

Customer Journey Mapping as a New Way to Teach Data-Driven Marketing as a Service

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Andrea Micheaux¹  and Birgit Bosio²

Abstract

As firms gather increasing amounts of data, the question of how future marketers can use these data to make their marketing more relevant and to make a strategic difference remains. However, students may feel uncomfortable about information systems and database technology, which they may perceive as complex and dry. This case describes how the development of a course on data-driven marketing makes use of service design methods. The experiential learning innovation is based on the optimization of customer journey mapping, which encompasses theoretical marketing concepts, modern database architecture and practical digital marketing knowledge. As a visualization of individual interactions with a product, service, or brand, customer journey mapping helps explain the way an interaction occurs in one moment and how it influences all other moments. By taking the “data as a service” perspective on the customer journey, students benefit from a more innovative and creative approach to data-driven marketing, which helps improve their attention and motivation.

Keywords

data-driven marketing, data as a service, customer journey mapping, persona development, stakeholder map, experiential learning

Customer journey mapping is positioned in the American Marketing Association's leading marketing publications as paving the way to the future of the customer experience (Lemon & Verhoef, 2016; Qaqish, 2018). Because the customer journey has always been central to data-driven marketing, this renewed focus confirms the importance of this discipline at the forefront of the marketing curriculum. Since the late 1980s and early 1990s, marketing databases were created from customer data collected at the points of contact between the customer and the firm. At the time, only billing and some sparse customer data, such as the customer's gender and postal code, but often not even his or her age, were available. Currently, data sources are vastly more abundant, largely due to the proliferation of digital channels and the touch points they generate. However, data are now considered a service, which is new.

Data provide a service to the customer. Using customer data to help the customer while making a profit represents a service for both the customer and the company and society. The use of data to produce relevant and timely marketing proposals is a service to the customer. The data serve the company through the revenues they generate and serve society through the employment they create. Data-driven marketing not only pays marketers' salaries but also contributes to the salaries of all of the company's employees. Thus, data should be a primary concern of marketers and all

members of a company. However, they are not the focus of marketing students.

Teaching database marketing is difficult for two main reasons. On one hand, students, especially digital marketing students, are interested mainly in the creative and social media aspects of marketing. They are often more enthusiastic about learning SEO (search engine optimization) than about how to integrate customer data into a database or how to organize data in the most operational form to drive personalized marketing and analytics, even if they soon discover during their internships that SEO involves a great deal of writing code on web pages. The second difficulty is teaching the subject of marketing technology (Martech) when it is evolving so rapidly. New acronyms are released almost weekly. There is a lively debate on whether the data management platform (DMP) should instead be called the customer management platform or whether a data lake should be included in the operational marketing database (OMDB). It is difficult for academic

¹IAE–University of Lille, Lille, France

²MCI Management Center Innsbruck, Innsbruck, Austria

Corresponding Author:

Birgit Bosio, MCI Management Center Innsbruck, Universitätsstraße 15, 6020 Innsbruck, Austria.
Email: birgit.bosio@mci.edu

teachers to follow every new development. However, professionals, although they can distinguish between what is Martech hype and the fundamentals of data-driven marketing, which have remained unchanged for 30 years, may lack knowledge of marketing theory. In this regard, the challenges of data-driven marketing education are as follows: first, how to interest students in OMDBs; second, how to ensure that students can also learn the subject despite their different backgrounds, many of whom are not engineers or statisticians; and third, how to help academic professors cope with the changes brought about by Martech technologies. Educators must teach the fundamental theory behind data-driven marketing principles. Marketing students need to understand the relationship between marketing and data to contribute value and not lose their jobs to statisticians and mathematicians with no previous marketing education.

This article presents a course designed by a teacher with a hybrid background as a practitioner and an academic. The professor, the lead author of this article, was in a privileged position to combine data-driven marketing practice with theory and to understand the difficulties encountered by educators in this area. The course focuses on the customer journey touch points. Each touch point is independent of the others regarding the data collected and the database processes entailed, which allows teachers to update the touch points as technology evolves. As the customer's story unfolds, the accumulated data are enhanced and leveraged to improve the customer experience, which is achieved through the educators' marketing knowledge and the skills acquired by the students.

In designing the course, the professor looked for customer journey engineering software. Smaply was chosen from the customer journey mapping tools reviewed by Ramshaw (2016). From a data service perspective, the service engineering software was the natural choice. Through two case studies detailed in this article, students developed personas and customer journey and stakeholder maps. The persona represents the customer, and the journey mapping represents the capture, ingestion and organization of data in the OMDB. Marketing theory and practice related to engagement and customer experience are associated with the customer journey (see Lemon & Verhoef, 2016, for a review of the theory). Stakeholder mapping provides an overview of how the different entities in the database are interconnected and how the different people and departments in the organization work together on the data.

The aim of this article is to present the course and offer it to other marketing educators on the creative commons principle. The course has been developed and taught to 344 students since 2016. Although there was no formal measure of program success, student feedback at the pedagogical meetings was positive, and the classroom experience was transformed. We show that the students' learning path is in line

with D. A. Kolb's (1984) experiential learning theory (ELT). On one hand, students in data-driven marketing courses tend to have heterogeneous learning style profiles (D. A. Kolb, Boyatzis, & Mainemelis, 2001); on the other hand, the case steps we present are consistent with Kolb's experiential learning spiral (A. Y. Kolb & Kolb, 2017), which could explain the success of the course and why it is interesting to share it.

The rest of this article is structured as follows. Borrowing from Crittenden and Crittenden (2015), we first explain *what* is taught in the data-driven marketing curriculum. Then, we describe *how* the subject is taught. In the next two sections, we present the substance of the data-driven marketing course, first from a value perspective and then by addressing the role of data in the customer journey. The service design method links the *what* and the *how*, as it provides the model for course design. We therefore explain the fundamentals of service engineering methods by reviewing the literature. Next, we detail *how* the course is taught by presenting each of the two case studies that provide the instructional material foundation. In the results section, we discuss how ELT supports the validity of this course. We conclude with how the course addresses managerial concerns and those expressed in the literature on digital marketing education. A service-oriented vision of data-driven marketing education is proposed.

The Value of Data-Driven Marketing in Times of Digital Disruption

The course presented in this article emphasizes the value of data-driven marketing in several ways. The value lies in the subject itself as an essential field of study for future entrepreneurs. The program aims to show students the value of their marketing knowledge to enrich the data. It aims to involve students in the data as an essential asset. Data are used to engage with the customer and, as a shared resource, with colleagues in their own department and other departments within the company.

