THE SCIENCE OF SHOPPING: LEVERAGING IN-STORE ANALYTICS AND SHOPPER MARKETING IN A "PHYGITAL" PARADIGM

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ABSTRACT

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In-store analytics is a growing phenomenon where new technologies and digital solutions are emerging to help retailers answer a simple question - what is actually happening within their retail environment/s and how are shoppers responding. Despite in-store analytics' strong relevance for retail firms, it yet remains heavily under-studied among scholars. However, the growing number of studies regarding related areas such as localization and behavioural marketing indicate that the phenomenon is on the rise. What is more, the retail landscape is rapidly evolving, driven by an onslaught of omnichannel digital commerce where consumers are increasingly hyper-connected, going in and out of physical and digital contexts, thus changing the way consumers shop and are influenced in retail environments. In response, the current state of shopper marketing has also been flooded with multiple new marketing vehicles available to firms. A major problem, however, is that the model of how shopper marketing works is still more or less a "black box", and physical retailers lack in-store shopper data to adhere to a more "phygital" (physical+digital) experience. Unlike the online world where eCommerce retailers have the advantage of knowing a lot about what their customers do online to tailor the shopping experience to them in a plethora of ways, physical retailers fall short. In-store analytics can help unlock the "black box" of shopper marketing and enable an unprecedented and accurate view of the retail environment to consumer relationship, including aspects such as customer footfall patterns, visitor profiles, at shelf engagement, and collect granular data points along the in-store shopper journey to analyse and predict shopper behaviour.

This study followed a qualitative research approach, and the empirical findings were obtained via in-depth semi-structured interviews. The interviews were conducted with thirteen international participants, consisting of shopper researchers and leading digital solution providers. Thematic analysis, interpretation and analytic generalizing were utilized to analyse the findings of the research. The study reinforces the existing literature to great extent, but also provides new perspectives to the identified factors. The study was concluded as complex and multifaceted; therefore, this stream of research was approached from a holistic view, due to a lack of academic literature available. However, this thesis presents a novel area of study and has extended the existing comprehensions of the subject and offered managerial implications regarding the focal topic.

Keywords: In-store analytics, shopper marketing, shopper behaviour, omnichannel, "phygital", physical retail, brick-and-mortar retail, digital shopper solutions, behavioural marketing

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1 INTRODUCTION

In this chapter, the motivation and background of the study, research justification, key concepts, the research questions, and objectives, as well as the structure of the study are discussed.

1.1 Introduction to the topic

Despite the strong prominence of eCommerce retailing, physical (brick-and-mortar) retail venues invariably serve as a critical function to a fundamental human experience (Hlongwane, 2018). In essence, this is largely since people yearn to explore and discover, for both utilitarian and hedonic purposes. Consumers also most often want to try, touch, see, smell, and feel in-person, as well as for other important factors such as for immediate, accessible purchases, personal service, ease of returning goods, and connection to the brand (Hlongwane, 2018; Baird and Rosenblum, 2018, p. 3). Therefore, the physical retail environment (a store or venue) is a salient dimension of consumer immersion of which largely determines patronage and influence on shopper behaviour. However, the physical retail sector today is inevitably subject to transformation driven by evident changes in economy, shifts in consumer behaviour, and proliferation of hyper-connected mobile, digital, and technology overall. As such, the outdated confines within the retail sector are being blurred: offline and online are merging and consumers are becoming increasingly empowered through omni-channel interactions. In many ways, this phenomenon impacts the way physical retail environments are conceived and used, changing the ways consumers shop in stores. On the one hand, the challenge for physical retail establishments is to compete with, complement, and learn from the eCommerce online world. While on the other hand, to ensure that retail operations and channels are connected in order to bring forth new ways to not only deliver a seamless customer experience, but to understand shoppers contextually better at the right time and at the right place, especially within the catchment area of the retail venue.

With this in mind, understanding shopper behaviour in physical retail environments is essential for any enterprise aiming to provide a more personal and compelling shopping experience, optimize store layout, and improve store performance and operations. Achieving these goals ultimately leads to improved customer experience, conversion rates, and increased revenue (Yaeli, *et al*., 2014). Shopping behaviour, by general definition, can be defined as anything that a consumer does in a store, involving action and response to in-store stimuli. However, the process of the analysing in-store shopper behaviour is not well understood (Sigurdsson, *et al.,* 2016; Larsen, 2017). What is more, is that because in-store shopper behaviour is not well understood, the model of how shopper marketing works is still more or less a "black box", where lagging metrics, data sources, and outdated methodologies to obtain data are relied on. Therefore, these are compounded issues that otherwise needed to support each other. For long, retailers have had very little information about what happens in the store, the variables that influence shopper behaviour, and how shoppers' traverse and use the store space. The lack of crucial data and accurate information from what happens in the retail environment and how shoppers are responding to stimuli is a key missing element, and yet upmost essential. Henceforth, there needs to be a stronger understanding of the relationship between environment and consumer in the context of shopper behaviour.

Davenport et al. (2011) suggest retailers to consider all offers (e.g., in-store promotions, as well as the design of store layout, etc) to be treated as a kind of "experiment" or "test", and with it, to collect and use behavioural data from shoppers (shopper data) and insights as a sophisticated way to determine the effectiveness of various stimuli and promotional efforts to which influences in-store shopper behaviour. This approach can be put into action to prompt shopper behaviour and influence the decision making of consumers with the propensity to buy products in-store. Moreover, shopper data and insights can be applied to improve equity, sales and profitability of a brand, product category, or through shopper-centric changes to the retail environment and its stimuli or messaging. It also helps to explain the motivations, uncover the meaning, and decode the elements of shopper behaviour - in particular the factors to explain what is happening and what is *not* happening within the physical retail environment. Therefore, shopper data and insights are extremely valuable for retailers and shopper marketers alike to make smart decisions (Explorer Research, 2021).

Interestingly, in recent development, the term "cyber-behavioralism" has emerged which comes from a relatively new field that is the study of how we live our lives digitally. "Cyber-behavioralism" seeks to explore and find out how digital has an impact on our real-world expectations, particularly in the retail environment, now of which digital places the shopper at the centre. As highlighted earlier in this chapter, because shoppers interchangeably move between digital and physical contexts of which mobile and omnichannel behaviour occurs, a behavioural science-based approach is the constant that can be used to help drive shopper marketing and retail growth, thus leading to new ways in-store shopper data can be collected and analysed through advances by in-store analytics (Hughes, 2020, pp. 52-58). Today's advances in in-store analytics have been proliferated by localization technologies with the help of modular digital platform solutions. From this, in-store data and shopper insights

that can be tracked, analysed, and used in a myriad of ways to understand the relationship between environment and consumer, particularly beneficial for marketing and retail operations, as well as business intelligence. This means that retail enterprises can gain actionable insight into in-store shopper behaviour patterns and understand, for example, footfall trends and store navigation, how much time shoppers spend in different areas of the store, what routes they take, engagement at the shelf or product display, how well they are serviced, as well as insights into new vs returning visitors, and much more (Yaeli, *et al.*, 2014).

By comparison, we can consider similar principles and practices aligned from the online world in terms of how eCommerce retailers typically analyse online shopper behaviour for optimization purposes. For instance, web analytics tools (e.g., Google Analytics, Hotjar, Mixpanel, etc), are commonly used to track and understand user behaviour in order to optimize web page layouts, personalize the shopping experience (think for example, Amazon), increase conversion rates, and gain a fuller view of the online shopper journey touch points (aka, path-to-purchase). In turn, online retailers have had the advantage of knowing almost everything about what their customers do online and are able to tailor the online customer experience to them. In the offline world, the disparity is much greater by contrast. However, in parallel, similar principles and practices do apply to the offline physical store environment that can be used and reflected upon. Henceforth, advances in in-store analytics with a new frontier of shopper marketing now prevails.

Furthermore, generalizing beyond the aforementioned, it is important to point out that upon discovery, in-store analytics is rather two-sided in terms of in-store data capture. On one hand, there are analogous and observational methodologies to conduct in-store shopper behaviour research. While on the other hand, in-store shopper behaviour data can be harvested by utilizing advanced digital in-store analytics solutions, or even a combination approach of the two. Nevertheless, here lies at the heart of discussion that in-store analytics has not been a well-established practice or area of academic research. It is still more or less virtually uncharted territory (Sigurdsson, *et al.*, 2016, Bollweg *et al.*, 2016). This in part is due to three main reasons, (1) this is a novel area of recent research development, (2) there is limited apparent academic research available, and (3) limited digital solutions and technologies available for retail firms to obtain in-store data for actionable use. In terms of point number three, while this thesis was partly inspired from new in-store analytics solutions available on the market, a deeper analysis of the core benefits and various digital solution product features was not possible to elaborate on a more complex level as there was limited academic theory to support it. To reaffirm this notion, this thesis is primarily based on available academic literature which was found to be rather scarce. However, the withstanding literature surrounding this specific aspect of the study did provide significant contributions, both for managerial interests and further scholarly research.

Given the centrality of the issue related to the research focal phenomenon, the approach taken in this thesis is rather holistic and considerably innovative due to the fact that there has been relatively little academic research contributions towards this complex field of study chosen, particularly pertaining to in-store analytics digital solutions and relevant technologies that surround retail marketing operations. Thus,

looking at the focal phenomenon from a wide scope that encompasses the fundamental aspects of environment to consumer relationship on behaviour and the role that technology plays, such as covering mobile assisted shoppers, technology utilization to track in-store shopper behaviour, and other ways to explore in-store data. In short, the theoretical framework illustrates the current state of physical retail and the importance of the retail environment, followed by the role of shopper marketing and addressing the "phygital" paradigm shift. This then later leads into the advances of in-store behaviour analytics. Moreover, the compilation of literature available was limited also due to the fact that prior studies were construed by consultancies, start-ups, and conducted and secured by firms for their own purposes.

Nevertheless, as a novel and exciting field of study, in-store analytics and its supporting disciplines is a promising field for further investigation. Having said that, shopper research in the past decade or so has been thoroughly explored, primarily from industry practitioners and consultants, and have provided ample support for the assertion that in-store behaviour analytics is a growing field, necessary to a higher dimension of retail marketing, management, and behavioural economics (see also Sorensen, 2009; Underhill, 2009; Scamell-Katz, 2010). As such, it is increasingly becoming highly relevant for today's operational managers who seek to understand and monitor the activity of in-store shopper behaviour, optimize store performance, enhance customer experience, and improve bottom line profitability. Based on both the literature review and findings chapter of this thesis, it is safe to conclude that holistic retailing is experiencing a new emphasis on "behavioural marketing" through various technologies such as advanced analytics, IoT, mobile, and the proliferation of real-world behavioural data supported by single-point digital platform solutions with real-time visualized data analysis and contextual omnichannel marketing capabilities. The opportunities that in-store analytics bring forth are monumental.

1.2 Key concepts

In response to fluctuating market conditions across the physical brick-and-mortar retail sector, shifts in shopper behaviour, economy, and advances in technology have undergone radical evolution in recent years, thus resulting in the disruption of traditional retail strategies, bound to define the next generation of shopper strategy and retail activation at large. Because of this evolution, new concepts and terminologies from both academic and industry-based sources have emerged. "Omnichannel", "Phygital", "Phytics", "Connected Store", "Click and Mortar", as well as "Showrooming", "Mobile Commerce", "Customer Tracking", "Halo Effect", "SMACIT", "Big Data", and "In-Store Analytics", "Cyber-behaviouralism"; these are just some of today's industry buzzwords influencing the rapidly evolving retail landscape driven by an onslaught of digital commerce. At the same time, brick-and-mortar stores are stuck in the conundrum of closing their physical stores or embracing omnichannel commerce. Technology and the digital divide has exponentially changed business models,

the value, and product choices available to shoppers where they are increasingly becoming more connected and informed than ever before which therefore influences the evolution of how retail establishments operate in a dynamic marketplace (RIS, 2014).
In this study, the central concept under examination is 'in-store behaviour analytics' or 'in-store analytics' for brevity. However, this concept is somewhat defined and operationalized via concepts of other overarching yet closely related disciplines, which indicate some overlap with this phenomenon. For instance, in prior research the conceptualization of the term 'in-store analytics' is endeavoured by inspecting e.g., localization and retail analytics. Both related areas have emerged in academic literature in recent years (see Sachs 2013; Larsen, Sigurdsson, & Breivik, 2017), however it is not a new concept, nor the idea of tailoring the retail experience based on aggregate data about customers and how they shop. Correspondingly, shopper research has also been thoroughly explored in recent years which strongly supports and is tied to in-store analytics. Related subdisciplines of shopper research often get merged with "umbrella" terminologies such as shopper insights, shopper marketing, trade marketing, as well as category management, each of which overlap each other to an extent. For this study, the term 'shopper marketing' is primarily used, conjointly with in-store analytics as they uniquely compliment each other.
By and large however, what has truly changed is the methodologies around capturing in-store data, the volume, velocity, and predictability of data and how that is applied to customers' shopping experiences and the way retail operations and collaboration is done between retailer, consumer, and brand interface. This includes the way shopper behaviour is understood in the catchment area of the store and along the path-to-purchase. Recently, developments in in-store analytics, digital shopper and business intelligence (BI) solutions have emerged with the help of various new heterogeneous technologies. Conventionally, the focus on in-store analytics is a collection of systems (both analogous and digital) working together to organize, analyze and visualize massive consumer and shopper generated data and insights within the retail environment. In-store analytics is therefore focused on the relationship between retail environment and consumer, shopper activity, behaviour, and to optimize store performance.
Furthermore, closely supporting concepts used in this thesis are also for example, though not limited to, the terms "omnichannel", "phygital" and "phytics". In short, these terms surround a strong correlation and disparity between online and offline worlds, where the emergence and convergence of physical and digital retail experiences continues to evolve rapidly - diverging physical into "phygital" (physical+digital), or in other words, a complete form of "omnichannel". Whereas "phytics" is simply combining physical analytics with web analytics. Further explanations and additional supporting concepts are explained throughout this thesis. Nevertheless, the concepts are soundly linked to in-store analytics, as well as shopper marketing. Lastly, besides the concept of 'in-store analytics', many of the mentioned concepts described throughout this thesis are not well established in academic literature, however, many of the concepts are widely used by industry-related practitioners and therefore uniquely contribute to scholarly research.

1.3 Research justifications

According to Hlongwane *et al*., (2018), to the dismay of the physical retail sector, demarcation is both evident and inevitable. As such, the future of many brick-and-mortar retail establishments in particular is considered rather bleak, where winners and losers will emerge. However, the physical retail sector is also constituted for transformation in response to a global competitive challenging and dynamic marketplace. More importantly, the on-going continuity of physical retail is due to the fact that built retail venues will always remain relevant in this evolving digital age, and technology will not completely replace physicality or immediate gratification of in-store experience as it serves as a critical function to a fundamental human experience that is perpetual. In essence, this is largely since people yearn to explore and discover, and consumers most often want to try, touch, see, smell, and feel in-person, as well as for immediate and accessible purchases, personal service, locality, and ease of returning goods. Consumers also desire to have a connection with store experience as it is a social environment and place where the brand comes to life; where the "theatre" happens; and where emotion is turned into sales. By and large, retail is the final commercial link between who people are, and the things they need, and want. Retail is also at the cutting edge of social evolution – always has been, and always will be (Hlongwane, 2018; Baird and Rosenblum, 2018, p.,3; Stephens, 2017.) What is more, is that up to 80 percent of purchase decisions are also made in the store by consumers, and correspondingly brick-and-mortar retail stores will still account for roughly 80% of total retail sales by 2025. This is a rather important statistic considering the amount of marketing spend that is put on advertising outside of the physical store and invested heavily into e-commerce efforts (Ebster, & Garaus, 2015; Dennis, 2018).
Looking ahead, the most important aspect of the physical retail store of the future will be the experience it offers to shoppers and the way retail firms understand the relationship between the shoppers in the context of the environment they are in. That said, successful retailers will be the ones who will design, execute, and measure the experiences of shoppers in the retail environment, pivoting from product distribution toward the delivery of a physical media experience, similar to that of the web or in tandem to the sector's online counterpart. Thus, changing the way stores are conceived and used (Stephens, 2017; Hlongwane, 2018; Baird and Rosenblum, 2018, p. 3). Furthermore, retail firms still spend millions each year carefully planning, designing, and curating their stores driven by their bottom-line goal to generate profit in a competitive marketplace. Doing so, they invest on creating optimised multi-dimensional formats to enhance the interaction with consumers to improve overall customer experience. Improving customer experience inevitably leads to increased sales and store performance for the retailer. By creating and optimizing store dimensions to enhance the customer experience and store performance, retailers will then try to acquire and collect critical information about target consumers and shopper "profiles". Based on these target "profiles", the merchandising and interiors of stores are laid out to attract and successfully target these groups of consumers. Rebuttal to this point however, many retailers still do not generally engage in systematic research that enables them to understand the context of the retail environment and determine the appropriate

mix of environmental factors or innovative ways that may influence shopper behaviour and patronage decision (Baker, *et al*., 1992).

Furthermore, as retailing becomes more experimental and focuses more on customer experience, leveraging the physical space of the retail environment inherently becomes an increasingly important marketing tool and place for examination. It is essentially a living laboratory, rich with opportunities to explore how results are produced, particularly by the complexity of understanding shoppers' changing behaviours (Stratton, Moser, & Wallace, 2011). Interestingly, seminal research by Sorensen (2010, p. 8), claims a figure of 20 million seconds - that is the time all customers collectively spend in a typical supermarket every week based on measurements across multiple stores. That is 20 million opportunities a week to sell something. The tragedy of modern retail however is that most of these moments are wasted because retailers and brand manufacturers by and large do not know what the shopper is doing during these moments. This reference is also not limited to a single retail format exclusive to supermarkets. Research shows that in self-service retail stores, such as supermarkets, it is found that shoppers only spend 20 percent of their time simply moving from place to place in the store selecting merchandise for purchasing. However, this represents a major oversight. According to Sorensen (2010), this means that 80 percent of shoppers' time is economically unproductive and wasted (Sorensen, 2010, p. 8).

The centrality of this issue clearly points out that the shopper activity of what happens in-store is not fully understood. In addition, departments responsible for shopper marketing will typically make decisions based on consumer brand insights in addition to sales data, however, shopper marketing teams will need to increasingly incorporate both more advanced qualitative and quantitative insights, as the model of how shopper marketing works is still more or less a "black box" (Shankar, *et. al*., 2011, p. 30; see also Sigurdsson, *et al*., 2016). In addition, retail firms will then also have to rationalize their business models and incorporate technical solutions, making capital expenditure based on rigorous ROI measures, and frequent quantitative and qualitative testing, rather than on simply intuition or gut feel. Given the nature of retail trade worldwide, companies must constantly understand customers' needs, anticipate, and learn to influence behavioural changes requiring market research, business intelligence solutions, and innovation for creating better products, processes, services, and service environments around customers and the shopping experience (Bălăşescu, 2013). Larsen *et al*. (2017) states that new technologies and solutions such as advanced in-store analytics, bring forth an advantage to rely on behavioural data at the expense of theoretical, indirect, or even constructs that do not exist. With descriptive observations and interventions, analysts of behaviour can conduct objective science that allows substantial explanations of not only shopping behaviour but consumer behaviour overall. Additionally, Larsen *et al*. (2017), states that collaboration is needed from marketing scientists, economists, practitioners, and consumer spokespeople who are professionals in their field and can help to identify marketing-related issue. This includes focusing on the shopper and retail environment to consumer relationship that is driven by an omnichannel, digitized, hyper-connected world of today.

Consequently, as alluded by both scholars and practitioners in the field, the trigger of inquiry to explore the possibilities and drivers of change related to in-store analytics and shopper marketing was called for. Therefore, the justification for this thesis seeks

to identify the most prominent drivers of change in recent development to the physical retail sector at large. In particular, retail commerce, digital solutions and various associated technologies that can be used to understand in-store shopper behaviour, thereby expanding on the general knowledge of key concepts, phenomena, and the holistic relationship between environment and consumer.

1.4 Research questions and study objective

The aim of this research is to increase the holistic understanding and identify distinct drivers of change in the current physical brick-and-mortar retail landscape that meets digital advances applied to in-store analytics and support new developments in shopper marketing - driven by an omnichannel, digitized, hyper connected world of today. Ultimately, the foundation lies in the need to understand shopper behaviour and the salient relationship between environment and consumer. Because of the complex subject matter at hand, much of which is rooted in social sciences, a comprehensive yet multifaceted and holistic approach is necessary where several correlating aspects are studied. This, in part, is done from the perspective that retail firms for long have had plenty of transactional data and consumer data available, however, when it comes to data from shoppers, specifically the behavioural activity of what happens in the store, it is still more or less a "black box", much to the disservice of retailers with physical establishments. By contrast, eCommerce retailers know almost everything about what their customers do online and have mastered the art and science of making sure shoppers can find what they are looking for online. For example, the ability to acquire and track traffic to and on a site, as well as understand where customers go on their shopper journey, what resonates with them, to how it influences their shopping behaviours. By this, eCommerce retailers are able to constantly iterate marketing and web page elements to become more contextual that is personalized to the customer, and in turn make more sales. These various aspects of online retailing have long been studied. However, only until recently, granular parallel data applied to the physical world with digitized in-store analytics solutions have been made accessible to retailers, which is a significant advancement to traditional retail at large. Thus, creating a new frontier of both in-store analytics and shopper marketing opportunities. Moreover, another area of focus is to expand the general comprehension and conceptualization of the term "phygital", as further research of the topic has been necessitated in the preceding literature (Belghiti, *et al.*,2017).

In order to clarify the main objective of this research, the focal points of the theoretical framework are illustrated in figure 1 below, followed by the theoretical framework's primary and supporting sub research questions of thesis.

RQ1: how does the retail environment influence shopper behaviour?

how does technology play a role in this influence?

RQ2: what are the key parallels between the online world and offline world (e.g., using web analytics & metrics)?

Can similar principals be applied to the physical environment to understand shopper behaviour?

RQ3: how are operational managers collecting in-store shopper data?

what are their methods or solutions to do so?

RQ4: what are the distinct benefits of in-store analytics on shopper marketing and store operations?

The research questions were designed based on both desk research, as well as inspired from a string of ideas made by the author of the thesis related to the focal phenomenon of this study. Hence both a creative and holistic approach was taken when intricately piecing together the theme of the research topics. In order to profoundly answer the primary research questions, the identified drivers of in-store analytics and shopper marketing were placed under different categorizing themes in the findings chapter to integrate them with each key theoretical concept or phenomenon. In addition, as some categorizable drivers towards advances of in-store analytics and shopper marketing emerged solely from the empirical data, these findings were also allocated and presented in the findings chapter of this research. Moreover, the research questions ended up providing vast contributions also for framing the response for the secondary / follow-up research question of the study. It is important to point out however that the research topic themes and questions presented do overlap to some extent, however, strongly compliment, and support the theoretical literature and the greater findings of the study. The figure below is based on the authors own elaboration.

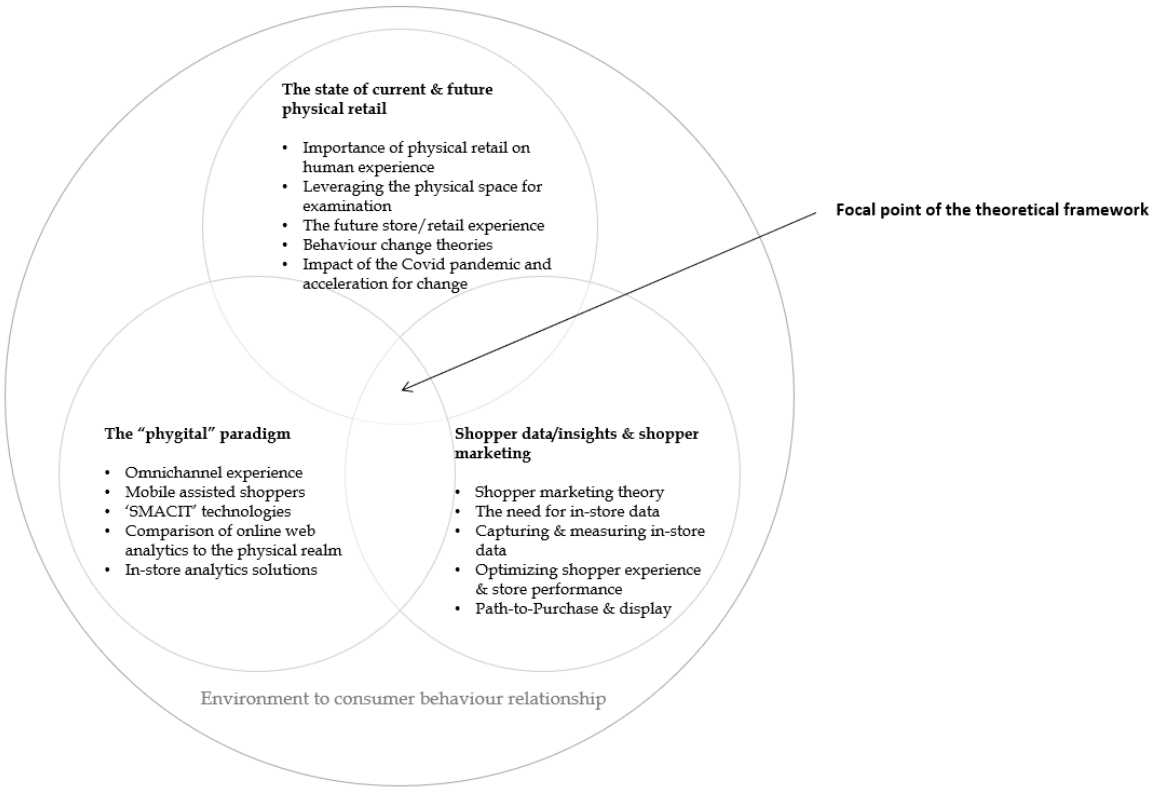


Figure 1. Focal points related to the theoretical framework. Authors own elaboration.

1.5 Research structure

This thesis is divided into five main chapters. First, the introduction chapter where the background and motivation of the study is explained. Moreover, this chapter contains the research justifications, introduces the premise of formulated research questions and objectives, and explains the structure of the overall study.
The second chapter consists of a comprehensive literature review which contributes as the base for the theoretical framework. As related to figure 1, the literature review begins with holistically focusing on the current state of physical retail, exploring why it is important to a holistic consumer immersion and valuable place for examination. This then follows into the topic of shopper marketing and the need for in-store data, which then leads to the "phygital" (physical+digital) paradigm theme. The last part of the literature review seeks to explore how the prior themes lead to advances in both in-store analytics and support a new frontier in shopper marketing. Furthermore, for outlining the theoretical framework, the existing literature and journals of retail management and marketing were thoroughly explored to find relevant information about the selected key topics and concepts to construct the research. In addition, consultancy papers, books, and academic journals of advertising research, consumer behaviour,

information management, and consumer and economic psychology were viewed to find information pertaining to the research themes.
In the third chapter, the complete research methodology, as well as the procedures of data gathering are thoroughly explained. This section also includes a brief background information table of the industry expert interviewees who participated in the qualitative research, along with a list of the firm types, job category or position, and country/location that the participants represent.
The fourth chapter aims to address the key empirical findings of the research. The findings are exhibited under overarching themes that were interpreted on the basis of the reviewed literature. Although the findings chapter focuses primarily on presenting the results of the study, the subchapters in this part are compassed with certain theoretical concurrences and demonstrates how each central theme overlaps the focal phenomenon of the study.
Finally, chapter five presents the conclusions that were made based on the research results in the light of existing research prevalent from the literature theory, as well as aims to outline thorough answers to both, the primary and secondary research questions of the thesis. The chapter ends by acknowledging potential managerial implications, research evaluations and limitations, as well as directions for future research.

2 THEORETICAL BACKGROUND

In this chapter, the theoretical framework of the thesis is introduced and constructed through a review of adequate literature related to the entirety of the research topic. Examined in this chapter are five main themes that tie into the focal phenomena of the research as follows: (1) the current state of the physical brick-and-mortar retail landscape with shoppers and consumers, (2) the importance of physical retail, as well as examining how the store environment plays a vital role towards influencing shopper behavior, (3) the call for shopper marketing and the need to collect in-store shopper data, (4) hybridization of physical and digital ("phygital") in the retail environment, which then opens new opportunities to leverage in-store data for shopper marketing, store operations, and ultimately advances in in-store analytics (5). These five main themes in the literature review are selected for further reviewing due to their relevancy and interlacing with understanding the holistic relationship between environment and consumer, which is fundamentally a key phenomenon under observation in this research.

2.1 Physical retail in a challenging and dynamic marketplace

Much has evolved lately in the retail industry. Reports of "retail apocalypse" and headlines that proclaim the demise of the highly distressed retail industry as we know it. Due to forces from eCommerce, mobile and digital, as well as recent threatening impacts from the Covid-19 global pandemic, some industry experts expect damage to the physical retail sector on a catastrophic scale and even concerning the demise of in-store shopping altogether. Take for example the rise of online retailing, with e-commerce incumbents, store closures have in fact outpaced store openings across global markets. At glance, it is as if physical brick-and-mortar retailers are caught on the wrong side of the digital shift with many businesses on a downward trajectory held back by the threatening cycle of diminishing foot traffic, thinning crowds, empty parking lots of shopping malls, as well as declining comparable-store sales and increasing amount of store closures. Headlines proclaiming such dismay may raise speculation to the general public that the digital age, among other relevant factors, is an extinction-level event for the physical brick-and-mortar retail sector (Agarwal, Breschi, & Devillard, 2017). Furthermore, the contentious label "apocalypse" derives from a controversial term used by the media to describe the ways a shift in consumer behaviour and spending patterns may be impacting the the traditional "brick-and-mortar" retail store business model, or the whole physical retail sector for brevity. This phenomenon connotes the widespread disaster and destruction across physical retail establishments and closing of a large number of physical retail stores. According to some reports, in many global markets, retailing has reached a 'tipping point', indicating a permanent restructuring of retailing. As a re-

sult, many traditional physical retailers may not recover (Corkery, 2017). For example, retail analysts estimate that by 2022, one quarter of shopping malls in the United States could even be out of business (McArthur *et al*., 2016; Sanburne, 2017).

However, retail changes are macro-level phenomena with micro-level implications. Academic research has provided some explanations for the dramatic changes shaking the retail industry ever since the establishment of department stores in the mid-1800s (Helm *et al*.,2018). Therefore, change is inevitable through such an evolving market landscape as the years go on. As such, the retail landscape is extremely dynamic, and the reality is that winners and losers have emerged over the past decades of industry evolution. This evolution considers several contributing factors responsible for the ongoing changes in retail. Industry experts have cited a runaway growth in retail space, major debt leveraged by buyouts (Thompson, 2017; Townsend *et al*., 2018), new technology-enabled retail formats (Rose *et al*., 2012), the continued growth of e-commerce online retailing, and global economics and affairs that heavily impact the retail industry at large. Research points to shifts in consumer power as one of the main factors shaping the retail environment today (Labrecque *et al*., 2013; Schoenbachler and Gordon, 2002). Consumers have taken a stronghold position through the adoption of eCommerce as the number of alternative suppliers has multiplied and the cost of comparison shopping across the globe grew insignificant (McArthur *et al*., 2016). While not a new phenomenon, one of the initial proliferating ways consumers have gained bargaining power is via access to information through the internet (Barrutia and Echebarria, 2005). Nevertheless, many of these changes and disruptions have enabled many retail firms and brands to innovate and rise to the challenge to meet such a dynamic marketplace to stay competitive. These disruptions have opened plenty of new opportunities for retailers, and marketing and distribution altogether to help grow relationships with consumers.

What is more, taking a closer look at the physical retail sector reveals a different reality, and the speculated news of physical retail's demise is rather premature. While eCommerce channels are carving out an aggressive share of the retail market, physical retail is still the dominant channel in this market today contrary to popular belief. With that said, the proportion of spending value in online stores is still much lower than that of brick-and-mortar stores. Interestingly, physical brick and mortar stores accounted for up to roughly 90 percent of all total retail sales (US Census Bureau, 2016), and is expected to still be over 80 percent by 2025 (Dennis, 2018). Global retail sales from 2018-2022 is forecasted at 25.04tr USD. In 2020, the global in-store brick-and-mortar retail channel generated 19.2 trillion USD in sales. The total retail sales worldwide amounted to over 22.5 trillion USD that same year, and by 2024, it is estimated that the value of e-commerce retail sales will reach 6.5 trillion USD on a global scale ("Retail Market Worldwide", Statista, 2021). From these findings alone indicates that retail by and large is doing far more than just surviving and it would be fair to say that the physical retail sector has "skin in the game".

Even while store closures have been apparent in the media headlines over the recent years, a number of retailers across many categories have still been announcing aggressive plans for new store openings and expanding networks (Holman, 2017). If we look at growth in the East Asian market for example, the Chinese retailer JD.com announced it's plans in 2020 to ambitiously expand its brick-and-mortar reach aiming

for a partner network of 5 million physical stores in just an approximate three-year time frame as China's eCommerce retailers strengthen their competition for consumers on a macro level (Sumathi Bala, 2020).

Similarly, major retailer Alibaba has for long been financially investing billions into the physical retail market and putting more focus on merging online to offline channels of retail (Mortier, 2018), while at the same time moving assertively with experience and technology enabled physical stores to meet consumer demands to strengthen market position (Howland, 2018). This trend is not bound to one market or one retail player for that matter, but rather an indication of retail growth and evolution. It is important to point out that in most major markets globally, physical retail still continues to grow, just at a much slower rate than eCommerce (Stephens, 2017). The rise of prominent retail forces such as Amazon, Alibaba, JD.com, Walmart, and many other dominant players in the industry have played a significant role in the retail industry and have had a colossal share in many retail categories, thus causing a seismic shift in consumer shopping habits, forcing many retailers to rethink their core business models by exploring new forms of consumer engagement, especially for those in the physical retail sector. In addition, large eCommerce firms along with digital technology utilization in many ways has become a major challenge for physical retail venues because it enables shoppers to buy online. Yet at the same time, technology presents meaningful opportunities to retail operators who desire and know how to harness it (Agarwal, Breschi, & Devillard, 2017).

As technology advances, the expectations from retailers to use technology has also changed drastically (Baird and Rosenblum, 2018, p. 3). Modern technology has been a proliferator to the evolution of the retail industry and proven to be vital, as the economic model for retail is changing. However, technology has advanced to the point where the ability to reach consumers directly is not only possible, but highly preferable and sought after. Even brands are starting to go directly to the consumer, which in turn, creates more complexity in the retail landscape, and results in a predicament for physical retailers where their vendors or partnered brands are also competitors for the same shopper (Stephens, 2017).

Now, in an era of personalization, convenience, speed and flexibility at the forefront of today's digital economy, the pressure for retailers' is a matter of "change or die" situation (Clarke, 2018), and this is particularly the case for the physical retail sector. Morgan (2019) claims that physical retail stores will still exist in the future, however there will be fewer of them, and the outdated traditional transaction store will disappear and be replaced by an immersive digital experience that blurs the line between online and physical experiences (Morgan, 2019). There seems to be no compelling reason to argue that the future changes in the retail sector cannot be ignored, and it is no doubt that the modern economy has led to new demands for the physical retail sector, causing it to develop and provide services that improve consumer satisfaction. Retailers will have to rationalize their business models and incorporate technical solutions, making capital expenditure based on rigorous ROI measures and quantitative testing, rather than on gut feel. Given the nature of retail trade worldwide, companies must focus on customers' needs and anticipate behavioural changes requiring market research and innovation for creating better products, processes, services, and service environments (Bălăşescu, 2013).

2.1.1 The Covid pandemic as the catalyst for retail reinvention

Despite difficult economic conditions, the global retail industry continues to grow, however, the state of physical retail for long has been facing extreme turbulence driven by multiple factors, some of which were mentioned previously. Astonishingly, 2019/2020 was ought to be one of the toughest periods of time for brick-and-mortar retailing and shopping in modern-day retailing history - and continues to recuperate to this day out of full economic toll from that of the Coronavirus disease (COVID-19) global pandemic (Kim, 2020). The emergence and impact of the COVID-19 virus was hardly predictable for brick-and-mortar retailers (Yildirim, 2021) and has raised much concern and uncertainty looking forward. While some viewed the retail landscape as apocalyptic, others viewed it as a constructive yet positive transition that has been to some regard anticipated.

The outbreak of COVID-19 had spread to six continents infecting over 181 million people, and over 3.9 million people had died after contracting the respiratory virus worldwide, recoded as of June 2021 (Statista, 2021). Although a pandemic was considered an unlikely event for a long time before the COVID-19 outbreak, a pandemic has been identified as one of the key threats to retail businesses (Kim, 2021). In response to the COVID-19 pandemic, many local and nationwide governments required retailers that were not deemed essential to close their doors indefinitely. In addition, nationwide and city-wide lockdowns, stay-at-home orders jointly with individual preferences to socially distance from others, as well as other protective health related measures. These various factors have no doubt largely impacted brick-and-mortar retailers in an unprecedented way. Since the initial pandemic outbreak, there has remained substantial uncertainty about the future of brick-and-mortar retail, particularly indoor shopping for different categories of products and services. Industry reports state that overall consumer demand reduced in several categories such as apparel and shoes (Briedis *et al*., 2020), meanwhile, the use of digital services and reliance on online shopping significantly increased (Kim, 2021). Consumers shifted to online shopping when possible (Charm *et al*., 2020) and altered their habits of when and where to shop (Arora *et al*., 2020). At the same time, this has also initiated many retailers with physical stores to tighten controls over occupancy rates on shoppers coming into their stores, many retailers of which have adopted digital solutions to track and measure in-store visitor traffic, and flow. For most retailers, knowing how many shoppers were in their stores at any given moment and what they were doing used to be a matter of profit and loss. Now, in an exaggerated sense, it is a matter of life and death (Verdon, 2020). However, while a few early studies described the losses for small businesses (Bartik *et al*., 2020), the damage to brick-and-mortar retail, if any, has not been thoroughly documented. Nevertheless, it is undeniable that consumers' attitudes towards in-store shopping are changing drastically and may possibly never return to "normal".

Furthermore, the mass media proclaiming a new "normal" or "retail apocalypse" is rather an incentive for retail reset and reinvention. This presents an opportunity - and a need - for many physical retailers to build the competencies they wish they had invested in before: to be more data-driven, in the cloud; as well as to have more agile operations and automation which creates stronger capabilities for integrated omni-

channels and digital shopper tracking solutions. In response to immediate challenges, retailers must be ready for moments of reversal and disruption. This agility will be core to the long-term capabilities they build. In addition, it is yet another incentive for retailers to rethink their physical space and reframe consumer needs (Accenture, 2020). Despite Covid's detrimental harm globally, it has in many ways accelerated retail evolution that aligns with the digital shift at large as briefly discussed earlier. It is foreseeable that retail is sure enough to go through a metamorphosis-like transformation and that in-store shopping will still have an important role in the post-pandemic times. In fact, a study made by Prosper Insights & Analytics in 2020 on US consumers, found that 90% of high earners over $50k reported that they depend on physical stores on being open. Coincidently, reports of shoppers across retail outlets in many countries have recorded an increase of shoppers eager to return to physical stores as Covid restrictions began to lift. In the UK for example, the number of people heading to stores surged to 87.8% in just one week during April 2021 versus the previous week as non-essential stores in the UK reopened after many consecutive months of Covid-19 lockdown. Kantar research forecasts that consumers will spend over 3.9 billion pounds (5.3 billion USD) on retail high street (a metonym for the retail sector) in the first week of reopening (Davey, 2021). Similar reports of Canadian malls found overwhelming long line-ups at their retail venues as large crowds of shoppers' flock to visit malls ahead of lockdown and especially after reopening. In addition, speculation has emerged that as consumers return to shopping at physical retail, the anticipation of online sales and profits will take a downward hit as shopping outlets begin to fully reopen (Robertson, 2021).

Nevertheless, it has now been documented that the Covid-19 pandemic has accelerated the rising trend in online shopping and the need for digitization. However, it seems clear that physical retail serves as an elemental component to a human experience, which indicates that even for online shopping, retailers should also ensure an online customer experience reflective of the physical channel designed for "discovery" rather than purely transactional. Knowing that consumers by and large still want to shop in-store provides forward guidance. Thus, plans for a reset and more foot traffic in stores will most likely be incremental as consumers have been trained to incorporate on-line purchasing into their shopping ecosystem. In summary, as is usual in any period of disruption or unexpected change, the Covid crisis and learnings from it will open new opportunities for business growth for both retailers and manufacturers entirely.

2.1.2 "Retailailization"

According to McGahan (2014, p. 10), radical transformation of an industry is unusual and occurs when "both core activities and core assets are threatened with obsolescence." In other words, there must be new technology, regulatory chances, and changes in consumer tastes or some crisis that forces transformation. For the retailing industry, the crisis may be COVID-19. With that said, the pandemic may serve as a catalyst for change, and this opens the discussion of physical retail subject to its very purpose and relevance. As stated earlier, retailers must rethink their business models,

improve, or implement new technologies, integrated offline to online channels, and a create a "higher engagement" retail experience to succeed. This also includes: the shopper experience, advice, consultation, pleasure, and moving beyond transactions into real relationships - transcending the physical space of brick-and-mortar venues in order to become more relevant than ever before. In high-involvement retail categories, specialty retailers may remain in demand, however differentiation is considered vital in a dynamic and competitive marketplace. Thus, retailers and brands alike must have a strong "reason for being" (Synchrony, 2017). Similarly, Châtel and Hunt (2003) refer to this as part of a "retailization" process by which retail is fighting back against a knowledge-rich consumer who has grown up in an era of mass 'quality' information about the things he or she consumes. "Retailization" is also subject to the impact and effectiveness of the retail environment and architecture, branding, experience, location, money, motion, politics, policy, space, and speed in this entire process, focused primarily on the consumer. Moreover, Châtel and Hunt (2003) argue that as consumers, one way or another, we all shop, whether it is for knowledge, leisure, medicine, or everyday groceries. Many consumers are unashamed shoppers, others pretend it does not happen, however, in reality, it most certainly does (Châtel and Hunt, 2003).
In essence, shopping and the purpose of the retail store is fundamentally the same and will always remain so due to its very human element that it offers. However, it is this very "reason for being" that retailers will need to consider when moving forward into the future - to be more agile, innovative, and experimental - revolutionizing the way retail spaces are planned, built, leased, measured, as well as to analyse the value of the store itself. In addition, as the phenomenon of the digital shift actualizes, the convergence of physical retail formats, digital services, and eCommerce channels will need to become fully integrated for a holistic shopper experience from start to finish. According to Bălăşescu (2013), the aforementioned should become a reality in this day and age, with shoppers experiencing the retailer as a single brand consistently across all touch points, both virtually and in the physical real-world environment. Currently however, there is a "digital divide", presenting two different multichannel shoppers with different shopping expectations which in turn is complex to solve in a single strategy (Bălăşescu, 2013).

