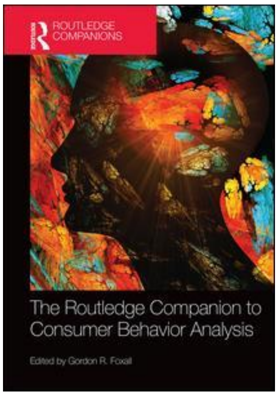

The Routledge Companion to Consumer Behavior Analysis

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Behavior analysis of in-store consumer behavior

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Behavior analysis of in-store consumer behavior

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> Technical improvements that permit us to bring new behavior into the laboratory, or that permit refined experimental control over behavior, are among the most important contributions that we can make.
>
> *(Sidman, 1960, p. 17)*

Introduction

Behavior analysis is a descriptive science popularized by B. F. Skinner, his students and followers. The aim of this natural science has been the quest for lawful individual behavioral processes studied extensively with within-subject experimental designs. Behavior analysis is particularly concerned with the interplay between behavior and environmental variables. The field is built on extensive experiments with the aim of discovering lawful behavioral processes relevant for consumer research as consumers learn to adapt to their economic environment. In-store consumer behavior, the topic of this chapter, was until rather recently an unexplored territory for behavior analysis. We will here introduce the quest for behavior analysis of in-store consumer behavior, how it deviates from traditional marketing, what has been gained, and problems and possibilities for more refined experimental control over this important economic environmental-behavior relationship for the future of retailing.

Why behavior analysis of in-store consumer behavior is important

For behavior analysis the objective is the discovery of laws and principles governing behavior through experimentation. Skinner (1953, 1976) stressed that behavior is of scientific interest in its own right, not as a sign or symbol of something else. In line with this, several marketing scholars have called for more in-store experiments in retailing. Grewal and Levy (2007) suggest, based on their review of articles published in *Journal of Retailing* over 2002–7, that measurement of "actual behavior" represents a new avenue for further research in consumer behavior. They say, "more work is needed that focus on measuring actual behavior . . . which track and observe actual movement or perhaps determine actual usage and consumption" (Grewal & Levy, 2007, p. 450). Levy et al. (2004) urge researchers to conduct more real-life field experiments to compare for alternative pricing strategies in retailing. In this realm, different concepts and methodologies from behavior analysis should be tested.

Another epistemological focus for behavior analysts has been the avoidance of formal development and testing of theories, or deductive theorizing. Marketing scientists, however, tend to emphasize deductive theory testing. However, one of the cornerstones of marketing is that the marketing mix is made up of elements such as product, price, place and promotion, classes of stimuli that can and often are explicitly used to influence consumer choice. The function of these marketing factors is dependent on consumers' environment and experienced consequences, but this process is not very well understood. The various elements that make up the marketing mix are mainly used as criteria for what is important in marketing strategy. In line with this, Davenport et al. (2011) recommend retailers to think of every offer (in-store offers, coupons etc.) as "a test", and as such to collect and use their customer data in a more sophisticated way to determine the effectiveness of various promotional efforts on consumer choice behavior. Finally, Shankar et al. (2011) claim that *controlled experiments* are needed to test the effectiveness of different aisle placement and shelf positions, as well to understand the usage situation and effectiveness of new technologies and in-store promotional instruments (such as in-store TV, shelf-talkers, and shopping carts). They say, "the model of how shopper marketing works is still a black box. . . . This . . . calls for effective ways to study shoppers in their 'natural habitats' compared to florescent-lit 'lab' environments. That is, more field studies are needed to supplement lab studies and validate the results from the lab studies" (p. 39). Descriptive consumer behavior analytic research and findings can be used to criticize armchair theorizing in marketing; when data deviates from theory or when research becomes too focused on the model instead of the true subject matter, consumer behavior.

The degree of decision-making in the store also suggests there is a considerable upside in doing more in-store experiments. According to POPAI (Point-of-Purchase Advertising International) data, more than 70% of the brand decisions are made after the shopper enters the store (Liljenwall, 2004). Furthermore, many shopping trips take place without a shopping list or any planning from home (Thomas & Garland, 2004). Many consumers therefore use a store's environment and its shelves as cues for what to buy. This suggests that retailers could benefit greatly from an active retailing approach (see Sorensen, 2009) grounded in insight and intelligence derived from behavior analysis of in-store consumer behavior. As retailers continue to invest in their own private labels, shopper behavior insight will also be important to grow these product lines through active retailing.

