kompetence indenfor lager og distribution, men der er fortsat behov for, at de garanterer f.eks. betaling. For tømrerhandlerne betyder det, at de fortsat har en relation til lokale tømrermestre (i forbindelse med betaling, men også i forbindelse med supplerende produkter – som og skruer).

Ikke blot flow af produkter

Kan Multi Stage Marketing så betale sig?
Som beskrevet ovenfor er MSM altså ikke blot gammel vin på nye flasker, men en ny måde at se værdikæden på. Man kan naturligvis argumentere for, at de fænomener begrebet dækker over, ikke er nye, men har eksisteret gennem længere tid. MSM som begreb sætter fokus på en række nye
udfordringer og muligheder som producenter, detailhandlere og slutkunder står overfor.

I den nyeste forskning indenfor området dokumenteres, at der er positive effekter af MSM i form af kundetilfredshed, loyalitet og villighed til at betale (Geiger et al. 2015; Vedel et al. 2012). Men selvom svaret på spørgsmålet altså umiddelbart er: JA, så er det ikke ensbetydende med, at MSM kan betale sig for alle producenter. Et andet spørgsmål er også om det overhovedet kan lade sig gøre at arbejde med MSM, herunder med ingrediens branding, for alle virksomheder. En virksomhed som Novozymes har brugt mange ressourcer på at undersøge mulighederne i ingrediens branding af enzymer i vaskepulver, men ser (endnu) ikke ud til at have løsningen.

**Litteratur**


Consumers’ preference for ethical attributes and choice of brand: The moderating role of quality shopping frequency

Af

Torben Hansen, professor, CBS
Ninna Aarfelt Andersen, Customer Shopper Manager
Christie Nielsen, Insights Manager

Introduction
In recent years, retail owned private label brands (PLBs, also known as ‘store brands’) have gained an increased focus in food retailing at the expense of national brands (NBs). PLBs are consumer products that are distributed exclusively by a retailer and carry the retailer's name, whereas NBs are brands of consumer products that are owned, advertised, and marketed by manufacturers (Bodur, Tofighi, & Grohmann, 2016). In 2016, the global dollar share for PLBs amounts to 16.6% with Western Europe countries being in the lead (e.g., United Kingdom, 41%; Germany, 34%) (Johnsen, 2017; Wells, 2017). One of the primary reasons for offering PLBs is to provide economic value to the consumer (Ailawadi, Neslin, & Gedenk, 2001; Nielsen, 2014). The higher price of NBs often acts as a limiting factor in consumers’ purchase of these products with 70% of global consumers saying they purchase PLBs to save money (Nielsen, 2014). This pattern is consistent with the observation that consumers seem to show a general economic value preference, leading them to prefer options with lower transaction costs (Gallarza, Gil-Saura, & Holbrook, 2011).

Coinciding with PLB market share growth is increased consumer demand for ethical attributes (Bodur, Tofighi, & Grohmann, 2016). Ethical attributes are product attributes, which consumers consider to have positive implications for environmental protection, human rights, animal welfare, and/or social issues (Gupta & Sen, 2013; Luchs et al., 2010). Extant research has examined product-related ethical attribute effects on both PLBs (Bodur, Tofighi, & Grohmann, 2016) and NBs (Arora & Henderson, 2007; Du, Bhattacharya, & Sen, 2007; Henderson & Arora, 2010). However, even though consumer sensitivity to ethical attributes of products may vary by product type (Folkes & Kamins, 1999; Strahilevitz, 1999), preferences for ethical attributes can also be viewed from a more general level. That is, they can be seen as criteria, which transcend specific products and which can be used by consumers to select and justify their overall food behavior (Grunert & Juhl, 1995). In spite of such notions, it remains relatively unexplored whether consumers’ general preference for ethical attributes
affects their general economic value preference and preference for NBs vs. PLBs when carrying out their food shopping.