2.1.3 The halo effect of retail experience

The importance and relevance of the store venue lies at the heart of the discussion. Stephens (2017) explains that the physical store serves a rich media channel in its own right, where the retailers can make the most of visitors' time and attention that is immersive and engaging. Furthermore, the digital shift has indeed created challenges for retailers to reach consumers in an effective way, mainly due to the cost of advertising increasing exponentially, and clicks online being incremental. However, because people still tend to gather at physical stores and venue places, they are open and receptive to messaging. This enables the store as a viable and productive media channel where the store itself serves as an "elemental" force of existence. Thus, the relevancy of the physical retail stores is salient to not only a holistic retail experience, but to be treated as a value-driven, customer acquisition strategy.

Moreover, while the distinction between channels is increasingly becoming eminent without difference (see chapter 2.4.1), the sales across channels is also strongly correlational where one retail channel format strongly supports the other or vice versa (Stephens, 2017). A recent study by ICSC of over 800 retailers and 4,000 consumers, reported on a trend referred to as "The Halo Effect", indicating that when a retailer opens a new store, on average, that brand's website traffic increases by 37 percent and the overall brand image is enhanced. Conversely, when a retailer closes a store, web traffic declines. It was also found that when shoppers make a $100 purchase online, they are more likely to spend more at the same retailer's physical store within 15 days and vice versa across the channels (ICSC, 2019; see also Verhoef *et al.*, 2015). A similar study was conducted in 2019 indicating that during a typical shopping visit, consumers - both men and women, will typically spend more money when shopping in-store than when they shop online. A survey that targeted a sample group of over 1000 US shoppers concluded that 54 percent of consumers spend upwards of $50 online – however rises to 71 percent when shopping in stores, as well as an indication that impulse purchasing increases when shopping in a physical store (First Insight, 2019).
In accordance with these findings, it could be argued that retailers must work to strike the right balance with consumers who are shopping differently online vs in-store and see their entire retail operations as an ecosystem altogether. Sorensen (2008) claims that the future of retail lies in the idea of what he refers to as 'tailing' - following the convergence of the target customers' online and offline shopping behaviour patterns and designing new retail concepts to mesh better with customers' daily activities and communication channels (Sorensen, 2008). Notwithstanding, the available evidence seems to suggest that physical brick-and-mortar retailers will need to become much more agile, innovative, experimental, and look to digital transformation to transcend both in-store experience and the physical space of the store as an integrated dimension.

2.2 Retailing and the physical environment

This section is concerned with the atmospherics and the relationship between environment and consumer, and the importance of physical retail. Micro and macro retailing is briefly discussed as a starting point to the proceeding sub chapters which then touches upon operant environment-behaviour framework that supports the holistic theme of this thesis. In retail management there are micro and macro factors that are relevant in the success and possible failure of the retail business. In essence a business environment is a marketing term that encompasses the retail environment and refers to the various factors and forces that affect a firm's ability to develop and maintain successful transactions and relationships with its target customers.
According to Bradford and Duncan (2000, p. 1) there are three levels of this environment which are: (1) microenvironment – small forces within the company that affect its ability to serve its customers, (2) internal environment – can be controlled, however, it can not influence an external environment, (3) macro (external) environment – larger

societal forces that affect the microenvironment (Bradford and Duncan, 2000). Duncan (1972) summarises the definition as the "totality of physical and social factors that are taken directly into consideration in the decision-making behaviour of individuals in the organisation" (Duncan, 1972, pp. 313–327). The microenvironment and the macro environment can therefore be distinguished. Furthermore, a simple definition of retailing is the sale of goods and services, in small quantities, directly to consumers. Thus, a retailer is a company or an organization that purchases products from individuals or companies with the intent to resell those goods and services to the ultimate, or final, consumer (Ogden and Ogden, 2005).

In conjunction, shopping is an essential activity and part of retail which can be defined as one who visits places where goods and services are sold, presented by one or more retailers to browse at and buy things (such as food, clothing, etc.). In some contexts, shopping may be considered a leisure activity as well as for economic reasons. Subsequently, there has been significant attention lately on shopping behaviour in academic and practitioner research. According to Ogden (2005), to effectively adapt to environmental change, it is imperative to grasp a basic understanding of the micro and macro retail environment. As such, a general understanding of retailing's internal and external environment and collection of appropriate data on these environments provides useful information as an essential starting point (Ogden and Ogden, 2005).

Retail formats and channels occur in a diverse range of types and in many different contexts - from small pop-up shops, through to large indoor shopping malls, and supermarket chains where fast-moving consumer goods (FMCG), also known as consumer-packaged goods (CPG) are sold. Forms of "traditional" non-shop physical brick-and-mortar retailing, includes online retailing. This type of retail channel is also more commonly referred to as eCommerce, a specialized form of "e-tailing" - the conduct of selling, buying, logistics, or other organization-management activities via the Web" (Schneider, 2002). What is more, is that not long ago, people even doubted the idea of buying online and thought that online shopping would potentially override offline (physical retail) shopping.

Ogden & Ogden (2005) argue that retailing is undergoing a strong focus on omnichannel, which is an integrated approach to multi-channel retailing in which company managers strive to create a consistent and seamless shopping experience for the customer. This approach has also been called unified commerce, which emphasizes the connection of all channels in real time. Multi-channel retailing is selling through several channels to reach customers where they buy (Ogden and Ogden, 2005). In addition, the term click-and-mortar (Wollenburg *et al.*, 2018) has recently emerged that encompasses a type of business model that has both online and offline operations, which include a website and a physical store. A click-and-mortar company can offer customers the benefits of fast online transactions and traditional face-to-face service in the physical retail environment and is thus potentially more competitive than a traditional stand-alone "brick-and-mortar" type of business, which is offline only (Twin, 2021; Wollenburg *et al.*, 2018). See chapter 2.4, "the phygital paradigm".

2.2.1 Physical retail = human experience

Despite a growing influence of eCommerce and digitization in retailing, Hlongwane (2018) among many other scholars, argue that physical retail venues will not disappear because they serve as a critical function to the shopper and fundamental human experience (Hlongwane, 2018). In essence, this is largely since people yearn to explore and discover. Consumers also most often want to try, touch, see, smell, and feel in-person, as well as for immediate and accessible purchases, personal service, and ease of returning goods (Hlongwane, 2018; Baird and Rosenblum, 2018, p. 3). Predominantly, retail is the final commercial link between who people are, and the things they need and want. Retail is also at the cutting edge of social evolution – always has been, and always will be. Taking cue from the theory of Maslow's "hierarchy of [emotional] needs", this thinking extends to the holistic retail environment, retail merchandising, shopping, and the elements that shape the human experience both utilitarian and hedonic fundamental forces (Sorensen, 2010).
It is also argued that retail shopping influences not only utilitarian consumption, but also pleasure expectation from consumption which is usually associated with hedonism in consumption culture. Hedonic goods and experiences are encountered during shopping and owes its capacity to provide hedonic and symbolic utility to consumers (Teo and Sidin, 2014, p. 390). For instance, retail environments have the potential to serve as a pinnacle place for social fabric and drawing community together which in of itself brings forth a human experience that retail embodies, through utilitarian and hedonic factors. In addition, the economic trend of urbanization has also created opportunities for social and commercial "destinations" in which retail venues embody as a fabric for human experience. (Pranay, Breschi, & Devillard, 2017). Trotter (2016) argues that physical retail establishments offer an experience that cannot be easily replicated, and physical spaces cultivate direct, meaningful, and full relationships with customers, and these aspects are crucially important to retailers more than ever before. Going beyond traditional marketing elements such as product, quality, and price, the creation of experience and value provided in physical retail environments generally embellish the following five core elements below according to (Gentile, *et al*., 2007, pp. 395–410):

Emotionally - through mood and feelings.
Sensorially - through touch, sound, sight, taste or smell.
Cognitively - promoting creative thinking and mental processing enabling consumers to break away from conventional assumptions about products and services.
Pragmatically - through promoting usability and human object interaction.
Lifestyle and relationship - through the affirmation of values and self beliefs and connection towards others

As an applied approach, to Stephens (2017), most retailers assume experience by design is primarily an aesthetic concept and how stores and websites look and feel. However, true retail experience to customers means deconstructing the entire customer journey into micro-moments and then reengineering each moment to look, feel and operate differently than before and distinctly from competitors. Related to Gentile *et*

al., (2007) on human experience in retail, Stephens (2017, n.p.) similarly illustrates that great retail experiences have five hallmark traits which retailers and brands can deliver by using the acronym "*super*" as further described as follows:

Surprise - incorporating elements or interactions that are unexpected or out of the ordinary, an element of surprise into the experience that leaves a lasting impression.
Unique – incorporating methods or customs that are unusual or proprietary to the brand but are also natural and authentic. These elements lend the feeling to customers that they have not only entered an appealing store, but a different environment altogether.
Personalized – elements that make the customer feel that the experience was designed for them, e.g., recalling preferences or details from an earlier visit.
Engaging – involving the customer in a visceral way to sense the environment and be an active participant in it.
Repeatable – executing the experience via prescriptive and experimental ways to achieve consistency across the enterprise, along with spontaneity.

Henceforth, when retailers deliver well on these important aspects which are considered elemental to a human experience, physical stores tend to have a higher conversion rate than online (Stephens, 2017). On that note, according to Baird and Rosenblum (2018, p. 3), physical stores are not only vital for a human experience but can also still be much more profitable than online stores as the propensity to buy in-store is typically higher than online. What is more, according to Ebster (2015), up to 80 percent of purchase decisions are also made in the store by consumers. However, this finding does not take online purchase behaviour while in the store into account. This is a rather important statistic considering the amount of marketing spend that is put on advertising outside of the physical store and invested heavily into eCommerce efforts (Ebster & Garaus, 2015). All things considered, there are many players in the retail industry who are still looking to improve and strengthen their physical store presence, and for good reason (Baird and Rosenblum, 2018). Now more than ever before however, the basis of retail competition is shifting from price and product superiority to privileged sophisticated data insights and value driven customer experience (Stephens, 2017). Reaffirming this notion, Guzzi (2010) expresses the following statement:

"*The physical retail environment is still the theatre to stimulate ideas... Shoppers are in constant search of being surprised and delighted. Beyond this, understanding underlying customers' needs has inspired retailers to incorporate new service offerings*" - (Guzzi, 2010, n.p.).

2.2.2 Leveraging the physical space

As retailing becomes more experimental and focuses more on customer experience, leveraging physical space of the retail environment inherently becomes an increas-

ingly important marketing tool and place for examination. It is essentially a living laboratory, rich with opportunity to explore how results are produced, particularly by the complexity of understanding shoppers' changing behaviours (Stratton, Moser, & Wallace, 2011). Retailers have also recognized the importance of the store environment as a tool for market differentiation (Levy and Weitz, 1995) and spend millions each year designing and carefully planning their stores, as well as the aim of creating optimised multi-dimensional formats to enhance the interaction with consumers to improve overall customer experience, store performance, and apply strategic shopper marketing programs. While retailers are primarily driven by their bottom-line goal to generate profit in a competitive marketplace, they also try to collect critical information about target consumers and shopper "profiles", and so the merchandising and interiors of stores are laid out to attract and successfully target these groups.
Luomala (2003) states that understanding and managing the complex relationship between consumers and physical retail environments is one of the essential tasks and challenges of marketing in the retail landscape. In retailing, the provision of services, brands, and products, as well as devoting efforts on studying, curating, and creative effective strategic designed retail environments has become more important than ever before (Luomala, 2003). However, still many retailers do not generally engage in systematic research that enables them to understand the context of the retail environment and determine the appropriate mix of environmental factors or innovative ways that may influence the patronage decision. This also includes how shoppers respond to stimuli offered by the retailer (Baker, *et al*., 1992). On these grounds, the relationship between physical retail environment and consumer is highlighted in this section.

2.2.3 Retail anthropology and experience by design

Tracing back to the year 1920, a renowned psychologist John B. Watson joined the J. Walter Thompson advertising agency. The establishment of a national advertising industry in the 1920s grew as a response to the outgrowth of a system of industrial production that was becoming increasingly geared toward distributing goods on a wide national scale. Because of the colossal growth of products and services, advertisers looked to psychology to advance the marketing process (DiClemente & Hantula, 2003). During Watson's days in advertising, Watson quickly realized "the consumer is to the manufacturer, the department stores and the advertising agencies, what the green frog is to the physiologist" (qtd. in Buckley, p. 137); or, perhaps, "what the pigeon is to another behavioural psychologist", B. F. Skinner. Indeed, Skinner (1953, 1974) saw science as a search for order, relations, and patterns of behaviour in context to the environment in which one is in. Patterns can be analysed by rate, a measurement preference Skinner and Watson both share. Moreover, Watson advocated for psychology as an empirical science and was adamant about the study of observable behaviour. Watson's ability to apply behaviourism and scientific principles to business is also one of the most significant contributions to Organizational Behaviour Management (DiClemente & Hantula, 2003) and extends support to gathered theory throughout this thesis.

Furthermore, "shopper behaviourist" Ken Hughes (2020, pp. 52-58) argues that in today's era of retail management theory, a deep social science of shopper understanding is overlooked. Hughes states that the study of natural sciences help us understand our physical world. The study of formal sciences (mathematics, logic, decision theory) help us understand systems and form definitions. However, it is social sciences (disciplines of psychology, anthropology, behavioural economics, and sociology) that help us understand people, which of course includes shoppers, and adding that "shopping does not live in a vacuum – it is a smaller part of a bigger life" (Hughes, 2020, pp. 52-58). Hughes elaborates as follows: how and where consumers are living their lives (anthropology), what do consumers want from life (sociology), how consumers make decisions (behavioural economics), and how desire is stimulated in a consumer (psychology). Encompassing this, Hughes coined the term "cyber-behavioralism", a relatively new field that is the study of how we live our lives digitally. "Cyber-behavioralism" seeks to explore and how digital has an impact on our real-world expectations, particularly in the retail environment, now of which digital places the shopper at the centre. Because shoppers and consumers interchangeably move between digital and physical contexts, a behavioural science-based approach is the constant that can be used to help drive shopper and retail growth (Hughes, 2020, pp. 52-58).

Notwithstanding, one such example of behavioural economics applied in the retail environment is from researcher Colin Payne (2014) who demonstrated an experiment titled as the 'Yellow Tape Shopping Cart' experiment. He took a simple printed sign and a piece of yellow sticky tape and placed both on every shopping cart in the store. The tape divided the cart at the 20% mark, and the sign read 'Please place your fruit and vegetables in front of this line'. Because when a shopper took a cart, it told them there was a 'dedicated space' for fruit and vegetables, the penetration of the store category increased by 102%. That means that twice as many shoppers bought something from the fruit/vegetable department because their shopping cart told them to (Payne, 2014). The way that store layouts, category placements and planograms are designed and planned also have similar implications.

Paco Underhill (2009) shares important contributions and premise to the appreciation of the complexity of human behaviour in relation to the retail environment relationship. Underhill gained prominence known as the "retail anthropologist" who took concepts from the discipline of environmental psychology and applied it to studying shopper behaviour in physical retail environments. Underhill had discovered some fundamental tenets of shopper behaviour and various problems and opportunities unique to the store environment, revealing that shoppers tend to behave in stores in certain ways. He mapped out the most esoteric patterns of shopping behaviour, e.g.: examining which aisles in a store seem to be the most alluring and convert most; the kinds of atmospheric elements that are most conducive to purchasing; and which gimmicks typically "seduce" shoppers into the most lucrative areas of the store (Osborne, 2002; see also Stratton *et al*., 2011). In conjunction, shopper researcher Scammel-Katz (2013) points out from his research that there is a significant difference between the perception of how we shop and the reality of how we actually shop. Based on qualitative interviews and in-store observations, what shoppers say they do is most often different to what they actually do (Scammell-Katz, 2013, pp. 66-67).

Interestingly, the last couple of decades has witnessed a considerable growth of interest in shopping as a research topic. This has been the case in anthropology (Appadurai 1986) - especially in the context of material culture studies (Miller, 1995) - in certain branches of psychology (Csikszentmihalyi and Rochberg-Halton, 1987; Dittmar, 1992), and in human geography (Gross, 1993; Jackson and Thrift, 1995; Sack, 1992; Zukin, 1991), to mention a few. Even back in 1951, Applebaum (1951) states that studying behaviour in a retail environment is important and typically starts with two key areas of focus, (1) the identification of customers, and (2), their behaviour patterns. Studying these two key components is intrinsically linked, and retailers need to understand and to determine who buys what, where, when, why, and how motivation factors along the way during their shopping trip, as well as to examine customers' responses to various promotional activities and marketing stimuli within the buying environment (Applebaum, 1951). More recently, Underhill's view on studying shoppers in the retail environment is a rather refreshing perspective in a time when there is much emphasis and narrow focus on financial data, profit margins, operational expenditures, or matters of company solvency (Stratton, Moser & Caroline, Wallace, 2011). As Daniels (2009) discusses, managers still often overlook behaviour, much to their detriment. Underhill also argues that many purchase decisions are being made on the sales floor, a finding only privy to those who are observing consumer behaviour rather than spreadsheets. What is more, is that findings from Underhill reveal insights and business performance metrics such as conversion rate (shoppers converted to buyers) and interception rate (sales associate contact with customer), which he argues should be used more frequently. To support these claims, this is discussed further in chapter 2.3. According to Underhill (2009), analysing shopper "flow" patterns of behaviour should be closer examined and that retailers should also carefully construct "twilight zones" (entrance areas that allow for sensory adjustment and physical acclimation of shoppers) and be wary of the "butt brush" factor (shoppers unintentionally bumping into other shoppers or merchandise in a tight spatial layout) to avoid lost sales. Another claim is the 'Invariant Right' rule – when people walk in stores or shopping malls they typically turn or keep to their right and continue to navigate and circumference the store in a counter-clockwise circulation pattern or traffic flow. This is a behavioural pattern has been recognized by many consumer researchers (Underhill, 2009; see also Ebster & Garaus, 2015). Interestingly, data compiled from a study of 200 stores reveals that US shoppers who move anticlockwise spend $2USD more per trip than those who go opposite direction. This is mainly because humans are naturally more inclined to move to the left, as it is easier to reach out with the right arm to grab items in the store when shopping (Lindstrom, 2012, pp. 211-212). Moreover, retailers will typically place "signature items" - the stores most popular items or brands which are often strategically located at the back of the store so that shoppers are pulled all the way through and around to the perimeters of the store and will have to pass by a wide array of goods along the way, which raises likelihood of unplanned purchases and time spent in store. The 'Invariant Right' rule is also known as 'perimeter shopping'. With this understanding, a large portion of profit is strategically made off the distant store sections on the perimeters and retailers try to appeal to shoppers' subconscious to idle in these sections or aisles, thus increasing the exposure to marketing stimuli and raising the purchase likelihood (Ebster & Garaus, 2015).

In addition, the more complex the navigation paths of a store, the slower shoppers will typically walk, which means shoppers are more exposed to marketing stimuli and influenced to buy (Lindstrom, 2012). The use of signage is another relevant factor. From a behavioural perspective, signs are discriminative stimuli that provide information to encourage a desired response by communicating information about an available consequence, such as the "yellow tape shopping cart" example. Underhill also sheds light on how people use signs, what is noticed, what information is needed and when. He effectively describes, in non-behavioural terms, the discriminative stimulus function of 'prompting' in a retail setting (Underhill, 2009; see also chapter 2.2.4 below). In the applied analysis of consumer or shopper behaviour literature, *what* works was well established; *why* it works and *where* it should go appears to be less well developed however (DiClemente & Hantula, 2003).

2.2.4 Atmospherics and environment-behaviour relationship

There has been a well-established stream of research which coincides with managerial interests that focuses on the importance of understanding and creating such effective retail environments to influence patronage. For example, atmospheric models have commonly been used to explain consumers' behavioural responses to retail store environments, as well as online store settings (Baker *et al*., 1992; Donovan *et al*., 1994; Daily, 2004). Prominent scholars such as Philip Kotler (1973) and his seminal work on atmospherics abound with examples surrounding the relationship between the retail environment-consumer buying setting. The word "atmospherics" or "store atmosphere" refers to multiple physical dimensions and environmental cues moderated by complex variables such as visual merchandising, displays and aisle placements, shelf-space positioning, aesthetics, store layout and design, interactivity, personalization and other stimuli. Atmospherics also include environmental cues such as colour, lighting, noise, music, and sound tempo, smell, temperature, crowding, signage, and equipment. All these various components affect shopper mood, motivation, perception, evaluation, interaction, and importantly, human behaviour (Donovan *et al*., 1994).

The aforementioned also includes overarching accounts and definitions from other well acknowledged academics in the literature; Kotler (1973) defined it as 'atmospherics', Baker (1987) as 'physical environment', Turley and Miliman (2000) as 'marketing environment', and Bitner (1992) as 'servicescape'. Along similar lines, the three dimensions discussed by Baker (1987), are consistent with the ones Bitner (1992) uses describing "servicescapes". Bitner's three dimensions are space/function (similar to design); and signs, symbols, and artifacts. Whereas marketing researchers traditionally have approached the design and ambient cues under the umbrella concept of atmospherics such as that of Kotler, however researchers in the field of environmental psychology have distinguished between them for two fundamental reasons. First ambient cues tend to affect nonvisual senses, whereas design cues are more visual in nature. Second, ambient cues tend to be processed at a subconscious level than that of design cues. There is some empirical evidence that design and ambient elements have different effects on consumer responses (Wakefield and Baker 1998). However, while all

these definitions may differ from each other, the general hypothesis on which studies made regarding the relationship between retail store environment and consumer are initially based on the ability of the physical environment to influence shopper behaviour and e.g., how; they are influenced, their perception to stimulus, solve its code and interpret, then make decisions at the end of this process (Engel *et al*., 1978). For example, retailers can make store layout and shelf-facing decisions based on closely exhibiting shopper insights generated from analysis of shoppers' in-store navigation and behavioural patterns (Chandon *et al*., 2009). Nevertheless, these findings also point back to Gentile *et al*., (2007) in chapter 2.2.1 that emphasizes the human experience elements salient to the holistic retail environment-consumer relationship.

Furthermore, psychologists have studied environmental-behaviour relationships resulting in the swiftly growing psychological discipline known as "environmental psychology" (See Donovan and Rossiter 1982; also, Underhill 1990). The discipline has been thoroughly expanded on in marketing literature and attempts to predict the collective effect of stimuli in a particular environment upon peoples' behaviour (Mehrabian, 1976). In a retail environment, this discipline also aligns with consumer psychology and applied behavioural economics, consumer choice architecture and heuristics, particularly focusing on what consumers do in space through time regarding search for, acquisition and use of, and disposition of goods and services (DiClemente & Hantula, 2003). Markin and Narayana (1975) acknowledge that space affects customer behaviour, and that design and atmosphere may be used to shape and modify the behaviour of shoppers (Markin and Narayana, 1975). In addition, time impacts buyer behaviour - the longer a consumer spends in a retail environment, the more likely he or she is likely to spend money (Donovan *et al*., 1994; Wakefield and Baker, 1998). The environment and how consumers interact with stimuli offers clues to enhance the shopping experience to be more value-driven for retailers and consumers. Based on theory from environmental psychology, Mehrabian and Russell (1974) developed a simple model known as the Stimulus-Organism-Response (S-O-R) model that explains how individuals react to a specific environment to formulate a base where shopping pleasure (stimulus) acts on desire to stay (organism) and result in re patronage intention (response). They also propose that individuals' reactions to all environments may be categorized as either approach or avoidance behaviours. Approach behaviours include physically moving toward, exploring, communicating, and performing in an environment, as well as returning to that environment. Avoidance behaviours include a desire to leave, disinterest, lack of interaction, and poor performance in an environment, as well as never returning to that environment (Billings, 1990).

In parallel to Mehrabian and Russell (1974) model, Fogg (2009) states that in recent years the application of behaviour analytic principles on consumer behaviour has been more systematic, as theory undergirding applications, to the point that this area of research is more akin to applied behavioural sciences. However, while principles of behavioural sciences are not new, it concerns itself with the psychology of decision making and that all human choices (none more so than in shopper behaviour) are driven by a compelling benefit (e.g., motivation) and a low barrier to act. Fogg argues that a rich yet practical understanding of human psychology provides insights into

the factors of human behaviour, of which we can directly align with shopper behaviour. Without this understanding, designers of persuasive experiences in the context of a retail environment are mostly guessing at a solution (or imitating techniques that work without understanding why those techniques work). To effectively encode experiences that change shopper behaviours (Fogg, 2009). With similarities to that of the S-O-R model from environmental psychology theory, Fogg's seminal work on persuasive design led to the development of the transferable Fogg Behaviour Model or "FBM" for brevity. The model as illustrated in this chapter (see figure 2 below) helps to identify and define three main factors that control whether a behaviour is performed. (Note: in this paper and in this model, "persuasion" refers to attempts to influence shopper's behaviours, not attitudes.) The FBM model shows that three elements must converge at the same moment for a behaviour (**B**) to occur: Motivation (**M**), Ability (**A**), and a Prompt (**P**), (**B=MAP**).

When applying this model in practice, the advice by Fogg is to start at 'ability'. As such, making the desired shopper behaviour easier to do, or the undesired behaviour harder to do. Moreover, when a behaviour does not occur, at least one of those three mentioned elements is missing (Fogg, 2009). The model is useful to yield recommendations for action needed by retailers and brands alike to address complex challenges in a way that creates value in the retail environment, especially pertaining to strategic shopper marketing. In addition, to better understand why behaviour is not happening, the following questions could be reflected on: (1) is the shopper motivated enough? (2) does the shopper have the capabilities of performing the desired behaviour? (3) Was there some sort of a reminder/ask/cue/nudge to the shopper to perform the desired behaviour? Figure 2 shows a visualization of the FBM model. Also, figure 2 shows the FBM with has two axes. The vertical axis is for motivation. A person who is low on motivation to perform the target behaviour would register low on the vertical axis. High on the axis indicates high motivation. This framework is conceptual therefore no units are on the axis. It is to simply show relationships of the components rather than precise values for each. The second axis is horizontal, as shown in Figure 2. This axis is for ability. A person who has low ability to perform a target behaviour would be marked toward the left side of the axis. The right side is for high ability.

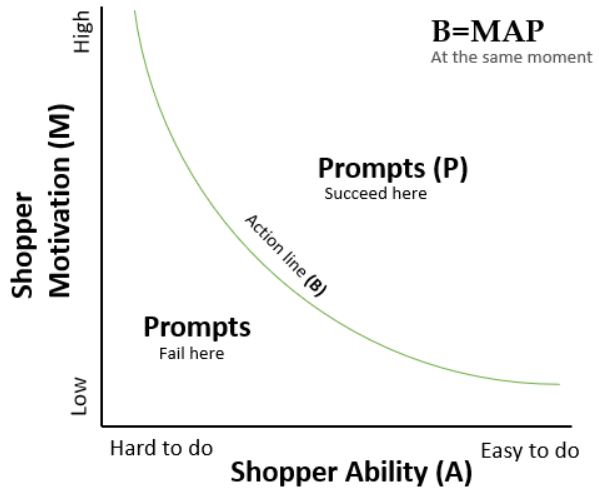


Figure 2. Based on: Fogg Behaviour Model (2009, pp. 1-7).

To elaborate further, Groenewegen, (2018) explains that the Fogg model is very recommendable to use for those involved in human-centred design or persuasive design, or in this case, the retail environment focused on influencing shopper behaviour. To influence or change shopper behaviour (**B**), motivation (**M**), ability (**A**), and prompt (**P**) (or can also be referred to as trigger), should be presented simultaneously. Therefore, **B=MAP** at the same time in order for desired behaviour to occur. As explained earlier, in the retail environment, a prompt translates to a cue or call to action that causes someone to perform a certain behaviour. A prompt should be noticeable and actionable. In other words, a shopper should be able to spot the prompt (could be with one or all the five senses (see Gentile, *et al.*, 2007, chapter 2.2.1), and should know what to do when seeing the prompt. Similarly, Sorensen, (2017) translates this as "putting the product in the path of the shopper" (Sorensen, 2017 p. 39-44). This then follows into Motivation. Motivation is the key concept needed to change attitude, which then leads to behaviour change. Interestingly, according to Groenewegen, (2018), people tend to change their attitudes to be consistent with the behaviour they have performed. In other words, if you can trigger certain behaviour, you can change attitudes. A few constructs related to this can be found from Flow Theory (e.g., shopping motivations) and have been investigated in retail environments, such as in the context of a shopping mall. (Bloch *et al.*, 1994; Ruiz *et al.*, 2004). Moreover, as stated earlier, Fogg recommends starting with making the desired behaviour easier rather than starting at motivation. To perform the desired behaviour, a shopper must have the ability to do so. By focusing on the ability of the target shoppers' behaviour, you increase what's known as "shoppability". Burke and Leykin (2005) explained that in retail, shoppability is the ability of the retail environment to translate consumer demand into purchase with various determinants that encompass atmospheric stimuli, e.g., store layout, navigation, product proliferation and presentation, defining the shopping attitude i.e., intentions for store entry and purchase. Furthermore, in the Fogg model, there are six ability factors that determine the so-called "shoppability": time, money, physical effort, brain cycles ("information load"), social deviance (going against the norm), and non-routine (habitual behaviours). Correspondingly, in consumer psychology, heu-

ristics is considered when easing the cognitive load of choice making in the retail environment which in effect influences shopper behaviour. The distinction between automatic and deliberate, as well as rational and irrational, thought process determines behavioural outcomes. Kahneman (2011) refers to this as system one and system two thinking (Kehneman, 2011; see also Groenewegen, 2018; O'Brian, 2012;).

Interestingly, Sharma, *et al.* (2021) adopted the FBM model in their research on shopper behaviour and persuasive technology used in retail. They argue that this model postulates that persuasive technology automates behaviour. It is particularly useful when applying a technological solution designed to gain clarity on shopper behaviour activity within the catchment of the store, but also to enhance shopping pleasure such as interactive shopping screens and creating social presence through augmented reality, for example. Given the role of technology in this case, retailers need to ensure a smooth shopper journey by improving 'ability' and by providing 'prompts' (or triggers) at the right time in the right place. For instance, providing information about merchandise through digital QR code to improve 'ability' and send automated messages during the weekend can be a 'trigger' to bring motivated customers to visit the store and to the product in the store (Sharma, et. al, 2021). Therefore, technological (and non-technological) triggers should be designed considering time, money, physical efforts, brain cycle, extent of social deviance involved, and should be non routine to make them more effective.

In conclusion, the operant models on environment on behaviour relationship such as the the S-O-R (avoidance and response) model and the Fogg Behaviour Model provide a basic applied framework that can be considered as part of a larger system that helps retailers and brands alike to better understand in-store shopper behaviour and design for behaviour change in the retail environment. Some implications allude to the use of technology to understand and drive shopper behaviour activity in the catchment area of the store or product fixture, such as the example given by Sharma *et al*., (2021), which significantly adheres to developments in shopper marketing and retail activation. Nevertheless, the common theoretical thread tying together all these approaches is an implicit acknowledgement of behaviour–environment relations as an economic system. DiClemente & Hantula (2003) argue that, in operant psychology and behavioural sciences reinforcers are equivalent to commodities in economics, and operant learning is based on the manipulation of operations controlling the organisms' access to reinforcers, or avoidance of aversive stimuli. Therefore, behaviour is the most basic intrinsic currency that is traded with the environment and as such, the cues, costs, and consequences involved may be understood in economic terms as a foundation (DiClemente & Hantula, 2003). By briefly discussing an applied behavioural economic framework, environment-behaviour relationship theory is encapsulated. Many sections within this literature review are based on structural variance which may be bridged in terms of economic functional relations. Therefore, a maturing literature based on systematic theoretical integration unfolds.

2.3 The call for shopper marketing

The adaptation of technological, social, and retail landscape, also driven by economic and global change over the last decade has profoundly altered changes in shoppers' behaviour, in particular the channels and use of tools that enable consumers to e.g., search for product and price information any time, outside or inside the store (Wyner, 2011; Marketing Science Institute, 2010). Other significant changes that effect shoppers' behaviour is the decline of traditional media, brand loyalty and the myriad of ways to interact with customers at the point of purchase (Harris, 2010). Among many other factors that trigger "reinvention" in the retail landscape, some of these changes have initiated a focus on the point of purchase on marketing management (Gilbride *et al*., 2013).

In this changing market environment, it has ultimately raised questions on how to approach customers more effectively. In recent years, many retailers, brands, and manufacturers alike have started to increase their attention and efforts allocated to the practice of shopper marketing (Deloitte Research 2007; Neff 2009a). The shopper marketing approach has emerged as a new way to answer some of those questions and concerns, recognizing the need to include the shopper at all points of the shopping process with elements that might have significant implications.

As such, large firms such as IBM, Microsoft, Unilever, P&G, Nestle, and the Coca-Cola Company, to name a few, have recently built internal units for shopper marketing. A significant factor in the rise of shopper marketing is the availability of high-quality data from which insights may be accumulated to help establish strategic plans. Deloitte for the Grocery Manufacturers Association even claims that "Shopper marketing is a new medium that is as important as the internet, mobile or gaming" (Ståhlberg & Maila, 2012). Shopper marketing is applicable to all retailers, brands, manufacturers, and product categories at large, however, many studies and practice related to shopper marketing has been focused mostly on consumer-packaged goods (CPG) and conducted through targeting portions of marketing investment at specific retailers or retail environments. It is estimated that, spending on shopper marketing that consists of consumer-packaged goods is as high as 60 billion dollars (GMA, 2011). One aspect that is important about shopper marketing is that it is a necessary component of an overall integrated marketing approach. It is recognised that shoppers need to be understood in terms of how well they interpret the needs of the consumer, what their own needs as a shopper are, how and where they are likely to shop, in which stores they can be influenced in, and what in-store activity influences them (Ståhlberg & Maila, 2012, pp. 1-2).

Looking back to 2004, a new model for growth had emerged as product manufacturers and retailers alike identified the need to uniquely influence the shopping experience. The term was then coined as being called shopper marketing (SM) (GMA, 2011). The practice of shopper marketing focuses much on improving the shopping experience for consumers to drive sales, both in-store and online, and enticing last-minute appeals to shoppers at the very moment they are considering buying. Much of these appeals can also be influenced by multiple factors, for example; store atmospherics and behaviour altering influences, as well as examining shopper

behaviour while in shopping mode (O'Donoghue, 2019). In the academic realm, shopper marketing is still young as a concept (Shankar *et al*., 2011), therefore, there are a variation of definitions that have been made found from the literature, including both academic and valid practitioner-related findings. The definitions found are presented in table 1 below and it is noteworthy that the definitions do vary slightly.

Table 1. Shopper marketing definitions. Source: adapted from Shankar et al., (2011, p. 30; see also Tešić, 2017, pp. 307-329).

Authors	Definitions
GMA/Delloitte (2007, p. 8)	The employment of any marketing stimuli, developed based on a deep understanding of shopper behaviour, designed to build brand equity, engage the shopper and lead him/her to make a purchase.
In-Store Marketing Institute (2009, n.p.)	The use of strategic insights into the shopper mindset to drive effective marketing and merchandising activity in a specific store environment.
Retail Commission on Shopper Marketing (2010, p. 7)	The use of insights-driven marketing and merchandising initiatives to satisfy the needs of targeted shoppers, enhance the shopping experience, and improve business results and brand equity for retailers and manufacturers.
Shankar (2011, p. 29)	The planning and execution of all marketing activities that influence a shopper along, and beyond, the entire path-to-purchase, from the point at which the motivation to shop first emerges through to purchase, consumption, repurchase, and recommendation
Anthony (2017, n.p.)	The process of understanding shoppers and using that understanding to develop a marketing mix which influences shopper behaviour in such a way as to positively impact consumption of the brand and or category.

A common premise to these definitions' rests on one of the most fundamental aspects of shopper marketing, which is that of firstly to understand shopping behaviour, secondly to employ shopper marketing decisions. Anthony (2017) states that for businesses that seek future growth, there is a need for shoppers to change behaviour (see Fogg model figure 2, chapter 2.2.4). Both retailers and brands will need new shoppers, or will need existing shoppers to purchase more, and more often. Each of these is a change in shopping behaviour, and thus growth is hindered without these changes. In short, the true value of shopper marketing is evolving from impacts from both changing consumption patterns and shopping behaviour (Anthony, 2017). Moreover,

Shankar (2011) is prominent in the academic literature on shopper marketing and highlights that the closely related definitions that have been made as seen in table 1. These definitions are coherent to each other with a shared view that shoppers have specific needs beyond simply consumption, which represent unique marketing management opportunities. In addition, the interpretation of the definitions mentioned also indicates that the shopper marketing approach does not conflict with traditional marketing, however, originates from traditional marketing where similar principals apply, therefore complimenting each other. In comparison to traditional marketing, shopper marketing uses more strategic and tactical holistic dimensions. Whereas, traditional marketing typically focuses on the consumer and consumption habits, however, does not consider that consumers play a different role when they are in the role as a shopper (e.g., in active purchase decision making mode, prepared to make a choice, or influence of unplanned purchases) whereas shopper marketing aims at consumers when they are in this role.

Additionally, Shankar (2011), states that shopper marketing differs from traditional marketing in three main ways. First, the domain of individual action where traditional marketing is concentrated, including offline activities such as in-store visits and actions which happen inside the store. In contrast, the domain of interest to shopper marketing across various channels such as offline media as well as online media, and facilitating technology, such as mobile channels. Secondly, shopper marketing covers multiple categories rather than only single. Thirdly, traditional marketing efforts are often directed at intermediaries such as wholesalers, manufacturers, and consumers, while shopper marketing focuses efforts on programs specifically on the shopper when they are in shopping mode. The key differences between shopper marketing and traditional is briefly described below and resumed in table 2 below:

- The focus on specific needs and patterns of the shopper by a deeper understanding, assuming that the shopper and consumer are not necessarily the same. Even if they are the same, the shopper is in a different mode while shopping (Pincott, 2010; Sorensen, 2008, 2009).
- A broad scope, including activities which fall under e.g., category management, trade marketing, marketing at retail, merchandising, point-of-purchase (POP) advertising, and in-store presence.

Table 2. Key differences between traditional marketing and shopper marketing. Source: adapted from Shankar et al., (2011, p. 30; see also Tešić, 2017, pp. 307-329).

Dimensions	**Shopper Marketing**	**Traditional Marketing**
Aim	Create awareness and influence behavioural prompts down the path to purchase.	Create awareness and use push and pull strategies

Target	Shopper and shopper-consumer link	Consumer
Mode of individual	Shopper	Consumer
Domain of individual action	Omnichannel and multichannel - across all channels, media, and devices	Primarily offline, typically in-store
Breadth of perspective	Path-to-purchase shopping and holistic view of the shopper	Brand and category
Category focus	Multiple	Single
Promotions	Shopper-directed	Trade and consumer-directed

Furthermore, in general terms it is important to note that the consumer and the shopper are not necessarily the same entity, and a shopper usually browses for goods or items in different media or channels. It is also important to note that a shopper and a consumer differ in that an individual could purchase for consumption by others (e.g., a parent buying for their children, or a pet owner buying for their pet) (Shankar, 2011). Fundamentally, a consumer is the one who uses the product or service in the end, and in general, the mindset of what people also perceive and want in a brand, product, or service. As such, marketers have come to understand that a consumer can be motivated or influenced when they are in the process of shopping, therefore, a shopper is a patron, a segment between a consumer and a customer. A customer on the other hand is a consumer who purchases a product or a service through a financial transaction with direct intent (Applebaum, 1951). Applebaum already in 1951 differentiated this difference with the emphasis between customer and consumer. Nevertheless, an overlapping consensus reveals that the terms consumer, customer, and shopper are intrinsically connected. However, while these terms often get used interchangeably, these three terms are not synonymous to each other and knowing the difference is important to how firms and researchers evaluate certain aspects such as understanding behaviour in the retail environment (Applebaum, 1951). See chapter 2.3.3 for further elaboration.

2.3.1 Path-to-purchase

As discussed in chapter 2.2.4, retailers have claimed positive effects from manipulating the atmospheric store environment to encourage buying, for example, doing so through sensory activation, to strategic arrangements of merchandise, spatial layout, shelf-displays, signage, to ambient conditions and more (Farias, *et al*., 2014). As such, there is truly an art and science to the influence or persuasion on patronage decision making and closing a sale. The journey of doing so is the careful, creative, and science-

driven design that retailers and brands alike call the "path-to-purchase" (POP) to explore the shoppers' experience. This has become imperative to success in shopper marketing and retailing. In addition, in-store or "POP" communications is the aspect of retail communication that comes into play once the customer is within the precincts of the store. It plays a very important role influencing the shopping process, or in other words path-to-purchase. For the retailer, with the decline in sales support personnel at the retail outlet, the POP acts as a surrogate salesperson. Therefore, POP provides the shopper marketer the opportunity to communicate with the shopper before a purchase is made (Sinha & Krishnaswamy, 2010).

In CPG retail for example, determining the path-to-purchase is truly an orchestrated process. In 1949, a typical supermarket carried roughly 3,750 different products. Today however, many supermarket stores carry approximately 45,000 different items (Ebster & Garaus, 2015). The fight for attention is becoming ever more challenging, especially for shopper marketers and CPG brands. Rebuttal to this point, it is no surprise that the large volume of choices available to shoppers can lead to a paralysis-like experience from information overload. Moreover, according to Ebster *et al.*, (2015) the positioning of everything in a store is often carefully planned out and almost every aspect of shopping is researched, tested, and ultimately controlled by the retailers. When it comes to path-to-purchase influencing factors, merchandise, and displays, too, determine what gets noticed or ignored. One common feature used in most supermarkets is the use of end aisle displays, or also known as "endcaps", as they are typically noticed by almost every shopper (Ebster & Garaus, 2015). Endcaps are sold to different manufacturers to display merchandise at the end of store aisles or at certain high-traffic flow locations within the store. These are considered strategic placements as they are prime locations for impulse buying, brand exposure, and usually at forward view eye-level to the shopper, even from afar. Endcap displays are crucial to boost sales on certain items. According to industry statistics, in supermarkets, 'POP' endcap displays typically raise brand sales between 1.2 and 19.6 percent, depending on the product and display type (Ebster & Garaus, 2015).