Although the field of data-driven marketing is not new (Stephenson, 1989), companies are increasingly requiring marketers to analyze and interpret the large amount of data generated by digital conversations with customers (Gartner, n.d.). Database skills are among the most frequently required analytical skills for marketing graduates and are associated with higher salaries (Schlee & Karns, 2017). However, students may feel uncomfortable with the technology they consider complex. They are not necessarily interested in the subject and may perceive it as dry. This attitude may mask a lack of self-confidence when compared with qualified statisticians who have spent 5 years of their curriculum analyzing data. Students learn to contribute to the value of the data in a meaningful way. This value lies in the student's learned ability to apply his or her marketing knowledge to data use. Students can enhance the raw data by creating relevant

marketing indicators from them and can find ways to use data to improve the customer experience. Additionally, they can contribute to improving the performance of the entire value chain by working with other colleagues on a common operational database (ODB).

Digital channels allow companies to collect a large amount of data on customer interactions with the company, its agents and products, as well as interactions between customers and other prospects or customers. However, the customer journey cannot be considered solely through the prism of digital marketing. Contact points can involve any agent in the company, computer-tracked interactions with objects, interactions with points of sale and systems, and digital and direct contacts through the media. As all departments of the company are involved, the data are a common ground for collaboration. The course aims to provide students with the skills and tools they need for effective enterprise-wide collaboration on the optimal use of data, which includes working with data and systems specialists and managers at all levels and in all departments.

Recently, managers have moved away from using pure customer interaction data to using a corporate database that includes interconnected data from upstream and downstream value chain touch points and stakeholders (Fink, 2017). This company database becomes the basis for the functioning of the entire firm (Vergne & Blanc, 2016). For example, artificial intelligence is used by airlines for preventive maintenance. As a result, marketing managers are working increasingly closely with colleagues in other divisions of the company. They work together on a common real-time ODB, with the joint aim of optimizing the entire value chain.

The Customer Journey as a Data Value Chain

Instead of teaching database logic and linking it to strategic and operational marketing, the approach adopts the customer journey perspective as a data value chain (Crié & Micheaux, 2006). For marketing professionals, the customer journey is based on the concept of “Moments of Truth” (Carlzon, 1987). These are key moments when the customer experience is decisive for the future of the relationship. Carlzon, then CEO of SAS Airlines, defined “50 million moments of truth” as the annual sum of the moments when an SAS agent is in direct contact with a customer. By empowering agents and refocusing the company on customer service, Carlzon significantly improved the company’s results, reducing costs while increasing customer and employee satisfaction.

Lafley (2005) subdivided the moments of truth into the first and second (FMOT, SMOT), representing the moment when the customer chooses a product in store and the moment when the customer tries the product at home, respectively. Lecinski (2011) preceded FMOT and SMOT by the “Zero Moment of Truth,” when, following an advertising stimulus,

the consumer searches several channels for information on a product or service. These moments are again fragmented in the customer’s digital journey, which is composed of a chain of experiential “moments” made tangible by computer-tracked interactions. These moments now involve not only interactions with customers but also those with all stakeholders and processes along the value chain. Data can therefore be considered links that close the value chain.

The touch points on the customer journey maps are sequential and provide a context for what is occurring at each moment. Data-driven marketing is currently focused on the sequential nature of data collection, such as time series modeling. Time series modeling follows the approach that data have meaning only within a context and thus attaches contextual or geographic attributes using artificial intelligence or machine learning (Aoga, Guns, & Schaus, 2017; Tong, She, Ding, Wang, & Chen, 2016). The concept of data contextualization is one of the main topics of the course. In terms of data capture and flow, this concept means attaching geographical and temporal attributes to the data.

Contextualizing data adds meaning, relevance, and value. For example, a rail company’s text message is enhanced in value when placed in the context of place and time. The message “Would you like to change your ticket for the next train?” is valuable only if the customer is too far from the station to be able to take his train. If he is already at the station 15 minutes early, it still has meaning, but it is less important for the customer. If the customer has already changed his reservation, the message is no longer relevant. The next day, it lacks meaning.

Service Design as a Model for Developing a Data-Driven Marketing Course

Service design thinking has helped marketers place the customer at the center of attention. Because customers are cocreators of their own experiences and of customer value (Teixeira et al., 2012; Vargo & Lusch, 2004), a customer-centric marketing approach is crucial to delivering an optimal customer experience. Service design tools such as personas and customer journey and stakeholder maps (Stickdorn, Lawrence, Hormess, & Schneider, 2018) help marketers better understand customer behaviors, feelings, and needs.

Data-driven marketing is customer-centric because it is based on customer data. It was therefore appropriate to base the course on service design methods. The objective was to provide students with a practical experience of value creation opportunities based on data related to customer journey mapping. At the same time, students needed to understand the theoretical concepts that underlie the success of data-driven marketing, including digital engagement, involvement, behavioral and attitudinal forms of commitment, and the

concept of consumer relationship quality (Fournier, 1998). By stimulating students in a holistic way with real tasks and tools, as part of a unifying customer journey project that can be implemented in a company, the class would be more dynamic.

Persona Development

Personas, as used in marketing, embody a user-centered approach (Schäfer, Zinke, Künzer, Hofinger, & Koch, 2014). They were initiated by Cooper (1999) as a new way to create a hypothetical user. Personas provide a means of conveying a wide range of qualitative and quantitative data. They draw attention to aspects of design and use, better than other methods (Pruitt & Grudin, 2003). Some authors criticize personas and say that their creation can lead to stereotypes (Turner & Turner, 2011). However, Stickdorn et al. (2018) propose that a persona is more of a research-based archetype. The benefits of using personas have been highlighted in the literature (Cooper, 1999; Goodwin, 2008; Miaskiewicz & Kozar, 2011). Creating a character with a fictional name and background information can help marketers or designers develop greater empathy and a more intimate relationship with the customer (Schäfer et al., 2014). Members of the marketing team are easily engaged with these target consumers (Miaskiewicz & Kozar, 2011). In addition, personas provide a common basis for collaboration and internal communication at all levels of the company. Shared representation induces a client-centered perspective. Although a persona for marketing purposes may have different attributes than that for product development (Pruitt & Grudin, 2003), all the attributes created by contributors combine to form a single view of the customer.

Since Cooper's first raw sketches, personas have evolved into much more detailed characters that help make the needs of customers salient and intelligible. Personas are created from data collected from customer databases and through ethnographic methods such as interviews or observations (Pruitt & Grudin, 2003). Although the early persona data were mainly ethnographic, recent studies also use other methods, such as factor analysis (McGinn & Kotamraju, 2008) or grounded theory (Dupree, Lank, & Berry, 2018). Personas typically include demographic and behavioral variables, as well as general information, such as the user environment, current frustrations, relevant relationships, and goals (Goodwin, 2008; Stickdorn et al., 2018). Data analysis can identify different persona profiles (Cooper, 1999). The data collected throughout the customer journey is therefore an integral part of persona building. Personas thus provide a bridge between what may appear to students as a dry database technology and what interests them, that is, creative ideas in marketing. Therefore, the enrichment of personas through data collection and processing is a key part of the course.

Customer Journey Mapping

Customer journeys are generally developed from a persona (Stickdorn & Schneider, 2011). A customer journey is a sequence of a customer's direct and indirect contacts with a product, service or brand (Meyer & Schwager, 2007), each of which constitutes a positive, negative or neutral experience (Berry, Carbone, & Haeckel, 2002). The value of the customer experience at each touch point influences the perceived relationship quality (Fournier, 1998), which in turn affects commitment (Palmatier, Dant, Grewal, & Evans, 2006). Contact points can occur in both online and offline channels (Meyer & Schwager, 2007). A customer journey map is structured as a sequence of phases. The customer experience at each of the preservice, service and after-service periods is influenced by past experiences and by one or more touch points during each phase, which influences the future experience (see Figure 1).

The customer journey may vary in scope. It can be based on hypotheses or research, can reflect the current or future state, and can be an overview or detailed, product- or experience-based view (Stickdorn et al., 2018). Customer journey mapping thus follows the principles of service design by sequencing the encounters arising from service consumption, ranging from the first contact with the customer to a description of the service in its entirety. A customer journey map can include different types of information from the lead agent, a general description of touch points, storyboards, and graphic depictions of emotional journeys. Emotions are important for understanding where the customer is having difficulties, for identifying gaps in the customer experience and for exploring potential solutions. Other attributes of the journey map may include information on the channels where contact points are located, stakeholders, dramatic arcs, backstage organizational processes, related tasks, and conversion funnels (Stickdorn et al., 2018). Customer journeys have been applied mainly to marketing and service design (Asbjørn & Knut, 2018; Rawson, Duncan, & Jones, 2013; Zomerdijk & Voss, 2011). However, journey mapping is not limited to mapping the customer experience; it can also be applied to employees or other stakeholders (Bosio, Rainer, & Stickdorn, 2017; Stickdorn et al., 2018; van Oosterom, 2011).

Stakeholder Maps

Stakeholder maps are often used in addition to personas and customer journeys. A stakeholder map is a visual representation of the different individuals or groups involved in a service, as well as the relationships between these stakeholders. Stakeholders may include staff, customers, partner organizations, company departments, or database entities. By charting the service environment in which the customer experience occurs, a stakeholder map helps analyze the respective roles

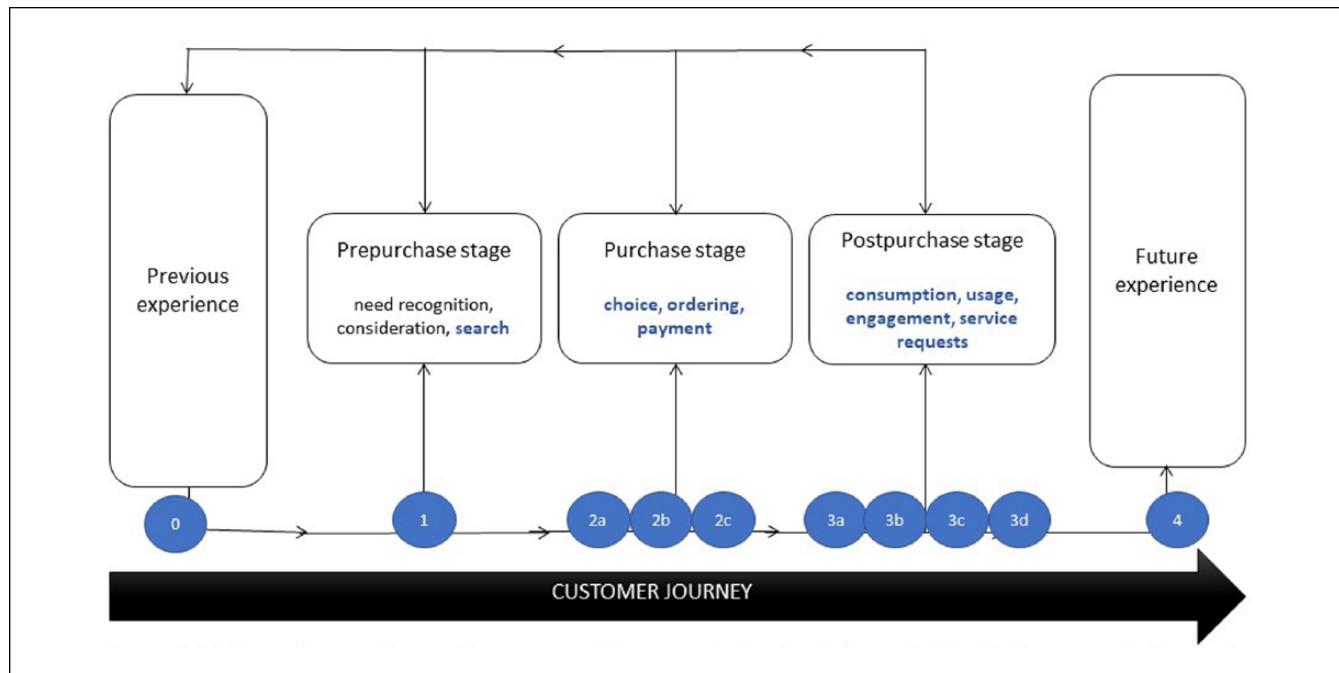


Figure 1. A Persona's customer journey.

Note. The numbers represent the successive touchpoints associated with the persona in the service design software. In a journey map, there may one or several successive interactions in each stage. Above, the search (in bold) is the only touchpoint represented at the pre purchase stage. While there are multiple touchpoints within the purchase (2a, 2b, and 2c) and the post purchase stages (3a, 3b, 3c, and 3d).

Source. Adapted with permission from Lemon and Verhoef (2016).

and interactions between the different groups involved (Stickdorn & Schneider, 2011).

First, a set of stakeholders is created through desk research and interviews. Second, the interests and motivations of stakeholders are analyzed and incorporated into the map by establishing relationships between them and determining the nature of these relationships. The map can be drawn on a background of embedded circles to visualize the importance, influence, and hierarchies of the different relationship groups (van Oosterom, 2011). Stakeholder maps help cluster the internal and external stakeholder groups involved by importance and influence and make their interconnections visible (Stickdorn & Schneider, 2011).