In addition hereto, a substantial amount of literature has addressed the importance of contextual factors in understanding consumers’ purchase decisions (e.g., Belk, 1974, 1975; Gehrt, Ingram, & Howe, 1991). A key element of the market context is the relative positioning of each retailer with respect to their commitment to offering quality or economic value (i.e., low prices) (Hansen, Jensen, & Solgaard, 2011), which also can be referred to as the retailer’s reputation (Bodur, Tofighi, & Grohmann, 2016; Dawar & Parker, 1994). Given these types of potential conflicting consumer and store factors (e.g., preference for ethical attributes vs. economic value preference and/or low quality food stores) or potential congruent factors (e.g., preference for ethical attributes vs. high quality food stores; preference for economic value vs. low quality food store), it is highly important for marketers to understand how such factors may interact in their potential influence on consumers’ NB vs. PLB buying propensity.

On the backdrop of the above considerations, this research investigates whether consumers’ general shopping context (i.e., whether consumers frequently patronage high quality food stores, or not) may influence the interplay between ethical attributes preference, economic value preference, and NB/PLB buying propensity. The conceptual underpinnings of our research come primarily from cognitive consistency theory (Festinger, 1957; Heider, 1958, 1979; Osgood & Tannenbaum, 1955; Newcomb, 1953) and cognitive congruence theory (Goodman, 1980; Heckler and Childers, 1992; Meyers-Levy & Tybout, 1989; Teng et al., 2014; Bodur, Gao, & Grohmann, 2014). Taken together, these theories posit that consumers tend to seek consistency/congruency between their preferences, their product choices, and the market context in which their choices are carried out.

Theory and research hypotheses
Cognitive consistency theory (Festinger, 1957; Heider, 1946, 1958, 1979; Osgood & Tannenbaum, 1955; Newcomb, 1953; Todd & Gigerenzer, 2003) and congruency theory (Goodman, 1980; Heckler & Childers, 1992; Meyers-Levy & Tybout, 1989; Mattila & Wirtz, 2001; Teng et al., 2014; Bodur, Gao, & Grohmann, 2014) provide a framework that is relevant to the moderation hypotheses that we develop in this study. Taken together, these theories suggest that when consumers are faced with a decision problem (like buying a food product in a supermarket) they seek to balance their knowledge, preferences, attitudes, goals, feelings or desires in
order to avoid a state of cognitive dissonance and to serve their self-interest (Todd and Gigerenzer, 2003; Teng et al., 2014). The notion that consumers will seek to establish congruency and mental justification in relation to their decision-making has been widely verified as an important determinant of consumers’ choice behavior. For example, past research suggests that people will be less likely to consume hedonistic goods when the situation makes it difficult for them to justify it (Okada, 2005). On a similar note, Chernev (2005) found that consumers are likely to seek choice-combinations that are easiest to justify. Chandon, Wansink, and Laurent (2000) demonstrated that effectiveness of sales promotions is dependent on the congruity between promotion and product category benefits. More recently, Teng et al. (2014) showed that consumers are likely to favor an advertised brand when the cultural meaning expressed by the ad is congruent with their own cultural beliefs and values. Although cognitive consistency theory and congruency theory both propose that humans are motivated by the pursuit of internal consistency, numerous empirical studies also suggest that consumers’ aim for internal consistency is susceptible to contextual influence. Previous research has demonstrated that consumers sometimes moderate, neglect, or even alter, their preferences as a consequence of contextual influences such as the way in which choices are framed (Kahneman & Tversky, 1984; Tversky and Kahneman, 1986), the present physical surroundings (Hansen 2002), and consumers’ emotional state at the time of choice (Nygren, Isen, Taylor, & Dulin, 1996). The influence of such factors may lead consumers to reverse their initially stated preferences or intentions (Hsee, 1996, 1999; Wells & Iyengar, 2005). In this study, we pick up these notions and argue that the frequency with which consumers patronage quality stores (i.e., a contextual factor) may moderate the relationships between ethical attributes, value preference, and NB/PLB buying propensity as scheduled in the baseline model.