While there has been a decline in traditional mass marketing tools due to their effectiveness and changing ways of information consumption, more marketing budget has still been going into the store and aggregated in point-of-purchase 'shopper marketing' (Wade, 2014). Generally, the retail market is also typically characterised by an unstable demand for merchandise goods and impulse buying with many decisions which are often made at the POP, or in other words "in the moment" (Christopher and Peck, 1999). Important variables to understand path-to-purchase consist of the following: store wide behaviour (e.g., aisle and store dynamics, navigation patterns, etc.), category behaviour (e.g., shopper insights at the category), and brand level behaviour (e.g., granular insights into product segments) (Sharma, 2017). With this knowledge, retailers can become better at "putting products in the path of the shopper" or in other words "active retailing" (Sorensen, 2010, p. 97-100). Ultimately, converting visitors moving through the retail environment into active shoppers and then shoppers into buyers. These conversions happen during the process of reaching, stopping/holding, and closing, influenced by the POP, as further explained later in chapter 2.3.1.

Shankar (2011) suggests that one approach is to start treating shopper marketing as a media or an independent promotion to measure its effectiveness at the moments of truth during the path to purchase. For instance, in-store end aisle and free-standing displays may generate more gross rating points (GRP) or otherwise referred to as (reach times frequency) than regular aisle displays. According to Shanker, reach can be measured by the percentage of shoppers exposed to the display, frequency to the product, as well the number of store trips and the average time spent on the display by a shopper (Shankar, 2011).

2.3.2 Moments of truth

Retailers and shopper marketers strive to create positive customer-centric outcomes surrounding the 'servicescape' environment, of which is described as 'service encounters', or also commonly referred to as "moments of truth" (Normann, 1984; Edvardsson *et al.*, 2000). The service encounter is a "moment of truth" because the customer experience of the encounter is the main contributor to his or her perception of the entire service image and quality (Bitner, 1990). Sorensen (2010, p. 48) claims that each second a shopper spends in the store is considered as a moment of truth - an opportunity to sell something by the retailer or brand. However, to influence patronage decision making, retailers need to understand not only the 'servicescape' environment, but the shopping process altogether, this includes the shopper journey, point-of-purchase (POP), behaviour in the catchment area and the drivers that lead to "moments of truth ".
According to Sorensen (2010), retail has three fundamental moments of truth which are product discovery, purchase, and reaction; now of which have expanded to four with the disruption of eCommerce and mobile. The advent of this channel has brought two additional moments of truth: "digital exploration", a consumer researching a product during the shopper journey (e.g., omnichannel), and "anticipation," the time in between the online order and when the product is received (e.g., click-and-mortar). Sorensen describes the moments of truth that are applied to in-store shopper behaviour as seen in table 3 below. In particular, table 3 shows the three moments of truth of the shopping process. As indicated, there are parallels between the moments of truth and the concept of exposures, impressions, and sales in advertising, of which can be broken down to metrics that can also be compared to the online world, as well as an applicable marketing and sales conversion funnel (see also chapter 2.5.2). As such, the retail experience is much like an advertising-rich environment regardless of its channel.

Table 3. Three moments of truth: reaching, stopping, closing. Source: adapted from Sorensen, (2010, pp. 48-66).

First moment	Second Moment	Third Moment
Reach	**Stopping/Holding**	**Closing**
Visits	Shops	Purchases
Exposures	Impressions	Sales
Offer	Engagement	Persuasion
Appearance	Attention	Action
Presence	Interaction	Consummation
Place	Time	Money
Navigate	Find	Decide
Location	Scans	Follow Through
Paths and Counts	Observation	Scan data and observation

Reach is the first essential step in the shopping process: when the shopper and the merchandise are in the same place at the same time, thus determined by the surrounding environment e.g., atmospherics, layout, displays, etc which influences behaviour (see also Fogg model, figure 2). Sorensen states that everywhere a shopper turns, there are atmospheric stimuli and commercial messages (e.g., products competing for attention). Sales are preceded with exposures.

Stopping/Holding is the second essential step of the process - translating these many exposures into impressions that lead to arresting the shopper's forward moment through the store as the influence of the environment plays a central role. Sorensen recognises that time spent converts a visit to shop, regardless of the behaviour that occurs. Thus, stopping and holding converts a "visitor" into a "shopper".

Closing is the third part of the process. Sorensen argues that capturing a shopper's time is only effective when it leads to closing power. Thus, the third moment is closing the sale.

Key benefits of shopper marketing

As Shankar (2011) points out, the main goal of shopper marketing is the consideration of the need to understand, activate, and engage with consumers when they are in the role of a shopper. According to Shanker, to be successful in shopper marketing, the

use of processing generated insights that frequently automate the conversion of data into insights and improve shopper marketing activities should be put in place. These activities could be tactical or strategically conducted and include innovative digital activities and solutions, utilization of in-store technology, multichannel and omni-channel marketing, in-store atmospherics and design, in-store merchandising, using behavioural shopper metrics, and firm to manufacturer-retailer collaboration (Shankar, 2011). Shankar describes three key benefits of shopper marketing that encompasses the shopper, retailer, and brand, as seen in table 4 below:

Table 4. Key benefits of Shopper Marketing. Source: adapted from Silveira and Marreiros (2014, p. 94; see also Tešić, 2017, pp. 307-329).

For the shopper:	products, services, shopping experiences and communications more directed and tailored to their needs, and therefore more useful and relevant.
For the retailer:	driving a higher shopper satisfaction with the POP, there is a higher potential for increased loyalty and recommendation, besides increases in sales and improved differentiation. Also, the incorporation of shopper insights into category management enhances assortment and space management and develops deeper relationships with selected producers.
For the producer/brand:	strengthening of brand equity; development of more effective brand activation at a "moment of truth"; identification of key touchpoints and stimulus to more effectively interact with the shopper; increases in loyalty and sales; deeper relationships with retailers.

Key Challenges of Shopper Marketing

The available literature gathered seems to indicate some challenges that shopper marketing does not quite address, however. Specifically, pointing to the lack of measurement, understanding of in-store shopping behaviour activity, along with the technological limitations to support it. Silveira and Marreior's (2014, pp. 93-94) research findings address some of these limitations by highlighting relevant key issues and challenges that should be further examined within the practice of shopper marketing as seen below:

- Lack of information available on in-store shopper behaviour, with the complexity of understanding shoppers, since they are not easily predictable.

- Technical difficulties or limitations and costs in scaling/multiplying shopper insights for different stores.
- Concepts of consumer marketing replicated without adapting them to the mentality and mood of shoppers, making the offers and messages not relevant to shoppers.
- Lack of standards to measure marketing activities at the POP, and traditional valuation metrics applied to shopper marketing activities.
- Difficulty on the retailer-producer alignment on strategy and execution and in finding win-win-win solutions for the retailer, producer and shopper.

As highlighted, some barriers and issues that appear in shopper marketing when attempting to implement activities, is the need for measurement and factual data about the shopper and his/her behaviour (Shankar, 2011). Thus, a key component of the traditional marketing-mix, marketing communications, advertising, and actions that could be influenced by shopper marketing. In addition, many retailers reap the benefits in terms of profits by focusing on rebates, slot fees, promotional initiatives from brands and manufacturers, or even real-estate from sales (Sorensen, 2009). However, this partly explains why many retailers are not aware about actual in-store behaviour of shoppers. This means that most retailers are operating their stores based on reliance of intuitions rather than facts and experimentation. What is proposed is that retailers should be making sound decisions and gathering insight based on data-driven, fact-based analysis with the new technology and solutions that are available (Davenport *et al*., 2011). As such, shopper marketing strategies should be rooted in insights, relevant to how, when, where, and what they shop, especially in the catchment area of the store itself to receive full value.

2.3.3 In-store shopper data & insights

Hughes (2020) states that Shopper Marketing must lean more heavily on in-store behaviour as well as shopper psychology to truly evolve. It is the need to adapt to the changing nature of shoppers based on how they live their lives, how they make decisions, and the influence from digital and mobile commerce. Today shopper marketing strategy and campaigns must have a strong digital element to be relevant (Hughes, 2020). At the same time, the current state of shopper marketing has been increasingly flooded with an overwhelming number of new marketing vehicles available to firms, largely because shoppers today are faced with the propensity of immense choices that are available, driven by a channel blur from omnichannel factors. What's more, is that a collision of multiple trends has consolidated power in the hands of shoppers instead of solely in the hands of retailers or brands. In turn, this has become a significant challenge for firms and has led many retailers and brands to seek out new tools and digital avenues to home in on shifting shopper preferences to compete in this new challenging and dynamic retail landscape (Sharma, 2020).
The centrality of this issue however is that the model of how shopper marketing works is still more or less a "black box" (Shankar, 2011). While many scholars are increasingly investigating and conducting shopper research, Sharma (2011) calls for more ef-

fective ways to study shoppers in their 'natural environment' compared to 'lab' settings. However, academic research on shopper marketing and in-store shopper behaviour literature is rather limited since most studies are conducted by firms for their own purpose. Thus, creating constraints. As rebuttal to this point, experiments on in-store shoppers behaviour conducted in collaboration with retailers and/or manufacturers in "real" store settings are less common than rigorous laboratory experiments. Furthermore, Sigurdsson, *et al*., (2016) argue that one of the main aspects of shopper marketing strategy fundamentally involves the marketing mix which is made up of elements such as product, price, place, promotion, and stimuli that can influence consumer choice. The function of these marketing elements is dependent on consumers' environment and experienced consequences.

Meanwhile, a general definition of in-store behaviour can be defined as anything that a consumer does in a store, involving action and response to in-store stimuli. However, the process of the analysing in-store shopper behaviour is not well understood (Sigurdsson, *et al.,* 2016; Larsen, 2017). Davenport *et al*. (2011) suggests retailers to consider all offers (e.g., in-store promotions etc) as a kind of "experiment" or "test", and with it, to collect and use "shopper data" as a sophisticated way to determine the effectiveness of various promotional efforts on in-store shopper behaviour. "Shopper data" also referred to as "shopper insights", is a form of data or insight that can be put into action and decision making of consumers with the propensity to buy products. Shopper data can be applied to improve equity, sales and profitability of a brand, category, or store through shopper-centric changes to the retail environment and its stimuli or messaging. In addition, shopper data can help to explain the motivations, uncover the meaning, and decode the elements of shopper behaviour. Importantly, shopper data and insights can explain what is *not* happening as well as what is happening. Therefore, shopper data is extremely valuable for retailers and shopper marketers to make smart decisions (Explorer Research, 2021).

By relating back to chapter 2.2.2, Larsen, *et al*., (2017) also state that one who studies shopping behaviour needs to gather empirical data at the point of purchase, measuring the true behaviour of interest, and needs to work on transforming the store into a 'live' laboratory, as it serves as a primary place for examination (Larsen, *et al*., 2017). Shankar *et al*. (2011) claim that controlled experiments are indeed needed to test the effectiveness of different aisle placement, shelf positions, and store layout, as well to understand the usage situation and effectiveness of new technologies and in-store promotional instruments (such as digital in-store displays, shopping carts, or mobile and smartphone driven fixtures, etc). Furthermore, as previously highlighted earlier in this chapter, a consumer and a shopper are not necessarily the same entity. Because of this, it is worth pointing out that there is also a difference between consumer insights and shopper insights, which overlap to some extent. While consumer insights have been used for decades by predominantly CPG brand manufacturers, shopper insights focus on a specific segment of the consumer journey – the path-to-purchase and the purchase process (see chapter 2.3.1). Since the consumer and the shopper can be the same person, it is helpful to conduct shopper research through in-store analytics to examine consumer and shopper insights separately. In-store analytics is further explored in chapter 2.5. In shopper marketing, shopper insights are a great way to get context and

gather an accurate indication on real buying behaviour from within the retail environment. Figure 3 below differentiates consumer insights compared to shopper insights.

Figure 3. Consumer insight vs shopper insight. Source: adopted from Explorer Research, 2020, n.p.)

Notwithstanding however, the centrality of the issue remains. To elaborate, over the past decade or more, there has been immense growth in recognition of the value of transaction data associated with specific shoppers through shopper loyalty card programs (Sorensen, 2010). By contrast, there are many ways to learn about customers and their consumer habits, loyalty, preferences, and inclination to buy. As such, sales data, buyer data, and consumer (e.g., loyalty card) data are commonly used and provide a lot of valuable information to retailers and brand manufacturers. In addition, departments responsible for shopper marketing will typically make decisions based on consumer insights in addition to sales data, however, shopper marketing teams will need to increasingly incorporate both more advanced qualitative and quantitative insights (Shankar, *et al.*, 2011, p. 30). Relying on consumer and transactional data, and among other measures such as customer satisfaction, are output measures, and they do not provide enough information about the process that customers use to shop in-store, as well as measuring the impact of shopper marketing variables (Sorensen, 2009).

Because consumer and transactional data is typically restricted to product categories and often to one retailer, this data is collected in the retailers' database, however, only represents a part of the whole picture of what goes on in-store and at the point of purchase. For those reasons, transactional data such as buyer and sales data will not give a full 360-degree view of the shopper or the store-wide environment to behaviour relationships for that matter (Shankar *et al.*, 2011). Nevertheless, organizations are starting to see the potential benefits for moving to a shopper-ceentered decision-making process. The major hurdle of the problem however lies in the fact that many organizations still do not have access to the right resources and types of data to accurately measure shopper in-store behaviour, and this behaviour is critical to understanding shopper decision-making at the 'moments of truth' where shopper marketing efforts are made (Shankar, 2022). This will demand for more effective ways to study shoppers in their "natural habitats" compared to lagging metrics and older data

collection methods or tools that have been previously used, often of which reference is made after when the behaviour has occurred (Shankar, 2011).
Sharma (2020) referred to the missing piece of vital information as "filling the in-store information gap" by discovering and merging "shopper data", otherwise referred as "in-store data". Much to the alignment and interest of shopper marketing, this is a relatively new source of data powered by advances in technology and shopper science. It is the data on how shoppers navigate the store, how they engage with different elements of the store, how they shop at the shelf and what factors impact their purchase decisions. Shopper data also helps to strengthen overall physical retail in an omnichannel world and the component that focuses on activity of shoppers in the store to gather insights about their behaviour and how they use the shopping environment. Moreover, technology can capture in-store behaviour data at scale, while shopper science helps in organizing and interpreting the resulting behaviour data in the context of store elements. An example of this is measuring conversion metrics (exposure, engagement and closure rates – see table 3 "moments of truth") along the path-to-purchase for each display or product category in the store. In-store behaviour data can also uncover shoppers' decision process for each category as well as quantifying a category's "shoppability", as referred to earlier in chapter 2.2.4.
These metrics and insights derived from in-store behaviour data fill a critical gap in the understanding of shopper trends, complementing insights from sales and survey data. They fundamentally provide valuable data about shoppers—not just buyers—verifying where and how purchase decisions are made. As such, further clarifying e.g., when, what, where, why, who, and how shopper behaviour occurs. Thus, placing shoppers at the centre of shopper marketing. Figure 4 and figure 5 below distinguish the dimensions of data tied directly to the buyer, consumer, and the shopper. Figure 4 depicts the data types while figure 5 depicts a key gap in the data where shopper data fills this gap, complimenting consumer and buyer data bridged through in store behaviour analytics. As seen in figure 4, each three dimensions of data for capturing shopper trends and behaviour are complimentary data sets. Below briefly explains each as follows:

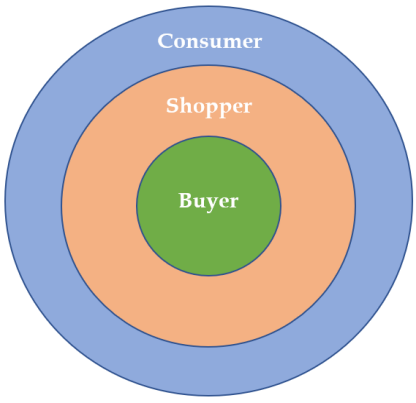


Figure 4. Three Dimensions of data for capturing shopping trends (Source: adopted from Sharma, 2020, n.p.).

Consumer data: data that provides insights on those who perceive or use the products. Typically, consumer data is gathered through a variety of survey methods – online panels, crowdsourcing, etc. Collecting this type of data is beneficial to help understand potential "demand", such as consumer opinions and preferences. It does not however address how the shoppers make the purchase decisions in-store.

Buyer data: data that typically uses loyalty card tracking or point-of-sale (POS) to understand the buying patterns of consumers who shop at the store. This type of data however does not address the actual shopping process.

Shopper data: Data that measures the in-store activities of shoppers, regardless of whether they end up purchasing a product or if they are the end-user of a product. This type of data is distinct from the consumer or buyer data due to its focus on the in-store shopping process.

As previously explained, there are many sources of insights from purchase data and consumer research data, however, there is a critical gap in data and insights. In correlation to figure 4, shopper data fills the gap the gap between consumer and buyer data and provides deeper insights into in-store behaviour path-to-purchase information. Figure 5 below depicts this gap in the data.

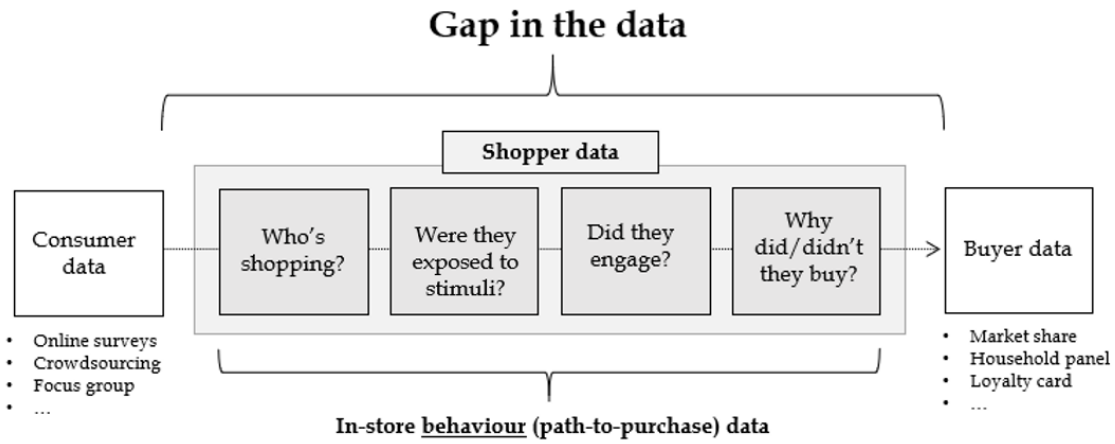


Figure 5. The in-store information gap. Source: adapted from Sharma (2020, n.p.).

Who's shopping?: those with propensity to shop and buy. This is reflective in loyalty and consumer preference data. However, the one with the propensity to shop and buy is separate from the one who is the end consumer.

Were they exposed to stimuli?: related to traditional in-store marketing and media and encompassing the entire store, this covers e.g., if they were exposed to a particular marketing stimulus, an in-store display, signage, as well as where people move, aisle or store navigation and traffic patterns. This is another level of measurement which maps to the path-to-purchase funnel.

Did they engage?: synonymous to the act of shopping, e.g., a shopper may transition from walking by an aisle; if the shopper was exposed to a particular display, did they stop to engage with it, view a product, compare, and how long did they engage, did the engagement lead to something, etc.

Why did/did they not buy?: the shopper reaches the last stage of the path-to-purchase funnel where it can be determined who did or did not buy. From in-store behaviour data, there is a much clearer picture of why the shopper did or did not buy.

2.3.4 Capturing in-store data

In alignment to chapter 2.3.3, there are many ways to collect the data needed to analyse shopper behaviour, some of which have been explained. The questionnaire method is the most used data collection methods among other traditional methods such as observation, interview, survey, shopper follow-along and intercepts. The data is often collected to compare visitors' expectations and motivations before they visit the store, experiences of interactions, during the shopping visit, and recall information and contributions of what they discovered after the visit. In addition, retail operators can also directly observe the behaviour of their customers in the store, particularly if they need to gather more information about shoppers' activity and occupancy volume to employ staff designated to their sales floor area (Merad *et al.*, 2016). However, Deighton, Rizley, and Keane (2012) state that existing methods, such as observations through follow shoppers as they shop in-store or conducting in-store research through long-form surveys, are hardly consistent with today's modes of communication; the authors call for research that tests new models involving processes that precede and follow transactions, and that can measure marketing actions and contextual factors that drive transactions, therefore encompassing in-store data. Behaviour-oriented research that involves manipulation (Wertenbroch 2016), explores "human behaviour in the marketplace" (Wertenbroch, 2015, p. 1), and measures "actual behaviour" (Grewal & Levy, 2007, p. 450) represents a new avenue for further research in shopper behaviour analytics. In line with this, many traditional methods for data collection indeed have a disadvantage, mainly because real-time activities are not entered, and the analysed data deviates from the actual results. (Dogan and Öztaysi, 2018).
Traditional analysis of shopping behaviour in retail environments such as shopping malls has been thoroughly developed for decades (e.g., based on manual videotape analysis, journal logging and recorded in writing, manual people counting, using test subjects and discreetly following shoppers to study their behaviour, blueprinting, and using eye tracking, to name a few). Taking the middle ground position, these approaches for capturing in-store data is partially the reasons why the model of how

shopper marketing works is still more or less a "black box" due to lacking methodologies, digital tools, and metrics to collect and streamline shopper data in a much more modern, efficient, and effective way.
However, new technologies are creating new opportunities to study shopper behaviour that make it possible to track, measure and report shopping behaviour in sophisticated ways that were otherwise not possible before or rather difficult to do. The value of advancing technology lies in its ability to constantly interlink and deliver more accurate data in nondisruptive ways in terms of how shoppers behave in the physical retail environment and how they react to various marketing stimuli (Larsen *et al.,* 2017). At the same time, technology also poses great challenges that affect or alter environment-consumer relationship, shifting shopper behaviours, and changing the retail landscape at large. Nevertheless, it is safe to conclude that the world is experiencing a new emphasis on "behavioural marketing" through digital technology, and proliferation of behavioural shopper data. The era of digital has increased, and should continue to do so, thereby strengthening shopper marketing and explanations relying on environment–behaviour interaction via digital technology and experimentation (Larsen, *et al*. 2017). This chapter section will be revisited and continued in chapter 2.5 to discuss the advances of in-store behaviour analytics.

2.4 The "phygital" paradigm

As emphasised in chapter 2.2.1, the physical retail environment is salient to a holistic dimension of consumer immersion and human experience. Retailers that use their physical stores not to simply sell products but to also sell experiences that involve the product, will be the new experiential merchants, enabling the physical store to become the most powerful and measurable media channel available to a brand, and the customer experiences that take place there will be the most profitable product a retailer can sell. By shifting the focus of placing shoppers at the centre of shopper marketing, the shift in experimental retailing will morph along with it. And because of the increasingly dominant force of eCommerce, this also indicates the opportunity to reinvent the physical retail store space, as well as redefine position, strategy and operating model to succeed in this era of digital disruption and transformation.
Moreover, a shift in consumer behaviour, specifically the way individuals' shop, is heavily influenced by mobile smartphone ubiquity. This goes to say that shoppers are interacting with an increased number of touchpoints as they search, buy, and get support while they interchangeably move between digital and physical contexts. Now, the power and forces of change are in the hands of the shoppers themselves, making it ever more difficult for retailers to control the shopping experience. At the same time, this phenomenon amplifies a new paradigm shift that changes the opportunities to understand, track, measure, and optimize the relationship between environment and consumer, both physically and virtually. This is where a strong disparity between

online and offline worlds emerge and convergence of physical and digital retail experiences continues to evolve rapidly - diverging physical into "phygital" (physical+digital) and is considered as a complete form of "omnichannel" retail.

2.4.1 Omnichannel: from blurring into blending

"The future of shopping is hybrid: blended, blurred, fluid, agile. The customer is the channel. Silos belong on farms." (Steve Dennis, 2021, n.p.)

Brick-and-mortar and e-commerce retail is often discussed as if they were two distinct concepts, and the demarcation has been blurred for years. However, for shoppers, what bonds the two is the ubiquitous use of mobile smartphone devices (Cognizant, 2018, p. 20). In retail, a shoppers' use of mobile, which typically refers to a mobile device, medium, technology, or channel, is growing at a tremendous rate (Shankar, *et al.,* 2016). This contraction indeed points back to the era of mobile internet and early smartphone adoption, which are inherently special tools, in terms of so-called ubiquitous technologies (Okazaki and Mendez 2013) that allow for nearly anytime, anywhere, any device, any content (Belghiti, 2017).

Many practitioners will refer to consumers who use their mobile devices within the physical retailing environment as "mobile assisted shoppers", "smartphone shoppers" or define it generally as 'omnichannel' shopping (Ortis, 2010, p. 1). One reason being that consumers go in and out of online and offline channels while in the retail environment. To refer to these new experiences, the term omnichannel retailing is used (Brynjolfsson *et al*. 2013; Verhoef *et al*. 2015). Omnichannel can be defined as "an integrated sales experience that melds the advantages of physical stores with the information-rich experience of online shopping" (Rigby, 2011, p. 67). Belghiti (2017) provides a more descriptive term as the designation of the consumer's free circulation between different physical channels (point of sale) and digital channels (SMS, push notifications, websites, social networks, etc.) somewhat controlled to a greater or lesser extent by the retailer or brand (Belghiti, 2017). Furthermore, Chen & Mersereau (2013, p. 3) state that a significant challenge in modern in-store retailing with omnichannel behaviour, is learning how to best compete with, complement, and learn from the e-commerce world. To correlate to that, Aubrey & Judge (2012, p. 31) also argue that "a huge opportunity is realised for brands and retailers to reinvent the physical store so that it actively drives growth". Rather than viewing eCommerce as a major threat to offline physical retail channels, there can be significant opportunity to develop online operations that cooperate and support the physical channel, as part of an integrated seamless "omnichannel ecosystem" (Aubrey & Judge, 2012, p. 31). In an ever-emerging hyper-connected world in which people and things are becoming increasingly linked together, consumers are better informed than ever before, and are able to move effortlessly between channels as they decide what to buy, and who to buy from. The outdated confines within the retail sector are being blurred: offline and online are merging and the shopper is becoming increasingly empowered through omni-channel interactions. Henceforth, retailers must ensure that all their operations and channels are connected so that the customer receives seamless experience which lives up to

their expectations, and at the same time bringing forth new ways to understand them at the right time and at the right place. This is what underpins a genuinely omni-channel approach (Concordel *et al*., 2016)

"Online retailing was called 'e-commerce' from the start. The important word is 'commerce'" – (Concordel, 2016, p. 8)

2.4.2 Mobile assisted shoppers

In essence, there is a long history of retailers and brand suppliers wanting to communicate with shoppers while they are shopping in brick-and-mortar stores. As such, retailers placed fixed advertising and communications around the store that were contextually sensitive - placing coupons on or near the product, or near a logically related product, for example. However, the true goal has long been to communicate with shoppers in a particular location and change the message dynamically as the shopper moves through the store. A location hypothesis formed by Sorensen (2010) found that 85 percent of shoppers' behaviour is controlled by the geographic location of the shopper in the store, and only 15 percent of behaviour is controlled by the product interactions. In addition, most shoppers regularly report that they shop "most of the store" on each shopping trip, when less than 2 percent shop as much as three-fourths of the store (Sorensen, 2010, pp. 80-87). While there is an interplay between location and product, mobile is also changing the way shoppers behave in-store and interact with products. This indicates that push and pull factors (Brocato, 2010) come into play to better influence in-store behaviour and communicate with shoppers in the catchment area. Scammell-Katz (2012) anticipates that retailers and brands will connect with consumers on a more contextual level where offers will be sent to the shopper's phone as they approach relevant points of interest in the retail environment, such as a product category of a store. As data from loyalty cards or programmes migrate onto consumers' phones, retailers will know the brand that each shopper normally buys. In turn, each shopper will potentially receive a customized offer sent directly from the brand to their phone as they approach the fixture, regardless which retailer they are in. (Scammell-Katz, 2012, p. 176).

While the use of mobile in marketing practice is growing dramatically, the intersection of mobile marketing and shopper marketing, known as mobile shopper marketing, is a rapidly evolving area (Shankar *et al*., 2016). Shankar *et al*., (2016) formally define mobile shopper marketing as the planning and execution of mobile-based marketing activities that influence shopper behaviour along and beyond the path-to-purchase: from a shopping prompt or trigger, to purchase, consumption, repurchase, and recommendation stages (Shankar, Kleijnen, Ramanathan, Rizley, Holland, & Morrissey, 2016). Thus far, academic research as cited by Shankar *et al.,* (2016), has focused on issues such as the scope of mobile marketing (Shankar and Balasubramanian 2009), mobile browsing experience (Adipat, Zhang, and Zhou 2011), applications to retailing (Shankar *et al*. 2010), mobile shopping carts (Van Ittersum *et al*. 2013), mobile advertising and promotions (Andrews *et al*. 2015; Bart, Stephen, and Sarvary 2014; Fong, Fang, and Luo 2015), and mobile shopping (Wang, Malthouse, and Krishnamurthi

2015). Shankar *et al.*, (2016) state that not only does mobile influence shopper behaviour, but it also changes the way consumers view shopping goals because it can be used to contextually prime other goals while in shopping mode, causing a dynamic shift in goal pursuit. For instance, the ubiquity of contextual mobile coupons and offers when shoppers are in or near a store could lead to deal-prone shoppers to become more predisposed to such intervention. Contextual offers trigger shopper motivation to shop (see also 2 chapter 2.2.4) because their serendipity and unexpectedness creates a positive effect (Heilman, Nakamoto, and Rao 2002; Walker Naylor, Raghunathan, and Ramanathan 2006). Significantly, mobile also offers marketers the opportunity to track such predispositions dynamically, make relevant offers, and trigger purchases.

2.4.3 Showrooming

Furthermore, a survey back in 2013 conducted by the Google Shopper Marketing Agency Council found that 84% of all shoppers are using their mobile devices to help them shop or browse while inside the store. Some of the uses for "pre-shopping" on smartphones include for example: research and compare prices, finding promotional offers, benchmark products, check reviews, or to browse the internet in real-time (Google M/A/R/C Study, 2013). Consequently however, the shoppers use of mobile while in-store has also led to a common shopping behavioural phenomenon known in the retail industry as "showrooming" - because physical brick and mortar stores act as a showroom for customers to browse, discover, touch, and inspect products - resulting in purchases being made online for possible reasons such as cost-saving, convenience, and more choice availability from product specifications (Flaherty, 2018). In contrast, "webrooming" (opposite of showrooming), is where consumers may also start their shopping journey online, browsing, collecting information to direct them to local stores and ensure their in-store experience goes smoothly (Salazar, 2018). According to studies made by Cognizant, more than 60% of retail sales start from online and then finish in-store (Cognizant, 2018, p. 20). Concerns about showrooming were further inflamed by the rise of web-enabled mobile devices, however the phenomenon is an outcome of the evolving omni-channel retail environment (Yurova *et al.*, 2017) and assumes high relevance due to the negative impact of the phenomenon on the profitability of the brick-and-mortar stores (Mehra *et al.*, 2013; Bhattacharjya *et al.*, 2016), as well as changing behavioural characteristics between consumer-environment relationships and path-to-purchase complexity.
On the contrary, Chatterjee (2017) argue that showrooming can still be an opportunity for retailers who adapt to become more omni-channel centric. A study made on in-store mobile use examined 3,000 consumers in three markets (US, UK, Canada) to shed light on how consumers are actually using their mobile devices in-store. The study found that over 50% of mobile assisted shoppers ("m-shoppers") are more likely to purchase a product in-store when their mobile device helps them get online reviews, information, or trusted advice. The same report found that over 55% are willing to sign up for a store loyalty program to gain benefits on their smartphone while in-store, and roughly one-third of all consumers of the study scan QR or UPC codes to directly

get product information. In addition, when 'm-shoppers' decide *not* to showroom, the study found that shoppers are primarily motivated by timing and convenience. The most important take-away from this research is that shoppers are simply using a tool at their disposal to navigate their shopping experience. The rise of smartphones poses new challenges for brick-and-mortar retailers, but it does not necessarily elevate showrooming into an insurmountable threat. According to Quint *et al.*, (2013), the greater threat for retailers may well be the growing adoption of mobile device use at home, in which browsing for goods and daily deals potentially takes the retail environment entirely out of the equation. It is expected that retailers will embrace the innovation that is made possible by integrating mobile technology and the in-store experience (Quint, Rogers, and Furguson, 2013).

2.4.4 Physico-digital hybridization

The paradigm of marketing and retailing research has been complexed by evolving consumers and changing shopping behaviours driven by the ubiquitous ability to connect in and out of physical and digital contexts. Mobile is evidently the link between channels that act as an extension of the user, however, mobile smartphones also create a gateway to better understand these contexts. By broad definition, mobile encompasses several aspects including device, technology medium, and channel. Device refers to the equipment such as a smartphone, tablet, smartwatch or wearable. Medium refers to the means of communication such as app, email, social media, SMS-text messaging, as well as digital signage and print. Technology refers to the hardware and software behind communication, such as wireless broadband or web-based platforms. Channel refers to the mode of transaction such as mobile phone, desktop, and physical store (Shankar, Kleijnen, Ramanathan, Rizley, Holland, &; Morrissey, 2016). With regard to devices, mobile is a connected device that can be used in motion and helps users perform multiple activities with them, such as making decisions on the move and using the mobile devices to search for relevant information. From a technology perspective, mobile enables contextually relevant information to the user (e.g., date, weather, notifications, location, speed of travel, and more). As for medium, firms can (with certain unobtrusive access) use mobile to view and track shoppers through passive signals obtained from shoppers' device and manage customer relationships through consent. From a channel viewpoint, mobile enables access to shoppers' transaction data to firms, being able to analyse and predict shoppers' needs, wants, and behavioural patterns. Furthermore, it is fair to say that the multi-channel logic is now giving way to an omnichannel one (Rigby, 2011), this starts to shift many retailers into a new form of omnichannel: "phygital" (physical+digital), otherwise known as "physico-digital" or "connected" store (Belghiti *et al.*, 2017; see also Lengsfeld, 2018).
Belghiti *et al.*, (2017) states that one of the solutions by companies to accompany consumers'and firms is the numerous physico-digital hybridizations is to proceed with hybridization while in the retail environment, particularly in their points of sale. Henceforth, the concept of the "phygital" paradigm prevails. The rather novel term "phygital" was first invented in 2013 by an Australian marketing agency, Momentum, contracting "physical" and "digital" environments (Belghiti, *et al.*, 2017), and

by taking the best aspects from each space to create a much more complete, satisfying, and immersive customer experience combined with unique aspects of browsing or shopping in a real-world brick-and-mortar store (Csainz, 2020; Sitel, 2020). Moreover, according to Belghiti (2017), the term is mostly used in retailing, surrounding the topic of in-store experience: the aim of digitizing the store, for example, incorporating a website, web applications, social media, and synergizing other online and digital components to the physical store utilizing various technology. This new paradigm for marketing and retailing highlights the phygital solution as a new way to provide value to the in-store buying experience and connect the fragmented omnichannel behaviour of shoppers. Similarly, the phygital experience is a closely related form of omnichannel shopping, however with the specific emphasis on its occurrence within the physical store setting itself, focused on both physical features and digital features (Belghiti, *et al*., 2017). Belghiti, *et al*. (2017) also argue that phygital retailing is the most complete form of an omnichannel experience, particularly in terms of distribution offers, due to a hybrid of physical and digital in a spatio-temporal context at the point of sale (Belghiti, *et al*., 2017). Furthermore, literature on both omnichannel and multichannel retailing, the temporal aspect seems to be a critical dimension, focusing on the desire to manage or even "manipulate" time spent in the retail setting (Balasubramanian *et al*. 2005; Ansari *et al*. 2008; Neslin *et al*. 2006, 2014; Gensler *et al.,* 2012). Findings shed light on applying technologies in the physical space and their appropriation by shoppers, as well as product merchandising which initiates further developments to the field of shopper marketing.

Interestingly, Stephens, (2020), predicts that IoT, sensor-driven replenishment, predictive analytics technology, subscription programmes, immersive digital shopping experiences, along with a myriad of other connection shopping options will effectively proliferate a not-so-distant future catering to the modern consumer needs, and ultimately changing the experience that is influenced by the physical retail environment. Notwithstanding, Stephens argues that the purpose of a retail store is fundamentally the same and will always remain so, however the most important aspect of the physical retail space of the future will be the experience it offers to shoppers and the way we understand shoppers in the context of the environment they are in. The successful retailers of the future will be the ones who will design, execute, and measure the experiences of shoppers in the retail environment, pivoting from product distribution toward the delivery of a physical media experience. In turn, changing the way stores are conceived and used (Stephens, 2020). 'Phygital' represents a fundamental shift from the way retailers and manufacturers think about retailing and how they can gather shopper data and insights in relation to the environment to consumer relationship. On that note, retail firms that understand what goes on inside the store can use unique insights to increase their sales significantly. However, this is a strategy that requires a lot of detailed knowledge and insight of shoppers based on various ways by tracking shoppers, through physical space and time, and channels used.

2.4.5 'SMACIT'

Ross, (2014) explains that retailers that aim for their physical stores to become more digitized and omnichannel-centric can use a "SMACIT" (Social, Mobile, Analytics, Cloud, and Internet of Things) strategy. As digital transformation occurs throughout the retail industry, the SMACIT strategy is beginning to gain traction (Ross, 2014). Companies that have been using this strategy, especially with the focus on mobile in shopper marketing have experienced positive results (Shankar *et al.*, 2016). One fundamental component of the SMACIT strategy is the pairing of mobile devices with the accelerated adoption of the Internet of Things (IoT). IoT refers to the networked interconnection of everyday objects and devices, which are often equipped with ubiquitous intelligence to communicate with humans. The networking capability of IoT allows for large volumes of data and information to be sent and received for example, from a shopper's mobile phones and in-store display fixtures, etc (Leung, *et al.*, 2012). Gartner estimates that there will be over 20 billion devices connected in the "Internet of Things" by 2020 (Gartner, 2017). This means that developments are already underway to deliver a fuller phygital connected store experience with gains in productivity, efficiency, and shopper insights and customer satisfaction to name a few. Data produced by IoT will also provide insights on customer buying behaviour, which will enable opportunity for integrated omnichannel experiments. Importantly however, data provided by IoT will enable causal inference for shopper marketing and communication efforts, such as the adequacy of personalization via targeted email, mobile couponing, contextual advertising, location-based proximity marketing, location-based tracking, and much more (Anderson and Simester, 2003). This can be done given that almost all mobile smartphones nowadays include built-in sensors, and IoT devices such as wireless beacon sensors can be equipped across multiple store touch points e.g.: shelves, end-aisle displays, as well as the ceilings of the venue, that can interact passively with shoppers' smartphones and can deliver contextually relevant information (Ross, 2014). What's more is that mobile and IoT can help track shoppers' footpath within the the premise of the store (or other retail venue e.g., shopping mall, etc.) which can provide retailers with granular in-store data such as what products or sections of the store drive higher shopper traffic, and if those sections convert to higher sales. (Ross, 2014; Pepes, 2017).

"SMACIT" technologies combined have the potential to exploit the vast flows of information in a five-dimensional space: across customers, products, time, geo-spatial location, and channel. Today, these advanced technologies such as IoT can be used to produce Big Data and provide granular tracking enabling firms to move from aggregate data analysis which dominated marketing attribution and effectiveness studies when data was limited on customers or shoppers (Bradlow, *et al.*, 2017). Therefore, if retailers could, for example, cross-reference transactions with footfall traffic and customer demographic data, they could not only gather information on who bought what on any given day, but how also patterns of product sales which correlate to when and why different customer groups come into the store. Furthermore, this would be of special interest for retailers and brand owners. Piecing together correlational data such as, (by season, by month, by week, day-by-day), even in real-time on who is visiting the physical store, could help interpret what shoppers' motivations were and what

they are most likely to buy. With granular data insights into the relationship between shopper, store category, time, place, and geo-spatial location, this could mean that store operations can improve offerings, optimise, and monetize their retail real-estate space to advertisers and connect with shoppers better (Bradlow, *et al*., 2017). A great example of this is a Business Intelligence software firm named Skyfii.io who refers to this as 'Omni-data intelligence', where the convergence of SMACIT technologies and multiple data points are able converge together to provide valuable actionable insights that gives retailers a fuller view into what is happening in their physical store venues. In addition, SMACIT technologies help to triangulate the relationship between people, environment, product, service, and channel. Simply put, the more a retailer or brand knows about how their shoppers behave, the better they can serve them (Bradlow, *et al*., 2017).

Moreover, the popular saying "delivering the right message to the right customer at the right time, and at the right place" has never been truer than in the era of "pygital" in modern retailing. For instance, "the right message at the right time" plays a big role in experimental retail design (e.g., A/B testing), and has been covered extensively in marketing literature. However, when discussing "at the right place" of physical retail and spatial location of shoppers, it has opened an entire new avenue for retailers where customer's geo-spatial location could impact the effectiveness of marketing and communication in the built environment (Bradlow, *et al*., 2017; Dhar and Varshney 2011). In many ways, the challenge of integrating online and offline channels where retail stores become 'phygital' has lately been solved by unobtrusively tracking shoppers in the store environment using various technologies, leading to new ways to deliver "higher engagement" for a retail experience (Merad *et al*., 2016; Wu *et al*., 2015; Hurjui *et al*., 2008; Oosterlinck *et al*., 2017).

2.5 In-store behaviour analytics: connecting the dots

As 'phygital' retail evolves, new opportunities to understand real-world behaviour through technology emerges and a new frontier of shopper marketing is born. Proliferated by 'SMACIT' technologies, advanced analytics in particular, retailers can use their stores as an enhanced channel for customer acquisition strategy. However, to truly convert shoppers into buyers, brands and retailers need to develop strategies that are rooted in insights, offering seamless omnichannel journey. These strategies must be relevant to e.g., how, when, where and what consumers shop, particularly in the catchment area of the store by first and foremost examining in-store shopper behaviour that occurs. By and large, localization and retail analytics for example, has emerged in academic literature in recent years (see Sachs 2013; Larsen, Sigurdsson, & Breivik, 2017), however it is not a new concept, nor the idea of tailoring the retail experience based on aggregate data about customers and how they shop. What has changed is the development of technology, volume, velocity, and predictability of data and how it is applied to consumers' shopping experiences. Recently, developments in in-store analytics and business intelligence (BI) solutions have emerged with the help of various new heterogeneous technologies. This has allowed retail firms to

better understand trends by combining spatiotemporal, geographic physical environment to consumer relationships with existing information provided by already implemented web analytics and BI technologies (Garber, 2013).
By and large, in-store analytics is a collection of systems working together to organize, analyse and visualize massive consumer and shopper generated data inside the retail environment. In-store analytics is therefore focused on the relationship between retail environment and consumer, shopper activity, behaviour, and optimizing store performance. In recent years, it has become widely used by retail venue owners to make the most of every retail location and enhance customer experience and touch points, and drive sales. In addition, it offers behavioural insights into shopper journey that highlights product exposure levels, engagement, and navigational routes throughout the store. The result from in-store analytics can lead to, for instance, improved layouts that drive shoppers deeper into stores for maximum exposure and increase visit length (Sightcorp, 2021; Ipsos, 2017). Moreover, in-store analytics ties in with a multi-dimensional mobile approach (see chapter 2.4). What seems clear is that retailers' mobile initiatives must fit into a larger strategy driven by retailers that also incorporate complementary technologies to collect in-store data, and to manage engagement on a single-point platforms that centres on a multi-dimensional approach.