Service Design Models to Help Students Learn Data-driven Marketing

For the design of the course, Smaply was used to simulate the implementation of data-driven marketing in the retail sector. The tool was chosen from the customer journey mapping tools reviewed by Ramshaw (2016). The professor chose Smaply because of its educational license and the academic background of its founders. In addition, as an SaaS (software as a service), Smaply required only Internet access for students and was easy for the teacher to configure. Two cases were produced with personas: the customer

journey and stakeholder maps. The pedagogical concept is based on the story of “Susie,” who is taking her first steps as a new customer at a local bookstore. The data generated by Susie’s interactions with the brand initialize and enrich the OMDB. The data allow students to gain a better understanding of Susie’s personality and tastes as her journey progresses.

The course design was anchored in Lev Vygotsky’s Proximal Development Zone, one of the founding theories from which ELT was developed (see A. Y. Kolb & Kolb, 2017). The service design templates were designed as scaffolding to allow students to move from their native understanding of the client’s journey, which they had acquired during their digital marketing or consumer experience, to a higher level of skills. ELT defines learning as “the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience” (D. A. Kolb 1984, p. 41).

D. A. Kolb’s (1971) Learning Style Inventory (LSI) was developed from a two-axis matrix: a vertical “experience-thinking” axis as a grasping process and a horizontal “reflecting-acting” axis as a transformative process. With the abundance of literature and pedagogical practice, the four basic learning styles (see McLeod, 2017, for a summary) have evolved into the KLSI 4.0, which is based on

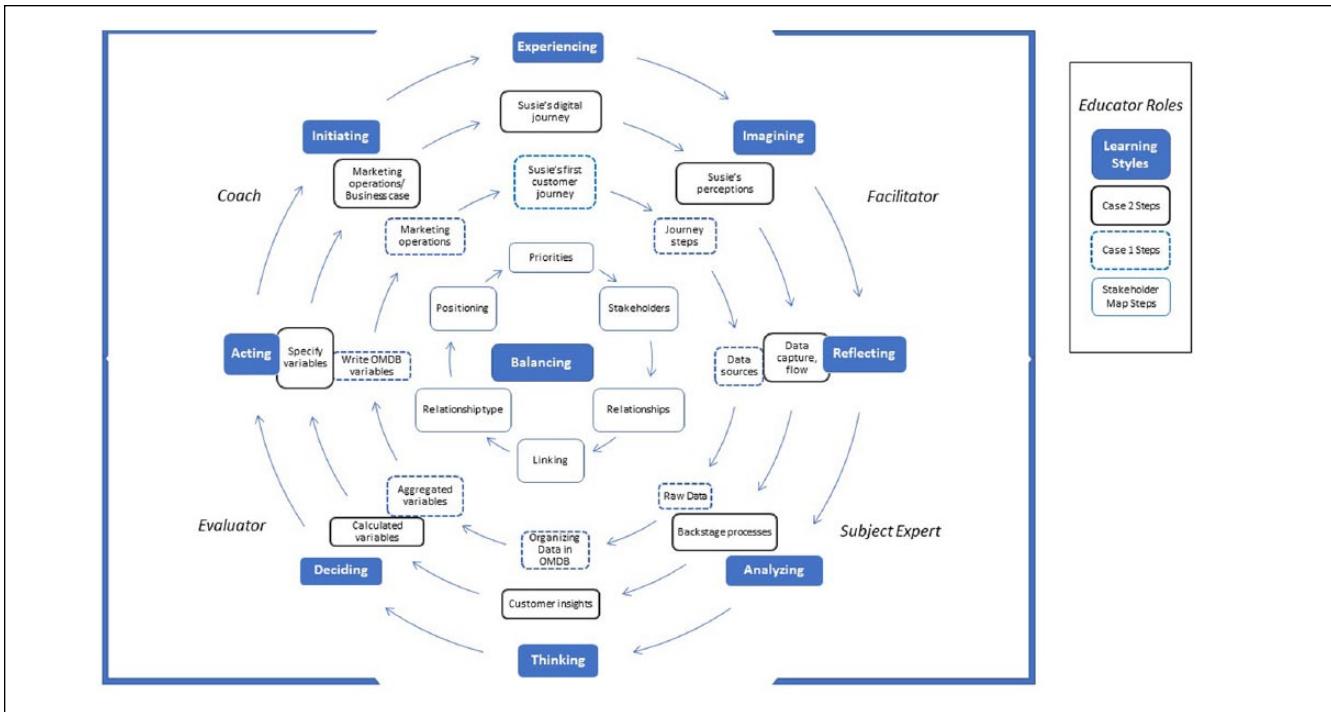


Figure 2. The students' journey follows the experiential learning spiral.

Note. The educator accompanies the students as they progress through the cases.
Source. Adapted with permission from A. Y. Kolb and Kolb (2017).

nine learning styles, each in kite form (A. Y. Kolb & Kolb, 2017). In Figure 2, the learning styles are positioned in a spiral with respect to the steps students take in the completion of the case studies. The ELT posits that a complete learning process can begin from any point in a clockwise direction but that it must cover all points at least once. In the following sections, we explain in detail how the data-driven marketing course is taught in the two case studies. Learning styles are *indicated* (in italics) in the description, where they are most appropriate in relation to Figure 2.

Case I: Susie Begins Her Customer Journey

At first, the students know nothing about Susie, except that she has just moved to a new neighborhood and that the case in point is her neighborhood bookstore. Students have two sources of data from which they can gain an idea of Susie's characteristics and needs, as well as aspects of her personality. The first source is an extract from the bookseller's sales system. The second source is a form that Susie only partially fills out when she logs in to activate her loyalty program membership.

At first glance, the data seem incomplete and scarce. However, as students connect the data to Susie's journey, they focus more on the books Susie buys, when she buys them and the online or physical store where she buys them.

As the journey progresses, the insight into the character grows. At the end of the first case, students understand the power and potential of customer data. Ultimately, they know much more about Susie through her purchases and interactions with the brand than through the information in her member profile.

First, students align their own consumer *experiences* with Susie's. After *imagining* the steps involved in her first purchase and joining the loyalty program, they build Susie's journey. Then, students *reflect* on the data sources and how they could be merged. With the help of the educator, they *analyze* the raw data and *think* about how to organize them in the OMDB. They *decide* which aggregated variables to create at the level of purchasing and customer database entities. They *act* on their ideas by writing the data from each step of Susie's journey into the backstage process lanes of the Smaply tool, which represents the BDMO. Finally, students describe how they plan to use the variables they create to *initiate* personalized marketing operations that will enhance Susie's experience. As illustrated in Figure 2, the students' progress in completing case one follows the ELT learning spiral.

By completing the customer journey (Figure 3), students learn the principles of ODB architecture: the primary key, the levels of aggregation and the difference between raw, dummy, aggregated, and calculated variables. They learn how the data take on a different meaning depending on the

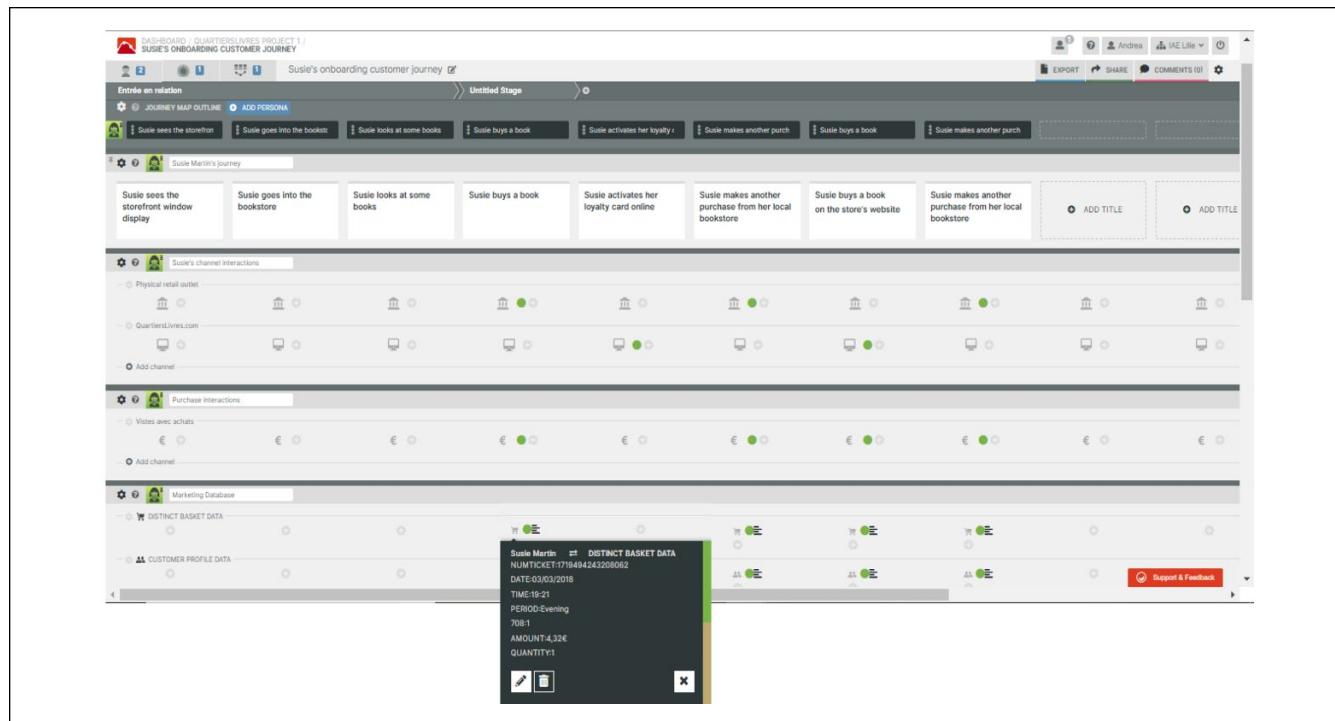


Figure 3. Students complete the customer journey by writing the data flowing from the touchpoints into the marketing database.

level of aggregation. They become familiar with database processes that occur behind the scenes but that are invisible to the customer. By analyzing the data, they gain a vision of the customer experience. They also learn some purely technical aspects of databases, such as the solutions provided by NoSQL databases, to solve some of the difficulties associated with merging data of different formats into different levels of aggregation. The Smaply web application, a MongoDB NoSQL database, gives additional weight to these arguments. In this way, students can begin to measure the impact of marketing issues on technological decisions and consider their technical colleagues as their allies.

Next, students are asked to think about how Susie is connected to the bookstore's backstage systems. Which database systems are involved in Susie's customer journey? How do these entities interact to enhance the customer knowledge that marketers need to ensure optimal customer relationship quality? These relationships are visualized and analyzed in a stakeholder map.

Using the stakeholder map, students can take an architectural database perspective and collaborate with their computer scientist counterparts through a common representation. Students reflect on the stakeholders that are provided. They analyze the potential relationships between stakeholders and think about how they can be linked to each other. They decide on the type of relationship they should choose to describe each connection. They act by positioning stakeholder groups using the concentric circles on the map. This step initiates

discussions. For the group of students who produced the stakeholder map in Figure 4, the customer database entity is the priority, while the information systems colleague might think that the administrative system is more important. This *experience* of comparing different points of view on database and system priorities prepares students to collaborate with colleagues in the IT systems department.

Case 2: A New Investor Takes Control of the Bookstore

In the second case, a new investor has taken over Susie's local bookstore. Suddenly, direct and digital marketing takes on a new dimension. Students play the role of the manager of the bookstore. To secure their position in the new company, they must demonstrate the marketing value of the data from the customer journey. To calculate the variables that will make a difference in their data-driven marketing initiatives, students must merge customer journey data from different channels. From this perspective, they become champions of the cause of modern database architecture (Gruhn, 2016).

The architecture of the target OMDB includes a DMP to merge customers' online and offline marketing interaction data. The model, provided to students in Case 2, reflects how the data are derived from Susie's journey to feed the target database. The customer journey represents Susie's successive interactions with eight channels (e-mail, customer forum, text messaging, call center, Facebook page, Facebook



Figure 4. Completing the stakeholder map for Case 1.

Note. Students define the relationships between the stakeholders and position at the center of the map the database entities which they feel are most important.

application, mobile application, and web customer service). The data captured, processed, merged, and stored from these interactions are displayed in the simulation as backstage process lanes.

Students face a double challenge. First, they must enrich the database with the intelligent marketing variables they will create. From this technical point of view, they must convince the chief information officer that these variables are of cross-channel origin, which requires, on the one hand, the release of data from existing silos via the DMP and the unique customer record and, on the other hand, the provision of data as a service in the synchronous BDMO. Second, they must convince senior management that investment in the new architecture will be profitable. They must demonstrate how marketing and customer service operations, which are driven by the new variables, will increase Susie's level of digital engagement and commitment. Only then can they secure their careers by being promoted to the position of chief data officer.