The importance of in-store applied behavior analysis

Research in behavior analysis has produced many useful applications in terms of methods to predict or control behavior. Applied behavior analysis is now used effectively in many important and diverse areas such as developmental disabilities, problem behavior, education and organizations. On the other hand, the field has "gotten stuck" in developmental disabilities. For example, 60% of data-based articles published in the *Journal of Applied Behavior Analysis*, the field's flagship periodical, from 2001 to 2005 were in this area of research (Woods et al., 2006) and this trend does not seem to be changing. Applied behavior analysis is therefore, unfortunately, not as relevant to society in general as many analysts in the field would like, but the potential is vast. Today, many countries and markets have shown signs of an economic downturn, which has led to more fierce competition among retailers and subsequently a lower turnover and margins. *Overstoring* is thus a challenge in more and more markets (Grewal et al., 2007), which means a disproportional increase in the number of retailers in relation to the growth in the population. With declining growth from new customers entering the store, further growth can only be achieved if existing customers buy more, or start buying more quality brands (growing the *share of wallet* – see e.g. Nitzberg, 2009). That is to use in-store applied behavior analysis to extract more surplus from consumers once they are in the store, for instance boosting sales by more effective aisle and display management strategies (Bezawada et al., 2009). This prompts retailers to focus on in-store merchandising and promotion, which again requires deep understanding of in-store shopping behavior.

In-depth knowledge of in-store consumer behavior is also crucial for brand manufacturers. They have already realized that traditional advertising has lost its traditional effect as consumers are bombarded with marketing messages and tend to zap between TV channels in commercial breaks more than ever before. Fast-moving consumer goods (FMCGs) firms have responded to this development by increasing their sales and trade promotions budgets at the expense of traditional advertising. According to Gomez et al. (2007), trade promotions spending in the US supermarket industry increased eightfold in the period 1996 to 2007, and accounted in 2007 for approximately 70% of a manufacturer's marketing budget. It has become the second-largest manufacturer expense after the cost of goods in the US supermarket industry (Gomez et al., 2007). To maximize return on investment (ROI) from such increased expenses, brand manufacturers need all necessary information on how consumers behave in the store, where they walk and stop, where, when and how they evaluate products as they shop, and how they can most effectively be influenced during their shopping. The increase of trade promotions spending in the US illustrates that reaching customers at the right time and in the right zone of the store is among the cornerstones of modern marketing of FMCGs. Consumer behavior analysis is most appropriate when the behavior-environment relationship is located in the same space and time. This is especially the case if extraneous variables in the retail environment can be controlled, as with in-store experiments. Unlike with mass advertising, there are no or few intermediaries (e.g., changes in budget, advertisements from other manufacturers, or word of mouth) between consumers noticing the interventions in-store and their response.

An introduction to the literature: consumer behavior analysis in stores

Retailers are close to the consumers, have the point-of-sale data on consumer behavior and should thus be in a good position to understand consumer behavior. Despite this, many retailers seem to ignore in-store behaviors (Sorensen, 2009). An explanation found in the literature is that retailers gain more in terms of profits by concentrating on rebates, slotting fees, and other promotional allowances from manufacturers, or even real estate, than the margins derived from sales (see, for instance, Sorensen, 2009). This picture fits well with our own experiences, and may thus partly explain why many retailers do not know a lot about the actual in-store behavior of their customers. These retailers are thus operating their stores based on feelings and common intuition rather than facts and experimentation. However, rules of thumb should be derived from data-driven and fact-based analysis, not convention or lore (Davenport et al., 2011).

Retailers' merchandising practices are also influenced heavily by leading manufacturers through various inducements, such as programs of product placements and payments for shelf space (Gomez et al., 2007; Dulsrud & Jacobsen, 2009). Since some placements and activities are associated with higher costs, manufacturers need to understand their effectiveness. Leading manufacturers thus spend a vast amount of resources to analyze and understand in-store consumer behavior – despite their distance from the behavioral scene, which is controlled by the retailers. Although these efforts have enabled manufacturers to gain a lot of proprietary knowledge, most of this insight is unfortunately unavailable from public sources. A good example is Proctor &

Gamble who built a consumer village in St. Bernard including a convenient-sized store which also stocks non-Proctor & Gamble products (Fasig, 2009). Thousands of shoppers volunteer each year to do in the village what they do at home and in their regular grocery store, but in front of a camera and a two-way mirror. The P&G village conducts as many as 450 studies a year (op.cit).