2.5.1 "Phytics"

While "phygital" is a relatively new term in academia, there also still seems to be considerably little research into understanding how shoppers behave in-store that make use of various technologies to track, collect, measure, and report on in-store shopper data and insights. There is however ample research on data for indoor environments where digital services and solutions have been conceptualized or developed for retail venue owners. These conceptualizations have been intended for venue owners to have access to physical visitor data and movement patterns giving insight into how people use the physical space in order to optimize efficiency, operations, and more (Kim and Ro, 2011). As such, preliminary research in this theme may include location analytics which encompasses the "phygital" paradigm and support the agglomeration of in-store shopper behaviour data, followed by in-store analytics.
Moreover, a large body of related research has indeed been conducted on localization which has been driven by location technologies and the goal of providing location-based services, be it mapping and navigation, or local alerts and digital advertisements (Nandakumar *et al.*, 2013). In fact, obtaining physical location data has been propagated since the widely used practice of geo-targeted ads (ttec, 2018). By exploring work on "indoor location analytics" (see Nandakumar *et al.*, 2013; Kim and Ro 2011; and Yaeli *et al.*, 2014), Nandakumar *et al.*, claim that analysing user location information (visitor data in the physical world he refers to as 'Physical Analytics', or 'Phytics'), it is possible to gain deeper insight about visitors behaviour over time potentially going beyond the location domain itself into advances of in-store behaviour analytics. Having access to physical location data information can unlock enormous opportunities and value to retail to power shopper insights, user engagement and

many other evolving uses. Nandakumar *et al.*, (2014) state that just like analytics for the online world, analytics in the physical setting could indeed be very valuable for shopper marketers and venue owners. For example, location information would provide shoppers with personalized information, while shopper marketers could serve and benefit from more effective targeting. Meanwhile, retail venue owners benefit from insights that enable them to deploy their physical real estate in a way that maximises operational efficiency, store performance, as well as shopper experience, engagement, and improve monetization of the physical space strategically. Therefore, physical analytics is in many ways analogous to online web analytics, where footsteps take the place of a clickstream online (Nandakumar, Rallapalli, Chintalapudi, Padmanabhan, Qiu, Ganesan, Goenka, (2013).

From the viewpoint of providing value to users and businesses, Nandakumar *et al.*, (2013) claims there are three main opportunities of which physical analytics offers, (1) in store browsing, (2) space planning, and (3) physical conversion. Fundamentally, retailing is about connecting end consumers with products and services in a way that serves their needs. Therefore, deep knowledge of the shopper - what they are looking for, what competing offerings they have considered, etc, is invaluable. Analytics plays a significant role in retailing with data being mined, for instance, to make product recommendations. Typically, such analytics is based on both purchases made and browsing behaviour, even if a final purchase is not made.

Nevertheless, tracking and analysing shopper behaviour in a physical store can provide great value. Firstly, ability to optimize and plan store space and layout. This refers to the exploration of understanding how people move through the built environment, specifically how shoppers flow through the space or area so that the retailer can maximize on profit and efficiency. Secondly, the physical conversion. This refers to shopper activation. More specifically, tracking the conversions made from shoppers and measuring the effectiveness of offerings. The conversion involves a physical action by the shopper e.g., a visit to the store or to a particular section of the store.

2.5.2 Parallels between online and offline analytics

Online retailers have had the advantage of knowing a lot about what their customers' online and tailoring the user experience to them. As a result, they've been able to visualise traffic flows of their marketing performance and expedite and inspire the shopper process. The ability to track traffic to a site, understand where customers go on their shopping journey, the path-to-purchase, what resonates with them, and how it influences their buying behaviours, has been long documented. For example, through the use of web analytics, e-commerce retailers are also able to measure and analyse customer behaviours that offer insights and uncover clues or help answer to questions such as: what drives customers to a website and what keeps them engaged? What website design attracts the ideal customers? What are the differentiators between purchasing and non-purchasing? Why are my "bounce rates" increasing/decreasing? Through web analytics, online retailers are equipped with modular tools and metrics that enable them to understand and interpret accurate web performance data, giving them insights into what customers want and what drives them to convert. As a result,

these retailers are making informed data-driven decisions to implement improved web store strategies that generate more sales, increase customer loyalty, and improve overall website effectiveness. Not to mention, these capabilities spread from large ecommerce retailers such as Amazon through to small business online web shops.

However, in comparison to the online world, the situation is quite different for physical retail. As highlighted in earlier chapters, physical retailers typically have little visibility on shopper behaviour, even within the confines of their own stores. Nandakumar *et al.,* (2014) state that retailers often do not have accurate information on the average length of a store visit by a shopper and have to resort to low-tech solutions and expensive means such as deputing a sales representative to make in-person observations and 'tail' shoppers throughout the store. On the contrary, seeing how web analytics can help benefit website owners to improve their business, similar principles from the online world could potentially apply to the physical domain, indicating new advances of in-store analytics (Kim and Ro, 2011). Kind and Ro (2011) explain that for instance, in the online setting, users traverse websites and applications. Typically, a user clicks around and interacts with various links or content elements on the webpage, type in search phrases, view information, and possibly add items to the virtual shopping cart etc. Based on this activity, the site is then autonomously capable of tracking and collecting information about the user's behaviour as they traverse the site. Once the data is collected, the site can be adjusted to the individual users' profile, interests, and online shopper journey. This is based on past products and pages viewed, where the user dwells, and for how long, where they gaze or cursor points to, scrolling speed, as well as how long the user spends to perform a specific action, navigates the web page or menu, and when the user abandons or takes a certain path. This kind of aggregate-level analytics is very valuable to the e-commerce retailer as it can be used to improve service quality, design structure and conversion rate optimization, product assortment, pricing, supply chain, workforce management, customer journey, retargeting, and much more (A. Yaeli, *et al*., 2014; see also Kim and Ro 2011, p. 183; Nandakumar *et al*., 2013).

A similar traversal is made by a shopper in the physical world, including where they go, their walking pace, how long they dwell, what they are looking at, the interactions they may have such as viewing a product or adding an item from an end aisle display fixture into their basket, which then reveals a great deal about them (Nandakumar, *et al*., 2013). Another illustration can be made by describing the parallels between the two settings of an online website and a physical retail venue in terms of hierarchical structure. Kim and Ro (2011, p. 183) use a simple analogy of a building to a website comparison. In terms of structure, an indoor retail venue or a store can be compared to a website. For example, a typical building may have several floors, and, on those floors, there are many rooms or sectioned zones. Similarly, a website consists of several or more web pages. Each web page typically has many clickable elements, links or icons. Comparatively, if a shopper enters the store, this behaviour is equivalent to a shopper entering a website, either by clicking a link, navigating a menu, searching for the web address or finding a search result. A web page corresponds to a floor of a building, and just as a website will have many sub-pages, a building also has many floors. If a person visits and views a certain page, then he or she is observing information on the page and is in the process of taking an action on the next step. Finally,

a room or zone section in the building corresponds to a clickable icon or even web page section (Kim and Ro, 2011, p. 183).

Furthermore, by looking at these similar parallels, it is clear that physical retail falls short where aggregated data has been limited to primarily traffic and conversion, often of which has been based on lagging metrics, methodologies and even using intuition to make decisions. On the contrary, Nandakumar *et al*., (2014) argue that conversion tracking and monitoring visitors' movement, particularly in spaces, such as malls, stores and other retail venues, can reveal deep insights into a shoppers' profile, just as clickstreams yield valuable information in an online setting (Nandakumar *et al*., (2014). Moreover, on the one hand, physical analytics and location-based data is the premise to understand visitor behaviour, thus further leading into a new frontier in in-store analytics (synonymous with physical analytics or "advanced analytics"). On the other hand, in-store analytics remains virtually uncharted territory (Bollweg *et al.,* 2016). However, this is changing quickly.

Advancements with in-store analytics proliferated by localization technologies and new modular solutions, brick and mortar retailers are now able to gain similar insights as the online world. Previously, in-store analytics solutions were not readily available because most of the technology had not yet been developed. Today, with advanced cutting-edge technology, retailers can transform their physical establishments through a much more "phygital" (physical+digital) one. In-store analytics can deliver over a precise, real-time format allowing brick-and-mortar retailers to close the gap between bridging transactional data such as sales and buyer data over to consumer data, where in-store data meets in between (see chapter 2.2.3). Just as the online world through web analytics, this now allows for important metrics to formulate and answer important questions, such as how shoppers behave in brick-and-mortar stores, identification of the drivers behind purchases (and non-purchases), and, how changes in the store can impact shopper experience and sales. To explain further, a visual illustration is shown below to depict the similarities between eCommerce and in-store shopper path that can be used to measure behaviour along the path-to-purchase in parallel. Figure 6 below shows a side-by-side view of a typical shopper path in both channels and available analytics listed for each path point.

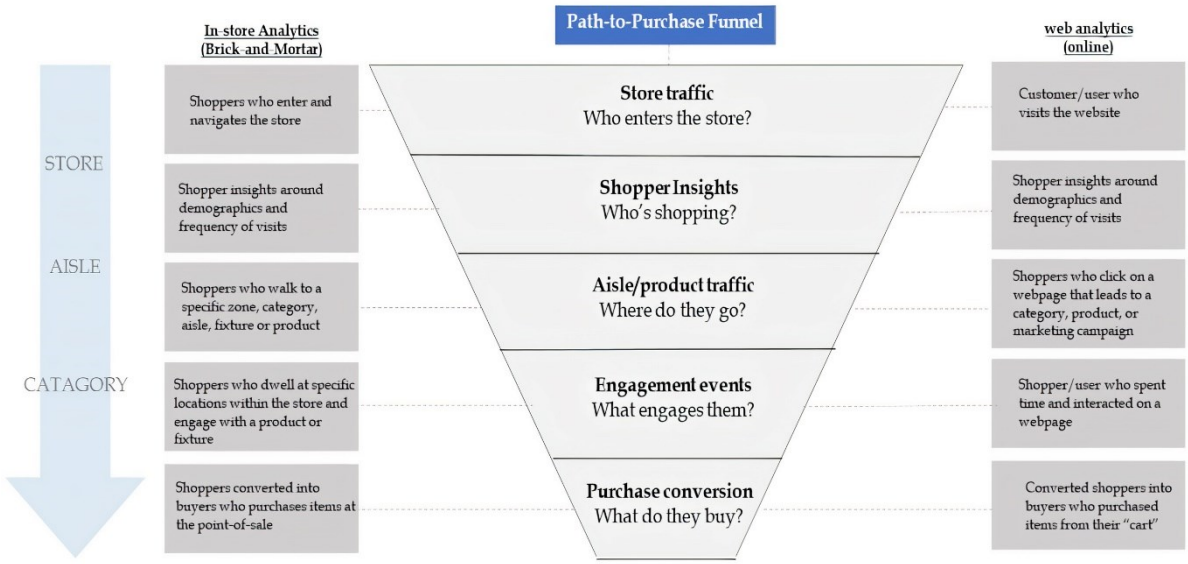


Figure 6. Path-to-purchase funnel comparison. Source: adopted from RIS, p. 9, 2016; Sharma, 2017, n.p.)

One of the key distinctions between the online and offline path-to-purchase as shown in figure 6 is the ability to conduct referral tracking to develop strategies and segmentation. In addition, gaining access to funnel data as depicted in figure 6 above is a critical element in developing an analytical framework. Sharma (2017) claims that the funnel, both in the online world and physical world is the key to equalize the playing field. However, one of the reasons why online retailers have been so successful is due to online referral tracking through web analytics. Online referral tracking such as through URLs shows where a shopper came from, what part of the path-to-purchase they were on, and whether they responded to marketing stimuli. The same principles can be applied to the physical world to understand where shoppers came from and what marketing stimuli they encountered helps to understand what in-store elements are having the biggest effect on shopping behaviour. For example, by tracking how shoppers are moving around in the aisle or tracking the sequence of how they move around in the store, as well as analysing demographics, trip types, time of day, shopper flow, and engagement. This is referred to as storewide behaviour or aisle dynamics, allowing retailers and shopper marketers to cross-promote or enable dynamic omnichannel marketing in-store at the shelf (Sharma, 2017).

In addition, there is in-store category behaviour and brand level behaviour. Category behaviour refers to the way people shop, indicative of lifestyle, cultural consumption, and understanding the products people select and the influential factors specific to the category down the path to purchase. This also enables brands to go beyond transactional data and make improvements to the category. Lastly, brand level data helps to understand more about what is happening in the decision-making process uncovering granular insights by going deeper into product segments, brands and aspects of the package that relates to the category. The path-to-purchase funnel illustrated in figure 6 can be applied to each aspect of in-store behaviour tracking, from storewide,

category, and brand level behaviour (Sharma, 2017). Furthermore, new technologies bring forth a new frontier of in-store behaviour analytics and tracking where heatmaps can also be applied to granular in-store data (Nandakumar, 2013). Following the funnel depicted, once this data is collected dynamic data visualizations such as shopper heatmaps can be added bringing online-like visibility to the physical retail environment to explore 'real world' shopper response to any specific marketing, merchandising innovation, how they use the physical retail space, as well as uncover how and why they might or might not convert.

2.5.3 In-store analytics technologies and analysis-metrics

The aim of this section is to systematically identify some of the most prominent available technologies and metrics that align with in-store shopper analytics. As described in earlier chapters (see 2.2.3), there are many ways to collect shopper data and analyse behaviour. For instance, Kirchberg and Tröndle (2012) conducts interviews to investigate the similarities and differences between experiences of shoppers. Data is collected comparing shoppers' expectations (motivations before the visit), experiences (social interactions during the visit), recall and contributions (what they learned after the visit). Operators are also often asked to directly observe the behaviour of customers in the store if they need more details about the shopper's behaviour to better employ the number of employees who need to be on their sales floor (Kirchberg and Tröndle, 2012; Merad *et al*., 2016).

Unlike traditional methods, it has become possible to combine much more granular data through new technologies (see also chapter 2.4.5). One of the disadvantages of traditional methods is that the real time of activities is not entered and is also considered a very manual process. Thus, analysed data deviates from the actual results, as well as efficiency drawbacks. However, new developments of technology and new data collection methods have emerged, significantly evolving in-store analytics to a new frontier. More recent approaches proliferated by these advances have strongly indicated that the application of computational advanced analytics has accelerated this frontier (Lee, Min, Yoo, and Song, 2013, pp. 901–910). The common feature of the new methods is the high quantity and accuracy of the collected data (Dogan, Öztaysi, 2018). For example, wireless fidelity (WiFi), Radio-frequency identification (RFID), computer vision techniques such as camera (Merad *et al*., 2016; Liu *et al*., 2015), motion sensor (Mohammadzadeh *et al*., 2015) and ultrasound are technology alternatives that can be used for collecting indoor location data (physical analytics) that contribute to in-store analytics.

In particular, WiFi is an indoor technology that determines the location of the user through the signals at the access points used (Yim *et al*., 2010). RFID collects and stores data by wireless communicating with tags on an object to be tracked (Seol *et al*., 2017). Another alternative is Bluetooth technology, which allows the system to recognize and track users through the media access control (MAC) address of the shoppers' smartphones. Computer vision technology, which collects data with image recording, uses advanced image processing algorithms with the complex structure to describe the object to be tracked (Oosterlinck *et al*., 2017). Motion sensor technology analyses

multi-camera images in indoor locations and monitors target areas (Dzeng *et al*., 2014) Dogan and Öztaysi (2018) state that the selection of respective technology for in-store behavioural analytics is determined by multi-criteria (Dogan, Öztaysi, 2018). The analysis of technologies that support in-store analytics discussed in the literature, yields two main categories of data collection technologies. These two main categories are described by Bollweg *et al*., (2016), which are direct measuring technologies and proxy technologies. Direct measuring technologies are able to directly determine shoppers (or visitors) and their actions. Whereas proxy technologies can directly determine shoppers (or visitors) and their actions specifically via proxy (such as via their smartphone devices, shopping cart or basket). There are different degrees in which shopper data collection can be made in conjunction with direct or proxy technologies as described as follows:

1) non-individualized (shoppers cannot be recognized and traced e.g., new vs returning).
2) individualized (shoppers can be recognized and traced e.g., new or returning).
3) identified (shoppers can be recognized, traced, and identified specifically/as named individuals).

According to Bollweg *et al*., (2016), these categories mentioned can also be classified into metrics categories based on these (direct or proxy) technologies. Firstly, location metrics - conducted via multiple or single location data points. Multiple location data points allow for complex analysis of shopper data and insights that can be depicted through e.g., in-store path analysis and heatmaps, as well as other visualised analytics representations. As such, this kind of analysis can correlate to not only how shoppers use the physical space of the retail environment, but behavioural changes in shoppers both at macro and micro level. This includes customer flow and navigational patterns, aisle traffic and penetration to action, shelf engagement, evolution of shoppers' trip types, loyalty indexing, and benchmarking return on investment (ROI) for every product category where retailers can for example A/B test store layouts, determine space allocation, and test new products and shopper marketing strategies to see how shoppers respond in a real-world context. Figure 7 below illustrates this by showing visit patterns and behavioural responses in relation to how shoppers interact with merchandise based on store layout.
In figure 7, the top image is a store layout showing product category performance. The first three boxes above are example metrics that align with time of day, peak store hours, and average time spent in-store. In addition, below the top images is a separate store layout depicting in-store path analysis (left image) with a heatmap layered over top (right right). These visual representations are generated by in-store analytics company Shoppermotion.

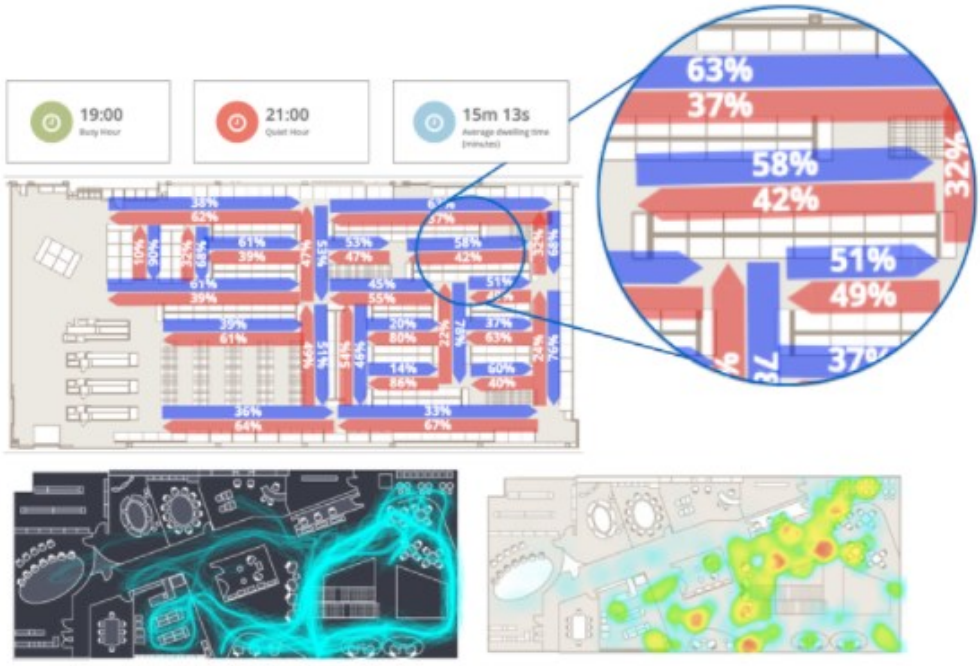


Figure 7. In-store analytics depicting product category performance, path analysis and heatmaps generated by Shoppermotion, (2021). (See appendix 1 for copywrite license).

Secondly is behaviour metrics - measuring beyond the physical movement of the shoppers. With this, there are two subtypes. First, the measuring of individual 'actions', such as walking, waiting, viewing, touching (see also table 3 - reaching, holding, closing, chapter 2.3.2). Second, the measuring of interactions, such as at shelf engagement with a product or POP display, as well as interacting with a store assistant/staff. Encompassing these metrics categories is 'in-store metrics'. Depending on the technology used to collect, track and analyse in-store behaviour, the following in-store metrics can be assessed e.g.: conversion rate, people counting, footfall traffic and people flow, crowd density, time spent in-store, dwell time, zones visited and transition, visit frequency (new vs returning), bounce rate, gazing, interaction with shelf/products/display and duration of interactions, etc. (see Bollweg *et al*., 2016).
Furthermore, there are potential cross-coordination of different shopper data collection options and hybrid solutions made available. While there is a myriad of technologies available to the retail sector for the collection of shopper data, identified in table 5 below are nine different options, ranging from simple solutions such as optical sensors, RFID, Bluetooth beacons, WiFi, to more complex systems, such as computer vision and CCTV recording. Each of these are categorized and described under optical sensors, proxy technologies, and tracking systems as seen in the table below.

			Location metrics		Behaviour metrics		
	Technologies	**Measurement**	**Single location**	**Multiple location**	**Action**	**Interaction**	**Shopper identification**
Sensors	Light barriers	Direct	yes	no	no	no	non-individualized
	Pressure pads	Direct	yes	no	no	no	non-individualized
	Door counters	Direct	yes	no	no	no	non-individualized
	Optical sensors	Direct	yes	no	no	no	individualized
Proxy technologies	RFID	Proxy	yes	yes	yes	no	identified
	WiFi, GMS, Bluetooth	Proxy	yes	yes	yes	no	identified
	Beacon technologies	Proxy	yes	yes	yes	no	identified
	Smart Glasses	Proxy	yes	yes	yes	no	identified
Tracking systems	CCTV/video systems	Direct	yes	yes	yes	yes	identified

Table 5. Technologies and metrics for the collection of in-store analytics. Adopted from Bollweg *et al*, (2016, p. 4-5).

Sensors

Data gathering and sharing through sensors contributes significantly to the in-store analytics domain. Rudimentary and optical sensors are most commonly used. Rudimentary sensors such as light barriers, pressure pads, and door counters are advantageous, low cost, and simple solutions, however, can be inaccurate. Groups of people, employees, and children wandering in and out can be accounted for, however unable to perceive shoppers as individual entities. For this reason, rudimentary sensors as such may be a good solution for analysing general trends in for example higher or lower shopper numbers, however, do not produce a reliable number of individual shoppers (Senior, 2007; Bollweg *et al*., 2016). Moreover, optical sensor devices range from motion sensors to infrared cameras, and can collect environmental, movement, and other data and can be shared with selected users in real-time. A great advantage is that sensor technologies such as this are capable of following visitors to a shop as individualized entities and to analyse their visitor behaviour within the store (e.g., path analysis, heat maps, etc) (Bollweg *et al*., 2016). By placing optical sensors around the physical store, creating an IoT environment, retailers are then able to better understand the most popular store zones, categories and products. Sensors are generally not able to identify visitors by name, making it an ideal solution to unobtrusively track and collect data without privacy issues. As far as some disadvantages however, collecting data for groups of visitors tends to be a challenge for most sensor systems and these systems typically act independently of the shopper, therefore do not allow the shopper the choice of opting out (Xu, 2007).

Tracking Systems

One of the most complex groups of technologies to collect in-store shopping behaviour data is closed-circuit television (CCTV), or otherwise known as video surveillance systems. Retailers who use video systems can count shoppers as they enter the store, follow and assess their shopping paths and collect their actions and interactions. Advanced video systems can analyse groups of people and distinguish relevant data (e.g., male from female, adult from child, etc). CCTV, combined with complimenting yet advanced output technologies such as artificial intelligence, predictive analytics, and facial recognition software, can allow for immense in-depth data collection that is similar to the quality of manual observations to study in-store behaviour (Liciotti *et*

al., 2015). However, the downside to this technology is that CCTV for shopper data analysis could raise serious privacy issues (Liciotti, 2015 and Connel, 2013). In addition, relying on video surveillance to understand shopper's behaviour is not considered scalable, given that deployment of video cameras and mining the video stream to extract information can potentially be very expensive (Zeng, Pathak, & Mohapatra, 2015).

Proxy Technologies

The range of individual proxy technologies are quite diverse, however the most prominent proxy technologies used for collecting data so far are via radio-frequency identification (RFID) chips, Bluetooth, WiFi networks and device sensing, or using smartphones with GPS tracking (Bolliger *et al*., 2009). One of the most significant advantages of using proxy technologies is that it can potentially allow for individual customer identification and that cross-referencing with transaction data and other customer data can be used. This therefore makes it possible to customize the shopping experience to the individual by offering digital services and responding to detected shopper behaviour. In addition, cellular telephone signals such as global systems for mobile communications (GMS) can be received in many indoor environments. Triangulation using these signals can provide a rough estimate of an object's position in many indoor environments. WiFi triangulation and device sensing for example can also measure the signal strength of nearby access points and approximate their respective distances and the user's mobile device is computed geometrically. However, the downside to some of these technologies is that for example, GSM only works within several hundred meters, making this proxy-type technology unsuitable for long range indoor spaces (A. Yaeli *et al*., 2015). In addition, shopper behaviour cannot typically be measured directly, due to the fact that it is extrapolated using proxies, which also means that misrepresentation and misidentification can occur, leading to information gaps, e.g., if the shopper does not carry a smartphone, does not have the phone turned on, WiFi or location-data sharing is not enabled, or if the shopper leaves the context of the proxy, such as the RFID identified shopping cart (Sorensen, 2003; Cai, 2014; Yaeli, *et al*., 2014).

2.5.4 Hybrid technology approach

In the ideal case, tracking and collecting in-store shopper data in the physical retail space would rely on a combination of hybrid technology solutions which can overcome any data gaps, infrastructure support, as well as end-user support, for example, in the form of an unobtrusive presence on the user's mobile device(s), where the user's mobile device anonymously senses the environment where location inference is done. Nandakumar states that considering how shoppers typically carry their mobile smartphone devices with them almost everywhere they go, this could also be a vehicle for tracking physical conversions and movement. In combination with other technologies, today's mobile-based location technologies provide information about the user's location that can be used in advanced in-store analytics and visualizations. This means retail enterprises can gain insight into visitor and shopper behaviour patterns

and understand, for example, how much time customers spend in different areas of the store, what routes they take, how well they are serviced, and much more (Yaeli, *et al.*, 2014; Nandakumar *et al.*, 2014).
In addition, hybrid technology utilization supports single-point enterprise platform solutions that encompass in-store behaviour analytics and omnichannel marketing capabilities. Furthermore, only until recently, retailers, shopping centres, and even manufacturers are able to gain access to in-store data and conduct in-store behaviour analytics. The complexity of advanced in-store analytics arises from many challenges to collect data and track shopper behaviour due to multi-criteria technologies, infrastructure, and lack of solutions available. In terms of technology utilization, the performance range of different technologies available do vary from each other. While on the contrary, many of these technologies do support and encompass each other. Retailers have a wide range of options from the systems that they might implement, by focusing on the type of information they can or desire to gain and objectives to be met (Bollweg, 2016). For example, certain tracking systems, optical sensors, and proxy technologies are capable of tracking visitors in a physical area, such as the movement and behaviour of shoppers in a retail environment. Therefore, the resolutions these technologies provide are enough to perform physical in-store behaviour analytics, as well as enabling in-store proximity-based marketing capabilities (Sun, Kim, Jin-Wook Ro, 2011).

2.5.5 Single-point platform solution

While the benefits of in-store analytics are evolving, the use of new technologies, tools, and enterprise solutions inherently enable the physical retail environment to morph into a "phygital" connected store experience. As such, when multiple in-store data sources and outputs are merged, full-featured advanced analytics platform solutions become available for enterprises, where a new level of insight can be delivered offering a complete picture of what is happening within the store environment and to understand the relationship between environment and consumer. Only until recently, retailers, shopping centres, shopper marketers, and even brand manufacturers have been able to gain access to in-store data and conduct in-store behaviour analytics. Now, a physical retailer can also experience similar benefits as those offered by eCommerce type web analytics with "phygital" cross-functional capabilities serving the entire organization at all levels, for example, the retailer who wants to make sure they are getting the right traffic through the door, or shopper marketer that want to enhance a through-the-line brand experience at the respective category, to retail operational managers who strive to optimize store performance at the highest level, right through to the shopper who seeks a remarkable retail experience (RIS, 2014).
As mentioned in earlier chapters, buyer data and consumer data have long been focused on by retailers. Retailers also have sophisticated customer relationship management (CRM) programmes that have added a highly valuable layer of information about customers and their buying and consumption patterns. However, for long, there has also been very little information on those who never purchased items during their visits, as well as the overall activity of when consumers are in shopping mode. Thus, the behaviour and activity that occurs in-store has for long been a black box, waiting

to be unlocked (Shankar, 2011). As mentioned, one of the biggest challenges has been that physical retailers have been disadvantaged with the lack of ability to integrate a variety of data points into a single platform. Additionally, the lack of technologies to collect shopper data and in-store analytics information. This means that for retailers, it makes it difficult to understand how certain store strategies impact certain areas of the store and overall operations, including marketing impact.
Furthermore, manually collecting data has shown to be rigorous, difficult, and a slow process to achieve. It required the employment of personnel or hiring research firms to manually observe, collect and analyse massive amounts of unstructured, unorganized store data, where the time needed to construct reports for comprehensible analysis to be delivered was extremely time consuming and inefficient. In addition, store data was dynamic and in constant change (fluctuations of foot traffic, changing shopper behaviour, and many other variables) making it ever more difficult, especially for capturing real-time data. With manual review, human error is also considered as a non-scalable option, yet alone maintaining this method of study (RIS, 2014). Figure 8 below shows a comparison of systematic visitor analytics from the 1970s (left image) and a more recent solution showing an automated in-store analytics platform of visitor data (right image).

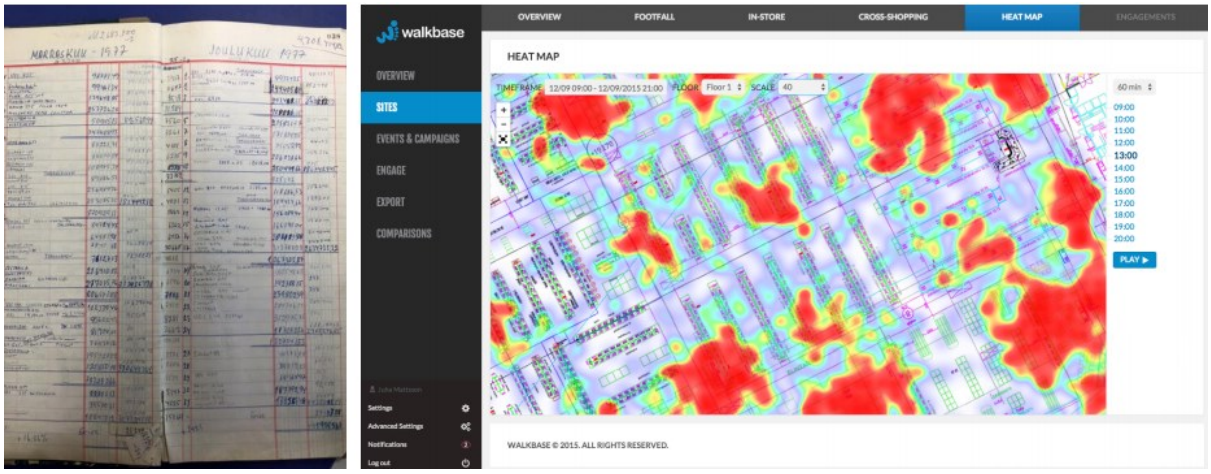


Figure 8. Comparison of systematic visitor in-store analytics generated by company Walkbase, (2015). (See appendix 1 for copywrite license).

While retailers have desired to understand how their shoppers traverse their stores and what might influence, prompt or trigger their purchases, the "phygital" paradigm shift has enabled the possibilities of doing so through the convergence of physical and digital worlds with technologies to support advances in in-store analytics and efforts to pull various data points altogether, derived from a plethora of integrated relevant sources which bring forth granular insights. As such, proprietary in-store analytics software platforms are accessible to the market that provide retail firms the ability to collect, track, visualize, and correlate a broad set of information from the most diverse data sources available inside the store and variables that influ-

ence in-store behaviour. Therefore, single-point platforms are ideal for presenting information in a variety of useful formats to enable retailers to discover and implement opportunities that enhance in-store experience, improve the environment to consumer relationship, and drive bottom line profitability (RIS, 2014). Moreover, in-store analytics platforms allow retailers to closely view key metrics correlational to the relevant data source included, as seen given in the example depiction below in figure 9. The figure below illustrates some of the various data sources that form a single-point in-store analytics platform. Data sources as seen on the left side range from direct and proxy technologies, guest WiFi (e.g., via social media), POS to extract transactional data, to even weather data which may indicate certain shopping behaviours and store sales at certain times. Moving to the right side is outputs that includes e.g., data from mobile app and devices, CRM data, store layout maps, predictive analytics, and visualized admin dashboards. The middle section depicts the key benefits from the combines data sources that are pulled together, which include and support e.g., shopper marketing, omnichannel activation, to overall store operations.

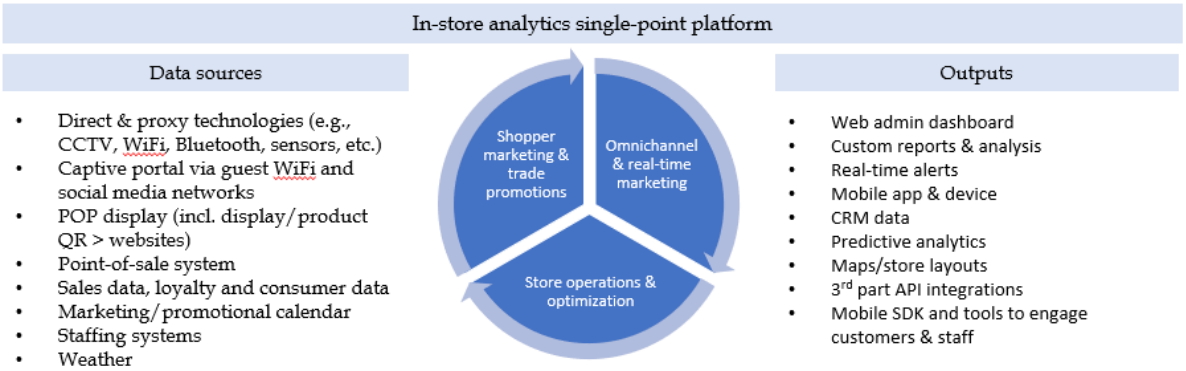


Figure 9. In-store analytics single-point platform merging various data sources together. (Source: adapted from RIS, p. 6-7, 2014).

2.5.6 Key opportunities of in-store analytics

Larsen *et al.*, (2017) states that the value that new technologies and solutions bring forth is the advantage to rely on behavioural data at the expense of theoretical, indirect, or even non-existent constructs. With descriptive observations and interventions, analysts of behaviour can conduct objective science that allows substantial explanations of not only shopping behaviour but consumer behaviour overall. In addition, Larsen states that collaboration is needed from marketing scientists, economists, practitioners, and consumer spokespeople who are professionals in their field and can help to identify marketing-related issues and shopper activity related to environment to

consumer relationship. Some of these activities include, though no limited to e.g.: temporal (time), spatial (path), spatiotemporal (movement + time), shopper interactions, and in particular, store layouts, signage, product display, pricing, point of sale (POS), path-to-purchase and shopper journey, as well as other factors that relate (Larsen *et al*., 2017). Nevertheless, table 6 below illustrates some, though not limited to, key benefits and opportunities that advanced in-store analytics helps improve.

Table 6. In-store analytics key opportunities (Source: RIS, 2014).

Marketing
• Measure and optimize marketing campaigns. • Optimize product placements and benchmark product categories. • Measure display effectiveness. • Understand shopper movement and identify high and low engagement areas. • Insights into shopper demographics and their behaviours. • Understand unique vs. new visitors, returning, and average shopping duration. • Identify and engage shoppers the moment they enter the and traverse the store. • Personalize the shopper in-store to enable omnichannel experiences. • Trigger proximity marketing campaigns and surveys. • Cross-selling and retargeting (incl. contextual online advertising). • ROI & ad attribution • Understand the impact of digital device capabilities within the store.
Retail Store Design
• Identify traffic patterns and paths for shoppers. • Understand shopping missions and trip types. • Better understand the optimized layouts or concept stores. • Shelf evaluation and display impact • Make layout changes and measure the impact on merchandising and conversion performance. • Understand the differences in exposure vs. engagement metrics. • Build strategies that promote more purchasing.
Other Use-Cases
• Queue management and occupancy rates • Optimising staff allocations • Tracking & managing assets e.g., shopping carts • Collecting shopper profiles & segmentation

- Developing store, concession, and tenant mix, (shopping centres & dept. stores)
- Loss prevention

Some other key benefits of in-store analytics allude to future implications to in-store retail, such as real-time dynamic pricing based on in-store behaviour. Proliferated by advances in in-store analytics, dynamic pricing is predicted to be the future of physical retail. Based on a shopper's behaviour in the physical store (e.g., how long he/she browses clearance sections), the price can potentially be adjusted instantaneously (Nusca, 2013; see also Nandakumar, 2013). Similarly, in Scandinavia, some supermarkets are already switching their prices daily, and across Japan doing so on an hourly basis through digital on-shelf fixtures or digital product price tags. Some factors that currently determine dynamic pricing of items include for example, weather (in some cases, prices go up because of bad weather such as severe hurricanes) and the density of customers in the store (in some cases lots of customers means prices decrease). Lindstrom (2012) argues that this also potentially opens new opportunities for behavioural targeting in the future as retailing becomes more omnichannel by nature (Lindstrom, 2012, p. 217). Nevertheless, as retailing and shopper behaviour becomes increasingly networked, digitized and hyperconnected, a "phygtial" retail experience prevails through opportunities that in-store analytics brings forth among many other benefits that it adds.

In conclusion, while there are clear parallels between online and offline analytics, in-store analytics measures equivalent areas that impact store performance and marketing capabilities. One of the key differences between the two worlds however is the environment to consumer relationship salient to a holistic consumer immersion and human experience that physical retail offers. On one hand, shopper behaviour is without a doubt deeply complex to understand. That said, Lindstrom (2016) argues that technology can however be compromised and limit our deeper understanding of real-world human behaviour that by and large, if companies truly want to understand consumers and shoppers, such prominent technologies such as big data and advanced analytics indeed offers a highly valuable and efficient, but in many ways an incomplete solution. The author further argues that our contemporary preoccupation with digital data endangers unique high-quality insights and observations – and thus digital products and product solutions – and that for all the valuable insights advanced analytics and big data provides, consumers and shoppers' "digital footprint" remains a curated, idealized version of "who we really are and how we truly behave", that may not necessarily help to identity the "needle in the stack". Interestingly, Lindstrom also states that Big Data through analytics might find it hard to find meaning or relevancy pertaining to the small cues of behaviour, especially the "why" factor of how behave occurs. In the digital world in particular, the tables are turning on the Internet by circling back and finding human – not digital – insights about ourselves (consumers) based on our own unconscious behaviours (Lindstrom, 2016, pp. 236-239).

On the other hand however, contrary to Lindstrom's argument, considering that consumer and shoppers are in fact driven by such an omnichannel and digitized world, advances in in-store behaviour analytics (including Big Data) still enables a significant

and much fuller, richer picture of in-store shopper behaviour that retailers did not previously have access to, and now enabling new ways to analyse and visualize granular data from a hybrid of multiple data sources providing brick-and-mortar retailers with the kind of insights that have otherwise helped on-line retailers to become so effective (RIS, 2014). Ultimately, understanding shopper behaviour in brick-and-mortar stores and other physical indoor venues is nevertheless essential for any business aiming to provide a more personal and compelling shopping experience, optimize store layout, increase same-store sales, boost marketing campaigns and display effectiveness, improve store operations, and discover new opportunities for growth. Achieving these goals also sequentially leads to improved overall retail experience, conversion rates, and increased revenue. For physical retailers to keep a competitive advantage among other retailers and especially competing e-commerce businesses, they will need to continue to measure and improve shopper convenience and personalized services that come from an in-person interaction along all touchpoints throughout the path to purchase. This, combined with continuously evaluating overall store strategies and trying to understand changes in shopper behaviour or needs, will result in physical retail thriving in an ever-changing environment and market landscape. Retailers who adopt comprehensive analytics solutions will be able to provide a best-in-class store experience and keep customers coming back for more while increasing the sales per shopper, both on and off-line (Yaeli *et al.*, 2015; see also RIS, 2014). Thus, revealing a new frontier of in-store analytics, shopper marketing, and even the next generation of retailing at large.

3 METHODOLOGY

This chapter introduces and explains the methodologies on which the thesis is built, the approach that is taken to structure and conduct the data collection process as well as how the data is then analysed and compared to existing literature.

3.1 Data collection: semi-structured interviews

Interviews are a useful tool when the phenomenon being studied is holistic, complex, or sensitive. In this stream of research, the data was collected by interviewing individuals with expertise in the field related to the themes of this thesis. Thus, interviews were the natural choice of method for collecting data for this body of research. There are multiple types of interview methods, including structured interview, semi-structured interview, theme interview and open-ended interview (Hirsjärvi *et al*. 2002, pp. 195–196). For the purposes of this research, the semi-structured theme interview approach was chosen, as it allows for flexibility in data collection, possibility to gather multifaceted, in-depth information, and probe for further clarification if necessary (Hirsjärvi *et al*. 2002, p. 192). Altogether 12 interviews were arranged. Each of the informants involved represented relevant yet different areas of expertise and representatives from different companies internationally.

Table 7. List and description of semi-structured interview respondents.