We expect that consumers with high quality shopping frequency (high QSF) will be more likely to show a negative relationship between ethical attributes preference and value preference as compared with consumers with low quality shopping frequency (low QSF). Low quality food stores can be regarded as a contextual attribute that dilutes the expected negative relationship between ethical attributes preference and value preference (Hasselbach & Roosen, 2015; D’Amico, Di Vita, & Monaco, 2016; Napolitano, Pacelli, Girolami, & Braghi 2008) since the general focus in such stores is more on price at the expense of quality (Hansen, Jensen, & Solgaard 2011). Hence, when patronizing low quality food stores, consumers adhering to ethical attributes may be less likely to view low priced products as inconsistent products.
In a similar vein, high quality food stores can be regarded as a contextual attribute that increases the expected negative relationship between ethical attributes preference and value preference. When patronizing high quality food stores, consumers adhering to ethical attributes may be more likely to view low priced products as diverging products that are not consistent with their ethical preferences. Hence, the following hypothesis is proposed.

H1: Quality shopping frequency (QSF) will moderate the relationship between ethical attributes preference and value preference, such that ethical attributes preference has a greater negative effect on value preference when QSF is high compared to low.

We propose that QSF will positively moderate the relationship between ethical attributes preference and PLB buying propensity and between ethical attributes preference and NB buying propensity, respectively. However, our proposals build on different background reasons for PLBs vs. NBs.

PLBs: Consumers are often uncertain on how to evaluate the quality of food products. Many food products are complex and consumers may neither have the motivation nor the time to carry out extensive evaluations of various brands prior to purchase (e.g., Donaldson, 2006). Also, consumers may find it difficult to calculate the importance of different and/or conflicting quality-aspects in relation to each other (Mai et al., 2017). Research on cognitive conflicts suggests that the complex task of choosing between alternatives encourages consumers to look for reasons to choose (Nagpal & Krishnamurthy, 2008). In a similar vein, cue utilization theory suggests that consumers often try to overcome the uncertainty by selecting one or more indicators (cues/stimuli) as a basis for their evaluation of the quality of the food product (e.g., Richardson et al., 1994, Olson & Jacoby, 1972). In that sense, consumers’ perceived store quality store may act as such an indicator of the general quality of the offered food products (Foxall, 1993). Indeed, using store quality as an indicator of the quality of available food products can be considered especially relevant for PLBs (vs. NBs) as these vary across stores. That is, consumers with high preference for ethical attributes may find that purchasing PLBs at high quality stores (as compared with low quality stores) is more consistent with preserving cognitive consistency.

NBs: In contrast with PLBs, NBs do not vary across stores, which make store quality less viable as an indicator of product quality. However, when consumers perceive a congruency between their ethical preferences and their
preferred NBs, this congruency may be reinforced by a high quality shopping context (Bodur, Tofighi, & Grohmann, 2016). In a similar vein, when patronizing high quality food stores (vs. low quality food stores) consumers adhering to ethical attributes may risk a confirmatory bias if they encounter a conflict between their ethical preferences and their preferred NBs. Regardless of the shopping context, consumers with less preference for ethical attributes should be more likely to neglect conflicts/congruencies between ethical attributes and NBs because these conflicts/congruencies are less relevant and important to them (Naylor, Droms, & Haws, 2009). In summary, we hypothesize as follows.

H2: Quality store shopping frequency (QSF) will moderate the relationship between ethical attributes preference and PLB buying propensity, such that ethical attribute preference has a greater positive effect on PLB buying propensity when QSF is high compared to low.

H3: Quality store shopping frequency (QSF) will moderate the relationship between ethical attributes preference and NB buying propensity, such that ethical attributes preference has a greater positive effect on NB buying propensity when QSF is high compared to low.