Rigorous academic experiments on in-store consumer behavior conducted in cooperation with retailers and/or manufacturers in "real" retail stores are much less common than laboratory experiments. The academic in-store experimental literature is limited as most studies are conducted by businesses for their own use (Sigurdsson et al., 2009); therefore, the reliability and validity of these findings are not known. It can be difficult for academics to gain access to stores and there can also be problems of contextual control as salespeople sometimes misunderstand the scientific purpose of the research. However, the amount of published research is increasing (see e.g. Chandon et al., 2009; Gaur & Fisher, 2005; Sigurdsson et al., 2010; Sigurdsson et al., 2010; Sigurdsson et al., 2011a, 2011b; Sigurdsson et al., 2009; Stratton & Werner, 2013). There are also growing opportunities for research with new technologies (e.g. radio-frequency identification (RFID) and digital in-store promotional instruments/vehicles) and improvement of experimental procedures and techniques. Application of new technologies has made it possible to shed light on some types of in-store consumer behaviors that have been difficult to measure earlier. For instance, Larson et al. (2005) collected field data on grocery store shopping paths using RFID tags located on individual customers' shopping carts. The results from their study dispel certain myths about shopper travel behavior that common intuition perpetuates, including behavior related to aisles, end-cap displays, and the "racetrack". Combining data on shopping paths with purchase data has also generated new insight, for instance on how the presence of other consumers in a store zone affects consumers' tendency to visit that zone and shop there (see Hui et al., 2009). The in-store use of wireless eye-tracking equipment in consumer behavior experiments is another example. A recent study sheds new light on consumers' visual attention when searching for a particular product or brand in a grocery store, and examines in particular how package design features are influencing visual attention and how shape and contrast dominate the initial phase of searching (see Clement et al., 2013).

A recent in-store experiment has also provided insight into how retailers can increase sales by several hundred percent for a brand on display. The sales potential offered by displays (under the assumption that the display has a sales-inducing design) is common knowledge in the retail industry, but very little academic work has elaborated on aspects of improving the displays' attention-capturing abilities. Nordfält (2011) observed more than 13,500 customers approaching special displays and found, for instance through design manipulation, that a retailer can increase the sales by as much as 977% by changing from one display design to a design much more effective in directing consumers' observational behavior. Thus, an in-store consumer behavior analysis helps retailers improve the effectiveness of various displays just by observing and analyzing consumers' reactions to different displays' design.

Since in-store experiments are rather costly and time-consuming, some researchers find it more beneficial to use readily available store-level data in their behavioral analyses (which enables ease of analysis). The study by Bezawada et al. (2009) represents an example. They used store-level data from a major retail chain to study the effects of aisle and display placements on cross-category brand sales, while controlling for the effects of marketing-mix activities. They were able to do so since their data (collected from 160 stores) dispelled variations in both aisle and display placements from store to store (spatial distance data). In this study, aisle placements were measured by distance between aisle locations of the two studied categories in the store, while display placement was represented by the distance of a brand's display from the aisles containing the product categories. Since the retail chain provided detailed information on aisle and display placements for the two chosen product categories in each store, as well as the appropriate store-level scanner data, their research objective could be fulfilled by using a combination of store-level spatial distance data and store-level scanner data.

Nevertheless, although a combination of spatial data and scanner data fulfilled the data needed for this particular study, such data are not optimal for all studies concentrating on understanding in-store consumer behavior or testing the effect of various in-store stimuli on the buying behavior of individual shoppers. The research objective will determine what type of data, and hence data collection strategies, are most appropriate in each study.

The lab: on the importance of good collaboration with different retailers

In in-store experimental analysis the store is the main laboratory. To perform an in-store consumer behavior analysis, researchers need permission from the retailer to use its premises as a research setting. Such permission is probably easier to obtain for studies that are built on research designs that do not involve experimental manipulation of one or several of the marketing-mix variables. In such cases, observations and/or interviews of customers in the store might be enough, resulting in a reduced need to coordinate various interventions with the retailer. An example of such a study is Vanhuele and Dreze (2002) who ran an in-store survey that measured consumers' memory for prices immediately after the consumers picked a product from the shelf. Experimental studies involving manipulation of one or several of the marketing-mix elements are more demanding as they require more coordination with the retailer. Also the retailers, in some cases, incur some additional costs and/or lose some incremental revenues because of the experiment. Relevant manipulations include, among others, experimenting with *product placement* (e.g. shelf position, number of facings, and the use of special displays), *retail prices* (coupons, rebates, other types of price promotions), *in-store communication* (shelf-talkers, posters, video etc.), and/or *retail atmospherics* (scent, lighting, music etc.). The retailer might experience a loss of gross margins on sold products as well as sales volumes during such experiments. Sigurdsson et al. (2011b) show for instance that sales of candy (high glycemic carbohydrates – HGC) decreased when the interventions in their study were introduced (involving displaying more healthy products at the cash register and thus moving the candy away from this zone). They also found sales of their HGC remained fairly stable throughout the remainder of the study and that sales of these items were 29% lower during the follow-up period than in the initial baseline period.