Participant	Position	Firm type & focus	Country	Time
R1	CEO	In-store analytics digital solution provider	San Francisco, USA	1hr
R2	CTO	In-store analytics digital solution provider	Madrid, Spain	1hr 24min
R3	CEO	In-store analytics digital solution provider	Pennsylvania, USA	1hr
R4	Solutions Manager	In-store analytics digital solution provider	Portsmouth, UK	1hr 20min
R5	CEO	Digital solution provider (ambient communication & design)	Madrid, Spain	1hr 15min

R6	CEO	Shopper marketing digital solution provider	Singapore	58min
R7	Consultant	Shopper insight consultancy	Tel Aviv, Israel	1hr 17min
R8	Consultant	Shopper insight consultancy	Paris, France	1hr
R9	Managing director	Shopper insight consultancy	Oxford, UK	1hr 45min
R10	Category Management & insights Consultant	Shopper insight consultancy	London, UK	2hr
R11	Consultant	Shopper insight consultancy	Cape Town, South Africa	1hr 12min
R12	Strategist	Shopper marketing & communications	New York City, USA	1hr
R13	Chair, board of directors	Council for retail & sales	Pennsylvania, USA	1hr 22min

The participants for the interviews were chosen through purposive sampling which is a form of convenience sampling. Convenience sampling is a way of choosing participants that are most suitable based on the availability and suitability of the potential participants, as well as the resources and timeframe of the research. In short, purposive sampling stands for choosing participants that best meet a specific purpose. (Hair *et al*., 2015.). All (12) industry-expert interviews were individually and remotely conducted by video calling, 11 held via Zoom and 1 on Microsoft Teams which took place between the time of late March and early May 2021. The average length of the interviews was approximately 1hr 20min. In addition, the interview calls were hosted from Finland by the thesis author, where all participants contacted were located internationally from various countries and in different time zones. Given the COVID-19 pandemic, logistic and geographical constraints, this inevitably enabled the interviews to be done remotely in a convenient and flexible manner. The chosen respondents were all well established professionals in their field with expertise varied in, though not limited to; shopper behaviour and insights, shopper marketing, trade and category management, specialized retail venue technology and digital solutions - all of which held various positions ranging from CEO, CTO, managing director, account managers, strategists and consultants, as well as a book author publicly known in the industry. All respondents were actively in the work-life in their respective fields, some of which were entrepreneurially established.

3.1.1 Participant acquisition

The approach of acquiring interviewee participants was conducted in a rather unconventional way using a marketing-centric approach initiated solely by the author. Given the unique niche of the field of study, the ideal research participant sample size was relatively small and scarce. These participants were also typically of high-level positions of companies where their limited availability, time, and receptiveness to be involved was considered. With this in mind, an engaging, targeted and personalized approach was taken in the acquisition process.

Furthermore, four main channels were used in the process of acquiring research participants: (1) a single website landing page, (2) email outreach, (3) posting on LinkedIn Groups, and (4) LinkedIn direct messaging. The first step involved creating a visually appealing yet simple and informative single website landing page containing an overview of the thesis topic and purpose of interviews. This landing page also included a "frequently asked questions" (FAQ) section to reduce lengthy communications that would otherwise need to be done by a cold email outreach approach that would hinder the acquisition process to potential participant prospects. On this landing page, "call-to-action" button links were apparent which linked out to the authors own integrated calendar booking app, where the participant could selectively choose the time slots that conveniently work best for them and in their time zone which was automatically converted. Utilizing LinkedIn, a social media platform for professionals, this landing page was posted to 13 industry related LinkedIn community groups where inbound acquisition and interest was generated. As for outbound acquisition, the author selectively sourced and connected with certain professionals on a personal level where conversation was initiated via both LinkedIn direct messaging and through email outreach.

Altogether, the number of participants surprisingly exceeded the initial required amount for the thesis interviews, along with extra participant leads that had later inquired out of interest, unfortunately however, they were declined due to the maxim amount already acquired. This creative approach to interviewee acquisition allowed for an impressionable, yet enjoyable, quick, and friction-less process. Figure 10 shows the landing page in horizontal view, followed by a separate image featuring the calendar booking app page.

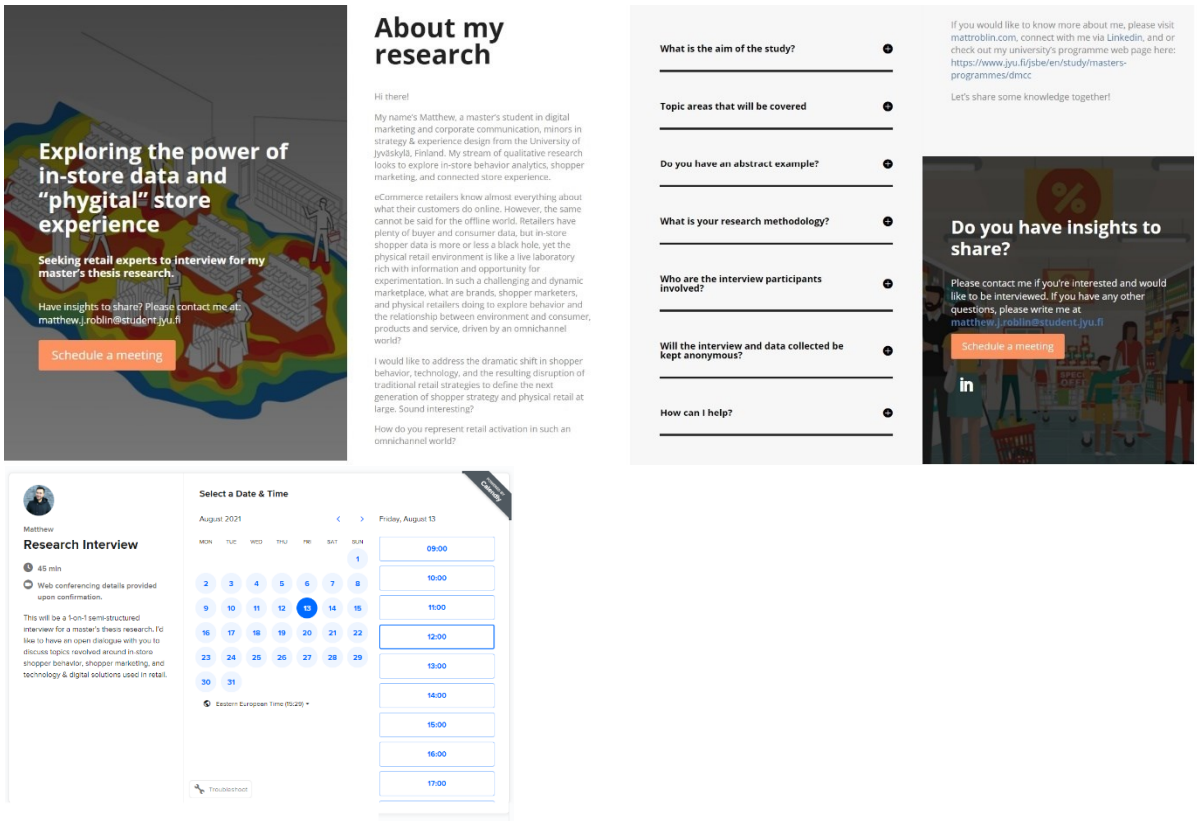


Figure 10. Website created for participant acquisition (source: mattroblin.com/research-info).

3.1.2 Interview strategy

The chosen semi-structured interview strategy is based on predetermined themes; however, the exact format and sequence of the questions is not necessarily defined (Hirsjärvi *et al*. 2002, p. 195). The guide for the semi-structured theme interview is shown in Appendix 2. In accordance with the approach of Perry (1998) the starting question was to invite the interviewee to share a little bit about their background and experience so far related to e.g., shopper behaviour research and or digital solutions that encompass the context of the physical retail environment. Additional pre-designed follow-up sub-questions were asked based on the theoretical discussion and depending on their answers and how the discussion evolved during the interview, enriching the interview data. This kind of approach allows the researcher not to influence the interviewee's responses, but also makes sure the relevant topics from the research point of view are covered also in case the interviewee does not raise them in the unstructured part of the interview (Perry, 1998). Due to the reasoning above, the

theme interview discussion guide was not sent to the interviewees prior to the interview, to invite more spontaneous answers that are free from restrictions or influence by the researcher.
All the interviews were recorded with permission of the participants and transcribed for the analysis. The recorded answers were further complemented by notes from the author. In addition, all respondents were on record asked whether they agreed to be interviewed and recorded and that their answers could be used for the purpose of the research. As such, only the answers of consenting respondents were used for this research. No identifying information other than their job role, sector, and perhaps country of operations is revealed in the answers. As such, quotes from the interviews have been scrubbed of potential identifying information. The data was analysed using content coding and theme-based categorizing. The first step in the analysis of the interview data was to read through the transcribed interviews to get an initial understanding on the themes they revolve around. Next, the aim was to give descriptive names for the themes found, to correlate the different themes, and create groupings for them. The theoretical discussion was used to support this phase of analysis, especially to help in conceptualizing the empirical findings. The analysis continued by categorizing the interview data based on the identified themes. The initially identified themes were utilized as a foundation for the categorization, but the aim was to further refine the themes and concepts throughout the analysis and coding the data. The interviews were read and listened through by the author one by one, and the content was coded into the created categories with the help of a word processing application. In the next chapter method of analysis is introduced, and the reasoning for choosing that specific method as well as the subsequent steps of analysing the empirical data.

3.1.3 Analyzing data through thematic analysis

The chosen method of analysis for this thesis was that of thematic analysis, as it is ideal for conducting in-depth qualitative research (Braun & Clarke, 2006). A common thematic analysis approach involves six main steps, each with their own subsequent sub-steps that include, (1) familiarizing with the data, (2) generating initial codes, (3) searching for themes, reviewing themes, (5) defining and naming themes, and (6) producing the report (Braun & Clarke, 2006; Nowell *et al.*, 2017). To begin with, this process starts by first immersing oneself into the data collected, by which can be done by transcribing verbal interview data, hence this approach was chosen for this thesis (Braun & Clarke, 2006). As previously mentioned, the interview data was obtained via Microsoft Teams and Zoom, recording of individual interviews. Depending on the participants, a majority had video enabled, while a few others did not. However, for the purpose of unifying the interview data, the audio of the interviews was most important for transcribing. Transcribing by definition is the process of writing down, paraphrasing or summarizing in written what was said during a verbal interview, such as through 1-to-1 video call. ("Transcribing definition. Merriam-Webster Dictionary," 2021). In this case, the transcribing was done in a simplified manner to clarify the core meaning of each question-to-answer response. Furthermore, to transcribe the

data in a scientific way, the contents were coded (Braun & Clarke, 2006). Coding involves examining the empirical data, of which is the transcribed interviews word by word to label the answers by topic, theme, or characteristic (Eriksson & Kovalainen, 2008).

After each of the interviews were coded, duplicate content was removed, and codes that were closely alike were merged. Codes that had little representation in the data set or where otherwise incompatible with the final themes were not included. The remaining and most relevant codes were analysed for connected meanings and patterns throughout - linking and grouping similar codes into initial themes. The themes that arise encapsulate salient meaning from the interview data gathered that correlated to the research questions, as well as theory of the thesis research. A theme is constituted by a show of unifying patterns across multiple instances of the data set (Braun & Clarke, 2006.) Following this, the next step was to refine in more detail by removing any overlaps combining similar codes and themes, as well as codes that do not provide meaningful contribution to the research questions given. Next, once the chosen themes were filtered, compiled and aligned, a visualized map of the salient themes discovered from the interviews were ready for final analysis, or otherwise considered as a thematic "map" (Braun & Clarke, 2006.) At this stage, each theme was then analysed in further detail, leaving room for further refining, where any subthemes can be identified given the complexity of the theme. In order to do so it was necessary to identify the main narrative of each theme that unfolded, giving them a descriptive name and to present the theme content to the reader as clearly as possible. (Braun & Clarke, 2006.) The themes and codes were reviewed several times to ensure substance. According to Nowell *et al*., (2017), themes should be analysed and processed at least more than once before finalization to ensure enough attention has been given to each code and themes found. At this stage now, each theme was given a distinctive name and detailed analysis that describes its contents, where it relates to the other respective themes and relation to the research questions (Braun & Clarke, 2006). Finally, (six) main themes were identified along with possible sub-themes, as found in the finalized thematic map in Appendix (2). The themes are covered in the final thematic analysis report of this thesis. The objective behind the thematic analysis report was to provide a "logical, non-repetitive, coherent, and intriguing account of the data found across themes" (Nowell *et al*., 2017, pp. 10-11). To support and feature the conclusions made in the thematic analysis report, compelling questions and excerpts from the collected empirical data were presented. Ultimately, the goal of the report was to show validity of the research and credibility of the findings, particularly related to the research questions made.

4 RESULTS AND ANALYSIS

In this chapter the results of the semi-structured interviews are presented and organized according to the theoretical framework, as well as the analysis based on the findings. The analysis consists of themes that emerged from the semi-structured interviews, however, follows the structure of the thematic map presented found in Appendix 2. This chapter is divided into the following four sections: (1) the current and future state of physical retail. This will illustrate the human experience element of shopping and the fluctuating role of digital pertaining to driver of change in shopper behaviour and understanding the relationship between environment and consumer. This then unfolds into the following chapter, (2) the role of mobile and general commerce on shopper behaviour and various technologies that drive a "phygital" (physical+digital) store environment. (3) Following the aforementioned sections, the third section indicates how in-store insights are captured, technologies and methodologies used towards in-store analytics. (4) Lastly, the fourth section creates further understanding into how retailers can adapt their physical spaces cantered around shopper behaviour by using in-store data in order to improve shopper marketing, as well as customer experience and store performance. Conclusions drawn from the interviews are further discussed in chapter 5.

4.1 The current state of retail with shoppers and consumers

During the interviews it became apparent that there is a fundamental need that is met by physical retail, a human experience that is not easily replicated in the online world. However, it became clear that retail is being pushed to move into an omnichannel world, where the offline channel needs to work in tandem with the online channel to become evermore silo-less and more of a seamless "ecosystem". It was also apparent that globally, the physical retail sector is going through a metamorphosis-like transformation where brick and mortar stores have been significantly impacted by digital, accelerated by the COVID-19 pandemic. These chapter findings create the premise for the preceding chapters that encompass the key drivers of change in the brick-and-mortar retail landscape. The first part of this chapter discusses why physical retail serves as a vital component of a human experience to shoppers and consumers. As the topic of the Covid pandemic arose throughout all the interviews, the second part (4.1.2 and 4.1.3) is discussed which leads to key drivers of change regarding retail commerce.

4.1.1 Why physical retail continues to be relevant.

Central to the proceeding topics that arose, all respondents expressed that despite shifting changes to the retail landscape, and prominence of eCommerce retailing, the

physical retail sector is continuously growing and is still the dominant channel for retail. The respondents all say that this is mostly because physical retail venues serve as a fundamental place for a human experience and exploration which is not easily replicated online. It gives consumers an opportunity to socialize, and use sensory activity, e.g., touch, try, see, hear, smell, taste, as well as hedonic and utilitarian consumption.

> *"The ritual of going to a physical space is built into people's lives in a way that is essentially unchallenged, unless it is otherwise dangerous to do so." - R8*

> *"The fundamentals of shopping have not changed, for example there's a human factor and has an emotional connection where consumers want to be there in a social environment, and looking, touching, feeling, really seeking that tactile sensation. For online retailers, it is extremely difficult to replicate this connection into the physical retail environment." - R10*

With that said, informant R10 highlighted that across the retail sector it comes down to the category that the retail establishment offers and really understanding the emotional connection to the product relative to the others, where this manifests itself into the physical environment. She further explained that this is especially the case for high-end products where social connection and personalization is needed to provide that experience, which online retailers cannot match the same way. The same informant pointed to luxury fashion brands such as Prada or Louis Vuitton and referring to her earlier experience working in airport retail where it was not uncommon for exclusive products such as a £5 thousand bottle of cognac to be purchased - all of which is indeed determined and influenced by the level of shopping experience one receives, which would not likely occur online. It seemed clear from the informants' views that physical retail is becoming less about product and price and more emphasised on experience. As respondent R12 stated:

> *"People will still continue going to stores even though things are available on the web. The desire to go to stores is partly entertainment, and part of it is that it is physically better to touch and experience things." - R12*

Similar to the response of R10, respondent R7 mentioned that not having a physical store presence also becomes challenging for those retailers who want to gain market growth and long-term brand equity, this in part due to the lack of personal touch and human experience that eCommerce does not provide when shopping. The same respondent noted that because of the shopping experience you get when in a physical store environment, the propensity to buy in-store is also much higher than that from an online eCommerce retailer.

> *"Generally, even with companies that have supercharged their eCommerce activity, roughly 70-90% of the sales are still happening in physical brick and mortar, outside of China that is..." - R6*

In addition, three other respondents mentioned that eCommerce is extremely expensive to operate and even unprofitable for many retailers who are not considered as online-only "pure-plays". Respondent R3 however stated that the only way retailers can justify this challenge is if the total equation is met by a merge between physical and digital into the store environment. On the other hand, respondent R6 believes that in certain retail categories an online-first approach for new upcoming brands is the way forward, followed by some sort of physical presence. Another important factor that came from informant (R11) of SA, thinks that broadly speaking, physical retail in many markets will remain relevant and still be the dominant channel, and referred to a South African context - that it is largely because low-income people have limited or no access to technology for online shopping. He thinks that because of this, there's a limit to the retail market moving to a purely online one. On a macro level, this is an important finding to reflect on. Furthermore, respondent R3 made a similar remark to respondent R10 and R12 above which aligns with both the current findings of this chapter, as well as the following sub-theme chapter. His remark highlights that there is a fundamental need that is met by physical retail important to a human experience, and therefore believes that not all stores will shut down despite the pre-eminence of eCommerce and unfortunate impact from the global Covid pandemic (see chapter 2.1.1).

> *"My personal belief is that there will be retail reinvention. I don't believe all stores will shut down. During this pandemic, all of the people who are staying home will probably get sick of buying online only. Not only will people want to have a detox from being indoors of their homes, but they will all want that human experience that physical retail provides" - R3*

4.1.2 Impact from Covid-19 on physical retail

In continuation to address the topic regarding the current state of retail and the question of whether physical retail is here to stay has caused much debate. Respondents (R8, R9) stated that for many years, the long-term prognosis for physical retail has been the dismay of physical retail at large with many stores' closures in many retail categories globally. This debate came up in all interviews. At the same time, the consensus view from all the interviews seems to be that not only is there a fundamental need that is met by physical retail to a human experience, but also that physical retail is and will be here to stay in some form or another. However, the informants all make clear that physical retail is without a doubt subject to habituation and yet poised for reinvention. Respondent R13 stressed that retailing often goes through trending cycles in parallel with consumer behaviour and economics, and in relation to brick-and-mortar retail, it is simply changing function rather than becoming redundant which has for long been speculated. Respondents R12 and R3 added their remarks to the phenomenon of the current state of retail as follows:

> *"There was this kind of theory about a 'retail apocalypse' happening for quite awhile, but I believe that the industry is just shifting and that there needs to be a new role for retail." - R12*

Concerns were disclosed by the interviewees regarding the impact of COVID-19 global pandemic on the physical retail sector, which has encouraged debate towards the future of the physical retail sector, and what a future retail experience might look like. According to the interviews, Covid is an important major indicator for change in the retail industry globally. It became clear from the interviews that all retail categories were affected one way or another, however some categories impacted more than others. Respondent R2 claims that supermarkets and grocery stores were the least disrupted in terms of sales, and in fact were significantly high performing categories on record throughout Covid. However, all interviewees also emphasised that Covid has accelerated the trend of going digital and having online presence. Another interviewee (R9) specified that even pre-pandemic, observing the dismay of many physical retailer stores was evident in many categories for quite awhile, and this in part is because nothing had really changed in those store environments in a very long time, along with poor shopping experience that does not give consumers the right choice at the right time. He stressed that the retailers who survive and become successful are the ones that have been able to utilize technology and put in the effort to generate some form of memorable experience that drives consumers back. Four of the respondents articulated their concerns regarding the current state of physical retail as follows:

> *"Retailers don't focus on what shoppers or consumers actually want from those environments." - R9*

> *"As a consumer, their expectations have shifted pretty significantly, in terms of what the physical retail experience should mean for them." - R4*

> *"There's always been winners and losers across the physical retail sector, whether 20yrs ago or 20yrs into the future. Fact of the matter is that spaces evolve." R1*

> *"Retailers should become more experimental with purpose-driven design." - R9*

Major challenges the interviewees raised concerning the current state of retail is that Covid has in fact triggered the need for change among retail businesses, and those that are quick enough to change have been forced to deal with omnichannel capabilities and it has completely accelerated the thinking process that all retailers and brands need to take part of in regard to the interplay between merging the offline and online world together to succeed. Six of the participants each mentioned the same example of a popular retailer in particular that was heavily impacted by Covid, named Primark. While this was only one example of many, they explained that this retailer did not have either digital or eCommerce capabilities, and when Covid disrupted the retail sector forcing retailers to temporarily and indefinitely close their stores, Primark ended up in an extremely difficult situation resulting in major financial loss and little to no sales generated during this period as they did not have their physical stores available or the ability to make sales online. On the contrary, when the regulatory store closures were lifted, there were line-ups of people eager to shop at their store's locations. This is an interesting case example that arose during the interviews as it correlates to the earlier literature from chapter 2.1, indicating that people still desire

to go to a physical store to shop, however also proving that online retailing in conjunction with the physical store channel both serve vital to the retail establishment's "ecosystem" and must work in tandem to meet the needs of consumers. Respondent R3 also indicated that during the pandemic, all of the people who are confined to their homes are likely to grow tired or frustrated having order and buy online only and will desire to have the experience that physical stores provide, implying that one cannot live without the other.
Furthermore, Pranay *et al*., (2017) argue that many players in the industry are still looking to improve and strengthen their physical store presence, however, it's becoming 'a tail of two worlds' between online and offline. The way retail spaces are planned, built, arranged, staffed, measured and managed will start to become much more experimental and innovative than how previous traditional retail operations have been functioning in the past. The responses of the interviewees reinforce this argument and correlates back to the finding that retailers face this challenge where there is a critical pain realized that the retail environment must evolve in order to survive and thrive, and that retailers need to include the omni-digital part of the equation from a consumer point view, thus the physical environment format needs to adapt. These arguments demonstrate that in conjunction with the impact of the Covid pandemic, the physical retail environment is quickly evolving into a more experiential "phygital" landscape (see chapter 2.4), offering more opportunities for immersive brand experiences, marketing, customer acquisition, and ways of better understanding shoppers in the catchment area of the retail venue. Interestingly, respondents R1 and R3, explained that the pandemic created a greater need for tracking visitor occupancy and storewide shopper behaviour in their venues even more closely than ever before. Respondent R1 stated that his company noticed a lot of investment going into physical retail among many retail firms, both pre-covid and currently, however these firms have realized that they need to understand in-store behaviour to correlate the offline world more with digital and online in order to provide better experiences for their customers, they need to be able to influence the full omnichannel experience and create an omnichannel infrastructure.

> *"What Covid has done is actually elevate the conversation, because now retailers are starting to realize that you really need this in place. Retailers who have control over occupancy levels, people flow, or control over traffic numbers, especially under the current Covid climate, enables retailers to ensure a safe environment, but also one that allows them to bring back their customers and serve them better. It's driven and elevated the prioritisation around technology like ours to be front and centre, especially for certain industry verticals that need this immediately." - R1*

4.1.3 Rethinking retail

In a post-covid world, all respondents agree that retail is moving towards a focus on entertaining customers and experiential retailing. As such, respondent R11 propounds the view that retailers should be focusing more on shopper-centric and friendly store

environments, aligning people to feel comfortable in the store. He used an analogy of the intuitiveness of a website, where the store space should feel the same in terms of seamlessness and navigation, with tailored experiences. Moreover, participant R3 believes by the year 2030, the local space of a retail format will be highly important, and multifaceted; partly as a digital format physical display space combined with a seamless click and collect system, while at the same time serve as a community space. Similarly, the topic of shopping malls arose in the interviews where one participant (R12) from New York City stated the following:

> *"In the US at least, shopping malls were becoming graveyards even before the pandemic and I think they will become a place for multi-use, post pandemic. Afterall, a mall is not about the convenience of shopping but about sociability. They will need to rethink the uses of the space and attract different kinds of interesting retailers, especially for newer and younger generations looking for more experiential experiences. I think malls will survive and become a different kind of a playground over time." - R12*

Other varied views from the interviewees think retail stores will serve as "showrooms" where the store itself will not be transactional, but rather a place where customers will go to explore, try and experience the product and be immersed into the branded store experience, regardless if the retailer's products are purchased online or not. Respondent R4 referred to this new age of retail as "*retail theatre*" where there will be more of a story behind the brand or retailer in terms of the experience and connection it provides with consumers while keeping up with relevant trends, building brand transparency, contextualization, and with digital at the forefront of the so called "phygital" or "connected" store experience. That said, half of the respondents referred to examples of popular large retailers and prominent brands who are moving in this direction, such as: Amazon Go, Nike, Lululemon, AT&T, Boots, Ikea, 7Eleven, Apple, and Lego, to name a few. However, despite that, one respondent (R10) predicts that along with impact from the covid pandemic, many consumers might go through a "backlash" against supporting large retailers that dominate and perhaps monopolise the marketplace. She professed that many consumers will be in favour of supporting small local retail businesses and will even lead to the prevalence of small retailers and independent entrepreneurs opening new stores.

Moreover, another respondent (R6) added that the model of the future is where the convenience of the store has what the customers are looking for addressed by the respective categories and products that serve the need of the shopping mission on demand, however, will need to include an element of excitement or "reason for being" as is a channel of exploration, thus retail firms need to enable new brands for ways to create an opportunity to come into the physical brick and mortar space with experimental ways of showcasing, such as pop-up stores, that would serve as an agile format to promote products, build brand awareness, and engage consumers sensorily within the physical environment combined with digital interaction experiences. Conjointly, all respondents agree that both the human experience of physical retail and technology is and will be a crucial component that connects the store space with the consumer in an ever changing dynamic and challenging marketplace. Lastly, respondent R13

asserts the notion that the way stores have changed over time is a reflection of us as people and as consumers. He adds that the interesting aspect of this are the elements that stay the same.

4.2 The shift into "phygital" retail

As discussed in the previous findings, the respondents strongly felt that the physical retail environment is salient to a holistic dimension of consumer immersion and human experience. Retailers that use their physical stores not only to sell products but to also sell experiences that involve the product, will be the new experiential merchants, enabling the physical store to become the most powerful and measurable media channel available to a brand, and the customer experiences that take place there will be the most profitable product a retailer can sell. However, it also became clear from the interviews that as physical retailing at large is amid disruption, largely due to eCommerce forces and the detrimental impact from the Covid pandemic, this also indicates opportunity to reinvent the physical retail venue space, as well as redefine position, omnichannel strategy and operating model to succeed in this era of digital disruption. In addition, a majority of the respondents communicated that as there becomes an increased number of touchpoints from both shoppers and consumers as they search, buy, and get support, this also creates a greater need to holistically understand the many variables that influence the patronage decision, particularly within the retail store environment. These respondents further expressed that because of the ubiquitous use of mobile devices with the ability to connect seamlessly, along with various technologies that are available to incorporate into the physical realm of the retail venue, this has significantly changed the paradigm of marketing and retailing - from a multi-channel logic shifting to an omnichannel one. Respondent R6 recognised this by stating that eCommerce is now starting to be referred to as "social commerce" or simply "commerce" as the demarcation of channels becomes ever more integrated across retail and consumer behaviour. Furthermore, due to a hybrid of physical and digital in a spatio-temporal context, the term "phygital" or "connected store" was used, involving together the contraction of "physical" and "digital" retail environments. Belghiti, *et al*., (2017) states that a phygital experience is in fact a closely related form of omnichannel shopping, however with the specific emphasis on its occurrence within the physical store setting itself focused on both physical features and digital features, thus embodying the term "phygital" as the most complete form of omnichannel retailing. Interview participants (R1, R5, R6) described the term "phygital" in their own words as seen below:

> *"It is the concentration of an individual's behaviour or an object's behaviour across all platforms. Whether it be on digital platforms or physical environments, it's the convergence of behaviour into one term and into one place, that of which is 'phygital'. It gives an even better overall view of someone's behaviour, going beyond context to establish behavioural insights and trends over time." - R1*

"In short, it's about taking the best aspects from each space (online and offline) to create a much more complete, satisfying, and immersive customer experience combined with unique aspects of browsing or shopping in a real-world brick-and-mortar store." - R6

"Phygital'' is what closes the "cybernetic loop", where physical merges with digital and vice versa. From this you can even start to understand people's behaviour in a particular built environment, such as in the context of a retail venue. You can then even make real-time automated decisions based on behavioural parameters which can be used to alter the environment, such as through sensorial triggers in order to influence the crowd of consumers within that space." - R5

Each of these definitions are close representations that align with the theory that can be found in chapter (2.4), however, the description from respondent R5 who represents a phygital ambient communication solution, perhaps takes the concept of "phygital" one step further with the notion of closing the "cybernetic loop", doing so by altering the physical environment by atmospheric stimuli to enhance the environment to consumer relationship. This approach is explained further in chapter (4.2.3). While the aforementioned supports the discussion around this subject, two respondents (R2 and R3) claim that the drivers of change for this development is for the retail store to become much more digitized. Not only in terms of the way spaces are planned, but by capturing behavioural data at every single point of that retail store space and product point in accordance with the shopper, thus strategically using the physical space in a digitized way to achieve a "phygital" experience. Respondent R12 also believes that "phygital" will pave the way for future retailing and will be a key factor for retailers and brands to differentiate themselves as it is a new way to provide value to the in-store shopping experience, redefining the fragmented omnichannel behaviour of shoppers.

Moreover, interviewee (R2) stated that a "phygital" approach allows marketers to "close the loop" by synergizing online and digital components to the physical store utilizing various technologies, which ultimately enables retailers to understand more about shoppers and what they do inside the store. Another interviewee (R6) who represents a firm specialized in digital shopper marketing solutions and shopper marketing strategy raised an important aspect, which is that many large retailers still do not fully understand the difference between multichannel and omnichannel. He explained that communications need to be crafted to the profile of the shopper and the consumer, considering how the touchpoints of the shopper journey may be complex between for example, product discovery online, followed by experiencing the product in-store, and then making the final purchase online. Shoppers should therefore be given a "through-the-line" brand experience where advertising is consistent from digital into the physical store - this in part is where the importance of "phygital" prevails where the merging of consumer and shopper data is becoming so powerful, informant R6 explains. Similarly, informant R13 referred to the notion of an integrated shopper journey between physical to digital and vice versa as the "halo effect" which aligns to the theoretical literature from chapter 2.1.3.

Furthermore, informant R6 reiterated that retailers need to evaluate what the role of digital is in the store. He used the analogy of 'digital' in relation to in-store marketing point of sale material as it acts like a "silent salesman", and because of this, retailers and brands will desire to know various measurable factors that are important to them, such as engagement rates across all channels. Additionally, informant R6 further explains that this creates an integrated environment that provides omnichannel digital information which can be implemented, through for example personalized micro websites that shoppers can discover via QR code on product packaging or display fixtures, this then provides a layer of information relevant to the shopper while in the physical store. Correspondingly in chapter (2.4), Belghiti *et al.,* (2017) distinguishes "phygital" as the designation of the consumer's free circulation between different physical channels (point of sale) and digital channels (SMS, push notifications, QR, websites, social networks, etc.) which is somewhat controlled to a greater or lesser extent by the retailer or brand.

4.2.1 Mobile commerce in the context of "phygital" experience.

Further evidence of the findings supporting the phygital paradigm seems to suggest that mobile is one of the most important key components to not only drive retail commerce across channels, but also enabling a digitized store, or in other words a "phygital" / "connected" store experience. However, it also became clear from the interview data that eCommerce and brick-and-mortar is often discussed as if they were two distinct concepts, and the respondents had said that the demarcation has been blurred for years. On one hand, during the interviews there have been dissenters to the view that what bonds the two is the ubiquitous use of mobile smartphone devices, which in turn opens many opportunities for retailers and brands to gain insights into in-store behaviour and improve omnichannel strategy. Pointing back to earlier theory from chapter 2.4.1, Okazaki and Mendez (2013) argue that contraction indeed points back to the era of mobile internet and smartphone adoption, which are inherently special tools, in terms of so-called ubiquitous technologies (anytime, anywhere, any device, any content) and behaviour is changing as a result in particular by the way individuals' shop. This has uniquely changed the opportunities for retailers to think about how they understand behaviours of consumers and shoppers (Okazaki and Mendez, 2013). During the interviews, when asking participants, the question "how has mobile changed in-store behaviour", all thirteen informants' views varied in terms of its relational role between environment and consumer, encompassing a "phygital" experience. As such, the premise surrounding the consensus view of the question rests on three correlating assumptions gathered from the informants: (1) mobile serves as a gateway to track behaviour in-store by means of device signal triangulation, (2) mobile opens new opportunities for omnichannel shopper marketing to better communicate and engage with shoppers, especially in proximity to objects and goods, (3) challenges and behavioural dynamics pertaining to what happens in-store through the influence of using mobile. Upon initiating the aforementioned question, the following informants (R7, R10, R8) first responded by the following statement:

"Nearly everyone carries a mobile phone on them, and nowadays the mobile is even considered like an extension of our body. It's with us everywhere" - R7

"Using mobile in-store is instantaneous for shoppers." - R10

"Mobile significantly changes the dynamics of what happens in-store" - R8

Many of the findings from this sub-theme overlap and carry over to chapter 4.3 which aims to generalize beyond the role of mobile, further continuing the debate surrounding implications on shopper marketing and advances in in-store behaviour analytics. Therefore, this sub-theme establishes the premise to findings discussed in later chapters. Interestingly, two of the respondents both reported that mobile consumerism varies from market to market and specified that China is the most mobile-driven market where roughly 18% is bought online, particularly in grocery stores, and up to 90% of that is online shopping on mobile (R6 and R8). Respondent (R12) also expressed her view of the importance of mobile as follows:

"Mobile has had a huge impact on retailers and brands, partly because it enables shoppers to do product research while in-store via their phone, quickly looking things up. You're able to plan your whole experience, you can map the store ahead of time, you can download your discount coupons, make purchases with cashless payments from mobile wallet, and you have everything at hand. In the store, you can compare products from in-store to online and get more information about products immediately." - R12

The same respondent further explained that mobile has become so ubiquitous, particularly during in-store shopping, as well as the popularity of mobile apps used by consumers, and retailers and brands that provide their own branded store app for consumers to use as part of the shopping experience hold many benefits. She specified that some of these benefits of mobile apps include a more frictionless shopping experience, while also the significant ability for retailers and brands to gain granular insights from the shopper activity in-store due to the inherent connection that mobile apps have with Bluetooth, as well as passive WiFi sensing from the mobile device. Retailers and brands who harness this are now able to provide a personalized experience to shoppers in-store, informant R12 explained. This aspect of the findings is also further supported in chapter 2.5.3 of the theoretical literature. On the contrary, informant R2 stated his opinion that on one hand, mobile apps indeed serve highly beneficial for multiple reasons, while on the other hand, however, does not believe that mobile apps have become so widely used among consumers when shopping. Nevertheless, in alignment to the, informant R9 expressed the following:

"This so-called "phygital" store experience should be and will be about personalizing the shopping experience and mobile plays an important role" - R9

Three of the interviewees however, stress that the challenge is to keep shoppers within the experience, which requires a personalized and contextual approach and by nurturing the relationship with the shopper with relevant and timely information to keep

them engaged throughout the shopper journey. Based on the interview data, mobile and the use of mobile apps seem to be an important aspect that contributes to the "phygital" experience. Moreover, respondent R3 highlights that in the context of consumer product goods (CPG) retailing, a broad range of technology, whether digital via mobile devices or digital via in-store signage or display fixtures, this development for growth for in-store retail is rather slow moving and has been proposed for more than a decade. However, he expressed positively that the adoption of in-store technology has been quite rapid in recent years and seems to be a promising direction especially regarding CPG retail and shopper marketing in particular. He further explains that mobile is a very feasible technology to encapsulate a "phygital" store experience given that nearly everyone owns and carries a mobile around with them and into the store, often helping them shop.

4.2.2 The showrooming phenomenon

As earlier mentioned, there were concerns disclosed by the interviewees regarding the challenge to keep shoppers within the experience. One respondent raised the concern that mobile has made shopping more difficult since it takes away the attention of the in-store shopping experience and task at hand. This raised the discussion among the participants regarding the phenomenon of "showrooming" or otherwise known as offline to online or online to offline (O2O) commerce (Li Shen, & Bart, 2018; Rampell, 2010). According to Yurova *et al*., (2017) showrooming is an outcome of the evolving omni-channel retail environment and assumes high relevance due to the negative impact of the phenomenon on the profitability of the brick-and-mortar stores (Mehra *et al*., 2013; Bhattacharjya *et al*., 2016), the shoppers use of mobile while in-store has also lead to a common shopping behaviour known in the retail industry as "showrooming" - because physical brick and mortar stores act as a showroom for customers to browse, discover, touch, and inspect products - resulting in purchases being made online for possible reasons such as; cost-saving, convenience, and more choice availability from product specifications (Flaherty, 2018). In China for example, consumers often regard physical department stores as showrooms as free fitting services for their online shopping, which has been a headache for physical retailers (McKenzie & Yip, 2018). However, Chatterjee and Kumar (2017) argue that showrooming can still be an opportunity for retailers who adapt to become more omni-channel centric (Chatterjee and Kumar, 2017). Respondent R13 expressed that personalization is very important in the context of the store, and this is where both omnichannel strategy and customer service experience becomes crucially important, which therefore in turn prevent the negative effects of showrooming, as the respondent explains as follows:

> *"People usually use their phone to get input, such as reviews or even product comparisons from competitors. There's a lot more "abandon cart" backout behaviour online than there is in person, and this is where customer experience and engagement should be highlighted. There also needs to be a proper link between the product and the experience one receives when searching online for that product during the in-store shopper experience." - R13*

Rebuttal to this point, as we discussed in chapter 4.2.1, along with informant R6's emphasis earlier explaining that communications indeed need to be personalised to the profile of the shopper, which would therefore create a more omnichannel "streamlined" and frictionless branded experience, influencing the shopper to stay within the experience at the right time and at the right place, rather than the shopper feeling the need to seek out e.g. an online competitor website while browsing in-store. To elaborate, he described an example way of preventing the negative aspect of showrooming which could involve giving shoppers access to a dynamic online micro website or webpage that is on the product by scanning a personalised quick response (QR) code (which can be posted on the product in the physical store, on a display fixture, or can be advertised in any public locations and can even be used to order and pay for the item online through the mobile device, and then wait for the product to be delivered, or otherwise be used to provide further information about the product to increase the likelihood of in-store purchase. In addition, five of the respondents claimed that showrooming can be easily prevented by the level of customer service one receives from in-store staff. Interestingly, respondent R1, a CEO of an "omni data" intelligence solution that helps physical venues use data to measure, predict, and influence visitor behaviour, shares his view on how his company helps to construe with the showrooming phenomenon:

> *"Showrooming is definitely a challenge and we're able to track it to an extent. In some of the retail environments that we work in, because we've got the ability to observe online and offline visitor behaviour, especially if shoppers have WiFi enabled on their phones, our solution serves as a channel to visualise that and inform the retailer about this cross-channel behaviour, as well as the sites the customer is looking at. Real-time actionable insights can be taken into account, where in-store customer service can then intervene and help the customer in a timely manner. Our aim is to get across the entire data set ecosystem between the retailer, environment and consumer to assimilate what is driving purchase behaviour" - R1*

4.2.3 Closing the "cybernetic loop"

As substratum to the subject "phygital", in relation to the physical retail environment and shopper experience, one respondent (R5) in particular discussed the topic of "phygital" from a different perspective, yet unique and relevant supporting the other theme findings. As quoted earlier in chapter 4.2, this informant perhaps takes the meaning of "phygital" one step further highlighting the relationship between environment and consumer. The informant's own company provides an ambient communication solution that comprises technology that makes it possible to create digitally enabled physical environments, where live data is used to manage physical environment locations in real-time using ambient communication. In relation, Stratton *et al*., (2011) argues that as retailing becomes more experimental and focuses more on customer experience, leveraging the physical space of the retail environment inherently

becomes an increasingly important marketing tool and place for examination. It is essentially a living study laboratory, rich with information and opportunity to explore how results are produced, particularly by the complexity of understanding shoppers' changing behaviours (Stratton, Moser, & Wallace, 2011). Retailers have also recognized the importance of the store environment as a tool for market differentiation (Levy and Weitz 1995). The correlation from respondent R5 reaffirms this through his explanations of how ambient communication closes the "cybernetic loop" or in other words "phygital" experience between the environment and consumer, adding that final or top layer. He stated that "phygital" is most powerful when it becomes personalized and contextual to the environment, particularly when adding sensorial triggers that enhance the human experience of the physical retail environment in which influences the patronage decision through "nudge" behaviour and doing so through strategic atmospherics and ambient communications by means of e.g., dynamic lighting, colour, sound, smell, and touch. He expressed that this opens new opportunities to redefine retail spaces of which he refers to as "narrative environments" that can instil a sense of brand identity, context, visceral experience, and an environment that tries to tell a story - aligning to the idea of "retail theatre" as respondent R4 pointed out in chapter 4.1.3.

> *"Data harvested from the physical environment can now be used to perform automated real-time sensorial triggers personalised to consumers interacting in the retail environment, based on e.g., visitor demographics, dwell time, people movement, flow, crowding, as well as engagement with fixtures or objects, and how one responds to certain stimuli. With these parameters you can then allow that physical environment to change dynamically. And so, the environment becomes intelligent in relation to the people's behaviour in that space." - R11*

The findings from this unique perspective lend support to the claim that both omnichannel and multichannel retailing, the temporal aspect seems to be a critical dimension, focusing on the desire to manage or "manipulate" time spent in the retail setting (Balasubramanian *et al*. 2005; Ansari *et al*. 2008; Neslin *et al*. 2006, 2014; Gensler *et al*. 2012). Supporting literature also points to the need to further examine the spatial dimensions which strongly correlates, hence informant R5's perspective of "phygital" is a unique substratum that sheds light on applying technologies in the physical space and appropriation towards advances in behavioural analytics and experience design. The informant stresses that this approach of "phygital" is in early development in regard to closing the cybernetic loop for the built environment. However, going forward he explains that this will consist of merging the discipline of design, architecture, analytics, and digital user interface design, which can then be used to further benefit the developments toward digital marketing and related disciplines. Interestingly, encompassing the "phygital" concept, he describes a parallel between both offline and online worlds using the comparison of a building or store layout to that of a website or webpage, explaining as if the physical space was similar to a digital user interface, henceforth similar principals from the online world can in many ways be applied to the physical space, representative of an entire platform or ecosystem. Expanding on the "phygital" concept, this directly correlates to chapter 2.5.1 (see Nandakumar 2013;

Kim and Ro, 2011; Yaeli *et al.*, 2014) discussing the concept of "Phytics" (physical location analytics).

Along similar lines, two respondents, namely R1, CEO of an "omni data" physical venue solution and respondent R4, representative of a prominent shopper tracking solution provider, brought up an interesting finding which lends claims to this chapter theme and supports the chapter themes that follow. Referring to chapter 4.2.1 which discussed the topic of mobile in the context of "phygital" experience, along with the three correlated assumptions that encompass the "phygital" concept, more specifically the underlying question of how mobile has influenced behaviour in the physical retail environment. As such, the two respondents mentioned that although not limited to, mobile predominantly serves as a gateway to track behaviour in-store by means of device signal triangulation which correlates to the active participant of those who posses the mobile device within the physical store environment, this then opens up a plethora of opportunity for retailers and brands who are able to harness the data that can be obtained, thus optimizing an entire retail shopping experience. Aligning to the idea of "phygital", respondent R4 elaborated that mobile is a crucial component that helps to unlock the power of in-store data in relation to shopper behaviour (see next chapter 4.3), as informant R4 explains:

> *"You could take mobile phone signals and run a kind of locational analysis to locate people in an anonymized way within shopping centres and retail stores to get a sense of not just how many people are there, but how they navigate around the venue space for example. This is built around the key principle of questioning if we know how often they're coming back, how long they're spending there, and what they visit, don't visit and what they do, we can start building these networks and maps of behaviour and that then starts to give us insights around what the overall value proposition looks like, at a brand level or storewide level. For example, are we really engaging people the way we should? And is there something missing from the proposition? Ultimately it helps us redefine or improve retail strategy and activation and build that dialogue with our clients who are in turn trying to build a dialogue with their end customers. This kind of technology and approach is something that has existed for the past decade and there's been many advances since, combining this with other various technologies, it's becoming much more sophisticated and finer grained." - R4*

Further evidence supporting this finding may lie in the literature of Larsen *et al.*, (2017), who claims that holistic retailing is experiencing a new emphasis on "behavioural marketing" through digital technologies, analytics, mobile, and the proliferation of behavioural data. 'Phygital' retailing continues to evolve, thereby strengthening explanations relying on environment-behaviour interaction via digital technology and experimentation (Larsen, Sigurdsson, & Breivik, 2017).

4.3 In-store data, insights, and solutions

The overlapping holistic theme of in-store behaviour analytics and shopper marketing arose as a core topic with all respondents during the interviews for this research. The importance of shopper research and in-store data was first recognised as a main prerequisite for the proceeding sub-themes in this chapter, prompting the baseline questions asked "why is it important to study shoppers? What is in-store behaviour analytics, and what is in-store data and insights and why is it important?". Although all respondents shared very similar views to describe the aforementioned questions, respondent R1 first portrays the topic from a holistic perspective on the topic regarding the importance of understanding in-store behaviour.

> "*Physical in-store behaviour can provide a different view on a customer or shopper and the different touch points that occur, which could potentially influence how you communicate and engage with them. The ability to influence someone along the shopper journey and at the point of purchase is very important in-store. So hence, the understanding of their in-store behaviour is really important to be able to deliver that outcome. And in order for brands to change how consumers exhibit their products in-store, how they are merchandised in-store and how they sell on premise, without data, you can't understand what's happening in-store. In-store data can help uncover what the trends are suggesting what the sentiment of your customers is saying. And then adapt your building and your layout, your merchandising and your placements, as well as your staffing first and foremost around that. So, I think that's why it's important to understand in-store behaviour." - R1*

The data yielded by the interview findings provide convincing evidence that in-store behaviour analytics is multifaceted and that there is a significant blind spot of knowledge, awareness or even disdain pertaining to the activity of what happens inside the physical store environment that influences patronage decision making and thus needs to be closer examined. To put this into perspective, Sorensen (2010, p. 8) claims a figure of 20 million seconds - that is the time all customers collectively spend in a typical supermarket every week based on measurements across multiple stores. That is 20 million opportunities a week to sell something. The tragedy of modern retail however is that most of these moments are wasted because retailers and brand manufacturers by and large do not know what the shopper is doing during these moments. This reference is also not limited to a single retail format exclusive to supermarkets. Evidence borne out by Sorensen's (2010) research shows that in self-service retail stores, such as supermarkets, it is found that shoppers only spend 20 percent of their time simply moving from place to place in the store actually selecting merchandise for purchasing. However, this represents a major oversight. According to Sorensen, this means that 80 percent of shoppers' time is economically unproductive and wasted (Sorensen, 2010, p. 8). Aligning with this synopsis, respondent R8, a highly acclaimed shopper researcher expressed the following two statements which provided ample support to this notion:

"A mistake that's been made over the years is thinking about retailers as really good at selling stuff, but the essential factor is that retailers are really good at buying goods and shipping them to destinations serving as warehouses. And for long, retailers have had very little information about what happens in the store and how shoppers use the store space. Retailers then relied on the brand manufacturer to do all the internal and external marketing, and there's very little understanding about why people choose one product over another." - R8

"The lack of understanding of the space, the lack of understanding of the impact that space has on where people go, and the lack of knowing what they do in that space is virtually a "crime", essentially, the lack of crucial data that is missing and a must-have. There needs to be a stronger understanding of the relationship between environment and consumer in the context of behaviour." - R8

While the in-store behaviour of shoppers has been studied for more than 60 years (e.g., see Applebaum, 1951; Frisbie, 1980; Kollat and Willett, 1967; Stern, 1962), all respondents from the interview agreed that studying in-store behaviour is still quite often overlooked, much to the disservice of retailers, brands, and shopper marketers. Furthermore, systematic documentation of the underlying patterns of shopper behaviour remains necessary. At the same time, a majority of the respondents also mentioned that studying in-store behaviour is complex as an art and a science, and in addition, new technologies and tools available are creating new opportunities for developments in the field. This in part is due to the 'phygital' paradigm shift and growing importance of the physical store serving as salient to a holistic dimension of consumer immersion, as discussed in previous theme chapters. That said, Larsen *et al.,* (2017), profess that there is no better time than now for undertaking shopper research on in-store behaviour, experiments and analysis by applying technology, given the evolution of retailing apparent from a behavioural perspective in which operant behaviour represents an activity that is altered by the environment-consumer relationship of an evolving 'phygital' landscape (Larsen, Sigurdsson, Breivik, 2017). To build a comprehensive description of in-store behaviour to advance the science of shopping (Underhill, 1999) a multifaceted and multi-measure approach providing insight into different aspects of in-store behaviour is important according to a majority of the respondents. When asking the respondents to describe 'what is in-store behaviour analytics', two respondents (R8 and R10) with near identical responses compass this question by explaining that the subject is rather holistic and yet complex with varied techniques that can be applied, however begin with describing key aspects covered by using the questions as quoted below:

"It's a matter of trying to understand everything from what influences the choice of store that people make, once they get to that store, how do they recognise it? How do they navigate around it? If you get them to an aisle, how do you get them to browse or stop to engage with something? How does that physical space help or hinder them in terms of that journey? How does that physical space enable selection of merchandise? How is the interface between staff and the store and the shopper? How does the conversion work? If so, how do we entice that?" - R8

This summary is closely connected to the response of informant R1 at the beginning of this chapter, however, respondent R10 with expertise in category management & shopper insights referred to this as encompassing the path-to-purchase (P2P). She noted that there are different versions of path-to-purchase that can be applied accordingly, as such with online and or omnichannel retailing the path-to-purchase becomes quite complex between channels especially when a component of digital is involved, drawing back to chapter 4.2. Probing deeper to glean insights on in-store data in the context of shopper behaviour, the surrounding consensus view rests on three correlating key findings gathered from the informants: (1) in-store data helps to uncover the "how" and "why" aspect of shopper behaviour, (2) in-store data helps to understand the difference between "who" is shopping by distinguishing the difference between shopper and consumer, and (3) filling in the in-store information gap between sales, buyer and consumer data. This reveals that in-store data, (also referred to as shopper data) is the missing crucial information that fills the gap to serve as a vital link between retailer, brand manufacturer, and improving the shopper experience. Four of the participants (R3, R7, R9, R10) explained in detail that without in-store data, the only information available from past transactions and purchasing patterns. Sales and buyer data is typically obtained from loyalty card tracking or point-of-sale (POS) to understand the buying patterns of consumers who shop at the store longitudinally in terms of what they are buying and how often over time.

Further elaborating that this type of data however does not address the actual shopping process. In addition, there is consumer data, which is harnessed by brand manufacturers - this data provides insights on those who use the products and how they perceive the product or brand. The informants explained that typically, consumer data is gathered through a variety of methods e.g., surveys, online panels, crowdsourcing, etc. as it is beneficial to help understand potential "demand", such as consumer opinions and preferences. It does not however address how the shoppers make the purchase decisions in-store. Lastly, the informants explained that shopper data helps to measure the in-store activity of shoppers regardless of whether they end up purchasing a product or if they are the end-user of a product. This type of data is uniquely distinct from the consumer, buyer or sales data due to its heightened focus on the in-store shopping process. One informant (R3) further stressed that without in-store data, the activity of shoppers is more or less unknown, and that physical retailers, along with CPG brands, for long have been making uninformed decisions with partial information based on, for example, survey data, manual observation, and even decisions based on intuition.

> *"Without proper measurement, in-store shopper behaviour is usually only understood from lagging metrics taken at the point of sale, after when the behaviour has occurred" - R3*

Two of the informants (R3 and R9) stated that a primary goal of shopper research exploring in-store data is to ultimately enhance the shopper experience which in turn drives store and brand performance, however doing so by first understanding shopper behaviour, conjointly with connecting consumer to environment relationship.

> *"Our goal was to remove that blind spot and provide them a systematic understanding of what shoppers are doing, and what stimulus impacts that behaviour. Because that stimulus is the investment that the CPGs and retailers are making, whether they're at the highest level as to how you design the store, to improve the experience, and simply making people buy more. The idea is how can you improve the experience so that when they come in store, they can shop in a way that is better for them. To remove that blind spot providing the connection between stimulus and response, and to see what changes may impact on behaviour. At the end of the day, you're still trying to get inside the mind of the shopper. Any information that relates to how shoppers shop and what influences the shopping is the middle part of the equation and that is what needs to be addressed." - R3*

Supporting this finding, respondent R9 added that sales, buyer, and consumer data does not do well at contextualization attesting to the "why" component of the consumer. In addition, there is much emphasis on the ones who buy, however, often overlooking the ones who do *not* buy, pointing out that not only are there missed opportunities, but that in-store decision making hierarchy plays an essential role. Upon investigating further, asking the respondents 'why might there be this gap between buyer data and consumer data, and how might this gap be bridged together?', it was found from over half the respondents that there are certain obstacles involved such as financial cost factors, as well as siloed information across company functions. Especially in the context of CPG, the conflict arises primarily between the retailer firm and brand manufacturer as both do not often disclose certain data with each other. In turn, this hinders the employment of in-store behaviour analytics and shopper research entirely, as data on both sides can be fragmented or inaccessible which would otherwise be beneficial to the greater good of shopper marketing and store performance optimization. It was also highlighted that retailers' often do not hold large budgets for research which brand manufacturers would usually have at their disposal. Nevertheless, while cross-collaboration may be a challenge, four of the informants (R3, R6, R8, R10) indicated that every stakeholder involved benefits from in-store data and insights one way or another, for example between the retailer, brand, shopper research solution provider, and also the shopper or consumers' themselves. According to the informants, it is how the data and insights are used which determine the best possible outcome in order to draw the bottom line. Correspondingly, Silveira and Marreiros (2014) refers to this as the triple "win-win-win" scenario (retailer+brand+shopper) in tandem. As such, informant R3 affirms this by summarizing that CPG retailers (including shopper marketers) for example, make decisions based on in-store promotions tied to the way shoppers behave in-store. Retailers benefit from the performance of the store and sales from the categories, brands benefit from the consumer insights, and shoppers benefit from tailored or enhanced store experience (see chapter 2.3, table 4, Silveira and Marreiros, 2014).

4.3.1 Shopper insights & tracking delivered

Interestingly, probing deeper to the remark of respondent R3, he further specified that in-store data and insights can be delivered at three different levels for a more in-depth analysis of in-store shopper behaviour and trends, (1) storewide behaviour trends (2) category behaviour trends, and (3) brand level behaviour trends. Describing each in more detail as follows: first, storewide behaviour - R3 described this as relative to the overall dynamics of the physical store and key storewide shopper behaviour trends such as analysing demographics, trip types, time of day, shopper flow, traffic, and engagement which can be monitored through heatmaps and video analytics. He claimed that storewide behaviour monitoring helps brands shape a larger channel strategy and drive a range of category management and shopper marketing decisions. Another aspect he noted was that the Covid pandemic has created an even stronger need to track storewide behaviour more closely and frequently. Second, R3 discussed category behaviour trends to which he describes as the way in which people shop, indicative of lifestyle, cultural consumption, and understanding the products people select and the influential factors specific to the category, or otherwise as the fundamental changes in the process of shopping, enabling brands to go beyond sales and survey data with actionable recommendations for enhancing category performance. Thirdly, R3 explained that brand level data helps to understand more about what is happening in the decision-making process uncovering granular insights by going deeper into product segments, brands and aspects of the package that relates to the category. R3 pointed out that this behavioural data enables brand manufacturers to adjust marketing and promotion strategies, as well as with agile tracking of brand to product segment level performance, indicative of shift in shopping behaviour and the impact it creates. On the contrary, respondent R10, a category shopper insights expert, argued that brand tracking, specifically in terms of shelf-level research is an area where the least amount of money is being spent pertaining to in-store behavioural data studies and is one of the most difficult to track behaviour on. However, she optimistically mentioned that there is a lot of research carried out on planograms, display fixtures and store layouts by utilizing technologies such as virtual reality (VR). Corresponding to chapter 4.2.3, respondent R3 summarized by mentioning that the aforementioned various behavioural in-store data can be visually tracked, measured, and analysed through a data-driven cloud-based online platform tool that provides key behaviour metrics on an ongoing basis (see also chapter 2.5.5).

4.3.2 Filling in the in-store information gap.

In accordance with prior findings discussed, methodologies surrounding in-store behaviour analytics arose as a sub-theme topic. Transitioning into application use, the research question of 'how is in-store shopper behaviour data typically captured and analysed' was asked. All respondents gave varied responses surrounding methodologies, approaches, tools and solutions pertaining to in-store behaviour analytics. Half of the thirteen respondents emphasized technological solutions, whereas the other

half of the respondents emphasised more on conventional approaches to exhibit in-store behaviour. Notwithstanding, each view was considerably correlational to one another. In earlier research discussed in chapter (2.3), Applebaum (1951) states that studying behaviour in a retail environment typically starts with two key areas of focus, (1) the identification of shoppers, and (2), their behaviour patterns. Studying these two key components are intrinsically linked, and both retailers and manufacturers need to understand and to determine who buys what, where, when, why, and how motivation factors along the way. In addition, the examination of shoppers' responses to various promotional activities and marketing stimuli within the buying environment (Applebaum, 1951).

Collectively, all respondents acknowledged these aspects. Some approaches and techniques were frequently mentioned more than others indicating two-sided views; however, it did not seem clear as to which approach is most optimal. What did seem clear from the respondents, however, is that a hybrid approach to methodologies to in-store behaviour analytics seems to be necessary. This hybrid approach included, though not limited to, best in practice conventional analogue techniques, as well as novel digital in-store shopper tracking solutions. One respondent (R13) pointed out that when conducting in-store shopper research, it is to primarily find out both the positive and negative critical factors that are needed to make adjustments. All things considered, he added that it is particularly useful when examining pain points such as the low converting parts of the store or category that led to valuable insights where further improvements can be made. Similar to that of Applebaum (1951) as previously mentioned, R12 believes that conducting in-store shopper research often depends, though not limited to; what you are specifically trying to study, differentiating between shoppers and consumer, the profile of the shopper, and importantly the retail format and store environment, which then determines the approach, methodology, tools, and solutions to be employed in order to collect actionable in-store shopper data and insights. Furthermore, two respondents (R8 and R11) argued that data collection across the physical retail establishment is complex and multifaceted. While R8 provided a rather holistic perspective on the matter, R11 alluded to a more opposing view on the digital data-driven approach to in-store behaviour analytics. The informant's views are explained below and later touched upon in chapter 4.3.3.

> *"There are constructional problems of shopper research, which is that the challenges spread across the physical representation from on the shelf through to packaging, display location, and much more, as well as off shelf communication which falls between the prior mentioned. I think shopper research still to this day struggles to grow out from where it should be which straddles both sales and marketing. And the biggest challenge is trying to get the marketers to understand that, when you want to sell a product, it needs to be sold off the shelf and there's a whole lot of research that you need to know about, compared to traditional market research studies and methods, such as focus groups. Marketers need to understand how people actually shop for their products." - R8*

> *"A lot of marketers can be quite myopic and never go out into the market. They see shopper behaviour in the context of their brand, not the category. That's where CPG*

people need to be more unbiased. A lot of this cannot be understood purely by numbers, you need to go out and observe and talk to people." - R11

4.3.3 Digital solutions for the collection of physical data

To understand the advances in in-store behaviour analytics and its implications towards shopper marketing, both interview findings and existing literature recognize prominent technologies. These technologies are also important to the interplay between store environment and shopper. Bollweg *et al.,* (2017) discloses academic research data collected on current state-of-the-art in-store analytics technologies through their different degrees of maturity. Corresponding to chapter 2.5, Bollweg *et al.,* (2017) argue that in-store analytics has not become a well-established practice, and instead, many retailers and researchers continue to concentrate on analysing transactional data. This in turn hinders the opportunity to expand the analysis horizon to include in-store shopper data that is otherwise not covered by the transactions and lagging metrics used. According to Bollweg *et al.,* (2017), one reason for this is the reluctance to engage in new analysis methods that may be because retail is experiencing a major change, in which the search for new solutions is high-cost, potentially error-prone and difficult to integrate into the existing infrastructure. Respondent R12 made a distinction regarding these challenges as follows:

"Making technological changes often comes down to margins and investments for retailers. Retailers are very dependent on their vendors, and they don't build a lot of the infrastructure of their own. They rely more on their vendors; they rely more on the manufacturers of the products that sit on their shelves to supply the marketing and all the insights that go along with it." - R12

What seemed clear from the interview data which also corresponds to Bollweg *et al.,* (2017), is that there are a myriad number of technologies available for collecting and assessing in-store shopper data that have different degrees of maturity and beneficial application use (Bollweg, *et al.*, 2017). To some extent, one respondent (R2) validates this by saying that each technology has a trade-off in that each has pros and cons to its capabilities, however by combining a set of technologies together integrated into the infrastructure, the technologies will complement and support each other for best possible data collection results, explained from informant R2. In relation to the theme of this thesis, a focus was placed on digital shopper tracking solutions that align with the academic findings of (Bollweg *et al.*, 2017). Less than half of the interviewees alluded that the current tools, data collection and management methods are rather suboptimal and that more advanced technology should and will pave the way for commercial use. Concurrently, the same respondents conveyed that they were vaguely aware of current state-of-the-art digital solutions available and intrigued by their capabilities. Nevertheless, the respondents highlighted the tools and solutions that they were most familiar with, starting with the current use of CCTV, eye tracking studies, followed by qualitatively interviewing selected shoppers to match what they said to what the action was in-store. This seemed to be a common methodology to

study shoppers depicted by the respondents. R8 explained that this approach is to qualitatively understand the decision-making process at the display fixture in-store. In addition, R8 also believes the most effective technology for tracking - for understanding the relationship between environment and shopper, is both video systems and IoT sensors. Meanwhile, when examining decision making hierarchy and emotional response to for example visual triggers, he claims that eye tracking is most effective. In fact, it was found from half the interviews that eye tracking is commonly used, while concurrently it was also found that nearly all respondents emphasized that CCTV as essential to in-store behaviour analytics, as respondent R7 for example shares his view:

> *"CCTV is a must-have to observe in-store shopper behaviour. Complimenting that is video analytics which provides the most value. But the solution is not, for example, the camera technology, but rather the data you collect from it and how you use it." - R7*

4.3.4 Technologies most utilized

Of all the technologies to track, analyse and collect in-store data for behaviour analytics, the most mentioned technology solution of them was CCTV, video analytics (including machine learning algorithms and AI), followed by smart glasses (eye tracking), WiFi tracking, wireless Bluetooth beacons, RFID, light barriers, motion sensors, door counters, and people counter systems. All of which support an IoT ecosystem. In no particular order, these technologies can be categorized as follows: rudimentary sensors, optical sensors, proxy technologies, and tracking systems. These technologies are described in further detail in chapter 2.5.3. Over half of the respondents claimed that they utilize many of these mentioned technologies simultaneously, whereas less than half respondents mentioned that they use selective technologies as stand-alone solutions in tandem with conventional techniques. Three of the participants (R1, R2, R3) provided a brief non-technical overview of their digital in-store behaviour analytics solutions that they employ, which also comprises software business intelligence dashboards, therefore unique to the interview findings. First, informant R2, representative of a shopper tracking solution, described his solution which uses Bluetooth Low Light energy beacon devices that are installed to the ceiling of the retail venue space, which then triangulates highly accurate signals to Bluetooth beacons that are attached to physical shopping carts. This respondent specified that this solution provides an in-store full-path analysis of shoppers' patterns as they navigate within the store and in real-time, and particularly useful to gather behavioural insights pertaining to how much time is spent in certain category zones or at displays in the store. He stated that this is particularly unique and important to retailers since this solution passively and anonymously tracks individual shopping carts which associate with the shopper, and provides comprehensive visualised data reported results to ease operational and strategic decisions for store or category managers, shopper insights specialists, or trade and shopper marketers. In support of this, respondent R4 highlights the importance of anonymised and passive data.

"The aggregation of anonymized in store data is extremely valuable, essentially challenging perceived wisdoms." - R4

This type of approach may not offer effective solutions for contextual behaviour observation analysis, however, proves to be useful for monitoring store performance in relation to the layout, as well as store-wide shopper behaviour, particularly for CPG retail settings. To further enhance in-store behaviour data collection on top of analogous conventional approaches, the interviewees emphasized consistency in the chosen methods and keeping a relatively inexpensive and simple infrastructure in place, which consists of CCTV / video systems as a primary source for tracking and looking at more complex behaviours in detail as well as shopper demographic recognition. Four of the respondents (R1, R3, R4, and R12) illustrated that mobile and proprietary high-density sensor have been prevalent and imperative in addition to CCTV, also due to cost benefit advantages and easy employment of technology. Respondents R1 and R3 further specified that because mobile includes Bluetooth and WiFi capabilities, triangulation through device sensing creates an advantageous IoT ecosystem environment that enhances in-store the data collection at multiple data points, such as detecting the presence of a person or object that can be done anonymously and passively.
It was further expressed by R1 that WiFi in physical venues, was one of the first technologies capable of tracking people's physical footfall, and in recent years has become much more accurate and in-demand by retail vendors as it is highly advantageous and multifaceted. An added benefit of WiFi is that it supports omnichannel marketing capabilities which then tether into the existing infrastructure of the physical retail environment. On the one hand, R3 stressed that while this solution is indeed highly beneficial, it is not as accurate as CCTV analytics, in terms of in-store observation, spatial and time temporal resolution. On the other hand, WiFi adds an extra layer of data capture at multiple points, real-time tracking, and marketing functionality. Nevertheless, both respondents agreed that a combination of technologies used simultaneously is most optimal to create an ecosystem for data capture which sheds light on actionable insights. Interestingly, respondent R1 uses the term "omni data intelligence" which he describes working across a broad variety of multiple data sets that provides a better context around physical behaviour and footfall patterns. The informant represents a solution that includes WiFi as a baseline technology that is intended to be part of an ecosystem with existing infrastructure of the physical venue at hand. As such, their algorithms pull together and bring data from all existing systems that the vendor has in place onto a provided software available for the vendor, serving as an all-in-one platform. When asking this respondent how he compares this solution to conventional solutions available, he responded with the following:

"The advantage of our solutions is being able to stitch together multiple datasets and or technologies into one place, and there are very few companies that can do that. A company might have WiFi, CCTV and video analytics, and a people counting solution for example, however, we can pull all the data from existing infrastructure into one

place onto one platform. Vendors of hardware providers also don't provide a software layer that goes gradually into behavioural reporting while at the same time providing marketing solutions, and we do that." - R1

"From a marketing perspective, shopping malls and retail owners historically have not had access to visitor or shopper data. WiFi provides a conduit for people to register and into a database through a captive portal. And to build up audience demographic data has been really powerful especially for shopping centres. We've serviced over 50 million people across malls worldwide, and these malls didn't have access to these people before until our solution came around. So, WiFi has been a really good customer database acquisition tool for shopping centres, along with mall's marketing teams that can communicate and drive engagement initiatives, as well as understand the whole customer journey in order to drive operational efficiency." - R1

4.3.5 Measurement & metrics

Measurement and metrics were identified as important factors of in-store behaviour analytics, holistically pertaining to both analogue and digital approaches, as well for store wide behaviour, category behaviour, and brand level behaviour. The data from the interviews appears to suggest that there are fundamental metrics of in-store behaviour analytics, and interestingly crosses over to similar metrics used in the online world of web analytics. In addition, all participants expressed that testing, measuring, and analysing in-store behaviour is not on-dimensional. Respondent R2 pointed out that retailers should focus strategically on how the physical space is being used and analyse the performance at every single point in the store layout of the store to understand how shoppers use the space in accordance with product categories. As the topic of metrics arose throughout the interviews, asking the question 'what are the metrics or most important metrics that are used to study in-store behaviour. It became clear that 'conversion' was the most important metric, however, it also became clear that the conversion metric depends on the type of activity that occurs that is being measured, as a result various overlapping descriptions were provided, followed by other metrics considered, such as dwell time and engagement at the shelf or display. Informants R8 and R10 outlined their description as follows:

"The most important measure in bricks and mortar store research is conversion. For example, how many enter the store, how many people go to the category, how many interact, and how many people select a product. This base metric is crucial." - R8

"In relation to category, you want to understand frequency of purchase and penetration. Penetration means the number of shoppers that are purchasing out of everyone that could shop. For example, there are two ways of this penetration conversion - how many people come to the store, out of how many of them purchase something. Depending on which one you're targeting, you need a completely different sort of strategy and tactics to marketing messaging." - R10

Similarly, respondent R9 provided a slightly different view from R10 describing the conversion metric as, penetration to interaction followed by interaction to selection, specifying that penetration translates to footfall. Footfall relates to findings from respondent R1 as he described his company's digital solution that uses WiFi to sense the dwell time, or presence of people at a given time and place inside the physical venue. He explained further that one version of conversion could be by measuring the entry and exits of the store. In contrast, while conversion is one of the most important metrics according to all the interviewees, it does not seem to be as clear as popular views might suggest as it depends on the activity being measured. The next metric that was most mentioned throughout all the interviews was dwell time which refers to how long shoppers spend in either the store or a subset within the store, for example in a particular zone or stationary spot. Respondent R4 highlighted that with digital tracking technology, this can be done through overhead CCTV, Bluetooth, and WiFi. He explained that the uniqueness with using WiFi or an aggregation of systems, for example, is that retail vendors can track the frequency of visits and how often visitors are returning and for how long they are spending time in-store or in a specific catchment area of the store. This can also be monitored using heatmaps and circulation flow. Similarly, R1 explains that using geofences, otherwise known as digital parameters, can be set up around the store zones, where they can track metrics such as dwell time and track conversion into these points of interest when visitors enter in the store zone section or how many visitors left immediately - to which he described as the "bounce" metric. R1 portrays that this provides valuable insights to retail vendors to understand if for example there are bottleneck areas in the layout which need to be adjusted or to add more staff to the store zone depending on the flow or volume of people. He emphasised that staffing optimization is very important and that it closely links to shopper behaviour, which in turn correlates with sales and patron decision making and customer satisfaction. He also noted however that their solution is not necessarily to increase conversion, but to help retailers understand the conversion factors that are influencing certain in-store behaviour. In conjunction, respondent R4 added that one of the most important things that a solution provider collecting this data can do is to discover insights, make recommendations, and create a business justification for support towards implementation, which also aligns with shopper marketing. Furthermore, in addition to measurement and metrics, testing assets in-store such as display location or fixtures arose in the interviews. R10 claimed that at shelf level engagement research is the most difficult to track behaviour on and is also where the least amount of money is spent in terms of in-store shopper research. Supporting these findings, R3 and R11 made an important remark as follows:

> *"It's important to remember that every individual responds differently to different things, whatever adjustments you make, whether you're trying to optimise the store zone location, display location, or measure engagement at a display, there is a lot of empirical data. For example, when we look at a display location, using A/B testing as a method, it's mainly through isolating the stimulus and collecting many responses so you can determine and isolate which one is more effective - location being one of the variables." - R3*

> *"In the context of CPG manufacturers, we believe that if they understood in-store metrics and employed shopper solutions, I think a lot of the decisions and what they execute in store would be very different, producing very different results." - R11*

Respondent R3 further discussed measurement and metrics in the context of CPG retail surrounding in-store shopper traffic and engagement at the store aisle and the category. He illustrated the dissection of a path-to-purchase (P2P) sales funnel that can be used to analyse and formulate a complete set of metrics to reveal additional key insights. Along similar lines to that of R10's findings mentioned earlier, R3 also briefly described the P2P funnel in a simplified way which consist of the following variables: (1) Stopping power - to determine if the category location is optimal. (2) 'Shoppability' - to determine if shoppers are engaged. (3) Activation - to determine the speed of purchase. Interestingly, R3 translated these variables to characterise a typical sales conversion funnel as mentioned. In addition, R3 also highlighted that the standard sales funnel is and can be modified to be used in in-store behaviour analytics, which is commonly referred to among those in this field of practice. As such, it became clear from this finding that a majority of the respondents described their own related version of this in-store conversion funnel accordingly. Probing further with the follow up question was asked 'what are the key metrics that were previously unmeasurable that you can now measure?'. One respondent (R3) provided a unique finding, using analogies of the parallels between the online world and the offline world in that they are very similar to an extent, particularly when trying to understand and create metrics that help with key performance indicators, leveraging the sequence, to understanding conversions, and trying to dissect the 'moments of truth', to analysing the decision-making process. On the contrary, R3 also stated that the offline world is far more complex than online, putting forward his view as follows:

> *"There's clearly a parallel, for example when somebody visits a website online, is equal to visiting a store in the offline world. In the online world, every user behaviour and movement is associated with a click and is tracked. In the past 20 years or less, there's emerged a science behind optimizing that. Why? Because you want to understand what is effective or not. Whether it's evaluating the value of the media, selling more, or optimizing the web page layout. Essentially all the things that help in understanding the performance of different elements of an online store. In this case, the effectiveness of influence, to determining who you are as a user etc, all these components are more or less missing from the offline world in the physical store. All you knew was what they bought over time, you didn't know what sequence you used, you didn't know what the conversion rates were, how many people came in, and how many bought or why didn't they convert. And all these aspects are very important." - R3*

4.4 Shopper marketing

As explained previously in chapter 4.4, it became clear by the interviewees that there are many ways to learn about consumer habits, loyalty, preferences, and inclination to buy. Intrinsically, sales and loyalty card data provide a lot of valuable information. Thus, both consumer and buyer data are commonly analysed by retail firms. However, aligning academic theory with the interview findings, relying on consumer and buyer data is not enough to accurately measure the impact of shopper marketing initiatives, and because shopper marketing looks at the domain of individual action which encompasses in-store activities of shoppers, as well as omnichannel and multichannel - across all channels, media, and devices, access to shopper data in-store behaviour will be critical in order to place the physical retail in the omnichannel world. By reiterating that shopper data helps to fill the gap to uncover not only in-store activity and behaviour, but also discovering the disparity and the missing link between the online world and the offline world of shopper marketing. On these grounds, and interlinked with prior theme findings, a majority of the interviewees implied that in-store analytics in essence encompasses and strongly supports the discipline of shopper marketing in a myriad of ways, some of which are touched upon in the following sub-theme findings in this chapter. The aim of this theme chapter from the interview findings is to generalize beyond the preliminary data which adheres to the drivers of change in physical retail and indicates the advances in in-store behaviour analytics and shopper marketing in tandem.

4.4.1 Shopper centricity

Building upon the previous theme chapter, the topic of shopper marketing arose throughout the interviews, specifically pertaining to current application uses and implications in the field, which in turn is highly correlated to earlier academic theory found. One participant (R3) communicated that with access to in-store shopper data, the shift in focus is now "putting the shopper at the centre of shopper marketing". He further elaborated and broadly defined that shopper marketing is when and where a consumer is in a mode of shopping, or in other words when an individual is actively making a choice or in the decision process of selection, therefore they are shoppers, especially when inside the store. The informant also added to this broad description that shopper marketing includes anything that influences or is done to inform and "nudge" the decision, indicating that shopper marketing also encompasses the "phygital" experience (see chapter 2.3 and 2.4).

> *"We found that there were assumptions made in terms of "who is a shopper", because many of the decisions are made from sort of panel data or loyalty card data at the household level. But in shopper marketing, you're looking at individuals. The first step is identifying who the shopper is, in terms of demographics, then informing what works better for them, followed by planning and evaluation of promotions to be implemented,*

and promotion tracking. Based on past work, if you target the shopper, you can get much better results." - R3

Interestingly, the same respondent noted that terminology often gets merged, for example trade marketing and category management is often merged with that of shopper marketing. He expressed that it is not entirely clear the separation in the industry, much of which overlaps. Shankar (2011) is prominent in the literature on shopper marketing and clarifies this separation illustrating a comparison between traditional marketing and shopper marketing, as also referred to in the theory in chapter 2.3, table 2. Shankar states that part of the challenge has been due to the fact that the discipline surrounds a broad scope, including activities which fall under e.g., category management, trade marketing, marketing at retail, merchandising, point-of-purchase (POP) advertising, and in-store presence (Shankar, 2011). Henceforth validating the view of informant R3. Furthermore, O'Donoghue (2019) argues that the practice of shopper marketing focuses much on improving the shopping experience for consumers in order to drive sales, both in-store and online, and enticing last-minute appeals to shoppers at the very moment they are considering buying. Three of the participants (R10, R11, R3) referred to this as the "moments of truth". Much of these moments and appeals can also be influenced by multiple factors, for example though; store atmospherics and behaviour altering influences, as well as examining shopper behaviour while in shopping mode (O'Donoghue, 2019). It was found that shopper marketing is applicable to all retailers, brands, manufacturers, and product categories at large, however, according to the literature, many studies and practice related to shopper marketing has been focused mostly on consumer-packaged goods (CPG) and conducted through targeting portions of marketing investment at specific retailers or retail environments, many of which the interviewees had expertise and area of focus on.

To reiterate further, some of the respondents (R3, R6, R7, and R13) specified that shopper marketing is a necessary component of an overall integrated marketing approach that focuses on specific needs and patterns of the shopper by gaining a deeper understanding, assuming that the shopper and consumer are not necessarily the same. Even if they are the same, the shopper is in a different mode while shopping. Two of the respondents (R3 and R6) characterized that the current state of shopper marketing has been increasingly flooded with a number of new marketing vehicles available to firms, largely due to the fact that shoppers today are faced with the propensity of immense choices that are available driven by a channel blur from omnichannel factors, which in turn has challenged many firms, retailers and brands to seek out new tools and digital avenues to hone in on shifting shopper preferences and insight gathering solutions.

"The world of shopper marketing has evolved tremendously over the last eight years. Shopper marketing teams are now being called Omni-marketing teams."- R6

4.4.2 Display focused shopper marketing

Five of thirteen respondents (R3, R6, R8, R10, R11) discussed the topic of shopper marketing. Of these five participants, a cluster of half addressed discussions surrounding a digital aspect of at-shelf level engagement, specifically highlighting display fixture and display location in-store, as well as exhibiting shopper marketing from a holistic perspective. According to Shanker (2011), to be successful in shopper marketing, the use of processing generated insights that frequently automate the conversion of data into insights and improve shopper marketing activities should be put in place. These activities could be tactical or strategically conducted and include innovative digital activities, utilization of in-store technology, multichannel and omnichannel marketing, in-store atmospherics and design, in-store merchandising, using behavioural shopper metrics, and firm to manufacturer-retailer collaboration (Shankar, 2011). The cluster of participants that discussed the topic of shopper marketing all agreed with a similar consensus view that reaffirms with this literature. Conversely, the available literature gathered (see Shankar, 2011) seems to indicate that some challenges that shopper marketing does not quite address directly aligns with the findings from the interview data (see chapter 4.3), specifically in accordance with the participants stressing that for long there has been a lack of measurement, lack of understanding of in-store shopper behaviour, and lack of shopper data available, along with technological limitations to support it. This has been a frequent theme throughout the interviews and repeated throughout the findings, surrounding each shopper research, in-store behaviour analytics, and shopper marketing. It became clear that these three correspond and directly support one another. Data from the foregoing discussion prevailed and an interesting finding from R8. The informant explained that a significant amount of money has been spent on shopper marketing on displays, however, much of it is wasted. R8 explains the following example from his prior shopper research experience:

> *"The role of signpost brands, for example, such as Coca Cola, is more of an indicator that tells shoppers where it's offerings or where the soft drinks category is located. There is a phenomenal amount of money spent on promotional activity in-store because things are done in traditional ways without in-store shopper data. The conversion of end cap promotion displays are minuscule, approximately 4 percent, whereas promotion within category is might higher." - R8*

The respondent did not appear to suggest that promotional displays e.g., endcap or end aisle display fixtures are redundant, but rather are not used to the best of their purpose or potential and should therefore be optimized based on in-store shopper data. Another respondent (R9) shares a similar yet slightly different view from his shopper research experience which portrays the role of signpost brands and product displays serving more so as behavioural cues to influence consumers and the direction of shopper traffic and zone penetration, followed by interaction to selection (see 'measurement & metrics' chapter 4.3.5).

"Changing product displays in-store is not necessarily to remove from the selling space but to create and influence decision making."- R9

When asking informant R9 how influencing or manipulating in-store foot traffic or patterns of behaviour, specifically directed to a particular zone, category, or product display can be done, he disclosed a case study example from a renowned toy manufacturer brand where they had conducted in-store A/B experiment testing with store layouts and display fixtures, particularly using video content digital signage on sizable pillar fixtures in-store relevant to the theme of the product category located in respective store zones. Based on shopper research, collecting in-store data, and using various techniques, this experiment resulted in a 11% increase in sales for that brand's store location. Furthermore, given the centrality of this issue, respondent R6 (an expert in omnichannel strategy, digital shopper marketing and insights solutions) portrayed the issue from his point of view and shared an important premise that sheds light into the matter. As such, the informant made clear that the focus of shopper research should be identifying shoppers as individuals and to distinguish the differences to why people shop in different channels. He also highlighted the importance of understanding the role that different types of channels play, particularly via omnichannel and the interplay of digital in the store environment. While this is not exactly a new finding throughout the interview data, what made this finding unique was that the informant emphasised that by identifying and personifying shopper profiles, the creation of what he referred to as "visual identities" of shoppers can be made. He elaborated by explaining that a shopper profile or "visual identity" is everything that relates to contextual information linked to the respective channel e.g., who they are, where they shop, where they engage with what brand, what are their triggers to purchase and motivations to purchase typically and what are they open to in terms of these kind of impulse opportunities. This elucidates the entire shopper journey and path-to-purchase, specifically pertaining to the activity of in-store behaviour. Moreover, the same informant explained that strategy can be developed between environment and consumer. As such, exhibiting the channel and shopper profile, where certain products and categories need to be located, thereby determining the type of engagement strategies and tactics in-store to convert that shopper into a customer. Similarly, respondent R4 also puts forward a related the view as expressed below:

"Instead of trying to make people do what we want them to do, let's give people what they want to see and do. Doing so by better ways of understanding them first and foremost. Contextualization is key. It's all about trying to get under the skin of the data and get a more granular understanding about the relative value of those people. Knowing what makes that customer tick, how to reach them, and how to cater for them is hugely important." - R4

Contrary to this finding, all respondents from the interview considered personalization and contextualization to be very important and the future of understanding shopper behaviour which aligns with shopper marketing will be and should be as personalized and as contextual as possible, much of digital plays an essential role in the shop-

ping experience. However, respondent R6 also highlighted that incentivisation is often overlooked in shopper marketing, primarily because shopper marketing is not very personalized or contextual.

> *"What was always missing is the hook to purchase. We need to move you through the customer journey through the funnel to a conversion environment. And a lot of what marketing teams were focusing on was audience management and engagement, but they were then missing the ability to pull that consumer or shopper depending on who that individual is into a purchasing mindset. This is where e-commerce helps and where omnichannel shopper marketing comes in" - R6*

A majority of the respondents felt that in-store digital shopper marketing mediums, such as proximity marketing, QR scanners, SMS push messaging, and wayfinding have not been quite prevalent, also due to the fact that shoppers do not want to be disturbed with marketing "noise" or irrelevant and untimely messaging, according to the majority of the respondents.

> *"Shoppers don't necessarily want coupons or promotions. They want the experience, and they want it relevant to them" - R13*

At the same time, the respondents also mentioned that in-store shopper marketing, such as on the display fixture or digital signage needs to be more interactive or streamlined to that of an online or immersive "phygital" experience into the store environment relevant to the user or shopper. In the context of CPG, three respondents brought up the topic of using QR code features on product or display fixtures that can be scanned via mobile smartphone, driven by shopper marketing activation. Two of the respondents argued that QR has been rather slow to popularise outside of the Asian market. They claim that people typically use QR to find product details, such as ingredients, or health related information, e.g., organic or eco-friendliness, and not much more. As rebuttal to this finding, R6 portrayed an optimistic viewpoint of QR in the context of display focused omnichannel shopper marketing. He believes utilizing QR will be more prevalent in the near future helping to improve the in-store shopper experience. He referred to a term he coined as "data-engagement" initiatives to which encapsulate "visual identities". For example, by digitally interacting with the product or display fixture through mobile, such as scanning a QR code from a mobile device, the QR code would instantaneously direct you to a personalized micro site that is relevant to the user / shopper to provide the right information in the right context, according to the shopper profile. In correlation to the theoretical findings in chapter 2.2.4 (see Sharma, *et al.,* (2021), respondent R1 affirms this by emphasising that physical display focused shopper marketing is ideal for not only driving engagement, but also loyalty, rewards, and preventing potential "showrooming behaviour" that negatively takes away from the retailer or brand. The respondent cited that this solution serves as a "through-the-line" brand experience that is reflective of the fact that shoppers ubiquitously use their mobile when shopping in such an omnichannel world, thus making this solution beneficial for retailers, brands, and shopper experience.

Furthermore, findings from R6 lend support to the developments of in-store analytics which compliment the findings from the majority of the research participants. R6 communicated that shopper marketing significantly encompasses in-store behaviour analytics. Digital shopper solutions such as display focused QR linked to micro sites is only highlighted as an example given, however, it uniquely ties into an ecosystem of technology harnessed by the retail venue (e.g., video systems, people counter systems, Bluetooth, and WiFi tracking, IoT sensors etc.) serving as both data capture from the catchment area as well as serving as a marketing tool, similar to the example given by respondent R1 in chapter 4.2. This display focused shopper marketing enables the delivery of contextual content and ability to produce in-store behaviour analytics, e.g., granular insights, in-store shopper metrics, such as dwell time and engagement at the shelf level and to measure for example how long someone viewed a product fixture or engaged with a product. Aligning to findings from R1, this form of omnichannel shopper marketing serves as a data acquisition tool and conduit for shoppers. Operational managers and marketing teams can then optimize and implement shopper strategy around insights gathered from the omnichannel or "connected store" retail environment. Aligning to chapter 2.4 discussing the "phygital" paradigm, respondent R6 and R1 voiced that these various digital shopper marketing and analytics solutions enable a fuller picture of the relationship between environment and consumer.

4.4.3 Shopper marketing in a cultural context

Conjointly with chapter 4.4.1 "shopper centricity", three out of thirteen participants encouraged debate surrounding shopper marketing related to store wide behaviour in a cultural context. R8 emphasised that generally, behavioural patterns are replicable, because shoppers are naturally subject to habituation. He referred to earlier shopper research studies in his consultancy practice conducted in five markets around the world and found that there are structural similarities across store formats and discovered that shopper behaviour exhibited is almost exactly the same. He believes the reason for this is because humans strongly use the unconscious to navigate and interact with the space. Deviating from this leads to the next related finding from respondent R10, a category insights consultant that shares her view that when looking at shopper behaviour in relation to digital and shopper marketing in a cultural context. She emphasised that there are different strategies for different retailers and the cultural context needs to be taken into consideration.

> *"What may work in the UK may not work in Italy, or South Korea for example. Digital has a strong advantage for retailers that want to capture different economic groups of shoppers. This is where physical and digital can be really closely connected." - R10*

The same respondent highlighted that mobile driven shopper marketing and overall digital adoption to the developments of the so-called "phygital" retail experience is more mature in some countries than others, which also implies implications on holistic shopper marketing depending on the market. Compiling this finding, one respondent (R13) characterised the following:

"The puzzle here is understanding both at retail and whether it is physical retail or digital retail, the easiest thing to change is the physical design, the hardest thing to change is the operating culture. Sometimes starting with HR. And part of what we have to do moving forward is eminently to be more holistic in terms of how we understand the product, the shopping process, the supply chain and localization" - R13

5 DISCUSSION

The purpose of this master's thesis was to increase the holistic understanding pertaining to the drivers of change in the current physical retail landscape that meet digital advances in in-store shopper behaviour analytics, which can then be used to improve shopper marketing that is driven by an omnichannel world. This chapter discusses the contributions of this study to both theory and practice. The discussion based on the findings of this thesis is divided into two parts – first, the theoretical contributions are presented, after which the managerial contributions are discussed. Finally, the limitations of the research are discussed and potential topics for further research are explored.

5.1 Theoretical contributions

The first topic that was derived from the research problem for this thesis was to address the current state of physical brick-and-mortar retail and the dramatic shift in shopper behaviour, technology, and the disruption of traditional retail strategies to define the next generation of shopper strategy and physical retail at large, thus leading to drivers of change pertaining to digital advances of in-store shopper behaviour analytics that aligns to shopper marketing. Preliminary to the research theory, the first research question asked, "given the dominance of eCommerce, as well as the impact of the Covid-19 pandemic, what is your opinion on the current state of physical retail". There was overwhelming evidence for the notion that physical retail serves as elemental to a human experience and will remain relevant and existent going forward into the future. Thompson *et al*., (2017) argue that the demise of physical retail for long has been speculated, however it is rather controversial and influenced by mass media to describe the way a shift in consumer behaviour and spending patterns may be impacting the traditional physical retail sector. At the same time, there is no compelling reason to argue that the retail landscape is extremely dynamic, and the reality is that winners and losers have emerged over the past decades of industry evolution. This was particularly the argument throughout the findings which aligns to the theory. Helm *et al*., (2018) also argue that retail changes are macro-level phenomena with micro-level implications. Without a doubt, the modern economy has led to new demands for the physical retail sector, causing it to develop and provide services that improve the satisfaction system of consumer needs and increase their satisfaction level while enhancing the relationship between the physical environment and consumer immersion. On these grounds, we can argue that retailers will have to rationalize their business models to understand this relationship between environment and consumer and incorporate technical solutions, making capital expenditure based on rigorous ROI measures and both qualitative and quantitative testing, rather than based on gut feel.

Bălăşescu, (2013) states that given the nature of retail trade worldwide, companies must constantly understand customers' needs and anticipate behavioural changes requiring market research and innovation for creating better products, processes, services, and service environments around customers. The findings of the thesis align well with the aforementioned, as majority of the respondents found that the shifting focus of physical retailing will become emphasised more on shopper experience and to understand this experience through the analysis of shopper behaviour inside the physical retail environment in the catchment area. The foregoing discussion implies that physical retailers that use their physical store venues not only to sell products but also sell experiences that involve the product, will be the new experiential merchants, enabling the physical store to become the most powerful and measurable media channel available to a brand, and the customer experiences that take place there will be the most profitable a trailer can sell. Both existing literature and the empirical data show that with the proliferation of online shopping and the ubiquitous use of mobile smartphone devices with the ability to connect seamlessly, along with various technologies that are available to incorporate into the infrastructure of the physical realm of the retail venue, has significantly changed the paradigm of marketing and retailing - from a multi-channel logic shifting to an omnichannel one. The theory recognizes this paradigm shift through a "phygital" experience driven by a hybridization of physical and digital in a spatio-temporal context, focusing on both physical features and digital features, thus embodying the term "phygital" as the most complete form of omnichannel retailing enabling the measurement of shopper experiences in the retail environment. The findings from the interview data revealed that a majority of the respondents characterised the term "phygital" in their own words, many of which referred to it as an immersive omnichannel activation which closes the "cybernetic loop" or "through-the-line" brand experience that is part of the retail-built venues' infrastructure ecosystem. Taking the middle-ground position, this indicates that the "phygital" paradigm enables new ways of harvesting physical data from the retail venue, particularly the from the visitors of the venue in the catchment area of the store premise, and in more defined terms aligning with the theory encompassing shopper data.

At the heart of discussion, one objective of this study is to find out how in-store shopper behaviour can be tracked, measured, and analysed, particularly through digital solutions, which then cross over to implications for shopper marketing. Because half the respondents represented firms that provide digital analytics & shopper solutions, their findings directly matched the existing theoretical literature. Ross (2014) for example, states that retailers that aim for their physical stores to become more digitized can use a "SMACIT" (Social, Mobile, Analytics, Cloud, and Internet of Things) strategy, which in turn, the respondents had in fact illustrated directly. The so-called "SMACIT" strategy mentioned in chapter 2.4.5, also corresponds to Bradlow, *et al*., (2017) who argues that in retail these technologies combined have the potential to exploit the vast flows of information in a five-dimensional space: across both customers, products, time, geo-spatial location, and channel. Today, these advanced technologies can be used for granular shopper tracking and have enabled firms to move from aggregate data analysis which dominated marketing attribution and effectiveness studies when data was limited on shoppers (Bradlow, *et al*., 2017). The findings reinforced

the importance of being able to exhibit in-store shopper data and by using technology to, for example, cross-reference transactions with footfall traffic, shopper profiles and customer demographic data not only by providing information on who bought what on any given day, but how patterns of product sales correlate to when and why different shopper groups come into the store, would be of special interest for retailers and brand owners, as well as piecing together correlational data such as, by season, by month, by week, to even day-by-day, on who was visiting the physical store, perhaps what their motivations were and what they are most likely to buy.

With granular data insights into the relationship between shopper, category, time, place, and geo-spatial location, this could mean that store operations can improve offerings, optimise, and monetize their retail real-estate space to advertisers and better serve shoppers that enrich the retail experience (Salmon, 2017). When discussing the importance of in-store shopper data, the respondents stressed that shopper data helps to determine the difference between the shopper and the consumer, noteworthy of which Shankar (2011), prominent on the literature of shopper marketing points out. Shankar (2011) also points out that the main goal of shopper marketing is the consideration of the need to understand, activate, and engage with consumers when they are in the role of a shopper. According to Shanker, to be successful in shopper marketing, the use of processing generated insights that frequently automate the conversion of data into insights and improve shopper marketing activities should be put in place. These activities could be tactical or strategically conducted and include innovative digital activities, utilization of in-store technology, multichannel and omnichannel marketing, in-store atmospherics and design, in-store merchandising, using behavioural shopper metrics, and firm to manufacturer-retailer collaboration (Shankar, 2011). Similar to the "SMACIT" strategy which participants had illustrated, the interview findings touched upon each aspect of these aspects by Shankar and strongly correspond to the literature. There was no indication of bias among the interviewees, however one clear aspect regarding in-store behaviour analytics was the complexity of the topic and subjectiveness to behaviour, as much of shopper behaviour is highly contextual, rooted in human psychology, social and behavioural sciences. That said, an apparent pattern emerged from half the respondents who were not as familiar with the digital aspect, stressing that digital in-store behaviour analytics does not do as well at providing information into the "why" component of shopper behaviour as this approach to in-store analytics cannot be fully understood through a numerical data-driven approach.

Anecdotal to the discussion, I would like to add that conventional economics seems to fail at taking into account contextual behaviour and social sciences of shopping (see also chapter 2.3.3), in addition, marketing in relation to behavioural sciences, is in essence grounded in behaviour change, creating value and demand, and now in the era of digital, plays an essential role. Similarly, the findings are more in line with Larsen *et al*., (2017), who stated that there is no better time than now for undertaking shopper research on in-store behaviour, experiments, and analysis by applying technology, given the evolution of retailing apparent from a behavioural perspective in which operant behaviour represents an activity that is altered by the environment-consumer relationship of an evolving 'phygital' landscape (Larsen, Sigurdsson, & Breivik, 2017). To build a comprehensive description of in-store behaviour to advance the science of

shopping (Underhill, 1999) a multifaceted and multi-measure approach providing insight into different aspects of in-store behaviour must be considered. The empirical findings are in line with literature on this matter and indicate that with new technologies, monitoring and measuring actual in-store behaviour is gaining more prominence in marketing science. Larsen *et al.*, (2017), also suggest that new technologies enable the ability to deliver much more accurate and non-disruptive accounts in terms of how individual shoppers behave in the store and how they respond to marketing stimuli and bring forth the advantage to rely on behavioural data at the expense of theoretical, indirect, or even non-existent constructs. It became apparent from the findings that in-store behaviour analytics when looking at shopper activity, such as where shoppers go in stores, paths, interactions with merchandise or displays etc, with descriptive observations and interventions, analysts of behaviour can conduct objective science that allows substantial explanations of not only shopping behaviour but consumer behaviour overall. As Larsen *et al.*, argues, the growing opportunity for shopper research using new technologies holds significant potential. Both empirical findings and theoretical literature correspond and mention the following technologies: traffic counters, beacon sensors, radio frequency identification (RFID) tags, WiFi, high-resolution video surveillance cameras, along with digital in-store promotional instruments, all of which were illustrated to support advances of in-store behaviour analytics and used to further support a new frontier of shopper marketing strategy driven by a "phygital" experience. This thesis aimed to increase the knowledge of how in-store behaviour analytics is conducted as well as the drivers of change with the use of technology that can thereby encompass shopper marketing. The results show that theory remains conflicted by the need to further explore the technologies, techniques, and methodologies in practice more comprehensively that are key to developments in the field, both academically and non-academically.

Furthermore, one of the sub-questions asked, "what should retailers be paying closer attention to". The discussion of in-store data arose repeatedly providing confirmatory evidence that in-store shopper data is often overlooked by physical retailers and brand manufacturer, specifically pointing to general examples describing aspects such as the lack of understanding the venue space, the impact the space has on shopper behaviour and how people interact, and where they go throughout the space is concluded to be a blind spot. The existing literature and the empirical data reaffirm this. Sorensen (2010) claims that having access to and utilizing the right type of customer insights and shopper data can lead to what is called "active retailing", which involves putting products in the path of the shopper and making decisions based on measurable data to spot opportunities that would not otherwise be apparent (Sorensen, 2010).

Ebster *et al.*, (2015) also highlights that understanding shopper footfall patterns and traffic flow is important to understand and can determine common patterns that emerge when shoppers interact with merchandise based on store layout, in particular understanding how shoppers search for products, and how influential factors can be implemented to help shoppers find products which are targeted to them, encompassing the notion of in-store path-to-purchase (Ebster, & Garaus, 2015). Interestingly in the theoretical literature, Ebster *et al.*, (2015), also state that shoppers make up to 80 percent of their purchase decisions in the store. An interesting finding considering the amount of marketing spend outside of the store, as well as on in-store shelf placements,

as this point was brought up in the interview data. Respectively however, it was found from two informed respondents claiming that this fact found in the theoretical data is inaccurate, since this finding was brought up in the interviews. There is no one source for data that can identify this finding, however as the respondents made clear, it depends on the retail environment, store format, and the context the shopper is in. These two respondents characterised that a fashion store environment will typically have far less planning, and therefore the environment is influential, however, in pre-planned spaces such as a grocery environment, it is determined by habituation and using cognitive cues as more of reminders, where in the context of a grocery store, the store itself serves as the "shopping list".
This aligns to the empirical findings that the role of signpost brands in-store is typically more of an indicator that tells shoppers where it is offering are respective to the category and where it is located. This provides evidence that there is a significant amount of money spent on promotional activity in-store, without fully understanding in-store behaviour of shoppers and how products should be put in the path of the shopper. Nevertheless, the findings from the thesis supports existing research and offers interesting theoretical contributions. Much of the theoretical framework of the thesis is largely dominated by available research based on shopper marketing theory and fragmented research from literature surrounding both in-store behaviour and technology pertaining to physical analytics.

5.1.1 Interpretive synthesis between in-store analytics and shopper marketing

As discovered from earlier literature throughout chapter 2.3 and as seen in table 1, shopper marketing is primarily about understanding how one's target consumers behave as shoppers, in different channels and formats, and leveraging this intelligence to the benefit of all stakeholders, defined as brands, consumers, retailers and shoppers. According to Shanker (2011), to be successful in shopper marketing, the use of processing generated insights that frequently automate the conversion of data into insights and improve shopper marketing activities should be put in place. These activities could be tactical or strategically conducted and include innovative digital activities and solutions, utilization of in-store technology, multichannel and omnichannel marketing, in-store atmospherics and design, in-store merchandising, using behavioural shopper metrics, as well as firm to manufacturer-retailer and marketing collaboration (Shankar, 2011).
In chapter 4.3.1, one of the interesting key findings gathered from the qualitative interviews was that in-store data and insights can be delivered at three different levels for a more in-depth analysis of in-store shopper behaviour and trends, (1) storewide behaviour trends (2) category behaviour trends, and (3) brand level behaviour trends. Corresponding to Shankar *et al.*, (2011) these behavioural trends can also be synthesized with collaborative marketing between retailer, brand, and consumer. Figure 11 below depicts how in-store analytics combined with shopper marketing leads to solutions that enable holistic retail collaboration and operations.

Figure 11. In-store analytics & shopper marketing solutions enabling retail collaboration. Source: adopted from Bruegmann-Group (2021, n.p.).

In conjunction with figure 11, the next figure below further illustrates this that collaborative marketing is at the centre which breeds into the enablement of each shopper interface, consumer interface, and business interface, each working in tandem. As in-store analytics and marketing capabilities come together, the manifestation of holistic retail operations begin to take place into a complete solution as also depicted in figure 12.

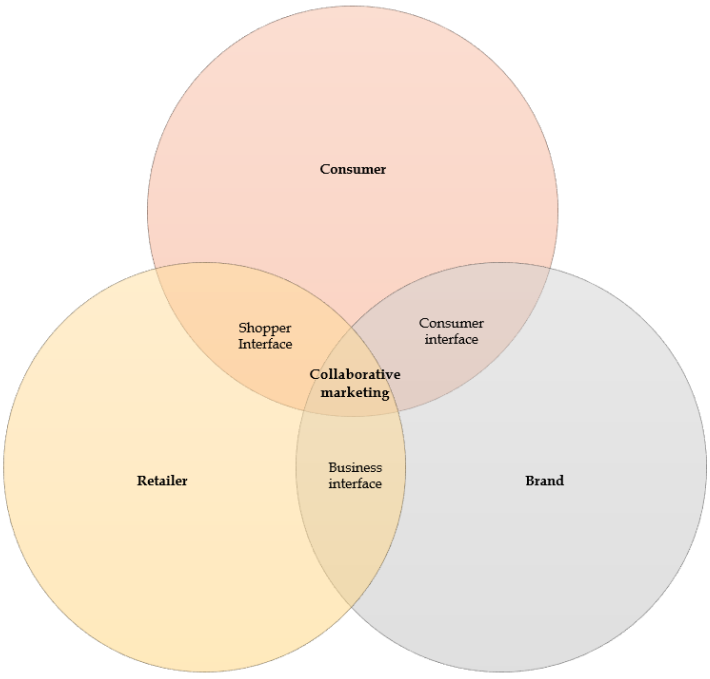


Figure 12. Interface between retailer, brand, consumer. Source: adopted from Bruegmann-Group (2021, n.p.).

Furthermore, in response to one of the research interview questions asked and discussed in the findings chapter, *"who benefits from in-store data and insights?"* The simple and short answer by most of the respondents was that everyone should benefit from in-store data and insights one way or another, depending on how the data is collected and used. As it becomes streamlined across e.g., retailer, brand, and the shopper experience, the interface between each becomes clearer and more beneficial to all for their own purposes yet complement each other.
Moreover, as in-store analytics meets collaborative marketing, it is safe to conclude that new digital solutions provide a complete view and whole new level of insight into shoppers' behaviours at all three levels as explained earlier in this chapter. Because new solutions emerge for holistic cross-collaboration, it ultimately benefits each party involved, creating "silo-less" functions.
Figure 11 highlighted some of the key aspects that new solutions can solve. However, by instrumenting how shoppers use the physical space of the store across all three levels (storewide, category, and brand level behaviour), there are in fact a myriad of aspects of the store that new solutions can solve. Highlighted in earlier chapters some of the primary aspects also include tracking foot traffic patterns, how long shoppers spend in certain parts of the store, engagement at the shelf, as well as what products shoppers interact with. This inevitably helps answer important questions such as whether the store layout is designed optimally or whether customers are using the environment in the store in a manner that is expected. Additionally, insights gathered to determine whether marketing campaigns were effective or not, or even helping to staff the store in order to meet customer demand. New solutions manifested by in-store analytics tied with shopper marketing bring forth a myriad of advantages between retailer, brand, and consumer experience.
This reaffirms the notion that new solutions, particularly in-store analytics, strongly supports marketing capabilities with the ability for retailers and brands to collaborate much more effectively and closely, especially to improve merchandising, product display adjacencies, packaging, pricing, and retail operations altogether. As such, this is soundly linked to chapter 2.5.5 in the theoretical literature review of the thesis.

5.2 Managerial implications

This chapter further evaluates the findings discussed in the previous chapter while presenting the managerial implications on how advances in in-store shopper behaviour analytics can be used towards shopper marketing strategy, as well as for retailers

that aim to provide a more personal and compelling shopping experience, optimize store layout, and improve store operations. The findings provide four main implications for managers.

First, the results of the empirical study depict that the current state of retail is going through vast disruption and that the market is challenged by bifurcation, particularly between the online and the offline retail channels, as well as the trigger for change accelerated by the lengthy Covid-19 pandemic. Despite the anticipated continued rapid growth of online shopping and store closures across many retail categories, more than 80% of all retail sales will likely still be done in actual physical stores in the year 2025, and as of 2020, the global in-store brick-and-mortar retail channel has generated over 19.2 trillion USD in sales, comparative of eCommerce sales at approximately 6.5 trillion USD on a global scale (see chapter 2.1).

In addition, it is evident that there is a fundamental need that is met by physical retail important to a human experience that can not easily be replicated online, this begs the discussion of relevancy in a challenging and changing retail marketplace. However, it was also found to be clear that the future of retail will not be evenly distributed, where in accordance, retailers and brands will need to focus on shopper experience and experiential retail to differentiate themselves and grasp relevancy going forward. The findings also emphasised the relationship between environment and consumer driven by a dynamic paradigm of digital commerce and technology. For managerial implications, this implies that the physical retail environment is salient to a holistic dimension of consumer immersion and human experience, where increasingly the adoption of digital in-store plays an important role pertaining to shopper behaviour.

Retailers that use their physical stores not only to sell products but to also sell experiences that involve the product, will be the new experiential merchants, enabling the physical store to become the most powerful and measurable media channel available to a brand, and the customer experiences that take place there will be the most profitable product a retailer can sell, particularly in an increasingly omnichannel, post-Covid world. Secondly, due to shifts in in-store behaviour and ever-changing shopper preferences influenced by mobile and digital commerce, the hybridization of physical and digital are merged into a term recognised as "phygital" which encompasses a complete form of omnichannel retailing. For instance, today's advanced technologies such as IoT, CCTV capabilities and mobile-based location technologies provide information about a user's location that can be used in advanced in-store behaviour analytics and visualization through available digital tools and solutions, by harvesting physical data from the activity of the catchment area of the store, which then sheds light into in-store insights and shopper data which for long has been a significant blind spot for many retailers. This means retailers and enterprises can gain insight into shopper behaviour patterns and understand, for example, how much time shoppers spend in different areas of the store, what routes they take, if they are engaging with display merchandise, how well they are serviced, and much more. Holistic retailing is experiencing a new emphasis on "behavioural marketing" through digital technologies, analytics, mobile, and the proliferation of behavioural data. 'Phygital' retailing continues to evolve, thereby strengthening explanations relying on environment-behaviour interaction via digital technology and experimentation (Larsen, Sigurdsson, & Breivik, 2017).

Thirdly, this ties into the two sub-themes discussing the methodologies to track, measure, analyse, and test in store behaviour analytics by exhibiting certain approaches and methodologies, and specific technologies used to do so. The second sub theme is the emphasis on the demarcation of data available to retailers and brands, specifically the 'in-store information gap' between buyer data and consumer data, where in-store shopper data bridges this gap. The findings show that for long retailers have had very little information about what happens in the store and how shoppers use the store space. Retailers also typically rely on the brand manufacturers to do all the internal and external marketing, and in turn, there's very little understanding about why people choose one product over another or navigate the store in accordance with product and path-to-purchase influence. Therefore, there needs to be a stronger understanding of the relationship between environment and consumer in the context of shopper behaviour. In store behaviour analytics helps not only to optimize store performance and improve customer experience, but also to uncover the "how", "why", and "who" aspect of shopper behaviour, as well as data that alludes to *why a* shopper did *not* make a purchase or decision on something. In addition, the findings revealed that many retailers have inferenced data from the past, using lagging metrics, relying on transactional data, and typically design their store layouts based on intuition, rather than from insights gained from actual in-store shopper behaviour data. Henceforth, in-store behaviour analytics provides actionable insights to fill the so-called in-store information gap.

Moreover, every stakeholder involved benefits from in-store data one way or another, for example between the retailer, brand, shopper research solution provider, and the shopper and consumers' themselves. This was referred to as the "win-win-win" (between retailer+brand+shopper) scenario. For example, for CPG retailers (including shopper marketers) make decisions based on in-store promotions tied to the way shoppers behave in-store. Retailers benefit from the performance of the store and sales from the categories, brands benefit from the consumer insights, and shoppers benefit from tailored or enhanced store experience.

On logical grounds, there is no compelling reason to argue that with tools and technologies available to track, analyse, and harvest in-store shopper data, a new frontier of shopper marketing prevails, where omnichannel and "phygital" experiences can become more contextualised and personalized to the shopper profile in the store at the right time, at the right place, and through the right medium. Thus, retailers and brand manufacturers can now provide a more remarkable retail experience, optimize store layout, and improve store operations. Achieving these goals ultimately leads to improved shopper experience, digital user experience, increase of conversion rates, and increased revenue. Finally, the fourth implication overlaps with the prior two, where findings show that in-store behaviour analytics highly supports shopper marketing. The practice of shopper marketing focuses much on the individual action when a consumer is in the mode of shopping and aims to improve the shopping experience in order to drive sales, both in-store and online, and enticing last-minute appeals to shoppers at the very moment they are considering buying. It was found that to be successful in shopper marketing, the use of processing generated insights that frequently automate the conversion of data into insights and improve shopper marketing

activities should be put in place. These activities could be tactical or strategically conducted and include innovative digital activities, utilization of in-store technology, multichannel and omnichannel marketing, in-store atmospherics and design, in-store merchandising, using behavioural shopper metrics, and firm to manufacturer-retailer collaboration. This is particularly relevant to managers as shopper marketing is applicable to all retailers, brands, manufacturers, product categories, and is a necessary component of an overall integrated marketing approach that focuses on specific needs and patterns of the shopper by gaining a deeper understanding, assuming that the shopper and consumer are not necessarily the same. Even if they are the same, the shopper is in a different mode while shopping. By understanding *who* the shopper is, *how* they interact and *what* they do in the physical retail environment space is of crucial importance for managers to understand. Henceforth, the developments of in-store analytics, in conjunction with the evolution of 'phygital' at retail, enables a new frontier of shopper marketing, signifying key drivers of change to overall retail marketing and shopper research.

5.3 Limitations of the research

There are certain limitations to this research. This study attempts to address the dramatic shift in shopper behaviour, technology, and the resulting disruption of traditional retail to define the next generation of shopper strategy and retail commerce. The basic premise of the theory indicates that there is a fundamental need met by physical retail that provides an elemental human experience, not easily replicable in the online environment. However, now in the era of digital, proliferated by an omnichannel world, physical retail must go through "retail reinvention" to keep up in a challenging and changing dynamic marketplace. This has uniquely changed the opportunities for retailers to think about how they understand behaviours of consumers and shoppers in the catchment environment, as well as shape customer experiences, optimize store performance and utilize new technologies available (Okazaki and Mendez, 2013). Thus, representing retail activation through the developments of in-store behaviour analytics and shopper marketing that encompasses the relationship between environment and consumer.

Regarding the interview findings, the data collection was conducted via semi-structured expert interviews on a rather broad scale instead of focusing on a specific factor. As such, this created limitations of the study which brought forth a holistic dimension that covered many related aspects of the research, some of which overlapped yet intertwined. Although the semi-structured interviews offered the possibility for new aspects to emerge, this thesis was not able to offer a detailed description but rather a general overview of the factors that lead to developments of in-store behaviour analytics and implications that retailers should be paying closer attention to in-store data, or in other words, the activity of shopper behaviour that occurs inside the store environment that can be tracked, measured, analysed, and reported on to make operational improvements that sever the retailer, brand, and shopper at large. Additionally,

the sample size of thirteen participants was sufficient to identify commonly emphasized factors but could have still been larger in terms of including more experts pertaining to shopper behaviour and shopper marketing with deeper understanding of the digital aspect in the field e.g., solutions, capabilities, or know-how. In this research, the sample size was rather outweighed by participants that had expertise in considerably "conventional" shopper research, whereas only four participants seemed to have stronger expertise related to digital shopper behaviour & marketing solutions. In turn, this can affect their opinions about certain aspects of shopper behaviour, in-store analytics, and shopper marketing. However, this research aims to identify drivers of change and why it's important to study the in-store environment given the challenges of the modern retail landscape today. Moreover, the responses of those working more closely with "conventional" shopper research could be compared to distinguish similarities in line with the participants that represent relatable digital shopper solutions, thus sharing an important premise of the need to further exhibit shopper behaviour and gather valuable physical in-store data.

Additionally, if more precise results are desired in terms of each theme covered in this research, some amount of quantitative data could also be added to provide comparison to the qualitative data. It would also be beneficial to probe deeper into further in-store shopper research studies that surround behavioural sciences and psychology to find further relational correspondence between environment and consumer, specifically the variables that influence shopper behaviour, choice architecture within the catchment area of the store, and exploring the parallels of how digital plays a key role. In-depth academic findings such as in-store path-to-purchase, experimentation of store layout design to increase conversion rates, analysing engagement at shelf displays, and comparable offline-to-online metrics for example, could be examined through actual case studies where behaviour analytics and its impact on store performance and shopper marketing could be examined. Furthermore, this study did not focus on a specific retail category or format, such as fashion retail, shopping malls, CPG, and supermarket retail, as well as specific digital solutions or technologies, but rather offered a general view of the important factors of examining in-store shopper data. How it can be used to, for example, improve shopper marketing, shopper experience, store performance, and increase a brand or retailer's bottom line, regardless of the physical brick-and-mortar retail category or digital solution used.

Findings showed some answers are not possible to generalize and thus further research on a specific digital technology, and retail category, situation, or certain aspect of shopper behaviour could provide more thorough results. By and large, the research revealed to be a highly complex topic where many specific avenues or aspects of the subject matter could be chosen as separate thesis topics in of itself. Therefore, holistic research unfolded and proved to be necessary. In addition, although there has been relatively little academic research into in-store behaviour analytics and it's cross-over to shopper marketing, the data gathered has notwithstanding well supported the overall theory and implications of this field of research.

5.4 Future research suggestions

As stated in the limitations chapter, the scope of this research was limited since the thesis was rather holistic. Although this research provided a broad overview of the subject matter and future implications, there is room for future research on each theme covered in this research. As such, more research is necessary before the findings can be credibly generalized and rooted into this field of knowledge. Similarly, as qualitative data collected from the interviewees were inquired only from a relatively small sample size, more data should be obtained from more experts with knowledge of digital in-store behaviour analytics and digital shopper marketing solutions to enrich and validate the acquired insights. On the contrary, data collected from those that did not have as strong expertise relative to the digital developments of in-store analytics, nevertheless provided significant value to support the thesis research. All in all, it is recommended that future scholars continue the process of identifying diverse drivers of change in retail commerce, particularly surrounding physical retail, in-store behaviour analytics and its implications towards a new frontier of shopper marketing in an evolving "phygital" landscape. Not only is this a growing phenomenon, but a promising field for further investigation as there has been relatively little academic research contributions due to the fact that this is a rather novel and innovative recent development. This in part correlates to the limitations of the research reaffirming holistic subject matter. In-store analytics has not been a well-established practice or area of research. The literature is limited partly because most studies are conducted and secured by firms for their own purposes. Only in the last decade or so, shopper research, primarily from industry practitioners and consultants, has provided ample support for the assertion that in-store behaviour analytics is an up-and-coming field, necessary to a higher dimension of retail marketing and highly relevant for today's operational managers who seek to understand and monitor the activity of shoppers, consumers, and store performance.

It is safe to conclude that holistic retailing is experiencing a new emphasis on "behavioural marketing" through digital technologies, analytics, mobile, and the proliferation of behavioural data. Purchases may or may not take place in a physical store but influencing consumer choice along the shopper journey is an omnichannel challenge. And because 'phygital' retailing will continue to evolve, it will thereby strengthen explanations relying on environment-behaviour interaction via digital technology and experimentation. For this reason, there is no better time than now for undertaking shopper research on in-store behaviour, experiments, and analysis by applying technology. This is accelerated by the evolution of retailing apparent from a behavioural perspective in which operant behaviour represents an activity that is altered by the environment-consumer relationship, driven in part by a 'phygital' experience. Furthermore, an interesting point that surfaced in the findings of this study was that acceptable metrics and access to shopper data information via technology is still in its infancy in terms of awareness, tools, service providers and solutions available to the enterprise to collect such data, be it brand manufacturer or retailer. At the same time, advances of in-store behaviour analytics technologies are on the rise and for very good reason.

Inspired by this thought, it was also contemplated in the managerial implications that this calls the need for conducting in-store experiments in retailing to better understand shopper behaviour more in depth to deliver strategic shopper marketing. Corresponding to the findings, that one who studies shopping behaviour needs to gather empirical data at the point of purchase, measuring the true behaviour of interest, and needs to work on transforming the store into a live laboratory, as it serves as a primary place for examination, rich for observational data. Another presumption that transpired in the findings of this study was that because of the lack of awareness and or access to in-store shopper data, the process of shopper behaviour, e.g., in-store path-to-purchase and engagement in the catchment area is not well understood, and rather typically relying on lagging metrics, measurement, and even decisions based on intuition. Paradoxically, one of the main aspects of a marketing strategy in retail is the fundamental marketing mix, which is made up of elements such as product, price, place, promotion, and stimuli that can influence consumer choice. The function of these marketing elements is dependent on consumers' environment and experienced consequences. By not having access to in-store behaviour implies a significant major oversight. This suggests collecting and use their shopper data in a more sophisticated way to determine the effectiveness of various promotional efforts on shopper behaviour. As such, controlled experiments are one way to test the effectiveness of different aisle placement, shelf positions, and store layout, as well as to understand the usage situation and effectiveness of new technologies and in-store promotional instruments (such as digital in-store displays, shopping carts, or mobile and smartphone driven fixtures, etc).

Lastly, there seems to be no compelling reason to argue that in-store shopper behaviour, as well as the overlap with the model of how shopper marketing works is still more or less a "black hole", calling for effective ways to study shoppers in their 'natural environment' compared to an antiquated lab setting, instead by utilizing of a hybrid of methodologies and digital technologies to do so. Afterall, there is a significant difference between the perception of how we shop and the reality of how we actually shop. Based on interviews and behavioural in-store observations in accordance with the findings, what shoppers say they do is often different to what they actually do (Scammell-Katz, 2013, pp. 66-67). In conclusion, since this research observed many different angles related to in-store analytics and shopper marketing that were holistic within the same study setting, it is encouraged that future research could focus on studying in-store behaviour analytics that encompasses shopper marketing in specific fields or narrowed focus areas, such as a particular aspect. As mentioned previously, this study is considered quite novel and innovative calling for further academic research.

6 REFERENCES

Accenture. 2020. Outmaneuver Uncertainty. Accenture, 1-3. Available: <URL: https://www.accenture.com/_acnmedia/Thought-Leadership-Assets/PDF-3/Accenture-COVID-19-5-Priorities-To-Help-Reopen-And-Reinvent-Your-Business-v3.pdf >

Adipat, Zhang, and Zhou. 2011. The Effects of Tree-view Based Presentation Adaptation on Mobile Web Browsing. MIS Quarterly, 35, 1, 99–122.

Agarwal, Pranay, Breschi, & Devillard. 2017. How the mall business can reinvent itself for the digital age. McKinsey & Company. Available: <URL: https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/how-the-mall-business-can-reinvent-itself >

Anderson, and Simester. 2003. Effects of $9 Price Endings on Retail Sales: Evidence from Field Experiments. Quantitative Marketing and Economics, 1 (1), 93–110.

Andrews, Michelle, Luo, Zheng, and Ghose. 2015. Mobile Ad Effectiveness: Hyper-contextual Targeting with Crowdedness. Marketing Science. Available: <URL: http://dx.doi.org/:10.1287/mksc.2015.0905 >

Ansari, Asim, Mela, and Neslin. 2008. Customer channel migration. Journal of marketing research 45.1, 60-76.

Anthony. 2017. What is shopper marketing? A shopper marketing definition that adds real value. Engage Consultants. Available: <URL: http://www.engageconsultants.com/recent/what-is-shopper-marketing-definition-adds-value/ >

Appadurai. 1986. The Social Life of Things: Commodities in Cultural Perspective. Cambridge: Cambridge University Press.

Applebaum. 1951. Studying Customer Behavior in Retail Stores. Journal of Marketing, 16(2), 172. doi:10.2307/1247625.

Arora, A., P. Dahlstrom, E. Hazan, H. Khan, and R. Khanna. 2020. Reimagining marketing in the next normal. McKinsey.com.

Aubrey, C. & Judge, D. 2012. Re-imagine retail: Why store innovation is key to a brand's growth in the "new normal", digitally-connected and transparent world. Journal of Brand Strategy, 1(1), pp.31–39.

Baird N., and Rosenblum P. 2018. How Retail Disruptors Drive Industry Change. consumergoods.com.

Baker, J. 1987. The Role of The Environment In Marketing Services: The Consumer Perspective Czepiel, J., Congram, C.A. and Shanahan, J. (Eds). The Services Challenge: Integrating for Competitive Advantage. American Marketing Association, Chicago, IL, pp. 79-84.

Baker, J. 1987. The role of the environment in marketing services: The consumer perspective. In

Baker, J., Levy, M., & Dhruv Grewal. 1992. An experimental approach to making retail store environmental decisions. Journal of Retailing, 68 (Winter), 445- 460. Available: <URL: https://www.researchgate.net/publication/303166632_An_experimental_approach_to_making_retail_store_environment_decisions >

Bălăşescu, M. 2013. The Influence of Innovations and Technology on The Future of Retail. Bulletin of the Transilvania University of Braşov, 6(55). Available: <URL: http://webbut.unitbv.ro/BU2013/Series%20V/BULETIN%20V/003%20balasescu%20m%20BUT%202013%202.pdf >

Balasubramanian, Sridhar, Raghunathan, and Mahajan. 2005. Consumers in a multichannel environment: Product utility, process utility, and channel choice. Journal of interactive marketing 19.2, 12-30.

Barrutia, J., Echebarria, C. 2005. The internet and consumer power: the case of Spanish retail banking. Journal of Retailing and Consumer Services 12, 255–271.

Bart, Yakov, Andrew T. Stephen, and Miklos Sarvary. 2014. Which Products Are Best Suited to Mobile Advertising? A Field Study of Mobile Display Advertising Effects on Consumer Attitudes and Intentions. Journal of Marketing Research, 51, 3, 270–85.

Bartik, A. W., Z. B. Cullen, E. L. Glaeser, M. Luca, and C. T. Stanton. 2020. What jobs are being done at home during the COVID-19 crisis? evidence from firm-level surveys. Technical report, National Bureau of Economic Research. Available: <URL: https://www.nber.org/papers/w27422>

Belghiti, S, *et al*. 2017. The phygital shopping experience: An attempt at conceptualization and empirical investigation. Academy of Marketing Science World Marketing Congress. Available: <URL: https://doi.org/10.1007/978-3-319-68750-6_18 >

Bhattacharjya, J., Ellison, A. and Tripathi, S. 2016. An exploration of logistics related customer service provision on twitter: the case of e-retailers. International Journal of Physical Distribution & Logistics Management, Vol. 46 Nos 6/7, pp. 659-680.

Billing. 1990. Effects of Store Atmosphere on Shopping Behaviour. Available: <URL: https://digitalcommons.iwu.edu/cgi/viewcontent.cgi?article=1014&context=busadmin_honproj >

Bitner, J. 1990. Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses. Journal of Marketing Vol. 54 (April), p. 69-82

Bitner, J. 1992. Servicescape: The Impact of Physical Surroundings on Customers and Employees. Journal of Marketing, 56(2), pp. 57–71.

Bloch, P.H., Ridgway, N.M. and Dawson, S.A. 1994. The shopping mall as consumer habitat. Journal of Retailing, Vol. 70 No. 1, pp. 23-42.

Bolliger, P., Partridge, K., Chu, M., Langheinrich, M. 2009. Improving Location Fingerprinting through Motion Detection and Asynchronous Interval Labeling. *Lecture Notes in Computer Science*, 37–51. Available: <URL: https://doi.org/10.1007/978-3-642-01721-6_3 >

Bollweg, Lackes, Siepermann, Weber. 2016. In-Store Customer Analytics – Metrics and Maturity Scenarios for the Collection of Physical in-Store Customer Data for Retail. Available: <URL: https://www.semanticscholar.org/paper/In-Store-Customer-Analytics-%E2%80%93-Metrics-and-Maturity-Bollweg-Lackes/117f8cdc29f2c267aee382202f45972a7e63d515 >

Bradford and Duncan. 2000. Microenvironment vs. Macroenvironment. Retail Management, Lumenlearning.com. Simplified Strategic Planning. Chandler House, p.1. Available: <URL: https://courses.lumenlearning.com/wm-retailmanagement/chapter/microenvironment-vs-macroenvironment/#footnote-2600-1 >

Bradlow, E. T., Gangwar, M., Kopalle, P., & Voleti, S. 2017. The Role of Big Data and Predictive Analytics in Retailing. Journal of Retailing, 93(1), 79–95. Available: <URL: doi:10.1016/j.jretai.2016.12.004 >

Briedis, H., A. Kronschnabl, A. Rodriguez, and K. Ungerman. 2020. Adapting to the next normal in retail: The customer experience imperative. McKinsey.com.

Brocato, D. 2010. Push and Pull Marketing Strategies. Wiley International Encyclopedia of Marketing. Available: <URL: https://doi.org/10.1002/9781444316568.wiem01053 >

Bruegmann-Group. 2021. Bruegman Solutions Enable Shopper Marketing. Bruegmann-usa.com. <URL: https://www.bruegmann-usa.com/services/strategy-and-consulting/shopper-marketing/ >

Brynjolfsson, E., Yu Jeffrey Hu, and Mohammad S. Rahman. 2013. Competing in the age of omnichannel retailing. Cambridge: MIT. Available: <URL: https://www.researchgate.net/publication/297689078_Competing_in_the_Age_of_Omnichannel_Retailing >

Buckley, K. W. 1989. Mechanical man: John Broadus Watson and the beginnings of behaviorism. New York, NY: Guilford.

Burke and Leykin. 2005. Retail Shoppability: A Measure of the World's Best Stores. Available: <URL: https://www.researchgate.net/publication/315729925_Retail_Shoppability_A_Measure_of_the_World's_Best_Stores >
Cai, D. 2014. A retail application based on indoor location with grid estimations. In Computer, Information and Telecommunication Systems (CITS), International Conference on, S. 1-4, IEEE. 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(6), 1–17.
Charm, T., B. Coggins, K. Robinson, and J. Wilkie. 2020. The great consumer shift: Ten charts that show how us shopping behavior is changing. McKinsey.com.
Châtel, F. d. & Hunt, R. 2003. Retailisation: the here, there and everywhere of retail. Available: <URL: Retrieved from https://www.routledge.com/Retailisation-The-Here-There-and-Everywhere-of-Retail/Chatel-Hunt/p/book/9780851424583 >
Chatterjee, P. and Kumar, A. 2017. Consumer willingness to pay across retail channels. Journal of Retailing and Consumer Services, Vol. 34 No. 1, pp. 264-270
Chen, L. & Mersereau, A.J. 2013. Analytics for Operational Visibility in the Retail Store: The Cases of Censored Demand and Inventory Record Inaccuracy. Working paper, Fuqua School of Business, Duke University, Kenan-Flagler Business School, University of North Carolina.
Christopher, M. and Peck, H. 1999. "Fashion logistics", in Fernie, J. and Sparks, L. (Eds), Logistics and Retail Management, Insights into Current Practice and Trends from Leading Experts, Ch. 5, Kogan Page, London, pp. 88-109.
Clarke. 2018. Digital Business Retail's Next Frontier. Cognizant, p18. Available: <URL: https://www.cognizant.com/whitepapers/retails-next-frontier-codex3555.pdf; also: https://www.slideshare.net/cognizant/retails-next-frontier >
Cognizant. 2018. p18. Digital Business Retail's Next Frontier. Available: <URL: https://www.cognizant.com/whitepapers/retails-next-frontier-codex3555.pdf >
Concordel, Clarke, Janssens, Schienke. 2016. Shopping in the Real World Is the Physical Store Dead? Insight Guide. Available: <URL: https://www.fujitsu.com/global/Images/Shopping_in_the_Real_World_Insight_Guide.pdf >
Connell, J. Fan, Q. Gabbur, P. Haas, N. Pankanti, S. Trinh, H. Retail video analytics: an overview and survey. International Society for Optics and Photonics, In IS&T/SPIE Electronic Imaging, S. 86630X-86630X.
Corkery, M. 2017. Is American retail at a historic tipping point? The New YorkTimes. Available: from: <URL: https://www.nytimes.com/2017/04/15/business/retail-industry.html >
Csainz. 2020. What's Phygital in the Customer Experience? Wearemarketing.com. Available: < URL: https://www.wearemarketing.com/blog/whats-phygital-in-the-customer-experience.html >
Csikszentmihályi, Mihály and Rochberg-Halton, Eugene. 1987. The Meaning of Things: Domestic Symbols and the Self. Cambridge: Cambridge University Press.Daily, L. 2004). Navigational web atmospherics: explaining the influence of restrictive navigation cues, Journal of Business Research, Vol. 57 No. 7, pp. 795-803.
Daniels, A. C. 2009. Oops! 13 Management practices that are a waste of time and money (and what to do instead). Atlanta, GA: Performance Management Publications. Hachette Book Group. Journal of Organizational Behavior Management, 32(1), 83-89. Available: <URL: https://doi.org/10.1080/01608061.2012.646860 >
Davenport, T. H., Mule, L. D., & J. Lucker. 2011. Know what your customers want before they do, Harvard Business Review, December, 84–92.
Davey, J. 2021. After dire year England's shops hope for end-of-lockdown shopping spree. Available: <URL: https://www.reuters.com/article/uk-health-coronavirus-britain-retail-idUSKBN2BY078 >
Deighton, J., Rizley, R., & Keane, S. 2012. Research priorities of the Marketing Science Institute: 2012– 2014. Marketing Science, 31(6), 873–877.

Deloitte/GMA. 2007. Shopper Marketing: Capturing a Shopper's Heart, Mind and Wallet. Washington: The Grocery Manufacturers Association.
Dennis, S. 2018. E-Commerce May Be Only 10% Of Retail, But That Doesn't Tell The Whole Story. Forbes. Available: <URL: https://www.forbes.com/sites/stevendennis/2018/04/09/e-commerce-fake-news-the-only-10-fallacy/#3950593239b4 >
Dennis, S. 2018. Physical Retail Isn't Dead. Boring Retail Is. Forbes. Available: <URL: https://www.forbes.com/sites/stevendennis/2018/03/19/physical-retail-is-not-dead-boring-retail-is-understanding-retails-great-bifurcation/#60d7cc171981 >
Dhar, Subhankar and Upkar Varshney. 2011. Challenges and Business Models for Mobile Location-based Services and Advertising. Communications of the ACM, 54 (5), 121–8
DiClemente, D. F., & Hantula, D. 2003. Applied behavioral economics and consumer choice. Available: <URL: https://www.researchgate.net/publication/267922990_Applied_behavioral_economics_and_consumer_choice >
Dogan and Öztaysi. 2018. In-store behavioral analytics technology selection using fuzzy decision making. Emerald Insight, Journal of Enterprise Information Management. Available: <URL: https://doi.org/10.1108\/JEIM >
Donovan, R.J., Rossiter, J.R., Marcoolyn, G. and Nesdale, A. 1994, Store atmosphere and purchasing behavior. Journal of Retailing, Vol. 70 No. 3, pp. 198-199, 283-294.
Donovan, Robert, J., Rossiter, John, R. 1982). Store atmosphere: An environmental psychology approach. Psychology of Store Atmosphere, Vol 58, No. 1, p. 34-57. Available: <URL: https://www.researchgate.net/profile/Robert_Donovan/publication/248766608_Store_Atmosphere_An_Environmental_Psychology_Approach/links/5a38c3ef0f7e9b7c48700249/Store-Atmosphere-An-Environmental-Psychology-Approach.pdf >
Duncan, R. B. 1972. Characteristics of organizational environments and perceived environmental uncertainty. Administrative Science Quarterly, 17(3), 313–327. Available: <URL: https://doi.org/10.2307/2392145 >
Dzeng, R.-J., Lin, C.-W. and Hsiao, F.-Y. 2014. Application of RFID tracking to the optimization of function-space assignment in buildings. Automation in Construction, Vol. 40, pp. 68-83.
Ebster, C. and Garaus, M. 2015. Store Design and Visual Merchandising, Second Edition: Store Design and Visual Merchandising, Second Edition. Available: <URL: https://ebookcentral.proquest.com/lib/jyvaskyla-ebooks/detail.action?docID=1983493 >
Edvardsson, B., Gustafsson, A., Johnson, M.D. and Sande´n, B. 2000, New Service Development and Innovation in the New Economy. Studentlitteratur, Lund.
Explorer Research. 2021. Shopper Insights vs. Consumer Insights. Available: <URL: https://explorerresearch.com/learn/shopper-insights/shopper-insights-vs-consumer-insights/>
Engel J. K., and David B, R. 1978. Consumer Behavior. Dryden Press, New York. Hinsdale, Ill.: Dryden Press, Journal of Advertising. Available: <URL: https://www.tandfonline.com/doi/abs/10.1080/00913367.1979.10673276 >
Farias, Aguiar, & Vicente. 2014. Store Atmospherics and Experiential Marketing: A Conceptual Framework and Research Propositions for An Extraordinary Customer Experience. Available: <URL: https://www.researchgate.net/publication/269788464_Store_Atmospherics_and_Experiential_Marketing_A_Conceptual_Framework_and_Research_Propositions_for_An_Extraordinary_Customer_Experience >
First Insight. 2019. The State of Consumer Spending: In-Store Impulse Shopping Stands the Test of Time. Firstinsight.com. Available: <URL: https://www.first-insight.com/white-papers-posts/the-state-of-consumer-spending-report >

Flaherty. 2018. In-Store & Online: Designing for the Changing Behaviors of Today's Shoppers. Nielsen Norman Group website. Available: <URL: https://www.nngroup.com/articles/changing-shopper-behaviors/>
Fogg. 2009. A behavior model for persuasive design. Proceedings of the 4th International Conference on Persuasive Technology. Available: <URL: https://dl.acm.org/doi/10.1145/1541948.1541999 >
Fong, Nathan, Zheng Fang, and Xueming Luo. 2015. Geo-conquesting: Competitive Locational Targeting of Mobile Promotions. Journal of Marketing Research, 52, 5, 726–35.
Garber. 2013. Analytics goes on Location with new Approaches. Computer, vol. 46, no. 4, pp. 14–17.
Gartner. 2020. Leading the IoT Gartner Insights on How to Lead in a Connected World. Available: <URL: https://www.gartner.com/imagesrv/books/iot/iotEbook_digital.pdf >
Gentile, C., Spiller, N., & Noci, C. 2007. How to sustain the customer experience: an overview of experience components that co-create value with the customer. European Management Journal, 25(5), 395–410. Available: <URL: https://doi.org/10.1016/j.emj.2007.08.005 >
Gilbride, T., J. Jeffrey Inman, & Stilley, K. M. 2015.The Role of Within-Trip Dynamics in Unplanned Versus Planned Purchase Behavior. Available: <URL: https://www.researchgate.net/publication/276163562_The_Role_of_Within-Trip_Dynamics_in_Unplanned_Versus_Planned_Purchase_Behavior >
GMA. 2011. Shopper marketing 5.0: Creating value with shopper solutions. Available: <URL: https://www.yumpu.com/en/document/read/3196708/shopper-marketing-50-grocery-manufacturers-association >
Google M/A/R/C Study. 2013. Mobile In-store Research: How In-store Shoppers Are Using Mobile Devices. Available: <URL: https://ssl.gstatic.com/think/docs/mobile-in-store_research-studies.pdf >
Goss, J. 1993. The Magic of the Mall: An Analysis of Form, Function, and Meaning in the Contemporary Retail Built Environment. Annals of the Association of American Geographers, 83(1): 18– 47.
Groenewegen, A. 2018. BJ Fogg model explained – SUE. Available: <URL: https://suebehaviouraldesign.com/bj-fogg-model/>
Guzzi. 2010. Active vs. Passive Retailing and Improving the Customer Experience. Available: <URL: http://flooringtheconsumer.blogspot.com/2010/11/active-vs-passive-retailing-and.html >
Harris, B. 2010. Bringing shopper into category management. In M. Stahlberg & V. Maila (Eds.), Shopper Marketing: how to increase purchase decisions at the point of sale (pp. 28-32). Kogan Page.
Heilman, Carrie M., Kent Nakamoto, and Ambar G. Rao. 2002. Pleasant Surprises: Consumer Response to Unexpected In-store Coupons. Journal of Marketing Research, 39, 2, 242–52.
Hlongwane, J. 2018. The Hype of Understanding and Mapping the Shopper Path to Purchase and Realities of Collecting Data at the Moments of Consumption and Purchase. Available: <URL: http://www.samra.co.za/wp-content/uploads/Hlongwane_The-Hype-of-Understanding-and-Mapping-the-Shopper-Path-to-Purchase.pdf >
Holman. 2017. Retailers Opening Over 4,000 Stores in 2017, Debunking the Retail Apocalypse. IHL Group. Available: <URL: https://www.ihlservices.com/news/analyst-corner/2017/08/retailers-opening-over-4000-stores-in-2017/>
Howland, D. 2018. JD extends physical presence in China with new investment. Available: <URL: https://www.retaildive.com/news/jd-extends-physical-presence-in-china-with-new-investment/517831/ >
Hughes. 2020. The Social Science of Shopper Marketing. ECR Report. Available: <URL: https://www.ecr-community.org/category-management-yesterday-today-tomorrow/>

Hurjui, C., Graur, A. and Turcu, C.O. 2008. Monitoring the shopping activities from the supermarkets based on the intelligent basket by using the RFID technology. Electronics and Electrical Engineering, Vol. 83 No. 3, pp. 7-10.
ICSC. 2019. The Halo Effect How Bricks Impact Clicks. Available: <URL: https://investors.simon.com/static-files/dbe9dba3-93d5-4110-93c5-922217c30089 >
In-Store Marketing Institute. 2009). Shopper Marketing Glossary. In-Store Marketing Institute. Available: <URL: http://www.instoremarketer.org/ >
Ipsos. 2017. Beginners Guide to In-Store Analytics, Market leader in people counting, management and behaviour insights. Available: <URL: https://www.ipsos-retailperformance.com/en/insights/beginners-guide-store-analytics-retailers/>
Jackson, Peter, and N. J. Thrift. 1995. Geographies of consumption. Acknowledging consumption, A review of new studies. Routledge, 1995. 204-237.
Kahneman, D. 2017. Thinking, fast and slow. Available: < URL: http://dspace.vnbrims.org:13000/jspui/bitstream/123456789/2224/1/Daniel-Kahneman-Thinking-Fast-and-Slow-.pdf >
Kirchberg, V., & Tröndle, M. 2012. Experiencing exhibitions: A review of studies on visitor experiences in museums. Curator: The Museum Journal, 55(4), 435–452.
Kollat, D. T., & Willett, R. P. 1967. Customer Impulse Purchasing Behavior. Journal of Marketing Research, *4*(1), 21–31. Available: <URL: https://doi.org/10.1177/002224376700400102 >
Kim and Ro. 2011. Indoor Location Analytics for Designing a Location-Based Product-Service System. Functional Thinking for Value Creation - Proceedings of the 3rd CIRP International Conference on Industrial Product Service Systems. Springer.com Available: <URL: https://www.springer.com/gp/book/9783642196881 >.
Kotler, Phillp. 1973-1974. Atmospherics as a Marketing Tool. Journal of Retailing, Volume 49, Number 4, p. 48-61.
Labrecque, L. I., vor dem Esche, J., Mathwick, C., Novak, T. P., & Hofacker, C. F. 2013). Consumer Power: Evolution in the Digital Age. Journal of Interactive Marketing, 27(4), 257–269. Available: <URL: https://doi.org/10.1016/j.intmar.2013.09.002 >
Larsen, N., Sigurdsson, V. & Breivik, J. 2017. The Use of Observational Technology to Study In-Store Behavior: Consumer Choice, Video Surveillance, and Retail Analytics. The Behavior Analyst, 40(2), pp. 343-371. Available: <URL: https://doi:10.1007/s40614-017-0121-x >
Lee, SangJeong, M. Chulhong, Y. Chungkuk, S. Junehwa. 2013. Understanding customer malling behavior in an urban shopping mall using smartphones. Proceedings of the 2013 ACM conference on Pervasive and ubiquitous computing adjunct publication. 2013. Available: <URL: https://dl.acm.org/doi/10.1145/2494091.2497344 >
Leung, F. 2012. Internet of Things. Available: <URL: https://www.academia.edu/11384975/Internet_of_Things >
Levy, M., & Weitz, B. A. 1995. Retailing management (2nd ed.). Burr Ridge, IL: McGraw-Hill/Irwin.
Li, H., Shen, Q., & Bart, Y. 2018. Local market characteristics and online-to-offline commerce: An empirical analysis of Groupon. *Management Science*, *64*(4), 1860-1878.
Liciotti, D.; Contigiani, M.; Frontoni, E.; Mancini, A.; Zingaretti, P.; Placidi, V. 2015. Shopper Analytics: A Customer Activity Recognition System Using a Distributed RGB-D Camera Network. Video Analytics for Audience Measurement Lecture Notes in Computer Science, arXiv preprint arXiv:1508.06853.
Lindstrom, M. 2012. Brandwashed: Tricks Companies Use to Manipulate Our Minds and Persuade Us to Buy. Mankind Quarterly, 52(3/4), 428-438.
Luomala, H. T. 2003. Understanding how retail environments are perceived: a conceptualization and a pilot study. Available: <URL: https://www.researchgate.net/publication/233290365_Understanding_how_retail_environments_are_perceived_a_conceptualization_and_a_pilot_study >

Luomala, H. T. 2003. Understanding how retail environments are perceived: a conceptualization and a pilot study. Available: <URL: https://www.researchgate.net/publication/233290365_Understanding_how_retail_environments_are_perceived_a_conceptualization_and_a_pilot_study >
Marketing Science Institute. 2010. Call for Research Proposals on Shopper Marketing. Available: <URL: http://www.msi.org/research/index.cfm?id=266 >
Markin, R. J., & Narayana, C. L. 1975. Behavior control: Are consumer beyond freedom and dignity? Advances in Consumer Research, 3, 222–228.
McArthur, E., Weaven, S., Dant, R. 2016. The evolution of retailing. A meta review of the literature. J. Macromark. 36 (3), 272–286.
McGahan, A. M. 2020. How Industries Change. Harvard Business Review. Available: <URL: https://hbr.org/2004/10/how-industries-change >
Mehra, Amit, Subodha Kumar, and Jagmohan S. Raju. 2013. Showrooming and the Competition Between Store and Online Retailers. Available: <URL: http://dx.doi.org/10.2139/ssrn.2200420 >
Mehrabian, A. 1976. Public Spaces and Private Spaces: The Psychology of Work, Play and Living Environments. Available: <URL: https://www.journals.uchicago.edu/doi/abs/10.1086/226666 >
Mehrabian, A. and Russell, J. 1974. An Approach to Environmental Psychology. MIT Press, Cambridge, MA. Available: <URL: https://mitpress.mit.edu/books/approach-environmental-psychology >
Merad, Djamal, *et al*. 2016. Purchase behavior analysis through gaze and gesture observation. Pattern Recognition Letters 81 (2016): 21-29. Available: <URL: https://dl.acm.org/doi/10.1016/j.patrec.2016.04.008 >
Miller, Daniel (ed.). 1995. Acknowledging Consumption: A Review of New Studies. London: Routledge. The Shopping Experience, edited by Pasi Falk, and Colin B Campbell, SAGE Publications, 1997. ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/jyvaskyla-ebooks/detail.action?docID=1001336.
Mohammadzadeh, F.F., Liu, S., Bond, K.A. and Nam, C.S. 2015. Feasibility of a wearable, sensor-based motion tracking system. Procedia Manufacturing, Vol. 3, pp. 192-199.
Morgan, B. 2019. What Is the Future Of Shopping Experiences? Forbes. Available: <URL: https://www.forbes.com/sites/blakemorgan/2019/07/25/what-is-the-future-of-shopping-experience/?sh=234dc9106c1c >
Mortier. 2018. JD.com to launch 1,000 stores per day. Available: <URL: https://www.retaildetail.eu/en/news/general/jdcom-launch-1000-stores-day >
Nandakumar, Rallapalli, Chintalapudi, Padmanabhan, Qiu, Ganesan, Goenka. 2013. Physical analytics: A new frontier for (indoor) location research. Redmond, WA, USA.
Neff, J. 2008. Pick a product: 40% of public decide in store. Advertising Age, 79, 31.
Neslin, Scott A., Dhruv Grewal, Robert Leghorn, V. Shankar, Marije L. Teerling, Jacquelyn S. Thomas and Peter C. Verhoef. 2006. Challenges and opportunities in multichannel customer management. Journal of Service Research, 9 (2), 95–112.
Neslin, Scott A., Kinshuk Jerath, Anand Bodapati, Eric T. Bradlow, John Deighton, Sonja Gensler, Leonard Lee, Elisa Montaguti, Rahul Telang, Raj Venkatesan, C. Peter, Z. Verhoef and John Zhang. 2014. The Interrelationships Between Brand and Channel Choice. Marketing Letters, 25 (3), 319–30.
Normann, R. 1984. Service Management: Strategy and Leadership in Service Businesses, Wiley, New York, NY.
Nusca, A. 2013. The future of retail is dynamic pricing. So why can't we get it right? Available: <URL: https://www.zdnet.com/article/the-future-of-retail-is-dynamic-pricing-so-why-cant-we-get-it-right/ >

O'Donoghue, D. 2019. Shopper Marketing 101: What It Is and How It Works. G2.com. Available: <URL: https://learn.g2.com/shopper-marketing#:~:text=Shopper%20marketing%20is%20a%20discipline,from%20traditional%20advertising%20and%20promotion >
O'Brien, D. T. 2012. Review of the book Thinking, fast and slow. Journal of Social, Evolutionary, and Cultural Psychology, 6(2), 253-256. Available: <URL: http://dx.doi.org/10.1037/h0099210 >
Ogden, Denise T., and James R. Ogden. 2005. Retailing 3e. Textbook Media Press.
Okazaki and Mendez. 2013. Perceived ubiquity in mobile services. Journal of Interactive marketing 27.2 (2013): 98-111.
Oosterlinck, D., Benoit, D.F., Baecke, P. and Weghe, N.V. 2017. Bluetooth tracking of humans in an indoor environment: an application to shopping mall visits. Applied Geography, Vol. 78, pp. 55-65.
Ortis, I. 2010. Unified Retailing - Breaking Multichannel Barriers. IDC Retail Insights Report.
Osborne, 2002. Consuming Rituals of the Suburban Tribe. The New York Times. Available: <URL: https://www.nytimes.com/2002/01/13/magazine/consuming-rituals-of-the-suburban-tribe.html >
Paulo Silveira, & Marreiros, C. 2014. Shopper marketing: a literature review. Available: <URL: https://www.researchgate.net/publication/303340059_Shopper_marketing_a_literature_review >
Payne, C. R., Niculescu, M., Just, D. R., & Kelly, M. P. 2014. Shopper marketing nutrition interventions. Physiology & Behavior, 136, 111–120. Available: <URL: https://doi.org/10.1016/j.physbeh.2014.03.029 >
Pepes, G. 2017. The path to a "Phygital" retail space. ETRetail.com Available: <URL: https://retail.economictimes.indiatimes.com/re-tales/the-path-to-a-phygital-retail-space/2415 >
Yildirim, P. 2021. The Short-run Impact of COVID-19 on Brick-and Mortar Stores: Evidence from RetailTech. Available: <URL: https://www.researchgate.net/publication/349027499_The_Short-run_Impact_of_COVID-19_on_Brick-and_Mortar_Stores_Evidence_from_RetailTech >
Pincot, G. 2010. Point of view on shopper marketing. In M. Stahlberg & V. Maila (Eds.), Shopper Marketing: how to increase purchase decisions at the point of sale (pp. 9-12). Kogan Page.
Piyush Kumar Sinha, & Gopi Krishnaswamy. 2010. The Path to Purchase During Shopping. Retrieved Available: < URL: https://www.researchgate.net/publication/46476955_The_Path_to_Purchase_During_Shopping >
Prosper Insights & Analytics. 2020. Strategic Insights: Coronavirus Covid-19 Consumer. AWS Marketplace. Available: <URL: https://aws.amazon.com/marketplace/pp/prodview-gyf4fgtkr5zqq >
Quint, M., Rogers, D. & Ferguson, R. 2013. Showrooming and the rise of the mobile-assisted shopper. Columbia Business School – Aimia Report. Available: <URL: https://www8.gsb.columbia.edu/globalbrands/sites/globalbrands/files/images/Showrooming_Rise_Mobile_Assisted_Shopper_Columbia-Aimia_Sept2013.pdf >
Rampell, A. 2010. Why online 2 offline commerce is a trillion dollar opportunity. Available: <URL: https://techcrunch.com/2010/08/07/why-online2offline-commerce-is-a-trillion-dollar-opportunity/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAF5bHqlVtsEzTrK32Q9tbM3AF-GOKsg9Mzt8V23S4oqHVjn7yhfWqIuXxRDjjkkNLNzgvVS2QnJElm_cLcjumcyb03q1Z-ZJH_6rUxM1w_xULswoGarWlRoUF_X08UXP6mQ8US-WHP_GEUBCpRh0YshU3KbjWQH8oScko33Ayo_Av1 >
Retail Commission on Shopper Marketing. 2010. Shopper Marketing Best Practices: A Collaborative Model for Retailers and Manufacturers. In-Store Marketing Institute. Available: <URL: https://retailhouse.files.wordpress.com/2016/06/shopper-marketing-best-practices-report-4-2010.pdf >

Retail market worldwide. 2021. Statista. Available: <URL: https://www.statista.com/topics/5922/retail-market-worldwide/ >
Rigby, D. 2011. The Future of Shopping. Harvard Business Review, 89(12), pp.64–75.
RIS. 2014. Transforming Physical Retail. An RIS whitepaper - RetailNext. Available: <URL: http://retailnext.net/wp-content/uploads/2014/01/RetailNext-Transforming-Physical-Retail-Whitepaper-Jan2014.pdf >
Robertson, B. 2021. Shoppers flock back to Toronto mall on first day of reopening. Available: <URL: https://www.blogto.com/fashion_style/2021/06/shoppers-toronto-mall-first-day-reopening/>
Rose, S., Clark, M., Samouel, P., & Hair, N. 2012). Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes. Journal of Retailing, 88(2), 308–322. Available: < URL: https://doi.org/10.1016/j.jretai.2012.03.001 >
Rose, S., Clark, M., Samouel, P., & Hair, N. 2012. Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes. Journal of Retailing, 88(2), 308–322. Available: <URL: https://doi.org/10.1016/j.jretai.2012.03.001 >
Ruiz, J., Chebat, J. and Hansen, P. 2004. Another trip to the mall: a segmentation study of customers based on their activities. Journal of Retailing and Consumer Services, Vol. 11 No. 6, pp. 333-50. Available: <URL: https://www.academia.edu/15528440/Another_trip_to_the_mall_a_segmentation_study_of_customers_based_on_their_activities >
Sachs, Anna-Lena. 2015. Retail analytics. Lecture Notes in Economics and Mathematical Systems. Available: <URL: https://doi.org/10.1007/978-3-319-13305-8 >
Salazar. 2018. In-Store & Online: Designing for the Changing Behaviors of Today's Shoppers. Available: <URL: https://www.nngroup.com/articles/changing-shopper-behaviors/ >
Salmon. 2017. How Predictive Analytics Could Transform In-Store Retail. Wundermanthompsoncommerce.com. Available: <URL: https://www.wundermanthompsoncommerce.com/en/what-we-think/blogs/how-predictive-analytics-transform-in-store-retail/ >
Sanburne, J. 2017. Why the death of malls is about more than shopping. Time. Available: <URL: http://time.com/4865957/death-and-life-shopping-mall/ >
Scamell-Katz, S. 2012, 2013. The art of shopping. Bookseller, 5535, p 18-19, p 66-67.
Schneider, G. P. 2002. New Perspectives on E-Commerce. Boston: Course Technology, a division of Thomson Learning, p. 1.04.
Schoenbachler, D.D., Gordon, G.L. 2002. Multi-channel shopping: understanding what drives channel choice. J. Consum. Mark. 19 (1), 42–53.
Senior, A. W.; Brown, L.; Hampapur, A.; Shu, C. F.; Zhai, Y.; Feris, R. S.; Carlson, C.: Video analytics for Retail. 2007. IEEE Conference on Advanced Video and Signal Based Surveillance. Available: <URL: http://www.andrewsenior.com/papers/SeniorRetail2007.pdf >
Seol, S., Lee, E.-K. and Kim, W. 2017. Indoor mobile object tracking using RFID. Future Generation Computer Systems, Vol. 76, pp. 443-451.
Shankar and Balasubramanian. 2009. Mobile Marketing: A Synthesis and Prognosis. Journal of Interactive Marketing, 23, 2, 118–29.
Shankar, Kleijnen, Ramanathan, & Morrissey. 2016. Mobile Shopper Marketing: Key Issues, Current Insights, and Future Research Avenues. Available: <URL: https://www.researchgate.net/publication/301732599_Mobile_Shopper_Marketing_Key_Issues_Current_Insights_and_Future_Research_Avenues >
Shankar, V. 2011. Shopper Marketing. Marketing Science Institute. Massachusetts.
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, 87, S29–S42. Available: <URL: doi:10.1016/j.jretai.2011.04.007 >
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, 87, S29–S42. <URL: doi:10.1016/j.jretai.2011.04.007 >

Sharma, R. 2017. Competing in an Omnichannel World With In-Store Behavior Analytics. Available: <URL: https://www.videomining.com/resource/competing-in-an-omnichannel-world-with-in-store-behavior-analytics >
Sharma, R. 2017. Putting the Shopper into Shopper Marketing via In-Store Behavior Analytics. [YouTube Video]. Available: <URL: Retrieved from https://www.youtube.com/watch?v=9q4ZPV7IhrI&t=792s >
Sharma, R. 2020. Monitoring In-Store Behavior Trends. Available: <URL: https://www.videomining.com/#whitepapers >
Sharma, R. 2020. Transforming CPG Retail Through In-Store Behavior Analytics. Available: <URL: https://www.videomining.com/videomining-whitepaper-transforming-cpg-retail-in-store-behavior-analytics-view >
Sharma, et al. 2021. Adoption of persuasive technology in Retail: Insights from a model of shoppers' behavior. Psychology and Education Journal, 58(5), 2366–2371. Available: <URL: http://psychologyandeducation.net/pae/index.php/pae/article/view/5750 >
Sightcorp. 2021. In-Store Analytics, What is it?. Sightcorp.com. Available: <URL: https://sightcorp.com/knowledge-base/in-store-analytics/ >
Sitel. 2020. Phygital Retail - Sitel Group. Available: <URL: https://www.sitel.com/white-paper/phygital-retail/>
Skinner, B. F. 1953. Science and human behaviour. New York, NY: The Free Press.
Skinner, B. F. 1973. About behaviorism. New York, NY: Vintage Books
Sorensen, H. 2003. The science of shopping. Marketing Research, 15(3), S. 30-35.
Sorensen, H. 2008. Long Tail Media in the Store. Journal of Advertising Research 48.3, 329-338.
Sorensen, H. 2009. The in-store audience. Journal of Advertising Research, 49(2), 176-179.
Sorensen, H. 2009. Inside the mind of the shopper: The science of retailing. Wharton School.
Sorensen, H., Bogomolova, S., Anderson, K., Trinh, G., Sharp, A., Kennedy, R., … Wright, M. 2017. Fundamental patterns of in-store shopper behavior. *Journal of Retailing and Consumer Services*, *37*, 182–194. Available: <URL: https://doi.org/10.1016/j.jretconser.2017.02.003 >
Ståhlberg, M. A., & Ville Maila. 2012. Shopper Marketing: How to Increase Purchase Decisions at the Point of Sale. (pp. 9-12). Kogan Page. Available: <URL: https://www.semanticscholar.org/paper/Shopper-Marketing%3A-How-to-Increase-Purchase-at-the-Stahlberg-Maila/c3b3da1ae196c3ed94875205aa65ad000e2adb9e >
Statista. 2021. Coronavirus deaths worldwide by country. Statista website. Available: <URL: https://www.statista.com/statistics/1093256/novel-coronavirus-2019ncov-deaths-worldwide-by-country/>
Stephens, D. 2017. Why Retail Is Getting "Experience" Wrong. Retailprophet.com. Available: <URL: https://www.retailprophet.com/retail-getting-experience-wrong/ >
Stephens, D. 2017. To Save Retail, Let It Die. The Business of Fashion. Available: <URL: https://www.shalomdc.org/wp-content/uploads/2018/03/To-Save-Retail-Let-It-Die-_-Opinion-Retail-Prophet-_-BoF.pdf >
Stern, H. 1962. The Significance of Impulse Buying Today. *Journal of Marketing*, *26*(2), 59–62. Available: <URL: https://doi.org/10.1177/002224296202600212 >
Stratton, J. P., Moser, A., & Wallace, C. 2011. The Retail Laboratory: Lessons from an Anthropologist. Available: <URL: https://www.researchgate.net/publication/238047752_The_Retail_Laboratory_Lessons_From_an_Anthropologist >
Sumathi Bala. 2020. JD.com wants a network of 5 million stores as e-commerce battle heats up. Available: <URL: https://www.cnbc.com/2020/11/12/jdcom-wants-network-of-5-million-physical-stores-in-china.html#:~:text=Chinese%20retailer%20JD.com%20plans,consumers%20in%20the%20smaller%20cities >

Synchrony. 2017. The Future of Retail, Insight and Influences Shaping Retail Innovation. Synchrony.com. Available: <URL: https://www.synchrony.com/futureofretailsynchronyfinancial.pdf >
Teo, C. B. C., & Sidin, S. M. 2014. Hedonic and utilitarian shopper types in evolved and created retail agglomerations. The International Review of Retail, Distribution and Consumer Research, 283-309. Available: <URL: https://www.tandfonline.com/doi/abs/10.1080/09593960802113877 >
Thompson, D. 2017. What in the world is causing the retail meltdown of 2017? The Atlantic. Available: <URL: https://www.theatlantic.com/business/archive/2017/04/retail-meltdown-of-2017/522384/ >
Townsend, M., Surane, J., Orr, E. Cannon, C. 2018. America's 'Retail Apocalypse': is really just beginning. Bloomberg. Available: <URL: from: https://www.bloomberg. com/graphics/2017-retail-debt/>
Trotter. 2016. Why Physical Retail Matters More Than Ever. Available: <URL: https://retailnext.net/en/blog/why-physical-retail-matters-more-than-ever/>
TTEC. 2018. Location Data Is Having a Moment. Available: <URL: https://www.ttec.com/articles/location-data-having-moment >
Turley, L. W., & Milliman, R. E. 2000. Atmospheric Effects on Shopping Behavior. Available: <URL: https://www.researchgate.net/publication/247032181_Atmospheric_Effects_on_Shopping_Behavior >
Twin. 2021. Click and Mortar: Retailers That Thrive Both Online and Offline. Investopedia. Available: <URL: https://www.investopedia.com/terms/c/click_and_mortar.asp >
Underhill, P. 2009. Why We Buy: The Science of Shopping, Simon & Schuster.
US Census Bureau. 2016. Available: <URL: https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf >
Van Ittersum, Koert, Brian Wansink, Joost M.E. Pennings, and D. Sheehan. 2013. Smart Shopping Carts: How Real-time Feedback Influences Spending. Journal of Marketing, 77, 6, 21–36.
Verdon, J. 2020. The New Science of Counting Shoppers: The Tech Tracking Customers In The Age Of Coronavirus. Forbes.com. Available: <URL: https://www.forbes.com/sites/joanverdon/2020/06/28/the-new-science-of-counting-shoppers-tracking-customers-in-the-age-of-coronavirus/?sh=178f81361de9 >
Verhoef, P. C., Kannan, P. & Inman, J. 2015. From Multi-Channel Retailing to Omni-Channel Retailing: Introduction to the Special Issue on Multi-Channel Retailing. Journal of Retailing, 91(2), 174-181. Available: <URL: https://doi.org/10.1016/j.jretai.2015.02.005 >
Tešić, D. 2017. Shopper marketing as a function of modern distribution channels. In Economic policy for smart, inclusive and sustainable growth, conference proceedings. Belgrade (pp. 307-329).
Wakefield, K.L. & Baker, J. 1998. Excitement at the mall: determinants and effects on shopping response. Journal of Retailing, vol. 74, no. 4, pp.515-539.
Walker Naylor, Rebecca, Rajagopal Raghunathan, and Suresh Ramanathan. 2006. Promotions Spontaneously Induce a Positive Evaluative Response. Journal of Consumer Psychology, 16, 3, 295–305.
Wang, Rebecca Jen-Hui, Su Jung Kim, and Edward C. Malthouse. 2015. "Branded Apps and Mobile Platforms as New Tools for Advertising, the New Advertising: Branding, Content and Consumer Relationships," in Data-driven Social Media Era. Ruth Brown, Valerie Jones, Bryan Ming Wang, editors. Santa Barbara, CA: Praeger.
Wertenbroch, K. 2015. From the editor: Rational choice as the foundation of behavioral research in marketing. Journal of Marketing Behavior, 1(2), 109–111.
Wertenbroch, K. 2016. From the editor: Manipulation and marketing: the elephant in the room? Journal of Marketing Behavior, 1(3–4), 209–212.

Wollenberg. 2018. From bricks-and-mortar to bricks-and-clicks: Logistics networks in omni-channel grocery retailing. International Journal of Physical Distribution & Logistics Management. Available: <URL: https://doi.org/10.1108\/IJPDLM >

Wu, Y.-K., Wang, H.-C., Chang, L.-C. and Chou, S.-C. 2015. Customer's flow analysis in physical retail store. Procedia Manufacturing, Vol. 3, pp. 3506-3513.

Wyner, G. 2011. Shopper marketing: How to engage and inspire consumers at critical points in the shopping cycle. Marketing Management, 44-4.

Li-Qun Xu. 2007. Issues in video analytics and surveillance systems: Research / prototyping vs. applications / user requirements. *IEEE Conference on Advanced Video and Signal Based Surveillance*, S. 10- 14, 2007. IEEE. Available: <URL: https://doi.org/10.1109/avss.2007.4425278 >

Yaeli, A., Bak, P., Feigenblat, G., Nadler, S., Roitman, H., Saadoun, G., Sandbank, T. 2014. Understanding customer behavior using indoor location analysis and visualization. IBM Journal of Research and Development, 58(5/6), S. 3-1.

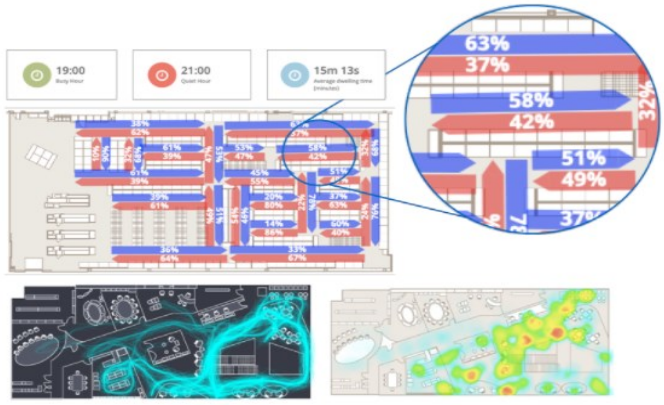
Yim, J., Jeong, S., Gwon, K. and Joo, J. 2010. Improvement of Kalman filters for WLAN based indoor tracking. Expert Systems with Applications, Vol. 37 No. 1, pp. 426-433.

Yurova, Y., Rippé, C.B., Weisfeld-Spolter, S., Sussan, F. and Arndt, A. 2017. Not all adaptive selling to omni-consumers is influential: the moderating effect of product type. Journal of Retailing and Consumer Services, Vol. 34 No. 1, pp. 271-277.

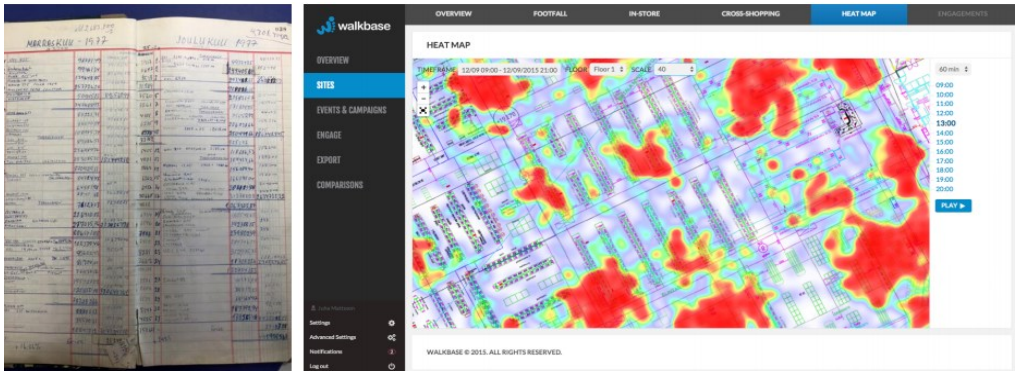
Zeng, Y., Pathak, P. H., Mohapatra, P. 2015. Analyzing Shopper's Behavior through WiFi Signals. In Proceedings of the 2nd workshop on Workshop on Physical Analytics, S. 13-18.

Zukin, S. 1991. Landscapes of Power: From Detroit to Disney World. Berkeley and Los Angeles: University of California Press.

7 APPENDIX 1 COPYWRITE RELEASE FOR IMAGES



Full path analysis of shoppers in-store. Copywrite image release by Shoppermotion, (2021).



Systematic visitor analytics since early ‘70s (left) and modern in-store visitor analytics (right). Copywrite image release by Walkbase, (2015).

8 APPENDIX 2 SEMI-STRUCTURED INTERVIEW QUESTION SET

Preliminary information given and asked by the interviewee prior to the interview:

- Tell the reason for this interview and that it will be recorded and ask the respondent to agree audibly on the recording.
- Tell that the results will only be used for the purpose of this thesis and published information will be anonymous.
- Ask for the name, job description, company they represent, and or what he or she has most expertise on, how long they've been in the field for etc.
- Ask about brief overview of their company and or their work background, services, or solutions they provide, industry verticals, types of clients, global markets presence, etc.

Theme 1: Current state of physical retail and evolution

1. What is your opinion on the importance of physical retail?
   -Do you think it has a future given the dominance of e-commerce, and in a "post-Covid world"?

2. What are some of the significant changes you've seen from the current state of retail and how have you responded to it?

3. In your view, what might a future retail experience look like?
   -How do you see the physical retail landscape changing?

4. What do you think are some of the technological trends and changes in both shopper marketing and physical retail?
   -how do you think it's shaping the retail experience?

5. For physical retailers to evolve even further, what do you think they should do to stay competitive and relevant in the future in such an omnichannel world with eCommerce dominance?

Theme 2: "Phygital" retail and digital solutions

6. How would you define the term "phygital" or "connected store"?
   -What do you consider as a good "phygital" experience or example to give?

7. How do you think the use of mobile has changed or influenced shopper's behaviour in-store? (Refer to "showrooming phenomenon" or "halo effect" across channels if necessary).

8. Could you name or describe some specific technologies that might change the future retail experience?
   -Have you implemented some of these technologies? If so, which of these technologies have been most successful for you or your clients?

9. What digital solution/s do you use to solve in-store behaviour analytics and or improve in-store marketing etc activities?
   -How does it work and why is it so beneficial?

10. What kind of infrastructure does the retailer establishment need to have for this digital solution or technology to be implemented?

Theme 3: Shopper data, insights, measurement, and approach

11. Could you describe your typical methodologies or approaches to studying in in-store shopper behaviour and insights?

12. In your opinion, what do you think is the most optimal way to capture in-store behaviour data (e.g., analogous manual observation vs streamlined digital solutions)?

13. What is the general importance of in-store data and who benefits from the insights?

14. Do you think that there's an information gap between the data that's accessible?
   -What do you think needs to be done to bridge this gap?

15. What are some example shopper insights that physical retailers should be paying closer attention to?

16. From your experience, how do you typically test the performance of an indoor retail venue or store, e.g., store layout, zone, specific category, display location, or even shelf level accuracy?
   -Do you have any specific parameters to do this?

17. What are the in-store metrics commonly used and how do you measure them?
   -Could you give me an example of how you use these metrics to measure the impact of adjacencies, display locations or insight into in-store shopper journey?

18. How would you define the term "moments of truth"?

19. Do you think there are any clear parallels between the way shopper behaviour is tracked and analysed online compared to offline?
   -Are there any distinct similarities between for example, a store layout and a website layout, in any way which reflects the how visitors/shoppers interact?

20. Are there any fundamental questions you typically ask when trying to solve in-store challenges around in-store shopper behaviours or optimizing store performance?

T**heme 4: Shopper marketing implications and examples**

21. How do you typically apply in-store insights gathered to be used towards shopper marketing and improving the overall customer experience?
    -Are you able to apply this to any sort of contextual marketing, omnichannel, or display focused marketing?

22. Can you refer to any specific shopper marketing campaigns that have been successful? How was it implemented?

23. Can you explain to me how you are able to improve "visitor" engagement?
    -through what methods and results produces? Does this reflect on customer or brand loyalty at all? If so, how?

24. Have you heard any feedback or concerns related to privacy related matters regarding the way you do in-store analytics and marketing?

9 APPENDIX 3 THEMATIC MAP BASED ON INTERVIEW RESULTS

1. Participant's area expertise and background

2. Retail landscape

a. Noticeable changes in the state of physical retail (pre&post Covid)
b. Future retail experience
c. Highlighting that physical retail will not die but will transform.
d. Technological influences

3. Online/offline retail and innovative solutions

a. Influence of mobile on shopping
b. Retail channels: one can't live without the other
c. In-store analytics solutions and infrastructure needed

4. Access to and use of shopper data

a. Methodologies, tools, and approach to shopper data collection
b. Discussing the in-store information gap and areas to focus on

5. Other shopper marketing implications

a. Omnichannel digital shopper solutions tied with in-store analytics
b. At shelf engagement and display focused marketing
c. Supporting storewide, category wide, and brand level in-store insights