Susie's interactions with the channels are captured by the various digital marketing and customer service applications. Platforms such as the campaign management system, mobile application platform, or call center system generate data in silos. Data from digital and Customer relationship management (CRM) sources are merged and integrated via the unique customer record and the DMP to the OMDB entities. Unstructured data, such as the review Susie left on the customer forum, are integrated into the data lake along with semistructured data, such as web browsing logs, and mirror copies of structured data, such as interaction events (clicks,

openings, etc.). The way data are collected, merged and integrated is written into the model. The data appear in the various entities of the BDMO. Color coding allows students to see how the processes interact with Susie and with each other. Facebook is presented as an external platform. Figure 5 shows how students click on the interactive customer journey model to visualize the data and processes resulting from the personas' interactions with the direct, digital, and social marketing channels.

Students must examine the data to determine when personal information is collected and consider personal data protection and explicit consent. For example, Susie cannot be geolocated until she has given her permission, that is, when she downloads the mobile application. Susie's interactions with the Facebook page are recorded only once Susie accepts Facebook login access to the "Harry Potter game." Susie calls customer service to say she did not receive the book she ordered. The call center agent then searches the catalogue for the book and sends another one. In this way, students understand that data-driven marketing cannot function in isolation from other internal processes. The ODB involves the entire company, just as all departments contribute to the perceived quality of Susie's journey.

Students are assigned tasks through which they develop and then defend their business case for the investment in the new database architecture. The learning path in case two begins with Susie's journey *experience*. Students simulate a customer survey by *imagining* Susie's perceptions at each point of contact if only silo data can be used to customize Susie's experience. The perceptions are reported by adding

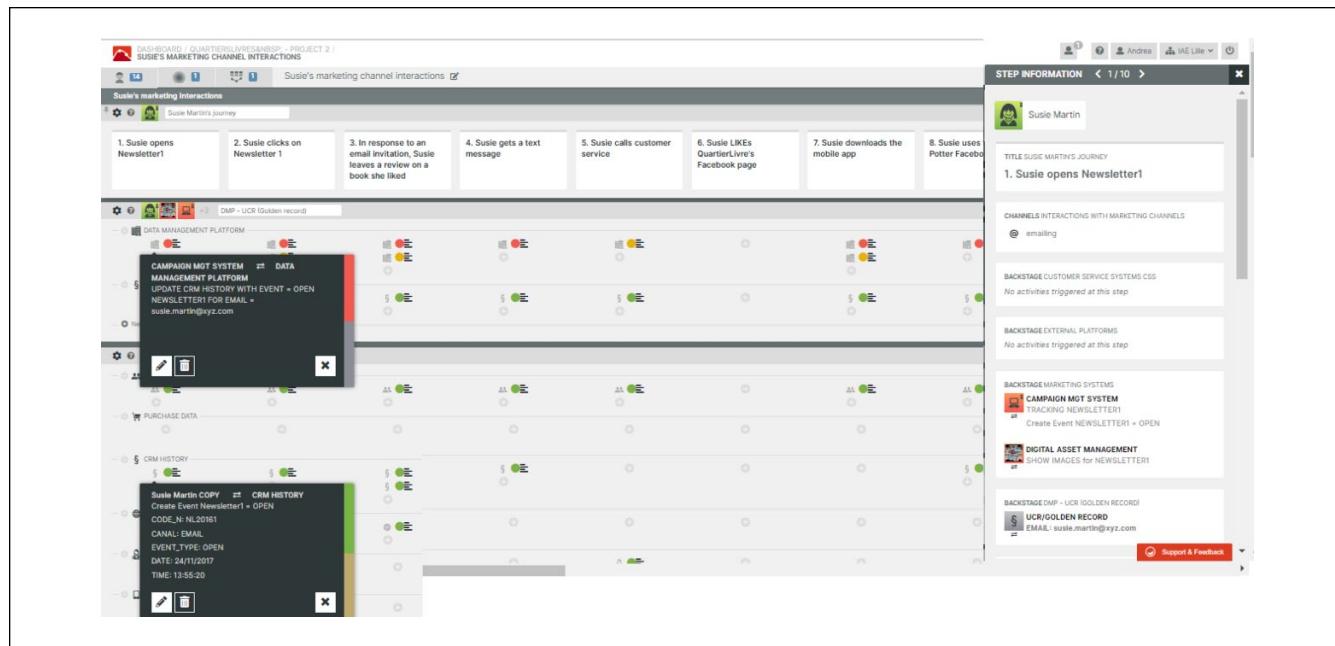


Figure 5. Students click on the interactive customer journey template to visualize the data and the processes flowing from the persona's interaction with the direct, digital, and social marketing channels.

an emotional journey to the existing journey map. Students spend time *reflecting* on how data are generated from Susie's interactions and *analyzing* how they flow through the system. For example, they can see how, at Contact Point 1 (Figure 5), the campaign management platform interacts with the digital asset management platform to show the images in the newsletter. At Contact Point 2 (Figure 6), students can learn how the DMP integrates the click event of the CRM campaign into the CRM history database entity, while Susie's visit to the online store is recorded in a different format in the e-store visits entity.

As they *think* about the data, students gain additional insights into Susie, who now clearly appears to be a working "digital mom." Although she is an enthusiastic reader, Susie does not seem to be committed to her relationship with the bookstore. She is more involved with the authors of the books she reads. Students use this knowledge to *decide* which variables they can calculate from the contextualized data that could trigger marketing actions to improve Susie's commitment level. For example, one group imagined that once Susie had downloaded the mobile application and accepted the geolocation, an alert could be created. This alert triggers an invitation on Facebook to have coffee at the nearest bookstore with other readers who share her interests and who are in the same area at the same time. Students *act* by writing the variables into the OMDB customer data entity. They adopt a syntax close to JSON (JavaScript Object Notation), which is used for NoSQL databases, including MongoDB. They specify the variables in such a way that a data scientist or an IT colleague can encode them. Students

obtain maximum points for inventing cross-channel indicators that require integrating various data systems that usually remain in silos.

Finally, students must justify the firm's investment in the new database architecture. They demonstrate the value of the enhanced data through which marketing operations can be launched to generate new revenue. Students describe what marketing can do that would not be possible without this new data architecture. Students draw Susie's commitment graph again, explaining which of the calculated variables specifically helped them improve her commitment to the brand. If the case is well defended, Susie's commitment should gradually increase. The space between the graphs drawn at the beginning and end of the case could be articulated with an empirical model to simulate financial gain.

As Susie progresses along her journey, data from the different touch points can be combined to obtain a behavioral commitment score and other composite indicators. With the help of their data specialist colleagues, marketing students should strive to identify the shape of Susie's relationship with the brand. Similar to Fournier's alternative brand relationship trajectories (Fournier, 1998), the system could recognize Susie's engagement curve as one of a typology of relational forms. They would then be able to predict the likely outcome of the relationship and act to shift Susie's relationship toward a more positive trajectory. By using composite indicators to determine the timing and content of marketing and service initiatives, marketers can increase relevance, improve customer experience, and reduce perceived pressure (Micheaux, 2011).

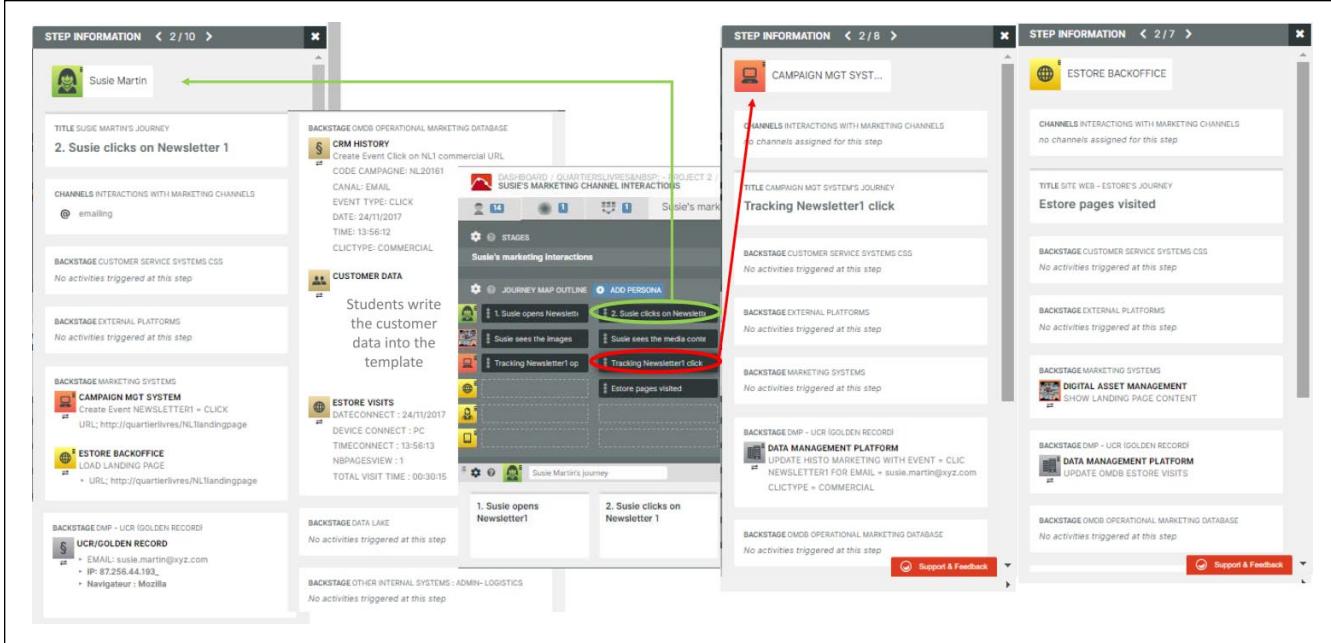


Figure 6. Students click on the interactive journey map to see how the data are captured, processed, and stored at each step.

Results and Limitations

The restructuring of the course has produced various results. Overall, the course successfully integrated students' heterogeneous learning styles and skills into a collaborative approach to data-driven marketing. From 2016 to 2018, the new teaching method was implemented with 78 student groups and 344 students in eight separate courses at three institutions. The course was taught at the master's degree level to students from different fields. These were digital-native marketing students, students with professional experience and final-year business school students pursuing a specialization in digital marketing. A few had degrees in computer engineering, social sciences or mathematics.

Prior to the course redesign, some students had difficulty understanding the database and systems aspects of the data-driven marketing course, while those who were comfortable with this technology did not see how it supported digital marketing operations. These difficulties can be explained by ELT theory. Student profiles cover Kolb's basic learning styles: diverging, assimilating, converging and accommodating (D. A. Kolb et al., 2001; A. Y. Kolb & Kolb, 2017). These styles correspond to the learning styles in each of the quadrants in Figure 2 in a clockwise direction.

According to this view, the dominant learning style of Marcom students is the divergent style. These students do well in "brainstorming" situations. Students in mathematics and social sciences tend to have assimilating learning abilities. They feel comfortable with data analysis and need time to reflect and appreciate concepts in a logical way (D. A. Kolb et al., 2001; A. Y. Kolb & Kolb, 2017). Engineers

and students from the IT world tend to have converging learning capabilities. They prefer technical tasks to social or interpersonal challenges and succeed in finding practical applications. Finally, the dominant learning style of business school students is the accommodating style, reflected in the "test and learn" paradigm of marketing practice. The new course format addresses all these basic learning styles.

Students also benefit from each other's learning styles when they collaborate on the case studies (Figure 2). Students with the diverging learning style generate ideas to engage Susie and increase her commitment. Students with assimilating learning abilities reflect well on data sources, and students with converging learning skills are in the best position to specify the variables to be implemented. Students with the accommodating learning style can see the value of these new indicators for marketing operations. Thus, the redesigned course allowed these heterogeneous students to combine and balance their skills to succeed in the digitally disruptive business world.

Because in the new course format, continuous monitoring has replaced some exams, it has not been possible to attribute the improvement in student grades to this method. In addition, too few students completed the feedback questionnaire to formally measure their satisfaction, which is a limitation of this work. However, two doctoral students and three conversions to data-driven careers emerged from the courses, which were unprecedented among these predominantly Marcom student populations. The course was well received by the education managers due to the positive feedback from students at the pedagogical meetings. Students liked the course and indicated that it allowed them to

improve their perceived skills in data-driven marketing. In July 2018, two associate professors from Lille University were trained in teaching the method; one of them gave the course in the first 2018 semester, and the other is scheduled for the second semester.

Added Value for Students

By using journey mapping tools in the classroom, the teacher was able to increase students' enthusiasm for the database topic. The creation of a persona, enriched by the data collected on the touch points, allowed students to better understand the customer's needs. By defining backstage Martech processes and the OMDB as stakeholders, it became clear that they also contribute to the value chain and influence the customer experience. The creation of stakeholder maps helped students understand how different data systems and colleagues who manage them interact to meet customer needs.

The use of classroom service design methods has brought together data, systems, theory, and practice in digital marketing. Students were able to observe how the various marketing channels and DMPs ingest, integrate, and add intelligence to the captured data. Students could discover how theoretical marketing concepts help justify investment in database architecture. They also learned how applied marketing theory can improve the customer experience and increase the revenue of marketers. The theoretical content was taught through presentations. Marketing theory and database concepts were introduced as students needed this knowledge to progress in the case studies. Additional documentation and support (e.g., instructional videos, documentation, and help) were provided through the Moodle learning management platform. Due to space constraints, this content is not described here.

A Deeper Learning Experience

Through the creative process, students focused on action and learning based on emotions rather than knowledge alone. Their apparent motivation increased. Students also learned to distinguish between various closely related concepts. For example, the analysis of the emotional journey helped students understand the difference between the concepts of digital engagement, involvement, and commitment, which, although related (Beatty, Homer, & Kahle, 1988; Oh, Bellur, & Sundar, 2015), are often confused. Through this approach, the professor helped students consider the data as a service. Data as a service means making data available to internal processes and other services through the OMD, as well as serving the customer through the data themselves.

Relevant direct and digital marketing benefits consumers and businesses. It reduces the commercial pressure perceived by consumers and increases corporate revenues

(Micheaux, 2013). Each touch point in the customer's journey determines the future development of the relationship. Relevant and timely messages can be perceived by the customer as a service and not as marketing. Finally, the students realized their own added value in relation to the data. They learned that databases are not the realm of technicians only. Marketers add value to the database through the variables they create, and they are in the best position to do so because they know how best to use these indicators to optimize their marketing programs and improve customer service (Moe & Ratchford, 2018).

Adaptable and Shared Teaching Model

Any experiential learning method is time-consuming, and the development of the models took several weeks. However, through sharing, other marketing educators can benefit from this effort. One of the problems was that there were not enough classroom sessions to take full advantage of the teaching opportunities. Other academics could provide additional elements and links between theory and practice. For example, human resources educators could adapt the content to optimize the employee's experience by using the data captured at the points of contact throughout the employee's journey. Finance professors could calculate the financial return on investment in the new ODB architecture from the incremental commitment of the persona, extrapolated to the total client population. Legal professors could further develop aspects related to compliance with the General Data Protection Regulation (European Commission, 2016).

It is difficult for technology-based educators to survive in such a rapidly changing environment (Moe & Ratchford, 2018). However, it is simple to keep customer journey maps in step with technological change, as only backstage processes need to be updated. Each contact point can be upgraded, deleted or replaced, and new contact points can be added. This flexible system meets the requirements of Martech's disruptive technology because the latest developments can be easily integrated into the course.

Conclusion

In conclusion, we propose the contribution of this work in response to ELT and the literature on marketing education and in terms of managerial implications. ELT has proven to be effective in the field of information technology. By 2000, computer science was the third most frequent source of ELT publications, after education and management, with 228 studies (D. A. Kolb et al., 2001). When applied to this course, the ELT interpretation framework supports the perceived success of the teaching experience (Akella, 2010) and the learning experience and indicates additional improvements. The KLSI 4.0, summarized in A. Y. Kolb and Kolb (2017), provides a close match between the nine-style inventory and

the students' learning steps as the case studies are carried out. By mapping each of Susie's journeys, students successively move through the eight learning styles shown in the outer circle in Figure 2. Balanced skills are required to identify stakeholders, set priorities and integrate database architecture, the business case and colleagues' opinions. Thus, the stakeholder map is centered on Figure 2 in relation to the ninth style, which is the balancing style.

Although the expanded KLSI 4.0 accommodates the borderline cases of the basic typology (A. Y. Kolb & Kolb, 2017) because students find that four members represent the optimal size of a group, a mixture of four dialectically polarized learning styles should produce the most effective groups. Finally, it is useful to link the course steps to the educator's role in supporting students throughout the learning cycle (A. Y. Kolb & Kolb, 2017, of which Figure 2 is adapted). For example, educators, at the appropriate stage of the learning spiral, provide students with *subject matter expertise* in the form of theoretical knowledge and provide feedback to help them meet the *evaluator's* expectations.

Regarding the marketing education literature, this study follows previous studies on student engagement in social media in the classroom (Mostafa, 2015; West, Moore, & Barry, 2015). In the present case, the students were engaged in the use of technology, a customer journey mapping tool. The strategic use of technology to solve a problem had a positive impact on the teacher's and students' experience (Bitner, Ostrom, & Burkhard, 2012; Dowell & Small, 2011) and helped foster deeper learning (Canhoto & Murphy, 2016). As called for by these last authors, the class includes feedback mechanisms for students, invites them to discuss their decisions and reflects on the meaning of the data results.

In addition, future students could develop their own learning journeys. They could use the software to document and reflect on their personal learning experience, which would provide qualitative feedback from students. Such feedback, often absent from traditional course evaluations, could help teachers redesign and adapt the course to meet students' needs. Because digital disruption changes not only marketing but also the way marketing is taught, educators must develop innovative teaching methods, based on personal experiences, to change thinking patterns (Prensky, 2001). Existing educational models must be replaced by active learning (McLaughlin, 2014). This case shows that although transforming a data-driven marketing course requires significant investment, it is achievable.

From a management perspective, as future marketing professionals, students do not have to become data scientists. However, they must learn to think like data scientists in order to work successfully with them and to ultimately manage them. They must master the fundamentals of data management systems to make the right decisions in their future marketing functions. To become effective chief data officers, students must have the ability to interact with the right

people in their organization and bring these people together. The course develops interdisciplinary skills, as students experience a realistic business use case with financial, ethical, and managerial implications of data-driven marketing. The software used helped students realize the importance of collaboration between departments to break down functional silos within their organizations and improve the customer experience (Grewal, Roggeveen, & Shankaranarayanan, 2015).

In addition, the course is flexible enough to adapt to new Martech platforms and advances in database architecture, such as NoSQL and operationalized data lakes. "Data as a service" is a technical term used in the context of modern database architecture (Gruhn, 2016), which is taught in the cases presented in this article. However, the vision of data as a service conveyed in this course transcends database technology to include service design methods applied to customer journey mapping, supported by service ethics. From a technical point of view, data as a service provides valuable real-time data to employees who collaborate to provide products and services to customers. The broader vision of the concept puts data at the service of society through economic growth driven by their ethical and relevant use in the best interest of the customer.

Authors' Note

The authors contributed equally to the publication of this article. The lead author of this article is the creator of the course. The course was taught at IAE–University of Lille, University Paris II Panthéon-Assas, IPAG Business School, France.

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ORCID iD

Andrea Micheaux  <https://orcid.org/0000-0003-4845-3618>

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