When consumers shop groceries they face two types of price-levels, which are relevant to the present context. These are intra-store prices, which in the present context can be conceptualized as the prices of NBs vs. PLBs within certain product categories, and inter-store prices, which are the general prices in the patronized grocery store vs. the general prices in other grocery stores. Empirical findings indicate that NBs are generally higher priced in high quality stores vs. low quality stores (i.e., inter-store price comparison) (Poulsen & Kjeldsen, 2017). Hence, when patronizing high quality stores consumers adhering to preference for economic value may in particular be inclined to look for low cost food products such as PLBs at the expense of higher-priced food products such as NBs (i.e., intra-store comparison). Based on the above reasoning we hypothesize as follows.

H4: Quality shopping frequency (QSF) will moderate the relationship between value preference and PLB buying propensity, such that value preference has a greater positive effect on PLB buying propensity when QSF is high compared to low.

H5: Quality shopping frequency (QSF) will moderate the relationship between value preference and NB buying propensity, such that value preference has a greater negative
effect on NB buying propensity when QSF is high compared to low.

**Methodology**

The data collection was carried out by the market research agency Wilke A/S using its online Danish consumer panel. A total of 506 respondents completed usable questionnaires. Of the respondents, 51.6% were women; the average age was 48.8 years and ranged between 18 and 87 years. We investigated if the profile of our final sample deviated from the Danish population aged 18-87 on gender, education, and income level. $\chi^2$-tests of differences between sample and population frequencies on each of these criteria produced $p$-values $>.05$. This indicates that the survey sample to a fairly degree reflects the demographic profile of the studied country population. Structural equation modelling estimated the results of this study.

**Results - discussion, implications and future research**

While consumer preferences for ethical attributes, economic value, and NB vs. PLB buying behavior each represents prominent trends in consumer retailing behavior, this research suggests the importance of understanding the interplay between these components. Specifically, the results indicate that the relationships between ethical attributes preference, value preference, and PLB/NB buying propensity is contingent upon quality shopping frequency (QSF).

**Results 1:** In line with previous research (Hasselbach & Roosen, 2015; D’Amico, Di Vita, & Monaco, 2016) we found that consumer ethical attributes preference had a negative influence on value preference. Adding to this insight, we found that the negative influence was higher when QSF is high vs. low. This indicates that high quality store managers seeking to attract consumers with high levels of ethical preferences may consider reducing the proportion of low cost food items in the stores. Furthermore, this may be especially important for PLBs (vs. NBs) as the indirect effect of ethical attributes preference on PLB buying propensity through value preference was negative, whereas no significant effect was found for NB buying propensity.

**Results 2:** We also found that QSF positively moderated the relationship between ethical attributes preference and both PLB and NB buying propensity. This finding also have managerial implications since it indicates that high quality retailers benefit to a greater extent from targeting consumers with high ethical attributes preferences. By following such a targeting strategy, these retailers are likely to see an increase in sales of both PLBs and NBs. However, exercising the same targeting strategy in low quality stores is less likely to
enhance consumers’ buying propensity of PLBs and NBs. Hence, resources allocated to attract consumers with high preferences for ethical attributes are more likely to have a successful outcome in high (vs. low) quality stores.

Since consumer demand for ethical attributes is on the increase, our findings thereby also contribute to the discussion on how quality retailers might respond to the ongoing 'battle in the marketplace', which in many countries has resulted in low cost retailers gaining increased market shares (e.g., Kantar Worldpanel, 2016). In that sense, our results provide some glimmer of hope to high quality retailers who wish to position themselves as social responsible and ethical retailers. At the same time, our findings clearly challenge low cost retailers who seek to benefit from the increasing demand for ethical attributes by following a strategy towards a more ethical positioning. Previous research (Bodur, Gao, & Grohmann, 2014) indicates that products with an ethical attribute are evaluated more positively when the ethical attribute benefit is congruent with product category benefits. Taking this into a retail store perspective, perhaps one promising way of overcoming the 'ethical attributes-low cost retailer' incongruity problem may be to focus on ethical attributes with economic aspects such as food waste reduction initiatives, and the like. However, more research is needed in this area in order to provide guidance on how low cost retailers may benefit from ethical attributes demand while at the same time maintaining their low cost positioning.