Sigurdsson et al. (2014) in a more recent in-store experiment dealt with other types of challenges, outside their control, which ultimately could have reduced the store manager's motivation for participating in their research project. In the middle of their in-store experiment it came as a surprise for both the researchers and the store manager that the store lost money on every sold item of the target product (a can of preserved high-quality fish balls). Hence, the retail chain was selling the target product below its purchase price, and the reason was a national price tactic scheme developed by the chain management aimed at getting a better ranking in the grocery price comparisons performed by the biggest Norwegian newspaper. Since the ultimate behavioral aim of the experiment was to increase the sales of the target product, which was achieved, the financial outcome was an even bigger loss for the retail store. When the store manager realized the situation, she was not as enthusiastic about the experiment as earlier. However, due to a strong and positive relationship developed over a long time between the researchers and the store manager, the experiment continued following the same procedures and research design as outlined initially. What we learn from this example is to scrutinize all aspects that might affect the conduct of the experiment in the planning and research design phase of an in-store experiment – including aspects that might affect the store manager's motivation for supporting the experiment.

The retailer might also experience some frustration among regular customers if changes in the retail environment caused by the experiment make it harder for the individual customer to find a given product. Furthermore, the retailer might lose revenue from its suppliers if the experiment involves using retail space that otherwise could have been sold to manufacturers (a form of alternative costs). Hence, retailers must be willing to accept even a small short-term loss as the price of new insight. This is probably more achievable in periods of economic prosperity than in economic downturns, and more likely to be acceptable for profitable retailers compared to retailers struggling with achieving acceptable profits from their operations. This is what we have experienced in Norway over the last couple of years. The stores belonging to Co-op in Norway that we have collaborated with over a long time span have recently gone from rather large operating profits to considerable operating losses due to a much more competitive retail market characterized by low market growth. The retailer's response has been cost-cutting programs with a particular emphasis on reducing personnel costs through the implementation of best practice routines aimed at increasing efficiency, which eventually will result in a reduction of the number of work hours needed to operate the store. With fewer working hours to operate the store, the risk is that the store managers become *less experiment-friendly*. However, we have managed to run new experiments indicating that acceptance of negative consequences (short-term losses, more work etc.) is more likely if there exists a close bond between the researchers and involved store managers.

Although many barriers can be overcome by developing and nurturing a close relationship with the store managers, in-store experiments might in some cases meet challenges that neither the researcher nor the store manager can control. For example, an intervention representing a higher or lower price on a product during an in-store experiment might sound easy, but can be rather complex in practice, especially if short-term price reductions are planned to take place in some but not all of the retail chain's stores. Nationwide uniform pricing strategies combined with centralized systems and procedures for updating prices might in fact represent too big a challenge for even a good relationship to overcome.

Method triangulation: different types of methodology, data, and philosophy

Many researchers find it useful to combine different methods and data to examine consumer behavior more thoroughly. We also suggest the possibility of using a different philosophy of science in a research program. The in-store experimental research field is no exception as both *method triangulation* and *data triangulation* might enhance the validity of the experiment. Collecting the same type of data from both similar and different contexts using the same methodology (*data triangulation*) offers, for instance, the opportunity to cross-validate the results. One way is to verify or falsify generalizable trends detected in one data set through data triangulation (see Oppermann, 2000). For example, one could conduct a similar experiment in one or more comparable retail stores to check if similar trends can be observed elsewhere and if they are consistent. A researcher could also conduct an identical experiment in other types of retail stores (size, location (mall, rural, or downtown), store types etc.) than the one used as the experimental setting for the initial study to see if similar trends can be observed. In grocery retailing the retailing formats are most often grouped into hard discount stores, soft discount stores, supermarkets and hypermarkets, and customers loyal to one format (e.g. high-quality customers) might show slightly different behaviors than those loyal to other formats (e.g. price sensitivity, time used in the store, fill-in versus stock-up etc.). The only way to verify whether the results derived from experiments conducted in one store format also apply to other formats is to run similar experiments in stores belonging to different retail formats. This has been done in the studies by Sigurdsson et al. (e.g., 2011a, 2014), who have run identical in-store experiments in both convenience stores and discount stores. Researchers are also encouraged to validate trends detected in data sets from one country's markets with results from data sets acquired from other countries' markets using the same method, as well as to validate the results across products. Sigurdsson et al. (2011a, 2011b, 2014) have used the latter approach extensively in their in-store marketing studies. They ran experiments in both Iceland and Norway and experimented with different type of target brands to examine the effect of their manipulations and in-store interventions.

While data triangulation can verify or falsify the results from one experimental setting, method triangulation enables researchers to analyze the research question from multiple perspectives. In fact, information gathered through different methods is in some cases required to obtain a full picture of what goes on at the point of purchase. There are many methods to select from, including observational techniques, transactional data (bar-code scanning data and loyalty card data), and in-store interviews. In addition, technologies such as RFID and eye-tracking equipment offer further insights into shopping behavior that supplement more traditional methods (Uncles, 2010). A relatively new eye-tracking study has for instance added new insight to the extant literature on the effect of more shelf facings and different shelf positions (see Chandon et al., 2009). Apart from confirming the results obtained in earlier studies that increased display size (number of facings a brand gets in a shelf) has a positive effect on sales, their measurement of both consumer brand consideration and choice demonstrated that attention gains from shelf position do not always improve consumers' evaluation of a brand. This difference between attention and evaluation had not been anticipated in the literature. With eye-tracking data they found that vertical shelf position, in particular, directly influenced brand evaluation (after controlling for attention), and shelf position (low, middle, or top shelves) can either strengthen or weaken the positive impact of higher attention. In other words, higher numbers of facings (resulting from increased visual attention) improve consideration and choice, while visual attention gained by positioning the brand on one of the middle shelves does not (Chandon et al., 2009).

Although the eye-tracking data in this study were not gathered in real stores, but by recruiting participants at shopping centers and seating them so that they could look at different planograms (brands displayed on a supermarket shelf), the findings still demonstrate that eye-tracking compared to sales tracking provides different types of insight. Hence, a more fine-grained picture of the effects of in-store marketing at the point of purchase would require a combination of different types of data and thus the use of more than one research method.

Method triangulation has also proven useful to detect anomalies between what consumers *say* (in interviews and questionnaire surveys) and what they *actually do* (real behavior). The experimental study by Sigurdsson et al. (2011b) involving bananas illustrates how consumer intentions do not always transform into actual behavior. Their survey data showed that consumers had very positive attitudes towards fruit and vegetable consumption and intended to buy more, and most of the participants in their consumer survey also agreed, both in closed and open questions, that in-store interventions of the type they conducted were important and necessary. Despite this, the results from their in-store experiment deviated substantially from the outcome of the survey, in that it was unsuccessful in changing consumers' buying behavior of bananas in the stores. Their findings resemble those presented in Achabal et al. (1987) who explored the effects of nutrition point-of-purchase displays on consumer attitudes towards the purchase of fresh products. Customers claimed that the perceived nutrition of the products was of significant importance during the buying decision-making but still the displays had little or no effect on the purchasing behavior of the customers.

As long as triangulation increases our confidence in the empirical results (which it does as long as the results are more or less congruent) or gives us a more fine-grained picture of consumer' behaviors at the point of purchase, we should strive for research designs comprising different methodologies and data sets in behavior analysis of in-store consumer behavior. This has been called for by Shankar et al. (2011) who say that one needs to go beyond behavioral data (such as panel data and loyalty data) to get a 360-degree view of the shopper. Hence, they recommend that other types of data (e.g. survey data) should supplement behavioral data, so that the data collectively offer a better view into shopping patterns. Research in consumer behavior analysis (e.g. Foxall, 2013; Sigurdsson, 2013) has delineated the uses of extensional environmental contingencies and intentional ascriptions (whether verbalized in first, second, or third person) for consumer description, prediction, and control. One important exploration in this direction has been to detect the limits of mainstream behavior analysis (or radical behaviorism as portrayed by Skinner and his followers) when it comes to complex behaviors that are under the influences of many endogenic contingencies in the marketplace. In this regard, Foxall (2013) has created intentional behaviorism; a critical interpretative device that gives the researcher several conceptual layers in dealing with the complexities of consumer choice ranging from the extensional to the intentional. This is important for socially responsible marketing as firms need to focus on the long-term needs and wants of the consumer. In terms of healthy food marketing, if we interpret a particular consumer situation as such that a particular individual wants (*intentional inner behavior*) to eat healthier but does not do so (*behavior*) then the researcher can interpret this as a problem of self-control as the consumer might be better off in behavioral economic terms. Operant behavior is functional and the focus should be on experimental analysis in the environment, but it adds to that explanatory system to have richer data in terms of first-person verbal behavior (e.g. interviews) and third-person observations (e.g. behavioral recording in stores).

The quest for extensive experimentation in stores: large retailers have comprehensive internal databases

Some retailers have considerable quantities of data to draw upon to understand consumer choice. Tesco, Co-op, and Metro, along with other big European retailers, have as part of their loyalty/reward programs built internal databases that are extremely comprehensive and which combine demographics with transactional data. Every time a customer swipes his or her loyalty card at the checkout, information is captured about the basket of goods bought, the frequency of buying, and responsiveness to price and promotions, among others (Uncles, 2010). In fact, loyalty programs generate a ton of data based on shopping patterns at the point of sale. Retailers that gather that information can then act upon the insight it provides as long as they do some data crunching. Such actions include increasing in-store promotions, changing the store layout, adjusting pricing, targeting promotions etc. Since these retailers also have in-store data on the promotion environment at the time when purchases are made (Gedenk et al., 2010), including both in-store and out-of-store promotions, it gives them an opportunity to scrutinize in more detail the effects of various promotions on purchasing behavior, at least when it comes to the household level. Furthermore, the possession of the purchase history of each loyalty card member opens up potential for more one-to-one marketing and targeted promotions. Customers showing no purchasing behavior in a particular category may be stimulated to make a purchase through a targeted coupon with a considerable discount. The British retailer Tesco, for instance, has for a long time focused on increasing sales to regular customers and enhancing loyalty with targeted coupons offers delivered through its Clubcard program. According to Davenport et al. (2011), Tesco's analysis of purchase information belonging to their Clubcard members has provided insight for more sophisticated targeted coupons. As a result, Clubcard members buying diapers for the first time not only get coupons for baby wipes and toys, but also for beer. "Data analysis revealed that new fathers tend to buy more beers, because they are spending less time at the pub" (Davenport et al., 2011, p. 4). Tesco's aim has not only been to expand the range of customer purchases through targeted coupons, but also to target regular customers with deals on products they usually buy. The result of these carefully executed offers has according to Davenport et al. (2011) been that Tesco and its in-house consultant Dunnhumby has achieved redemption rates ranging from 8% to 14% – which they claim is far higher than the 1% or 2% seen elsewhere in the grocery industry. Similarly, the German retailer group Metro has its Payback loyalty program (for more details, see Gedenk et al., 2010, p. 353) and the Norwegian retailer group Co-op has its Co-op Member Program – both with a potential of delivering valuable data for promotion analysis and planning, as well as consumer insight on other areas of interest for the retailers.

Retailers differ in their use of loyalty scheme data to understand behaviors, and the degree to which they experimentally test the effects of various initiatives (e.g. promotions) on consumer purchasing behavior. It is only a few years ago that Co-op in Norway first started to crunch their massive loyalty data for one-to-one communication purposes. To do this Co-op received valuable analytical assistance from Dunnhumby, which clearly illustrates the complexity of making some sense out of huge amounts of consumer purchase data. With help from Dunnhumby, Co-op was able to develop insights based on shopping data gathered from more than 3 million baskets every week (dunnhumby.com/norge). To turn such large batches of data into useful information requires expertise in, for instance, data mining and using appropriate software that looks for patterns.

Dunnhumby also provided assistance when Co-op needed more information when they discovered that a large share of their regular customers stopped visiting one of its hypermarkets due to traffic and parking challenges in 2012. The hypermarket was located in what has become the largest shopping mall in the northern part of Norway, and the data revealed that customers who had left Co-op during the 1.5-year construction phase were mainly those appreciating quality and not those who were price-sensitive. Such information is indeed critical, and helped Co-op find the right tactics to win back their lost customers.

Although loyalty programs generate tons of behavioral data, these data have clear limitations. First, the retailer is only able to capture consumer purchase behavior at the household level and not at the individual level. Second, only transactions made by cardholders are relevant for behavioral analyses. Purchases made by non-members have less value. Furthermore, if the cardholder forgets to swipe his or her card at the checkout, which happens regularly, and if the checkout personnel do not remind the cardholder, the data for this particular shopping trip will be lost. The same is true if the cardholder leaves the loyalty card at home or in the car. Consequently, the purchasing history of this cardholder will not be complete. Loyalty data are also restricted to limited product categories and one retailer (Shankar et al., 2011). In sum, loyalty data captured and stored in the retailers' databases only represent a part of the picture of what goes on at the point of purchase. For those reasons, loyalty and transactional data will not give a full 360-degree view of the shopper (Shankar et al., 2011).

The need for more systematic approaches

The in-store experimental studies reported in the literature have so far to a large extent been ad hoc and context specific. Experimental studies performed in a retail chain's grocery stores in one country (such as the study by Sigurdsson et al., 2011b) may provide useful information for the retail chain and the involved store managers, in particular, but will not tell us whether similar behavioral responses can be expected in other grocery stores in the same country or abroad. To establish some useful industry norms, a more systematic approach has been called for in the literature (see Uncles, 2010). This would require more extensive experimental studies to be conducted, where researchers from several countries collaborate using the same experimental design and procedures.

Another aspect is that society evolves, resulting in changes in a consumer's life, needs, wants and desires, as well as their behavioral choices (Uncles, 2010). Consumer patterns have for instance changed after the economic crisis. As Simon Hay, global CEO of Dunnhumby, puts it:

> There has been a definite shift in consumption pattern post the economic crisis. Retail markets around the world have seen a shift to increasing frequency of shopping and smaller baskets. This is a direct result of people wanting to keep a greater control on their budget and buying food only when they need it.
>
> *(Borpuzari, 2014)*

In such a perspective, there will always be a need for in-store consumer analysis to examine the impact of such changes on existing knowledge of consumers' behavior at the point of purchase. Hence, existing knowledge needs to be challenged and re-tested over time to ensure continued effectiveness (Davenport et al., 2011).

References

Achabal, D. D., McIntyre, S. H., Bell, C. H., & Tucker, N. (1987). The effects of nutrition P-O-P signs on consumer attitudes and behavior, *Journal of Retailing*, 63, 9–24.

Art, T. and Garland, R. (2004). Grocery shopping: List and non-list usage, *Marketing Intelligence & Planning*, 22, 6/7, 623–635.

Bezawada, R., Balachander, S., Kannan, P. K., & Shankar, V. (2009). Cross-category effects of aisle and display placement: A spatial modeling approach and insight, *Journal of Marketing*, 73 (May), 99–117.

Borpuzari, P. (2014). Understanding the customer psyche – An interview with Simon Hay, global CEO of Dunnhumby, Entrepreneur, *entrepreneurindia.in*, 7 January 2014.

Chandon, P., Hutchinson, J. W., Bradlow, E. T., & Young, S. H. (2009). Does in-store marketing work? Effects of the number and position of shelf facings on brand attention and evaluation at the point of purchase, *Journal of Marketing*, 73, 1–17.

Clement, J., Kristensen, T., & Grønhaug, K. (2013). Understanding consumers' in-store visual perception: The influence of package design features on visual attention, *Journal of Retailing and Consumer Services*, 20, 2, 234–239.

Davenport, T. H., Mule, L. D., & J. Lucker. (2011). Know what your customers want before they do, *Harvard Business Review*, December, 84–92.

Fasig, L. B. (2009). At Procter & Gamble's village, a peek into shopper behavior, Cincinnati Business Courier, *bizjournals.com*, published online March 30, 2009.

Dulsrud, A., & Jacobsen, E. (2009). In-store marketing as a Mode of Discipline, *J Consumer Policy*, 32, 203–218.

Dunnhumby.com/norge: *About Dunnhumby Norge* (Accessed 5 February 2014).

Foxall, G. R. (2013). Intentionality, symbol, and situation in the interpretation of consumer choice, *Marketing Theory, 13*, 105–127.

Gaur, V., & Fisher, M. L. (2005). In-store experiments to determine the impact of price on sales,
Production and Operations Management, 14, 377–387.

Gedenk, K., Neslin, S. A., & Ailawadi, K. L. (2010). Sales promotion, in Krafft, M. & Mantrala, M. K. (eds.). *Retailing in the 21st Century – Current and Future Trends*, Heidelberg: Springer Berlin, 345–359.

Gomez, M. I., Rao, V. R., & McLaughlin, E.W. (2007). Empirical analysis of budget and allocation of trade promotions in the U.S. supermarket industry, *Journal of Marketing Research*: August, *44*, 3, 410–424.

Grewal, D., & Levy, M. (2007). Retailing research: Past, present, and future, *Journal of Retailing*, 83, 4, 447–464.

Hui, S. K., Fader, P. S., & Bradlow, E. T. (2009). Testing behavioral hypotheses using an integrated model of grocery store shopping path and purchase behavior, *Journal of Consumer Research*, *36*, 478–493.

Larson, J. S., Bradlow, E. T., & and Fader, P. S. (2005). An exploratory look at supermarket shopping paths, *International Journal of Research in Marketing, 22*, 4, 395–414.

Levy, M., Grewal, D., Kopalle, P. K., & Hess, J. D. (2004). Emerging trends in retail pricing practice: Implications for research, *Journal of Retailing, 80*, 3, XIII–XXI.

Liljenwall, R. (ed.) (2004). *The Power of Point-of-Purchase Advertising: Marketing at Retail*. Washington, DC: Point-of-Purchase Advertising International (POPAI).

Nitzberg, M. (2009). Putting the shopper in your shopper marketing strategy, *Shopper Marketing*, June 17 [downloaded at http://www.visualise.ie/wp content/uploads/2011/03/ Dunnhumby-Putting-the-Shopper-in-Your-Shopper-Marketing-Strategy.pdf].

Nordfält, J. (2011). Improving the attention-capturing ability of special displays with the combination effect and the design effect, *Journal of Retailing and Consumer Services, 18*, 3, 169–173.

Oppermann, M. (2000). Triangulation – A methodological discussion, *Int. J. Tourism Res., 2*, 141–146.

Shankar, V., Inman, J. J., Mantrala, M., Kelley, E., & Rizley, R. (2011). Innovations in shopper marketing: Current insights and future research issues, *Journal of Retailing, 87S*, 1, S29–S42.

Sigurdsson, V. (2013). Commentary on consumer behavior analysis and ascription of intentionality to the explanation of consumer choice, *Marketing Theory, 13*, 133–135.

Sigurdsson, V., Engilbertsson, H., & Foxall, G. (2010). The effects of a point-of-purchase display on relative sales: An in-store experimental evaluation, *Journal of Organizational Behavior Management, 30*, 222–233.

Sigurdsson, V., Foxall, G., & Saevarsson, H. (2010). In-store experimental approach to pricing and consumer behavior, *Journal of Organizational Behavior Management, 30*, 234–246.

Sigurdsson, V., Larsen, N. M., & Gunnarsson, D. (2011a). The behavioral economics of neutral and upward sloping demand curves in retailing, *The Service Industries Journal, 31*, 2543–2558. doi: 10.1080/02642069.2011.531127

Sigurdsson, V., Larsen, N. M., & Gunnarsson, D. (2011b). An in-store experimental analysis of consumers' selection of fruits and vegetables, *The Service Industries Journal, 31*, 2587–2602. doi: 10.1080/02642069.2011.531126

Sigurdsson, V., Larsen, N. M., & Gunnarsson, D. (2014). Healthy food products at the point of purchase: An in-store experimental analysis, *Journal of Applied Behavior Analysis*, *47*, 151–154.

Sigurdsson, V., Sævarsson, H., & Foxall, G. (2009). Brand-placement and consumer choice: An in-store experiment, *Journal of Applied Behavior Analysis, 42*, 741–744.

Skinner, B. F. (1953). *Science and Human Behavior*. New York: Macmillan.

Skinner, B. F. (1976). *About Behaviorism*. New York: Vintage Books.

Sorensen, H. (2009). *Inside the Mind of the Shopper*. Upper Saddle River, NJ: Pearson Education.

Stratton, J. P., & Werner, M. J. (2013). Consumer behavior analysis of fair trade coffee: Evidence from field research, *Psychological Record, 63,* 363–374.

Thomas, A., & Garland, R. (2004). Grocery shopping: List and non-list usage, *Marketing Intelligence & Planning*, *22*, 6/7, 623–635.

Uncles, M. D. (2010). Understanding retail customers, in Krafft, M. & Mantrala, M. K. (eds.). *Retailing in the 21st Century – Current and Future Trends*. Heidelberg: Springer Berlin, 159–173.

Vanhuele, M., & Dreze, X. (2002). Measuring the price knowledge shoppers bring to the store, *Journal of Marketing*, *66*(4), 72–85.

Woods, D. W., Miltenberger, R. G., & Carr, J. E. (2006). Introduction to the special section on clinical behavior analysis, *Journal of Applied Behavior Analysis*, *39*(4), 407–411.