Results 3: In addition, the results suggested that QSF positively moderated the relationship between value preference and PLB buying propensity, whereas no moderating effect was found for NB buying propensity. This suggests that when patronizing high quality stores consumers adhering to preference for economic value may in particular be inclined to look for low cost food products such as PLBs. Hence, when seeking to attract consumers with high preference for economic value (vs. high preference for ethical attributes), high quality store managers should in particular ensure that lower cost PLBs are available in the stores.

Limitations and future research: Consumers were approached via online surveys; they may behave differently when engaging in specific store settings. Thus, although a survey is generally accepted as a means of data collection there is little control over the contextual setting and over the response behavior of consumers. While this study included several ethical attributes (e.g., organic, fair trade, and animal welfare) it is acknowledged that including additional consumer aspects (e.g., perceived product quality, perceived food healthiness,
consumer NB/PLB experience and commitment, among others) (Steenkamp, Heerde, & Geyskens, 2010; Miquel-Romero, Capilliure-Giner, & Adame-Sánchez; Olson, 2012) may further detail the results. This study concentrated on analyzing the consumer population of one society/culture. Although both low and high quality food stores are present in most societies, and even though the considered product categories are commonly found in most marketplaces, this could mean that the results may suffer from a lack of generalizability when other countries/cultures are considered (Sebri & Zaccour, 2017). Also, this study used consumers’ self-reported store patronage behavior, which could be threatened by biased responses. Future studies could examine these issues by manipulating store quality in an experimental setting. Such an experimental study would also replicate the present cross-sectional survey results in a more controlled laboratory setting, and thus provide even stronger evidence for the direction of causality in the conceptual model and the obtained moderating effects.

Bibliography


of the Association for Consumer Research, Association for Consumer Research, 167-179.


Wells, J. (2017). As private labels grow, innovation and trustworthiness are a challenge. FoodDIVE.com, June 9:


YDERLIGERE OPLYSNINGER

Tidligere numre af Nyhedsbrevet kan ses her:
https://rauli.cbs.dk

Ønsker du at modtage kommende numre af Nyhedsbrevet om Forbrugeradfærd?

Nyhedsbrevet udkommer hvert halve år, men kun i elektronisk form. Hvis du ikke allerede er tilmeldt, men ønsker at modtage kommende numre af Nyhedsbrevet, bedes du venligst sende os din e-mailadresse med overskriften 'Nyhedsbrev' til følgende e-mailadresse: th.marktg@cbs.dk

Eventuel afmelding af Nyhedsbrevet foretages til samme e-mail adresse.

Redaktørgruppen

Redaktørgruppen for Nyhedsbrevet om Forbrugeradfærd omfatter for tiden ni medlemmer:

Flemming Cumberland, ekstern lektor, cand.polit
e-mail: fc.marktg@cbs.dk

Jens Geersbro, lektor, cand. polyt, MBA, Ph.D.
e-mail: jg.marktg@cbs.dk

Lars Grønholdt, lektor, Ph.D., cand.merc.
e-mail: lg.marktg@cbs.dk

Torben Hansen (chefredaktør), professor, Ph.D., cand.merc.
e-mail: th.marktg@cbs.dk

Hanne Pico Larsen, adjunkt, Ph.D.
e-mail: hpl.marktg@cbs.dk

Anne Martensen, professor mso., Ph.D., cand.merc.
e-mail: am.marktg@cbs.dk

Hans Stubbe Solgaard, professor emeritus, Ph.D., MSc., cand.o econ.
e-mail: hso@sam.sdu.dk

Diana Storm, ph.d-studerende, cand.negot.
e-mail: dst.marktg@cbs.dk

Thyra Uth Thomsen, professor mso., Ph.D., cand.merc.
e-mail: tt.marktg@cbs.dk
Klik her for yderligere info om medlemmerne: