# The Coordination Imperative: A Comprehensive Approach to Align Customer Demand and Inventory Management for Superior Customer Experience in Retail

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SUBMITTED TO THE MIT SLOAN SCHOOL OF MANAGEMENT IN PARTIAL FULFILLMENT
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**Abstract**

The rapid growth of customers traversing different channels during their buying journey presents both opportunities and challenges for organizations. Fragmented decision-making and siloed communication between marketing and supply chain teams can lead to inefficiencies and negatively impact customer experience. This thesis proposes a conceptual framework to align customer demand and inventory management. The framework is examined in the empirical context of the fashion industry, focusing on the US market and insights from Brazil and Japan. By introducing a PDCA (Plan Do Check Action) process and cross-functional metrics, such as NPS (Net Promoter Score) and OTIF (On time in Full), this study seeks to encourage cooperation between departments and coalesce decision-making around enhancing customer experience. The research will explore the quantitative and qualitative aspects of the retail industry focusing on fashion and identify opportunities to leverage technology, marketing, and supply chain management for improved performance. Our study validated the existence of siloed operations and the drawbacks caused by silos in today's business. Through 16 expert interviews, we identify three key factors that contribute to silos between marketing and supply chain. They are technology fragmentation, lack of integrated KPIs, and complexity of multiple channels. Further, the interviews helped uncover how the experts tackled these challenges in daily operations.

The expected deliverable is a framework that combines analyzed customer journeys with cross-functional metrics to support decision-makers in day-to-day operations. The goal is to deliver a world-class customer experience by aligning decisions to coordinate actions. There is potential to incorporate machine learning to suggest experiments and further optimize value delivery for

customers by retailers through multiple channels. Our conceptual framework applies to various businesses struggling with coordination between demand generation and fulfillment.

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"Everyone has the potential to grow significantly. Nobody starts out being able to do everything. If you study hard and make progress, an infinite number of possibilities will open to you. Believe in the abilities that lie deep within your heart."

Kukai

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## Section1: Introduction

Effective and efficient communication is vital to success in any organization. As organizations grow, decision-making tends to become more fragmented, leading to inefficient organizational communication. Information silos between departments and functional boundaries make many teams focus on maximizing their KPIs while losing opportunities to improve their performance as a whole organization. Silos lead to a narrow-minded way of thinking that limits an organization's ability to make effective decisions. The growth in multichannel retail has exacerbated the problem of organizational silos and suboptimal decision-making.

E-commerce is one of the fastest growing sectors in the multichannel retail business. According to statistics from the US Census Bureau, e-commerce sales in the United States reached $861.12 billion in 2020, a 32.4% increase from the previous year. This growth is expected to continue in the coming years, with e-commerce sales projected to reach $1.5 trillion by 2023. However, decision-making processes with the growth in e-commerce have become more complex. Companies must control countless factors, including selecting the right products or services to sell, setting prices, marketing and promoting the business, managing inventory and fulfillment, and handling customer service and returns. Firms with an e-commerce channel must also consider the technical aspects of their online platforms, such as choosing the right e-commerce software, integrating with payment gateways, and ensuring website security. Siloed teams and the complexity of decision-making hurt business performance directly and indirectly.

These misalignments can have significant negative impact, from decreased customer satisfaction to increased costs and reduced efficiency. For example, as a direct consequence, silos potentially contribute to overstock, stockout, and waste of marketing budget. This, in turn, deteriorates the consumer experience with inconsistent customer service due to a lack of synchronization between the supply chain and marketing. With vast growth in the e-commerce component, these inefficient management practices create tremendous losses.

This thesis will analyze how customer experience can be improved by proposing a collaborative approach between marketing and supply chain teams during customer buying journeys. A possible path to promote this cooperation is creating a PDCA (Plan Do Check Action) process to address specific metrics that will make the departments act together.

For instance, one could designate NPS (Net Promoter Score) as an organizational target for every department. By doing this, the company must integrate its decisions across units to make the customer experience the best possible. This is because non-aligned decision-making will create friction affecting customer ratings negatively. This, in turn, will affect every department's budget and performance.

Another possible metric is OTIF (On time in Full). There are two essential components of this KPI. The first is to deliver to the customer before the promised delivery date and time. The second component is to ensure that the customer received exactly what was bought and that the order was delivered in perfect condition (package, product, description matching, etc.). The OTIF is zero if any friction occurs in stages 1 or 2. That will impact multiple departments, including supply chain and marketing.

The thesis will advance a conceptual framework with cross-functional metrics designed to assist decision-makers in daily operations to provide a world-class customer experience. Some metrics may necessitate machine learning applications for experiment recommendations. The framework will draw on a detailed literature review and qualitative in-depth interviews of business professionals from Marketing and Supply Chain and experts.

The empirical context of the research will be the fashion industry, given its quantitative (market size and growth, e-commerce sales share) and qualitative (importance of technology, digital marketing, and supply chain management) features. Moreover, the issues faced by the fashion industry are prevalent in other industries making our proposed framework generalizable for any retail business. Appendix 1 details the fashion e-commerce landscape with reasons and

supporting data justifying the selection of the fashion industry as the empirical context for this research. Although the primary focus is on the US market, the research will incorporate multicultural insights from diverse markets, such as Brazil, Japan, and the USA, as the customer behavior characteristics are complementary.

Given significant industry-specific terminology in this research, there is a Glossary of terms for reference.

## Section 2: Literature Review

The literature review constitutes a vital element of any academic thesis, offering an overview of the extant research within the field while identifying gaps and potential avenues for further investigation. This section will examine the literature pertinent to marketing and Supply Chain Management in the retail and e-commerce sectors. Subsequently, we will concentrate on articles exploring the convergence of these fields. We will analyze articles that have underscored coordination issues between marketing and Supply Chain or supply chain management and discuss our contributions to this domain.

### 2.1 Marketing

Digital marketing is a rapidly evolving landscape, necessitating mastery over various management activities, such as content creation, media planning, and CRM(customer relationship management). Moreover, social media has emerged as a critical theme in recent marketing trends. The coupling of "e-commerce" and "social media," referred to as "social commerce," is increasingly popular among retail proprietors due to its expansive reach, deeper engagement, precise targeting, and cost-effective marketing.

#### 2.1.1 Marketing Frameworks

Numerous theoretical frameworks have been developed to describe referral activity. **Kozinets et al. (2010)** created frameworks to analyze the dynamics of WoM (Word-of-Mouth). This model continues to elucidate numerous modern phenomena, from sudden demand surges triggered by influencers' posts to intentionally orchestrated demand explosions through marketing promotions. The authors focused on bloggers' activities, categorizing them into evaluation, explanation, embracing, and endorsement. These classifications and analyses

remain applicable to contemporary media platforms such as TikTok, YouTube, and Instagram. **Duan and Zhang (2022)** assessed the behavioral impacts of interactions among social media, third-party media (commerce media), and search referral channels on various e-commerce website performances, emphasizing the potent influence of social media posts, particularly from competitors' accounts.

Industry executives are increasingly exploring breakthrough technologies like augmented reality (AR), virtual reality (VR), and live-stream retail, which promise to propel the next generation of sales. Owing to the Covid-19 crisis in 2020, revenues transitioned from brick-and-mortar stores to e-commerce, prompting more organizations to invest in these technologies. **Tan et al. (2022)** posited that the positive impact of AR in e-commerce is quantifiable in terms of brand popularity, product appeal, product rating, and pricing. Additionally, **Bharadwaj et al. (2022)** examined emotional expressions, such as happiness, sadness, surprise, anger, and fear, in live-stream commerce and analyzed consumer action tendencies. While a detailed consideration of these novel media and commerce types is essential, the growing number of options and the expansion of technology development render this industry increasingly complex and challenging to manage.

Additionally, even in the marketing area, e-commerce supply chain is fragmented. Many companies tend to optimize specific activities and need help achieving long-term and holistic impact on growth. For instance, **Li et al. (2021)** highlighted the pitfall of assessing cart retargeting, known as high-efficiency ads. This research revealed that an immediate advertisement just after putting items in their cart has a negative incremental impact, and a late advertisement as a reminder has a positive incremental impact.

### 2.1.2 Relevant KPIs In Marketing

**Sugiyama and Andree (2011)** introduced a novel consumer funnel model for digital marketing, termed AISAS (Attention, Interest, Search, Action, Share). This framework delineates fundamental KPIs in digital marketing, such as effective reach, search rank, and social engagement. These KPIs are predominantly established as metrics for digital marketing endeavors in branding. In more sophisticated cases, clients establish incremental reach objectives for offline media by targeting specific segments, a vital aspect when strategically contemplating the expansion of addressable users among the vast online population.

Conversely, within performance marketing, KPIs like ROAS (Return on Advertising Spend) and CAC (Customer Acquisition Cost), which more directly calculate investment efficiency and revenue contribution, are widely employed in the e-commerce industry. Moreover, **Fatta et al. (2018)** indicates that the value of a single acquisition and CVR (conversion rate) varies significantly in e-commerce, with the AOV (Average Order Value) for fashion e-commerce websites. However, these KPIs pose difficulty in evaluating branding media and tend to result in overinvestment in the intensive targeting of users with higher purchase intent, such as search ads or retargeting ads. Consequently, it is crucial to consider investments in both branding and performance KPIs.

Overall, the significance of customer experience has become increasingly critical. The consumer journey model by **Edelman and Singer (2015)** underscores the importance of the experience following product purchases. This framework introduced stickiness after an exceptional user experience, positing that if consumers enjoy a great experience, they forgo considering alternatives and cease comparing themselves. Nevertheless, designing a comprehensive customer journey, particularly following a purchase, would be optimal. Companies must strive to make customers enjoy their experience, advocate for their products, and form strong platform connections. In terms of KPIs, **Marshall (2010)** developed CLV (Customer Lifetime

Value), representing the net present value of the projected revenue a customer will generate throughout their life with the brand.

### 2.1.3 Marketing Challenges in Retail

The rapid pace of technological advancement presents a significant challenge for enterprises. As new technologies emerge, the industry must allocate substantial resources to remain current with the latest trends. Augmented reality (AR) and virtual reality (VR) exemplify technologies that have garnered widespread attention in recent years. Furthermore, the number of platforms and technologies accessible to companies has expanded rapidly, resulting in a fragmented landscape, and complicating the management of marketing endeavors.

Notwithstanding the challenges firms encounter, there is a dearth of comprehensive research addressing this subject. While numerous studies have addressed specific issues, few have undertaken a holistic examination of the marketing challenges faced by these companies.

## 2.2 Supply Chain

### 2.2.1 Supply Chain Frameworks

**Deshmukh and Mohan (2016)** argued that traditional supply chain management focuses primarily on managing the flow of goods and materials, while conventional marketing focuses on managing demand. However, the two functions must effectively control the demand chain in today's rapidly changing business environment. Demand chain management is a process that integrates and aligns marketing and supply chain activities to create a seamless, end-to-end customer experience.

DCM (Demand chain management) can help companies better understand customer demand and respond more effectively to changing market conditions, especially with the increasing role of e-commerce. Demand chain management has several vital components: sensing, shaping, fulfilling, and feedback. The authors also discuss the role of technology in demand chain management, including data analytics, artificial intelligence, and other digital tools to understand customer demand better and improve the customer experience.

DCM is necessary for companies to manage and improve the customer experience effectively. It is defined as a process that integrates and aligns marketing and supply chain activities and highlights the role of technology in this process. When the interests of the company's agents (procurement, manufacturers, distributors, marketing, sales, and services) are aligned, it can build a relevant competitive advantage to build its go-to-market strategy combining marketing, supply chain, and technology.

**In 2003, Barnes, Hinton, and Mieczkowska** explored the concepts of competitive advantage in the e-commerce Supply Chain; the authors argued that companies could gain a competitive advantage through the effective use of e-operations, including e-commerce and e-logistics. By leveraging technology and the internet, companies can improve their operations and enhance customer experiences, leading to a competitive advantage. They have also identified several key factors contributing to a competitive advantage through e-operations, including the ability to customize products and services, reduce costs, and improve delivery times. Additionally, e-operations could provide companies with greater visibility into their supply chain and enhance their ability to respond to changes in market conditions.

E-operations can provide companies with a significant competitive advantage in the e-commerce era. Companies must integrate e-operations into their business strategy to fully realize the benefits. Integrations are a broad and complex topic to explore in the technology field, with several systems involved in the customer journey. These systems store and process large amounts of data through their workflows. Software engineers, programmers, and analysts

must extract relevant data from these systems to suggest insights by creating KPIs (key performance indicators) that will be used by business managers, who are essential for the decision-making processes. An analytics culture will become a competitive advantage to drive companies' efficiency to facilitate a customer-centric culture.

### 2.2.2 Relevant KPIs in Supply Chain Management

Companies compete harder and harder to acquire, retain and develop customers. There is a customer management framework that can explain the areas that must be addressed to create value for customers. It considers three pillars: understanding, measurement, and intervention. Understanding addresses the needs of customers along the journey. Measurement explains the importance of collecting data to predict the CLV (Customer Lifetime Value), who is at risk of churning over time, and if customers become stickier. Intervention brings the most effective way to acquire customers, which audience should be focused on, and when to intervene and personalize.

**Choin, Wallace, and Wang (2018)** suggested that big data analytics in Operations Management is using advanced data analytics techniques to analyze large volumes of data to make more informed decisions and improve operations within organizations. This involves collecting and processing data from various sources, such as transactional, customer, and supply chain data, to gain insights into key business processes and operations. The goal of big data analytics in operations management is to enhance efficiency, reduce costs, and improve customer satisfaction. This can be achieved through identifying patterns and trends, improved forecasting, and optimizing business processes. By leveraging the power of big data analytics, organizations can gain a competitive advantage and drive growth.

As explored in the outline, customers' purchasing evolved from a single channel to multi-channel to omnichannel and unified commerce. According to Statista, BOPIS (Buy online and

pickup in-store) has grown from USD 23.42 Billion in 2018 to USD 74.24 Billion in 2022. In this environment, retailers utilize technologies, be it supply chain management, customer service, or e-commerce and in-store experiences.

Omnichannel retail operations refer to a seamless shopping experience across multiple channels, such as online, brick-and-mortar, and mobile. Buy-Online-and-Pick-up-in-Store (BOPIS) is an omnichannel service that allows customers to purchase products online and pick them up in a physical store. BOPIS offers a convenient shopping experience that combines the ease of online shopping with the instant gratification of in-store pickup. This retail strategy helps businesses to increase customer satisfaction and sales, reduce shipping costs, and increase store foot traffic **(Gao and Sua, 2017).**

### 2.2.3 Challenges in Supply Chain in Retail

Strategically, by centralizing online journeys, companies can bring many improvements from the frontline that will capture value from friction that hugely impacts sales conversions. According to **Bell, Gallino, and Moreno (2020),** it is essential to have "Customer Supercharging" in Experience-Centric Channels, which refers to the concept of creating a positive, memorable customer experience to drive customer loyalty and repeat purchases. This can be achieved through technology and data analysis to personalize customer interactions and meet their individual needs and preferences. Customer supercharging in experience-centric channels, such as e-commerce, physical stores, and mobile apps, involves leveraging customer data to create a customized, seamless shopping experience. This includes offering personalized recommendations, real-time support, and purchasing process streamlining. Customer supercharging aims to create an emotional connection with customers, increase customer satisfaction and retention, and ultimately drive business growth.

In addition to technical articles in each division (marketing, operations, supply chain), there have been several previous studies to resolve the conflicts between marketing and supply chain operations, not just in the e-commerce field but in the retail industry.

## 2.3 Coordination Between Marketing and Supply Chain

We reviewed many articles in the marketing and supply chain areas, respectively. There is little research to tackle both areas with comprehensive frameworks. In this section, we will look back at the research in both e-commerce and traditional retail and explore select methods to solve marketing and supply chain silos.

### 2.3.1 Frameworks Capturing Coordination

The long-standing issue of siloed operations between marketing and supply chain management has persisted within the retail industry. **Walter and Grabner (**Nenhuma entrada de índice de ilustrações foi encontrada. addressed this problem by evaluating the outcome of a supply chain operation, known as "stockout," from a marketing standpoint. Although most inventory optimization models recognize stockout costs as a crucial variable, they often avoid measuring the impact on marketing and customer relationships. This oversight constitutes a significant managerial error, posing the risk of brand switching and the loss of credibility as a retailer. The situation worsens with repeated stockouts.

**Niraj and Rakesh (2001)** extended this discussion by developing an approach incorporating a comprehensive profit metric for customers, including the supply chain. Their research calculated customer profitability using CLV (Customer Lifetime Value), accounting for revenue and costs. While formal studies and practical applications typically only include acquisition costs or marketing budgets in their cost analyses, Niraj and Rakesh considered sales, services, and

operational costs, such as order processing and fulfillment. According to their significant findings, most customers proved unprofitable for large retailers, necessitating new criteria for evaluating customers and prioritizing customer nurturing over acquisition. This research underscored the substantial gap between siloed optimization from a marketing perspective and a comprehensive approach from a holistic viewpoint.

**Dai et al. (2021)** characterized the conflict between marketing activities and supply chain operations as a dilemma faced by retail store managers and discussed methods for incentivizing agents to invest effort in marketing and supply chain. They introduced the concept of demand censoring, a phenomenon where demand erodes due to insufficient inventory. This article illustrated the complexity of devising a solution to reconcile these polarized incentives.

In the e-commerce era, certain operational activities companies perform after a customer's purchase significantly affect customer satisfaction. **Gielens et al. (2021)** explored the impact of implementing C&C(Click-and-collect) orders on online consumer spending, comparing the convenience benefits of the C&C format with a retailer's existing brick-and-mortar and home-delivery channels. Access convenience drives revenue from rural and weekend shoppers, while collection convenience promotes the growth of large basket purchases and bulkiness. Similarly, **Petersen and Kumar (2009)** investigated the influence of product returns on customers' future behavior, concluding that an increase in product return behavior enhances future customer purchasing behavior, depending on the threshold.

**Bijimolt et al. (2021)** conducted a comprehensive analysis of siloed operations in omnichannel commerce, identifying the origins of tensions between inventory management and customer journeys and exploring methods to alleviate them in three decision areas: 1) assortment & inventory, 2) distribution and delivery, and 3) returns. Subsequently, they summarized the respective goals of marketing and supply chain. They proposed several broad resolutions, such as employing real-time data to influence customer purchasing behavior and establishing a

modern tracking system in the supply chain. This research offers a comprehensive perspective on the conflicts between marketing and supply chain.

### 2.3.2 Challenges for Attaining Coordination

Previous research has provided valuable insights into specific challenges within supply chain and marketing. The rapid expansion of e-commerce and technological advancements have generated new research topics and concepts surrounding marketing and supply chain in the multichannel retail sector. Although this has produced a diverse array of prior research that merits consideration, fundamental issues are anticipated to persist. One enduring challenge since the inception of retail is the siloed nature of marketing and supply chain. Numerous studies address this integration challenge by developing new KPIs/models and proposing innovative frameworks.

However, these prior studies may be deemed too general from practical perspectives. To be more applicable in real-world contexts, they should incorporate immediate, actionable tactics that management can implement. Furthermore, the proposed resolutions often appear to be conceptual. While some researchers have merely identified challenges in these silos, they have provided limited clarity on the role of technological innovation in overcoming such obstacles. In the constantly evolving landscape with the rise in e-commerce, the impact and nuances of technological innovations are influential factors that marketing, and supply chain cannot disregard.

Additionally, the silo challenge encompasses myriad issues, including miscommunication arising from organizational structure and decision criteria. Limited research has addressed these managerial and leadership problems in past references. Lastly, prior research has not sufficiently integrated short-term optimization with a long-term strategy. Aligning daily operations with overarching strategic objectives is crucial for any business owner.

## 2.4 Contributions and Our Hypotheses

To address the gaps in the previous section, our thesis makes the following contributions.

1. We will propose a conceptual framework with detailed steps to move forward by addressing functional siloes between marketing and supply chain, grounded in relevant industry and country contexts.
2. We will check technical feasibility and propose a resolution with modern tech architecture.
3. We will consider managerial and organizational perspectives of the silo problem and make suggestions to make organizations lean.

The digital age has brought about many changes in how businesses operate, including how they market and serve their customers. Technology integration has allowed companies to reach customers in new and innovative ways, but it has also presented unique challenges. One such challenge is the friction that arises in the customer journey due to siloed operations and marketing approaches. This issue is particularly relevant in today's rapidly evolving digital landscape, where customer expectations constantly change, and businesses must keep up with these changes to remain competitive.

Our thesis is set in the context of a specific industry, fashion, which presents a rich context to study the coordination challenges due to functional siloes between marketing and supply chain which hinders delivering a superior omnichannel customer experience. This will allow our research to suggest realistic and concrete recommendations. Given the issues faced in fashion multichannel retail are representative of other industries, our research-based actionable suggestions would be generalizable to other industries.

We organize our proposed resolution by considering the existing technology platforms and coming innovations in the two authors' specialties, marketing, and supply chain. It is an

essential prerequisite for strategy formulation in a market that has developed and continues to be driven largely by technology. Also, the technology platforms, differentiated in each domain (marketing, supply chain), underlie the silos. Therefore, we dive deep into the technology area.

Finally, our thesis will also promote holistic customer management. This approach will consider the customer journey, including the touchpoints between the customer and the organization. The goal of this approach will be to ensure that all aspects of the customer journey are considered and that efforts are made to improve the customer experience across all touchpoints.

In the next sub-section, we will briefly introduce a major trend and our hypotheses.

### 2.4.1 Omnichannel

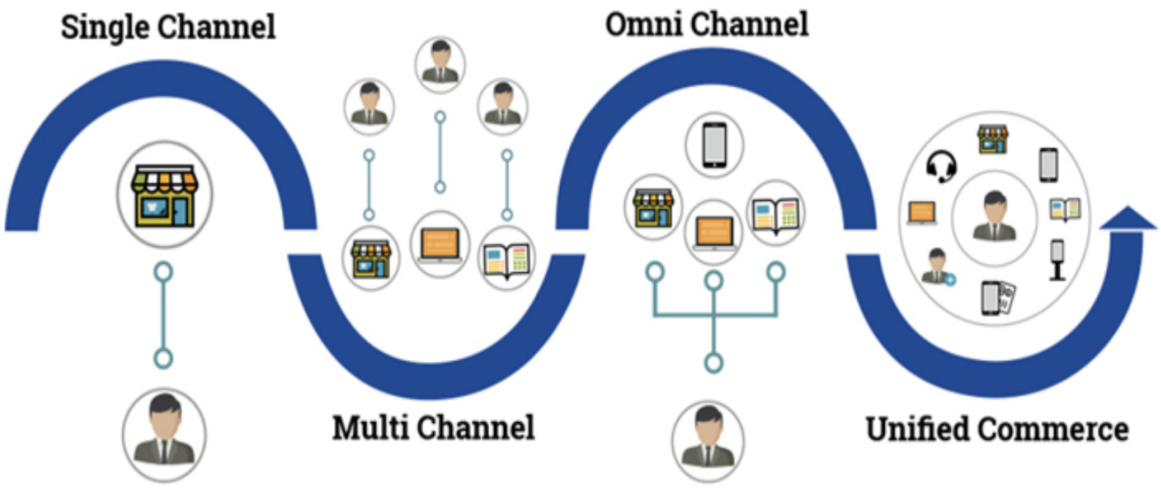


*Figure 1. Evolution of Retail Channels*

The evolution of retail has transformed the way customers purchase products and services as Figure 1 shows. In the early 2000s and before, customers used to buy through single channels, such as physical stores and mail orders. Then, e-commerce solutions appeared, allowing customers to shop online though again largely through single channels. Later, multi-channel sales emerged, and retailers could sell through various channels. Finally, omnichannel retailing combines e-commerce with brick-and-mortar stores, providing customers with a seamless experience across multiple platforms. Today, we are seeing the rise of unified commerce, integrating all aspects of retail into one seamless customer experience no matter where they shop. In this segment, we will explore the evolution of retail from single channel to unified commerce, including the challenges and opportunities that online retailers face in this environment using fashion retail as an example.

**Single-Channel Retailing**

Though Amazon and eBay launched in 1995, it was in the early 2000s, that retailers such as department stores and brands started to explore the online market. The initial approach to e-commerce was a single-channel experience, where customers could only purchase products online, and the relationship between the brand and the customer was one-way. For retailers, this meant that they could not engage with their customers in real time, and customers needed more access to product information, leading to low engagement and conversion rates.

**Multi-Channel Retailing (MCR)**

As the online market matured, retailers started to explore multi-channel sales to expand their reach and engage with customers more effectively. MCR allows retailers to sell through various channels, such as in-store, through sales representatives, and online. According to Statista (2018), 73% of consumers shop across multiple channels, and 87% of shoppers consider shopping in-store and online as a single experience. The same study also revealed that retailers

with multi-channel strategies achieve a 38% higher customer retention rate than those who don't.

Fashion retailers that implemented multi-channel strategies were able to reach more customers and increase their overall sales volume. For instance, Zara, a Spanish fashion retailer, integrated its in-store and online inventory to allow customers to buy online and pick up in-store, resulting in a 70% increase in online sales.

**Omnichannel Retailing (OR)**

OR emerged as the next step in the evolution of retail, combining e-commerce with brick-and-mortar stores to provide customers with a seamless experience across multiple platforms. Omnichannel retailing allows customers to browse products online but then go into a physical store to try them on or get help from an employee before making a purchase decision. In a survey by Retail Dive (2018), 70% of consumers stated that they expect an omnichannel experience when shopping and 60% of shoppers expect to be able to buy online and pick up in-store. Fashion retailers that adopted an omnichannel strategy were able to provide their customers with a seamless experience across multiple platforms. For instance, Nordstrom, a luxury fashion retailer, offers a unified shopping experience through its website, mobile app, and physical stores. It allows customers to shop, save items to their cart, and make purchases through any channel they prefer.

### 2.4.2 Hypotheses About Recent Challenges

Rise in e-commerce has revolutionized retail allowing customers to shop across different channels as per their specific needs at a given time. However, this transition from brick-and-mortar stores to digital channels has created several challenges for businesses. The fashion industry is highly competitive, and companies must coordinate their marketing and operational

strategies to remain competitive. This coordination challenge becomes even more complex due to channel fragmentation, technology integrations, and multiple providers.

In this thesis, we will explore the coordination challenges when aligning marketing and supply chain in a customer journey for the retail industry. We will analyze how channel fragmentation, technology integration, and multiple providers can affect responsiveness and customer satisfaction.

**Coordination Challenges**

**Channel fragmentation is the primary coordination challenge** in aligning marketing and supply chain in the customer journey for the retail industry. The retail industry has multiple channels, such as B2C, B2B, B2B2C, D2C, and more. Each channel has unique characteristics and requires a specific marketing and supply chain strategy. For instance, B2C brands such as Nike expect a different shopping experience than B2B brands such as Amazon sellers. Hence, these channels' marketing and supply chain strategies need to be tailored accordingly.

However, coordinating these strategies can be challenging. For example, a retail company may have different teams for B2C and B2B supply chains. These teams may have different goals, objectives, and timelines. Hence, aligning these teams' efforts and creating a consistent customer experience across all channels becomes challenging.

The second coordination challenge is **technology integration**. Retail companies rely on several systems to manage their multichannel journey. These systems include a website, a customer relationship management (CRM) system, an order management system (OMS), a warehouse management system (WMS), and a shipping system, among others. These systems must be integrated to ensure seamless data flow and streamline operations.

Technology integration can be complicated and time-consuming. Each system may have its interface, processes, and data format, making integration challenging. Moreover, each system may have different providers, and each provider may have unique implementation processes and timelines. Hence, coordinating the integration of these systems and providers can be a challenging task.

The third coordination challenge is **managing multiple providers**. Retail companies rely on several providers to manage their customer journey. These providers include website developers, payment gateways, shipping providers, and more. Each provider has its interface, processes, and timelines.

Coordinating multiple providers can be challenging as each provider may have different priorities, goals, and timelines. Moreover, each provider may have different levels of responsiveness, which can affect customer satisfaction. For instance, a shipping provider may have a delayed delivery, which can lead to customer dissatisfaction.

**Impact on Responsiveness and Customer Satisfaction**

The coordination challenges mentioned above can significantly affect a retail company's responsiveness and customer satisfaction. When marketing and supply chain are not aligned, customers may receive inconsistent experiences across different channels, leading to dissatisfaction.

For example, if technology integration is not seamless, it can delay processing orders and shipping products. This delay can lead to customer dissatisfaction and negative reviews. Similarly, if multiple providers do not coordinate, it can lead to delays in shipping, returns, and refunds, further impacting customer satisfaction.

### 2.4.3 Hypotheses About Resolution

Key Performance Indicators (KPIs) are quantifiable measures used to evaluate the success of a business or organization. Marketing and supply chains are crucial in driving sales and building brand awareness in the retail industry. Here are select key KPIs commonly used to measure the effectiveness of marketing and supply chains in the retail industry.

**Existing Marketing KPIs:**

- Website traffic: This KPI measures the number of visitors to a website. It's a key indicator of how well a brand attracts potential customers to its site.

- Conversion rate: This KPI measures the percentage of website visitors who purchase. It's a critical metric for determining the effectiveness of a brand's online marketing and sales efforts.

- Average order value: This KPI measures customers' average amount of money in a single transaction. It helps retail brands understand how much revenue they can generate from each customer.

- Return on ad spend (ROAS): This KPI measures the revenue generated by a specific marketing campaign compared to the cost of running that campaign. It's a critical metric for determining the effectiveness of a retail brand's online and offline advertising efforts.

- Customer lifetime value (CLV): This KPI measures the total revenue generated by a customer over the entire time they are a customer. It helps retail brands understand the long-term value of each customer and make strategic decisions about customer acquisition and retention.

**Existing Supply Chain KPIs:**

- Order fulfillment time: This KPI measures the time it takes for a retail brand to process and ship orders. It's a critical metric for customer satisfaction and can significantly impact a brand's reputation.

- Inventory turnover: This KPI measures how quickly a retail brand's inventory is sold and replaced. It helps brands optimize their inventory levels and avoid excess stock.

- Customer satisfaction: This KPI measures customers' satisfaction with their shopping experience. It can be measured through surveys or customer reviews and is critical for building brand loyalty and retaining customers.

- Cost of goods sold (COGS): This KPI measures the direct costs associated with producing and selling a retail brand's products. It's an essential metric for optimizing gross margin.

- Return rate: This KPI measures the percentage of products returned by customers. It's a critical metric for understanding customer satisfaction and identifying opportunities for improving product quality or sizing.

The retail industry relies heavily on effective marketing and supply chain to drive sales and build brand awareness. By tracking these key KPIs, retail brands can measure the effectiveness of their marketing and supply chain efforts, identify areas for improvement, and make data-driven decisions to optimize their business performance.

**New suggested KPIs Integrating Marketing And Supply Chain for Decision-Making:**

In addition to the key existing KPIs for marketing and supply chain in the retail industry, several new KPIs can help integrate marketing and supply chain decisions for the retail industry. These

KPIs focus on improving operations' efficiency and effectiveness, streamlining the customer experience, and driving customer loyalty.

- **On-time in-full (OTIF) delivery:** This KPI measures the percentage of orders delivered to customers on time and in full. This metric helps retail brands track their fulfillment performance and identify areas for improvement, such as optimizing inventory levels and improving order processing times.

- **Net Promoter Score (NPS):** This KPI measures the likelihood of customers recommending a brand to others. This metric helps retail brands understand their customer's overall satisfaction and identify opportunities to improve customer loyalty.

- **Inventory daily positions across channels:** This KPI measures the real-time inventory levels across all channels (e.g., online, in-store, etc.). By monitoring daily inventory positions, retail brands can optimize their inventory management strategies and ensure they have the right products available to customers at the right time.

- **Order and stock integrations between systems:** This KPI measures the level of integration between various systems used by a retail brand (e.g., order management, inventory management, etc.). By integrating these systems, retail brands can streamline operations, reduce errors, and improve the customer experience.

These new KPIs can help retail brands integrate their marketing and supply chain decisions in the online journey. By monitoring OTIF delivery, NPS, inventory daily positions across channels, and order and stock integrations between systems, retail brands can improve their operational efficiency, reduce costs, and enhance the customer experience. This can result in increased customer loyalty, brand reputation, and revenue.

### 2.4.4 PDCA

The PDCA (Plan-Do-Check-Act) cycle, is a widely used iterative management method for continuous improvement of processes. In the context of the retail industry, the PDCA cycle can be applied to optimize various aspects of the shopping experience, ranging from inventory management to customer satisfaction. Key performance indicators (KPIs) are essential tools to measure the success of these efforts and make data-driven decisions within the PDCA cycle. In this literature review, we will explore the application of the PDCA cycle in the retail industry and discuss the relevant KPIs for measuring its effectiveness.

The planning phase of the PDCA cycle involves setting objectives, identifying potential problems, and developing a strategy to address them. For retail businesses, this can include various aspects such as website design, user experience, marketing campaigns, inventory management, and customer service.

The "Do" phase involves implementing the planned strategies and monitoring their progress. For retail businesses, this can include launching new marketing campaigns, updating website designs, or implementing new inventory management systems.

The "Check" phase involves analyzing the results of the implemented strategies and comparing them to the initial objectives. In the retail context, this can involve evaluating the success of marketing campaigns, analyzing customer feedback, and assessing inventory management efficiency.

The "Act" phase involves adjusting based on the insights gained during the "Check" phase and implementing improvements for the next iteration of the PDCA cycle. In the retail industry, this can include refining marketing campaigns, improving website design, or enhancing inventory management processes. Continuous monitoring of the KPIs mentioned above can help

businesses identify areas for improvement and optimize their strategies for better results in future iterations of the PDCA cycle.

The PDCA cycle serves as a powerful management tool for fostering cross-departmental coordination and driving effective decision-making. By applying the PDCA framework, businesses can create a systematic approach to monitor, analyze, and optimize processes across various departments, such as marketing, supply chain, and customer support. This collaborative effort enables organizations to align their goals, ensuring that the chosen key performance indicators (KPIs) are relevant and contribute meaningfully to decision-making processes. Through the continuous evaluation and improvement of these processes, businesses can enhance their overall performance, drive customer satisfaction, and maintain a competitive edge in an ever-evolving retail landscape.

## Section 3 - Methodology

### 3.1 Data Collection Process:

The data collection process for this study involved conducting 16 interviews with fashion supply chain providers, retailers, marketplaces, and researchers in Brazil, Japan, and the USA. The interviews were designed to address the study's hypotheses, which focused on understanding the impact of siloed operations between marketing and the supply chain using the empirical context of the fashion industry.

**Criteria For Selecting Each Interviewee:**

The following criteria were used to ensure that our interviewees were qualified and knowledgeable about the topic and could provide valuable insights and perspectives on the challenges and solutions related to siloed operations between marketing and the supply chain in the retail industry.

- Geographic location: the interviewees were based in Brazil, USA, or Japan, which were deemed as providing representative contexts for the retail industry.

- Professional experience: the interviewees had at least ten years of experience working in the retail industry.

- Role: the interviewees had a current or previous managerial role in either marketing or supply chain.

- Industry knowledge: the interviewees understood the fashion industry and its specific challenges, including e-commerce.

- Heterogeneity: a diverse set of interviewees representing different companies, sizes, and levels of success in the retail industry in each country.

Table 1 lists the 16 interviewees for this research and basic information such as country, role, and category of companies. We have three interviewees from the US, four from Brazil, and nine from Japan.

*Table 1. Interviewee List*

| Interviewee | Country | Role | Company/Industry |
|---|---|---|---|
| Interviewee 1 | USA | Operations Director | Fashio Retail |
| Interviewee 2 | Brazil | Senior Vice President of Operations | 3PL |
| Interviewee 3 | Brazil | Senior Director of Operations | Marketplace |
| Interviewee 4 | USA | MIT Director Omnichannel Strategies | MIT Researcher |
| Interviewee 5 | USA | Professor of Operations Managemen | MIT Researcher |
| Interviewee 6 | Brazil | CSO | Ecommerce as a Service Agency |
| Interviewee 7 | Brazil | COO | 3PL |
| Interviewee 8 | Japan | Data Scientist | Fashion Retail |
| Interviewee 9 | Japan | Collaboration Manager | Fashion Retail |
| Interviewee 10 | Japan | Head of Business | Fashion Retail |
| Interviewee 11 | Japan | CMO | Fashion Retail |
| Interviewee 12 | Japan | CTO | Fashion Retail |
| Interviewee 13 | Japan | Head of Marketing | Fashion Retail |
| Interviewee 14 | Japan | CMO | Fashion Retail |
| Interviewee 15 | Japan | CMO | Fashion Retail |
| Interviewee 16 | Japan | Head of Marketing | Ecommerce Technology Platform |

### 3.2 Interview Structure

The Interview questions are in Appendix 2 Interview guide. The first set of nine questions asked during the interviews aimed to uncover the company structure from a leadership perspective, the company's responsibility and mission, the biggest problems in improving the user journey, and how these issues were being solved. The additional questions also explored whether similar

or different issues existed across marketing and supply chain, the activities involved in collaboration with supply chain personnel, and the key performance indicators (KPIs) used. Lastly, the interviews addressed potential problems, particularly concerning coordination.

### 3.3 Data Analysis

To analyze the data collected from the interviews, we employed a categorization technique to help interpret the commonalities, identify patterns, and set up comparisons. This involved organizing and grouping the responses from all interviewees based on similar themes, topics, and perspectives. We aimed to derive insights and draw conclusions relevant to the research directed by our hypotheses by categorizing the data.

The grouping process involved several steps. First, we carefully reviewed and transcribed all the interview responses. We then identified and labeled the key themes and concepts from the data. These themes were then grouped into categories based on their similarities and differences. For example, responses related to the challenges of delivering a seamless customer experience were grouped into one set. In contrast, those related to data analytics were grouped into one another.

Once the data were categorized, we thoroughly analyzed each category, looking for patterns and trends across the responses. We also compared the groups to identify their commonalities and differences. This allowed us to identify key themes and insights, such as the importance of integrated data warehouses, new integrated KPIs, and closed-loop communication to overcome silos between marketing and the supply chain.

In summary, the categorization helped us make sense of the large volume of data collected from the interviews and enabled us to identify patterns and trends that would have been challenging to do otherwise. By analyzing the data in this way, we were able to draw

meaningful conclusions that would inform the research objectives and contribute to the broader understanding of the challenges and opportunities facing retail in the digital age.

## Section 4 - Results and Findings

This study explores the challenges and opportunities multichannel retail companies face in delivering a seamless customer experience and the strategies and technologies they can employ to stay ahead of the curve. The research is based on interviews with executives from leading companies in Brazil, Japan, and the United States of America.

The hypotheses we supported were the following:

1. Siloed operations between digital marketing and supply chains in the multichannel retail industry hinder growth and profitability.
2. Some expected consequences of these silos include excess inventory, stockouts, inefficient use of advertising budget, suboptimal product recommendations, high return rates, and delayed deliveries, all of which can erode customer trust and brand loyalty.
3. The root causes of these silos can be attributed to the following:
    a. Fragmented technology platforms that do not communicate with each other.
    b. Lack of integrated key performance indicators (KPIs) across departments
    c. The complexity of multiple channels and providers
4. To overcome these challenges, possible solutions include
    a. Creating an integrated data warehouse that connects marketing and supply chain.
    b. Developing new integrated KPIs that track both supply chain and marketing activities.
    c. Reducing the number of partners and sales channels to simplify the supply chain.
    d. Encouraging experimental mindset and building a lean organizational structure.

Table 2 summarizes the result of hypotheses validation through each interview.

*Table 2. Executive Summary of Interviews*

| Interviewee number | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Total-Yes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coordination challenge | | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | N | Y | Y | N | Y | 13 |
| Challenges | Lack of KPIs | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | N | N | Y | N | Y | 11 |
| | Fragmented tech | Y | N | N | Y | N | Y | Y | N | Y | N | N | N | N | Y | N | Y | 7 |
| | Too many channels | Y | N | Y | N | N | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | 11 |
| Solutions | Integrated KPIs | Y | Y | Y | Y | Y | Y | Y | N | N | N | Y | N | N | N | N | N | 8 |
| | Technical Integration | Y | Y | Y | Y | Y | Y | Y | N | N | N | N | N | Y | Y | N | Y | 10 |
| | Narrow down partners | N | N | N | Y | Y | Y | N | N | N | N | N | N | N | N | N | Y | 4 |
| | Communciation/Culture | Y | Y | Y | Y | Y | Y | Y | Y | N | N | Y | Y | Y | N | Y | N | 12 |

**4.1 Challenges**

We categorized the challenges caused by silos common to retail identified through our interviews. First, we observed a pattern where strong departmental authority leads to reinforced silos between marketing and supply chain. This often results in missed opportunities and a lack of recognition of challenges unless the commanding department acknowledges them. Incentive issues also exist for each department. For example, customer satisfaction falls under the responsibility of the marketing department, while the supply chain department is responsible for the post-purchase experience. Such organizational structural issues are commonly observed. Second, we heard of many challenges related to the adoption of diversified technology by each department, which leads to the inability to view common data and KPIs, and different definitions of the data being viewed. This is also linked to communication problems between both departments. The third challenge is the diversity of partners and channels in the industry. Several players struggle with different layouts, payment options, or shipping times, leading to confusion and a lack of uniformity. In the rapidly changing retail industry especially in today's digital age, each department is preoccupied with catching up in their respective fields, resulting in a lack of discussion regarding common challenges.

### 4.1.1 Technology Fragmentation

The first key challenge identified by the study is the complexity of technology platforms and partners.

One of our interviewees, the manager of the largest Japanese fashion company, said,

> ***"In our e-commerce business, we work with over 10+ technology vendors, including SaaS players and consultancy even in the digital marketing system. If we consider the supply chain system, I cannot imagine how many people are involved in our technology stack."***

One of our interviewees, a supply chain expert at a 3PL (third party logistics) mentioned,

> ***"In our e-commerce operations, we work with multiple technology vendors, including SaaS providers and consultancies for various aspects like digital marketing and supply chain. The sheer number of different systems and tools we use can lead to technology fragmentation, making it challenging to maintain seamless integrations and efficient communication between all the involved parties. This complexity emphasizes the need for streamlined technology solutions that can reduce fragmentation and enhance overall operational efficiency."***

The potential for technological advancement to widen the silo between logistics and marketing even further is a concern. In such a scenario, the adoption of diverse technologies within each department may result in the inability to access common data or key performance indicators (KPIs) and discrepancies in how data is defined. This can lead to challenges in communication between departments and, ultimately, the inability to address common challenges. With each department focused on its own specific area of expertise, there may be a lack of communication and collaboration, leading to missed opportunities and poor user experiences.

It is important for the e-commerce system to work with various store (offline retail) systems. To overcome these challenges, companies need to not only invest in IT infrastructure and systems to support the entire supply chain and provide visibility into inventory, orders, and delivery status but also emphasize effective communication and collaboration between departments. Addressing this issue requires not only the adoption of the right technology but also a shift in organizational culture towards greater collaboration and a focus on the needs of the customer.

Another comment from our interviewee is,

> ***"The gap between the legacy system and the brand-new system is our headache. Operations are not very flexible, so the legacy system would generate massive technical debt for the long term."***

While replacing these legacy systems with brand-new ones may seem like a solution, it is not always feasible due to operational limitations and can create a gap between the old and new systems, leading to inefficiencies and errors. As such, it is essential to find ways to bridge this gap and manage technical debt proactively to ensure the platform remains secure, scalable, and up to date. As we summarized in section 2, the marketing and supply chain technology is deeply connected from a consumer journey perspective, so fragmentation of the two systems would cause huge problems in the marketing and supply chain operations.

#### 4.1.2 Strong Departmental Boundaries

One of our interviewees, a marketing expert in fashion e-commerce said,

> ***"Production team is always the most powerful department in my company. The marketing and supply chain are just following their orders. The production team forecasts the demand for each product, and the marketing team needs to sell as many as possible. The marketing team does not care about stockout because the resolution after stockout is not its responsibility. "***

This is one of the most extreme cases, but we found a lot of similar patterns in our interviews. In other cases, procurement and buyer teams have strong organizational authority and cause similar problems. The asymmetrical power distribution among departments can lead to the creation of silos, particularly between the marketing and supply chain teams. The product team's excessive influence over other departments could exacerbate this issue. Such a structure may result in missed opportunities, as well as a failure to recognize challenges unless the commanding department acknowledges them. Furthermore, incentive problems may arise, as different departments may be responsible for different aspects of the user experience, such as marketing's responsibility for customer satisfaction and supply chain's responsibility for the post-purchase experience. Because of such structural issues, the communication between departments may break down, exacerbated by the inability to view common data and KPIs due to the adoption of diversified technology by each department. Such issues could ultimately lead to a poor user experience and reduced customer satisfaction.

Another of our interviewees, a COO – Chief Operations Officer in the marketplace industry proposed Insufficient use of available data to improve customer experience: An imbalanced organizational structure may lead to a lack of collaboration between departments and hinder the company's ability to leverage data effectively. A more balanced structure would allow for better communication and data sharing, enabling data-driven decision-making and improvements in customer experience.

One marketing expert said,

> ***“This is one of the biggest problems in the fashion industry. Product teams and product buyers are confident in their own aesthetics and sensibilities. They take pride in the fact that they are creating fashion trends. However, the growth of many data-driven fashion e-commerce sites has convinced us that this is an old practice.”***

One supply chain expert at an e-commerce as a service company said,

> ***"The lack of flexibility in the implementation roadmap is one of the biggest challenges we face. Traditional organizational structures often focus on individual business areas,***

***and this can result in an inability to adapt to the specific needs of each client. However, the rise of agile and data-driven e-commerce companies has shown us that embracing a more balanced organizational structure, focused on collaboration and cross-functional teams, can lead to better customization and improved customer experience. This shift in mindset is essential to thrive in today's highly competitive market."***

The traditional culture of the retail industry often inhibits the use of data analysis and the swift implementation of measures. In cases where the product team takes the lead, demand forecasting may be simplistic, often based on year-over-year comparisons, leading to excessive stock-outs or overstocking. In the worst-case scenario, the marketing team may heavily promote popular items, resulting in accelerated stock-outs and an overabundance of other items. Meanwhile, the supply chain team may attempt to rectify the imbalanced situation but may not have any direct contact with consumers, instead focusing solely on the supply chain tasks assigned to them. This may result in a breakdown of the balance between supply and demand, leading to a poor user experience and reduced customer satisfaction.

#### 4.1.3 Complexity of Multiple External Players

One of our interviewees in the global brand said,

***"Our business has to deal with a rapidly increasing number of diverse partners across various aspects of the supply chain, from supply chain providers to payment gateways. This expansion creates challenges in managing and controlling these partners effectively to ensure a consistent and seamless experience for our customers across all channels. As a result, it demands more resources and a dedicated team to coordinate and oversee the collaboration between these partners to maintain the high level of service our customers expect."***

Integrating multiple channels and partners can be complex and time-consuming, especially if they are using different systems or platforms. Ensuring seamless integration is essential for providing a consistent user experience and avoiding errors such as inaccurate inventory counts or delayed shipments. From a data management perspective, the increasing number of partners not only means the rise of data volume but also less accessibility to the whole data. Further, due to the trend of privacy data protection, data sharing across companies becomes much more difficult. This trend would worsen the visibility of user behavior across channels.

And while this problem is common globally, the issues to be solved are specific to each local market. In Japan, for example, there are over 50,000 convenience stores where customers can make payments and pick up their orders placed in other brands, which can create logistical and cash flow challenges for retail companies. To increase their customer base, it would be essential to involve these channels in the distribution channel. This integration is not easy at all and needs a long time to operationalize.

In Brazil, the e-commerce landscape is vast and diverse, with a mix of local and international players. The interviewee from a marketplace emphasized the importance of understanding the unique characteristics of the Brazilian market, such as regional preferences, payment methods, and supply chain challenges. Adapting to these particularities requires flexibility and the ability to customize solutions for each client.

In the USA, one of the challenges mentioned by an interviewee revolves around the need to stay updated with rapidly changing consumer trends, technology, and regulations. Ensuring that various partners are aligned and working cohesively towards common goals is crucial for delivering a consistent and satisfying customer experience.

Another local example is the packaging. Especially in Japan, the packaging process is one of the most important activities to show brand superiority. An interviewee said.

***"Packaging is one of the most important processes to design customer experience because customers see our package first after purchasing items. If it is disappointing, all other processes would be useless."***

However, if different partners are responsible for different aspects of the customer journey, such as order fulfillment or customer service, it can lead to inconsistencies in quality and communication.

The challenge identified by the study is the need to understand the customer's needs and preferences. In the retail industry, this could mean a suitable product catalog, search function, and tailored questions for customers to guide them during the buying process. Sizing tools can also help guide customers and reduce the cost of returns. Accurate prediction of upcoming collections can help improve inventory management and reduce excess stock or out-of-stock situations.

### 4.2 Solutions

In our interviews, we found several potential resolutions to tackle existing silo problems. These resolutions are not necessarily a silver bullet for all the problems, but they are a step in the right direction addressing select parts of siloed operations and encouraging coordination between marketing and supply chain teams. By fostering open communication, leveraging technology, and working collaboratively, these organizations can overcome the challenges posed by the diverse range of partners and create a more seamless customer experience across channels.

### 4.2.1 Technology to Bridge Supply Chain

The first resolution is technology. As we mentioned in the challenge part, technology is a powerful double-edged sword that may create a tech silo. However, we found some practical examples to fill the gap between the marketing and supply chain divisions by leveraging the power of technology.

CMO in Japanese fashion retail said,

> ***"We developed a simple data warehouse collecting all the social media, websites, CRM, WMS, and ERP data without privacy information. Additionally, we provide some dashboards/visualizations on the top of DWH to democratize our data for non-tech people. This DWH enables both marketing and supply chain divisions to understand each other's work and how each other affects the other operation."***

A supply chain manager from a Brazilian e-commerce company shared their perspective on the role of technology in streamlining operations and promoting cross-functional understanding. He said,

> ***"We have implemented an advanced data warehouse system that consolidates information from various sources, such as social media, websites, CRM, WMS, and ERP while maintaining data privacy. To make this data accessible and useful for non-technical team members, we have created a series of user-friendly dashboards and visualizations."***

The manager further explained,

> ***"This data-driven approach has significantly improved the collaboration between marketing and supply chain teams. Both departments can now gain insights into each other's operations, identify potential bottlenecks, and understand the impact of their decisions on overall business performance. By providing a unified technology platform***

***that bridges the gap between different teams, our organization has been able to foster better communication, drive efficiency, and enhance the customer experience."***

It is possible to integrate multiple technologies and platforms with each other, but coordination between companies and departments is necessary, and it can be time-consuming and costly. However, if the goal is simply to collect data and visualize what is happening across platforms, this can be easily achieved using the cloud. In the example of this company, by standardizing typical analyses and creating dashboards, they were able to increase access to data and analysis for a wider range of people, leading to better mutual understanding between departments. Also, quick wins in an organization unleash investment in new technology even in traditional organizations.

The key to developing technical advantage is talent. In both cases, some people bridged two departments with technical expertise and domain knowledge. Without multi-skilled leaders, it would be difficult to select the right technology for the organization and fail to create a common value between the two groups.

Data analytics enable retail companies to make informed decisions and improve customer satisfaction. By collecting and analyzing data on customer behavior, companies can gain insights into customer needs and preferences and develop targeted marketing campaigns and personalized recommendations. Net Promoter Score (NPS) is a commonly used metric for measuring customer satisfaction. Still, companies can also leverage data to measure other indicators such as batch and expiration control, CAC, CLV, and AOV. The study highlights the importance of visualizing and dashboarding data and having a skill set for translating data into action.

Also, another interviewee, the CTO of a leading e-commerce company said.

> ***"Our e-commerce infrastructure was designed in a very simple architecture. This simple architecture allows engineers to reduce maintenance costs and understand both marketing and supply chain divisions' activities."***

In this company, the technical team understands both divisions' activities and sometimes supports collaboration between two divisions by creating a combined data warehouse and democratizing accessibility to employees in each division. Thanks to this system integration, marketing people can access the supply chain database. Accessibility to data is another key for collaboration because siloed operation starts from the invisibility of other teams' activity and strategy.

Technology is a key enabler of a seamless customer experience, and companies need to stay up to date with the latest trends and technologies to remain competitive. One emerging technology expected to impact significantly is microservices, small, independent components that can be developed and deployed quickly. By moving these microservices to well-orchestrated warehouses, companies can improve their supply chain efficiency and delivery times. Another emerging technology is real-time fashion, which involves leveraging data and technology to quickly identify emerging fashion trends and bring new products to market while providing a seamless customer experience across multiple channels.

### 4.2.2 Integrated KPIs

Aligning marketing and supply chain departments in the retail industry has become increasingly crucial to delivering exceptional customer experiences. One of the most effective ways to promote collaboration and integration between these departments is by implementing a set of integrated KPIs. By using these KPIs as performance benchmarks, organizations can create a shared vision and motivate cross-functional teams to work together towards common

objectives. This section will discuss the usage of integrated KPIs, such as OTIF, NPS, OTD (On time delivery), and others, and explore their potential impact on enhancing customer satisfaction.

Our interviewee, the CMO of an e-commerce startup said.

> ***"We developed an integrated KPI called 'true CAC'. This CAC reflects everything about the supply chain such as labor cost, storage, packaging, and delivery costs. Marketing team reviews true CAC every week and makes decisions about campaign investment and featured products."***

This startup successfully achieved coordination between the supply chain and marketing departments by incorporating supply chain data into their KPIs for marketing decision-making. A crucial aspect was recognizing that solely focusing on marketing investments for popular products with low CAC could result in increased inventory costs for other items and strain the supply chain's labor costs. Consequently, it was necessary to reflect these penalties in marketing investment decisions.

The same interviewee said.

> ***"The data is not necessarily updated in real-time. We can use the weekly average for analytics. The most important thing is to operationalize right data-driven marketing and we successfully resolved this challenge."***

Integrated KPI is not necessarily the breakthrough metrics. Another Japanese e-commerce CEO said.

> ***"Sales are the one and only key goal indicator (KGI) and key performance indicator (KPI) for our company. Each department can look at various data, but we must never waver from the goal of increasing sales. We've made sure to focus on that. Growing sales is evidence of improved customer satisfaction, and sales can be measured in real-***

***time. We've thoroughly investigated where our sales come from and what causes them to decrease."***

If a primary KPI is well-established, there may be no need for additional, specialized KPIs. Conversely, assigning detailed KPIs to each department may result in a counterproductive approach, often leading to cases where collaboration is hindered. The most crucial aspect is understanding how customer satisfaction is reflected in real-time metrics and operationalizing marketing and supply chain activities in a manner that does not promote siloes.

One of the interviewees, a senior manager from a well-established retail company, shared their experience regarding the use of KPIs to ensure coordination between marketing and supply chain:

***"In our company, we have found that using key performance indicators (KPIs) has been instrumental in aligning the goals and efforts of our marketing and supply chain teams. Some of the most critical KPIs we monitor include OTIF (On Time in Full), NPS (Net Promoter Score), and cost per order processing per campaign. By focusing on these metrics, we can ensure that both departments work together to optimize the customer experience, streamline our processes, and ultimately drive business growth. It is crucial to establish a shared understanding of these KPIs across the organization and regularly review the performance to identify areas for improvement and make data-driven decisions."***

This citation emphasizes the importance of using KPIs as a tool to facilitate coordination between marketing and supply chain, leading to improved efficiency and customer satisfaction.

Through the interviews, we found new and unique KPIs reflecting both marketing and supply chain performance to help reduce siloed operations between the two areas.

Budget per Campaign Aligned with Operation Order Processing Capacity

Aligning marketing campaign budgets with operational capacity is essential for optimizing resources and ensuring smooth order processing. By monitoring this KPI, organizations can avoid overburdening their operations department while ensuring marketing efforts generate the desired return on investment. This alignment enables better forecasting, resource allocation, and overall efficiency, ultimately contributing to improved customer satisfaction.

Orders per Shift Connected to the Marketing Campaign

Connecting the number of orders per shift to specific marketing campaigns allows organizations to assess the effectiveness of their promotional efforts and adjust strategies accordingly. By monitoring this KPI, marketing, and operations departments can work together to optimize campaigns, manage inventory, and allocate resources to ensure a seamless customer experience.

Cost per Order Processing per Campaign

Evaluating the cost per order processing for each marketing campaign helps organizations identify areas for improvement and optimize resource allocation. This KPI enables both departments to collaborate and identify strategies to reduce costs while maintaining or enhancing customer satisfaction.

Number of Interactions through Chat, Email, WhatsApp, and Phone

Tracking customer interactions across various communication channels can provide valuable insights into customer preferences and pain points. By monitoring this KPI, marketing and supply chain teams can identify areas for improvement, optimize communication strategies, and enhance overall customer experience.

Capacity per Employee to Answer Tickets

Measuring the capacity of each employee to handle customer inquiries and resolve issues is essential for maintaining high levels of customer satisfaction. By tracking this KPI, organizations can optimize staffing levels, provide additional training, and implement more efficient systems to ensure a timely and effective response to customer inquiries and better manage customer returns.

Return Rate and Reasons for Returns

Monitoring return rates and analyzing the reasons behind returns can help organizations identify areas for improvement in both marketing and supply chain. By understanding why customers return products, teams can work together to address issues such as inaccurate product descriptions, poor product quality, or inefficient delivery processes. Addressing these issues can lead to reduced return rates and improved customer satisfaction.

Conversion Rate by Campaign and Product Category

Tracking conversion rates by campaign and product category can help organizations optimize their marketing strategies and better align their inventory management. By monitoring these KPIs, marketing and supply chain departments can collaborate to identify the most effective campaigns and adjust inventory levels, accordingly, ensuring that customer demand is met while minimizing stockouts and overstock situations.

Customer Complaint Resolution Time

Measuring the time, it takes to resolve customer complaints is crucial for maintaining customer satisfaction and fostering loyalty. By tracking this KPI, marketing and supply chain teams can

work together to identify areas for improvement in their customer service processes, ensuring that issues are resolved promptly and effectively.

In summary, implementing a set of integrated KPIs can significantly enhance collaboration between marketing and supply chain departments. Though exemplified in the fashion industry, they generalize broadly in other industries. By focusing on shared objectives and using these KPIs as performance benchmarks, organizations can create a more cohesive and customer-centric approach to decision-making. This collaborative mindset can lead to improved customer satisfaction, increased efficiency, and ultimately, better business performance. By consistently monitoring and optimizing these KPIs, organizations can ensure that their marketing and supply chain teams work together to create exceptional customer experiences and drive long-term success.

### 4.2.3 Selecting and Concentrating Partner Relationships

In today's fast-paced and increasingly digital world, businesses need to be agile and adaptable to stay ahead of the competition. One critical aspect of this adaptability is the ability to select and concentrate partner relationships to ensure optimal service levels and customer experiences. This can be particularly important for multichannel retail businesses, where customer satisfaction is heavily reliant on efficient and seamless interactions with multiple service providers. In this section, we will discuss the importance of selecting and concentrating partner relationships, the benefits of streamlining service providers, and the strategies businesses can employ to achieve these goals.

**The Importance of Selecting and Concentrating Partner Relationships**

Partner relationships play a crucial role in the success of any business, particularly in the e-commerce era. They can have a direct impact on the efficiency of supply chain, marketing, and

customer support, ultimately affecting the overall customer experience. By carefully selecting and concentrating on these relationships, businesses can ensure that they are working with the most effective and reliable partners, leading to better service levels and a higher quality of the information provided to customers and consumers.

One interviewee from a leading Japanese mail order company,

> ***"Channel partnership is one of the most difficult dilemmas for retail business. If you expand partnerships, you will earn more customer base, but you will struggle with controlling them. Supply chain team may suffer from too many channel partners."***

Marketing teams normally want to expand the channel partnerships and distribute brand items to as many channels as possible. Also, engaging with multiple channel partners allows for the exploration of different marketing tactics, enabling companies to optimize their approach based on each partner's strengths and audience. Cross-promotions and shared marketing initiatives are other opportunities for marketing. However, the addition of channel partners can complicate inventory management, as each partner may require different inventory levels and replenishment schedules. Moreover, managing multiple partners may necessitate increased resources for communication, coordination, and supply chain, leading to higher operational expenses. Finally, inaccurate inventory forecasting across various channel partners can result in stockouts, which may harm customer satisfaction and brand reputation, or overstock, which can lead to higher inventory holding costs and potential markdowns.

**Benefits of Streamlining Service Providers (Source: Interviewee 6)**

1. Improved Service Levels: By focusing on a select group of service providers, businesses can invest in building stronger relationships with their partners. This can lead to improved communication, a better understanding of each other's needs, and more effective collaboration, resulting in higher service levels and better overall performance.
2. Increased Efficiency: Streamlining service providers can help businesses eliminate redundancies and inefficiencies in their processes. With fewer partners to manage,

businesses can dedicate more time and resources to optimizing their supply chain and ensuring that everything runs smoothly and efficiently.

3. Enhanced Information Quality: Concentrating partner relationships can lead to better information sharing and data consistency between providers. This can result in more accurate and timely information being provided to customers and consumers, helping to improve the overall customer experience.
4. Better Control and Accountability: By working with a smaller group of partners, businesses can have better control over their operations and more direct communication with their providers. This can lead to increased accountability and a stronger focus on achieving business objectives.
5. Cost Savings: Consolidating service providers can lead to cost savings through economies of scale, streamlined processes, and reduced administrative overheads. These savings can be reinvested in the business to drive further growth and improvements in customer experience.

**Strategies for Selecting and Concentrating Partner Relationships (Source: Interviewee 6)**

1. Evaluate Existing Partners: Start by reviewing your current partner relationships and assessing their performance against key criteria such as service levels, expertise, and cost-effectiveness. Identify any areas for improvement and discuss these with your partners to determine whether they can address these issues or if it's necessary to explore alternative providers.
2. Identify Core Competencies: Determine which aspects of your business are most critical to your success and which service providers are best suited to support these core competencies. Focus on building relationships with partners that can deliver the highest value in these areas.
3. Streamline Processes: Look for opportunities to simplify and streamline processes across your partner network. This may involve consolidating providers, automating tasks, or implementing new technologies to improve efficiency and reduce complexity.

4. Foster Collaboration: Encourage open communication and collaboration between your partners and internal teams. This can help to break down silos, improve information sharing, and promote a more cohesive approach to delivering exceptional customer experiences.
5. Monitor Performance: Continuously monitor the performance of your partner relationships to ensure that they are meeting your expectations and delivering the desired results. Be prepared to make changes if necessary to maintain the highest possible service levels and customer satisfaction.

Having explored the benefits of streamlining service providers and strategies for selecting and concentrating partner relationships, such an approach can yield significant advantages for businesses. The insightful quote below from the director of an e-commerce as a service company further emphasizes the value of concentrating on partner relationships.

> ***"By concentrating on fewer systems and deepening partner relationships, e-commerce as a service companies gain greater control over meeting customer demands. It's a delicate balance that requires focused attention and strategic partnerships to achieve success."***

As pointed out, this approach can lead to improved communication, collaboration, and service levels, ultimately enhancing the overall customer experience and contributing to business success.

Considering these findings, it is essential for businesses to carefully consider their partner relationships and make strategic decisions that maximize efficiency and customer satisfaction. By implementing the strategies discussed in this section and learning from the experiences of industry leaders, businesses can successfully navigate the complex landscape of partner relationships and build a strong foundation for future growth and success.

### 4.2.4 Incentivizing Coordination

One of the marketing managers we interviewed mentioned collaboration with the supply chain.

> ***“My company seriously embraces experiments. Each employee needs to propose 60+ experiments in a year to improve customer experience and revenue which is our KPI. To achieve this goal, you need to find a space to improve outside digital marketing and collaborate with other divisions.”***

One of the operations directors highlighted the importance of incentivizing coordination between different departments. They said,

> ***"In our organization, we actively promote cross-functional collaboration. To improve customer experience and drive revenue growth, which are our key performance indicators (KPIs), we encourage each employee to propose experiments or initiatives weekly. To achieve these ambitious targets, it's essential to look beyond our individual roles and work closely with other divisions, including digital marketing and supply chain."***

This approach fosters a culture of innovation and collaboration, breaking down silos and enabling the organization to adapt more quickly to changing customer demands and market trends. By empowering employees to experiment and share their ideas, the company can identify new opportunities for improvement, optimize processes, and deliver a better overall experience for customers.

The importance of culture in businesses cannot be overstated. It is essential to create a culture that embraces collaboration and a bottom-up approach to communication, where all employees feel empowered to share their ideas and contribute to the success of the business. The example provided by the marketing manager underscores the importance of experimentation and collaboration, which are critical components of a culture that fosters innovation and growth. In this company, the marketing analyst proposed multiple ideas to

reduce safe stocks and collaborate with the supply chain team to think about how to stabilize the demand for popular items and reduce supply chain costs. By encouraging employees to propose experiments and collaborate with other divisions, businesses can leverage the expertise of their entire workforce and generate new ideas for improving customer experience and driving revenue.

Moreover, by adopting a bottom-up approach to communication, businesses can ensure that all voices are heard, and all ideas are considered, regardless of hierarchy or departmental silos. In this company, all the executives checked the impact of the results of experiments, and they especially appreciated failures bringing more learning into the organization. This can lead to better decision-making and more effective solutions to business challenges.

Another example is from a leading retailer in Japan.

> ***"Our salary scheme is unique and incentivizes us. If we achieve the sales target based on the previous year, which is the only KGI (Key Goal Indicator) we aim to maximize, we gain JPY (Japanese Yen) 200K in addition to our salary. It would be 50% of our usual salary. Then, everyone thinks not only about short-term sales growth but also about long-term customer growth. Also, we cooperate with each other to achieve our common goal."***

This is an extreme example of incentives and compensation plans for startups, but encouraging employees to focus on KGIs in addition to KPIs can help to break down silos and incentivize cross-functional collaboration. By simplifying the KGI framework, businesses can ensure that employees have a clear understanding of the goals and objectives that they are working towards, which can help to foster a shared sense of purpose and alignment.

Furthermore, incentivizing employees with bonuses tied to KGI achievement can motivate them to work towards shared goals and encourage collaboration across departments. By aligning

incentives with KGI performance, businesses can ensure that employees are working towards a common goal and that their efforts are recognized and rewarded appropriately.

The study also identifies the importance of having clear policies and procedures for handling returns and minimizing their impact on the business. By addressing these issues, companies can help build customer trust and streamline operations, ultimately increasing satisfaction and profitability.

In conclusion, the study emphasizes the need for companies to invest in IT infrastructure and systems to support the entire supply chain and provide visibility into inventory, orders, and delivery status. Companies must also leverage data analytics and emerging technologies to improve customer satisfaction and stay ahead of the curve. By understanding and catering to customer needs and preferences coupled with having clear policies and procedures for handling returns, companies can build trust with customers and streamline operations, ultimately leading to increased satisfaction and profitability.

## Section 5. Discussion

Our findings clearly demonstrate the potential challenges due to siloed functionality in organizations between departments. The ramifications of this are detrimental to customer experience and consequently business performance. We see this in the case of siloes between marketing and supply chain. However, in a positive vein, we also demonstrate avenues to facilitate better coordination between the functional areas of marketing and supply chain.

## 5.1 New Framework - Marketing + Supply Chain funnel in retail

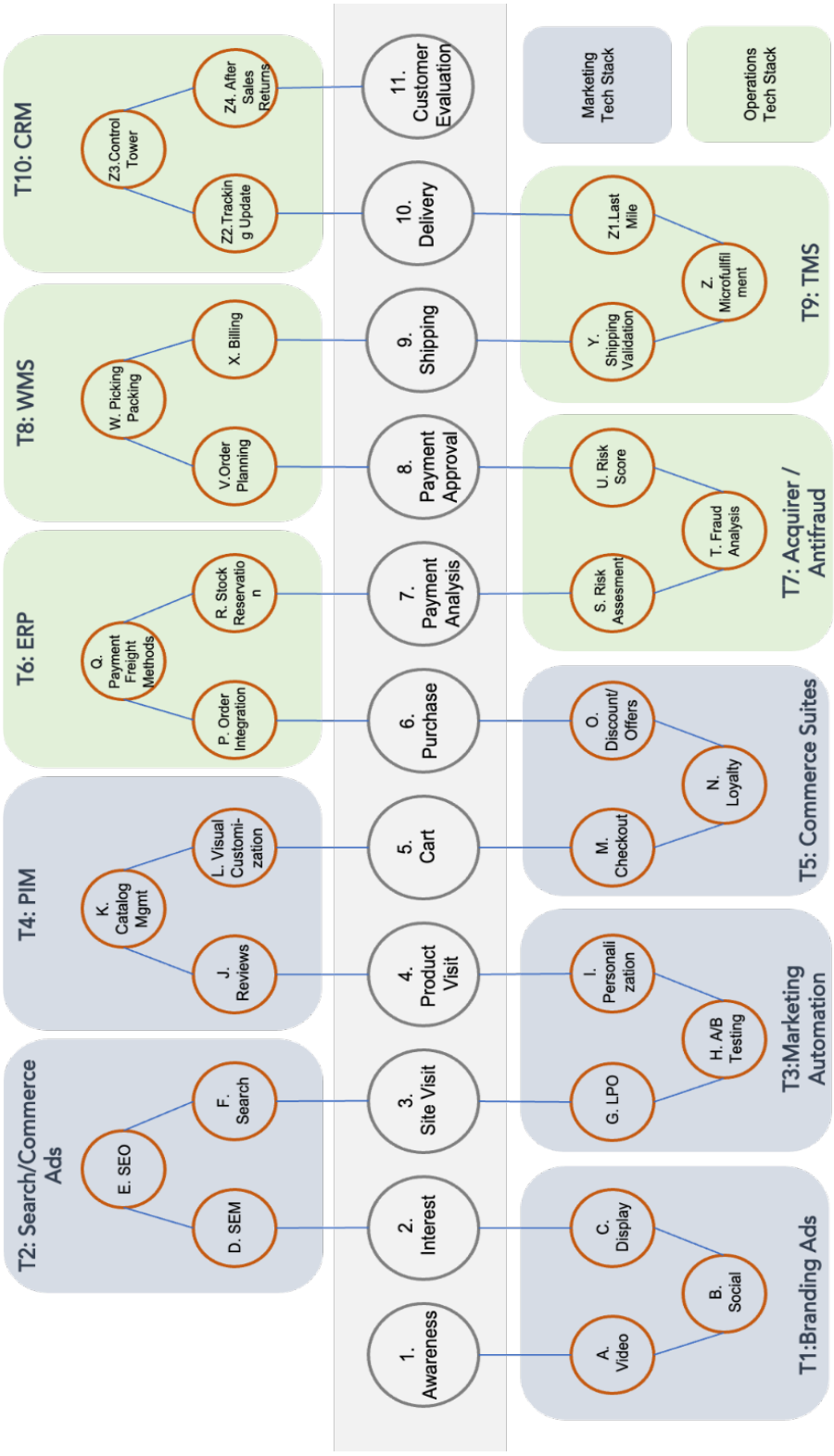


*Figure 2. New Framework: Marketing + Supply Chain Funnel in Retail*

Figure 2 shows the consumer journey on the front end comprises eleven touchpoints: awareness, interest, search, product visit, cart, purchase, payment analysis, payment approval, shipping, delivery, and customer evaluation. This journey may vary across countries, such as Brazil, Japan, and the USA. The first six touchpoints are considered marketing, while the last six are considered to supply chain, with the purchase touchpoint involving both departments.

To support the backend journey, we suggest 30 touchpoints (video, social, display, SEM, SEO, search, LPO, A/B testing, personalization, reviews, catalog management, visual customization, checkout, loyalty, discount, and offers, order integration, payment and freight methods, stock reservation, risk assessment, fraud analysis, risk score, order planning, picking, packing and shipping, billing, shipping validation, micro-fulfillment, last mile, tracking update, control tower, after-sales, and returns). These touchpoints are supported by 10 systems (branding ads, search, and commerce ads, marketing automation, PIM, commerce suites, ERP, acquirer, anti-fraud, WMS, TMS, and CRM).

Nowadays, brick and mortar stores also utilize these digital touchpoints and share backend. systems with e-commerce. Technology improves both online and offline user experiences and unifies them into an omnichannel journey. For example, an inventory management system that manages the inventory of physical stores in real-time in conjunction with e-commerce can inform customers not only about purchasing through e-commerce but also about nearby stores where the desired item is in stock. Considering shipping costs and delivery times, technology allows customers to make better choices.

By combining these frontend, backend, and system touchpoints, a comprehensive framework can be created to be applied in any online and offline consumer journey aiming for customer satisfaction. This framework enables retail businesses to analyze and optimize their operations across multiple countries and cultural contexts, ensuring a seamless and satisfying customer experience throughout the entire process.

**Retail Marketing Tech Stack**

The marketing industry uses the “funnel model” to describe consumer physical and psychological behavior from awareness to purchase. These funnel models are based on frameworks such as AIDMA and AISAS as in Figure 3 depicts the psychological transformation of consumers as their premise. The AISAS model has evolved into a more realistic framework for purchasing behavior by including two behaviors created by the Internet's development: search and sharing. AISAS Model is an online consumer behavior model created by Dentsu, an advertising agency in Japan, according to **Sugiyama and Andree (2011)**.

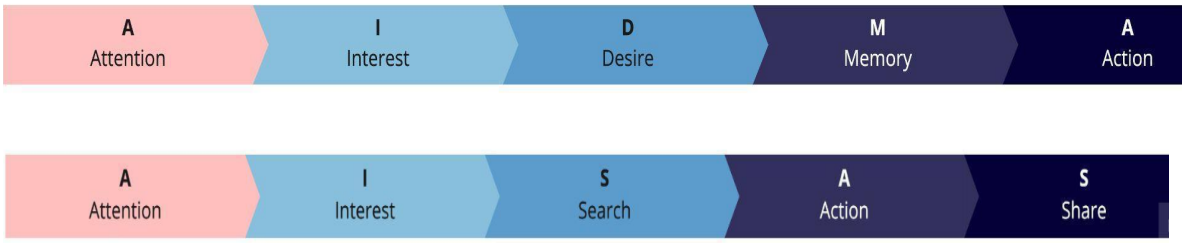


*Figure 3. AIDMA and AISAS Models*

Behind these consumer behavior models, various types of technology are used to gather and analyze data, which vendors then utilize to improve marketing strategies. This data accumulates well before a user even visits an e-commerce website. For example, in branding advertising, video media such as YouTube and social ads on platforms like TikTok and Instagram contribute to many brands’ sales. Additionally, data on user searches and interests, obtained through SEO, SEM, and commerce advertising, is provided by platforms such as Google and Amazon. Once directed to a company's website, this data, combined with information on the user's origin and browsing history, is used to personalize the website experience, optimize site design, and make product recommendations. These various platforms in the marketing field are working to increase user engagement, enhance the user experience, and ultimately maximize sales. At the same time, the journey can be split into two parts, before and after a site visit.

Before the site visit, the leading investment field is digital advertising. Regarding marketing outside clients' websites, the growing privacy concerns have led to a dominant market share of digital platforms holding large amounts of data. Furthermore, major web browsers such as Google's Chrome and Apple's Safari have announced restrictions on data used for advertising within the next two years. This news is expected to accelerate the digital behemoths' shares in the oligopolistic market.

Among the increasingly influential digital platforms, those with a greater affinity for fashion, such as Tiktok and Instagram, have the most dominant impact on fashion retail. According to Mckinsey's research, fashion industry investments in these two companies far outpace those in Google and Amazon.

After site visits of users, e-commerce owners have many opportunities to personalize its offer, pricing, and product recommendations. It is not easy to read the context of every user and communicate optimally accordingly. Not only do you have to match countless segments with products, but you also must do it at the right time and place, and with the benefit of automation, personalization is possible. According to LiveClicker research, marketers using advanced personalization tactics see up to a $20 return on every $1 they invest. Segmentation, dynamic content, and sleek recommendations drive marketing performance and operational efficiency. For example, a 67% increase in conversion rate, a 25% increase in average order value, and it takes just 10 mins to set up such personalized communication.

Overall, the importance of customer experience has become much more critical. Figure 4 shows the consumer decision journey model from **Edelman and Singer (2015)** in Mckinsey which describes the importance of the experience after purchasing products. This framework introduced stickiness after an excellent user experience. If you deliver a great experience to consumers, they skip considering alternatives and stop evaluating you with others. However, designing a complete customer journey would be best, especially after buying. A multichannel

retail company needs to make customers enjoy, let them advocate your products, and bond to your platform.

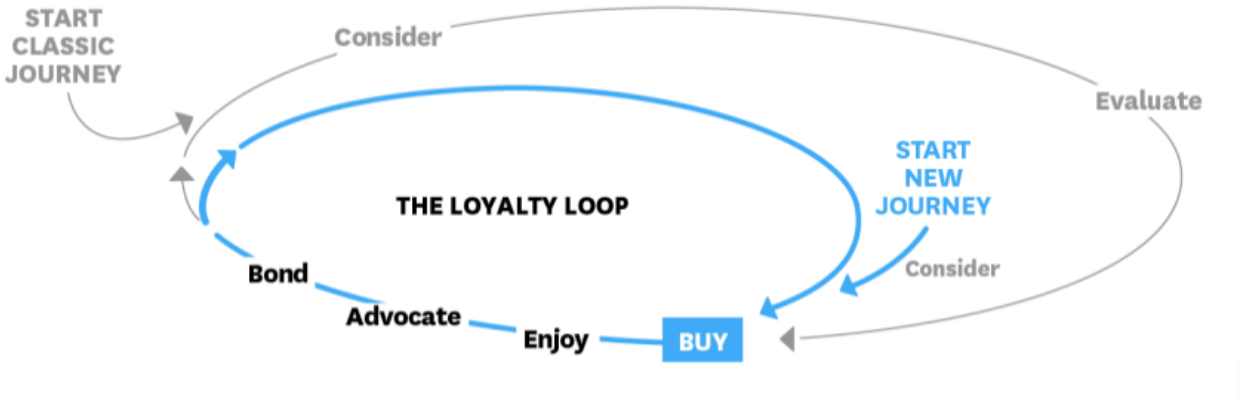


*Figure 4. Consumer Decision Journey Diagram*

The consumer decision journey model emphasizes the importance of post-purchase experiences. As our framework suggests, it is vital for marketing and supply chain teams to collaborate closely and ensure both pre- and post-purchase experiences are exceptional. Otherwise, a company may not even be considered in comparison to its competitors. Conversely, by providing outstanding experiences, companies can engage customers in a loyalty loop without incurring acquisition costs and sell their products without customers considering alternatives. Therefore, it is crucial for executives to understand all aspects of the sales funnel and technology to succeed in this competitive landscape.

**Retail Supply Chain Technology Stack**

Effective resource allocation is crucial for multichannel retail supply chain. Companies operating digital channels require technology to manage orders, process them, and ensure timely delivery to end customers. supply chain operations are responsible for receiving, storing, and shipping goods. Several business models can operate multichannel retail channels, including:

- Third-Party Logistics (3PL): A 3PL is a company that provides outsourced supply chain services to businesses for part or all their supply chain management functions. These services can include transportation, warehousing, distribution, inventory management, and order fulfillment. 3PL providers typically specialize in integrating these services into a seamless, cost-effective solution, allowing businesses to focus on their core competencies. Some well-known 3PL providers include DHL, FedEx, and UPS.
- Fourth-Party Logistics (4PL): A 4PL provider takes the concept of 3PL a step further by acting as a single point of contact for all supply chain management functions. 4PL providers manage and coordinate the entire supply chain process, often through partnerships with multiple 3PLs and other specialized service providers. They offer a more strategic and consultative approach, focusing on optimizing the entire supply chain and providing greater visibility and control. 4PL providers may also use advanced technology solutions, such as sophisticated software systems and analytics, to drive efficiency and cost savings. Examples of 4PL providers include Accenture and Deloitte.
- Vertical Integration: Vertical integration is a business strategy in which a company takes control of multiple stages of its supply chain. This can include owning or controlling suppliers, manufacturing facilities, distribution centers, and even retail outlets. Vertical integration allows a company to have greater control over its operations, reduce costs, and improve efficiency by eliminating intermediaries and streamlining processes. Examples of companies that have adopted vertical integration include Apple, Amazon, and Tesla.
- Marketplaces: In the context of e-commerce, marketplaces are platforms that connect buyers and sellers, facilitating transactions between them. Marketplaces can offer a wide variety of products and services from multiple vendors, allowing customers to compare prices, read reviews, and make informed purchasing decisions. These platforms often handle the transaction process, including payment processing and sometimes order fulfillment, while vendors are responsible for shipping the products or providing the services. Examples of e-commerce marketplaces include Amazon, eBay, and Alibaba.

- General Warehouse: A general warehouse is a facility where goods are stored, managed, and distributed to support a company's supply chain operations. Warehouses can be owned by the company itself or operated by third-party supply chain providers. General warehouses typically handle a wide variety of products and can serve multiple clients, offering services such as inventory management, order fulfillment, and shipping. They may also utilize technology solutions, such as warehouse management systems (WMS), to streamline processes and improve efficiency.

These business models are supported by technologies that process every multichannel retail transaction. Each system in the technology stack plays a vital role in managing workflows, capturing order information, and storing data in a data warehouse. This data is then used to generate KPIs, monitor service levels within the operation, evaluate freight carriers' performance, and assess customer satisfaction.

The primary systems that this study will examine are (Figure 2)

1. ERP (Enterprise Resource Planning): ERP systems integrate various business processes and facilitate the flow of information across the organization. They help manage finances, inventory, procurement, and other critical functions within multichannel retail operations.
2. Acquirers: Acquirers, also known as acquiring banks or merchant banks, are financial institutions that process credit and debit card transactions on behalf of merchants. They are responsible for maintaining the merchant's account, authorizing, and settling transactions, and ensuring that funds are transferred from the issuing bank (the cardholder's bank) to the merchant's account. Acquirers also handle chargebacks and disputes, helping to resolve issues between the merchant and the customer. Some well-known acquirers include Chase Paymentech, First Data, and Worldpay.
3. Anti-fraud Prevention Systems: Given the prevalence of online fraud, e-commerce businesses must employ robust anti-fraud prevention systems to protect themselves and their customers. These systems use advanced technology and algorithms to identify

and prevent fraudulent transactions, such as unauthorized credit card charges or identity theft. They analyze various data points, including customer behavior, transaction history, and device information, to detect unusual patterns or potential fraud indicators.

4. WMS (Warehouse Management System): WMS systems support the efficient management of warehouse inventory, including tracking, storage, and movement of goods. They aid in optimizing warehouse space, streamlining order processing, and reducing the risk of errors.
5. TMS (Transportation Management System): TMS solutions optimize transportation operations, including carrier selection, route planning, and freight auditing. They help minimize transportation costs, improve shipment visibility, and enhance overall efficiency.
6. CRM (Customer Relationship Management): CRM systems manage customer interactions, support marketing and sales efforts, and help improve customer satisfaction. They collect and analyze customer data to personalize communication, enhance customer service, and drive customer loyalty.

When integrated, these systems can generate numerous KPIs through data visualization software such as Power BI Pro (Microsoft), Tableau, and Qlik Sense. Key supply chain KPIs track the entire workflow, covering order costs, employee productivity, task timing, resource allocation, inventory management, consolidation, and fragmentation processes, and other activities related to customer satisfaction.

**5.2 New KPIs**

Organizations typically divide their key performance indicators (KPIs) into two categories: strategic and tactical. Strategic KPIs impact the entire organization and can be measured broadly through revenue, margins, and NPS (Net Promoter Score). These KPIs are typically used in strategic meetings held monthly or bi-monthly. Tactical KPIs are daily-based controls for individual departments.

What characteristics define superior KPIs? Doran (1981) developed the SMART framework (specific, measurable, assignable, realistic, and time-related) as criteria to guide the setting of goals and objectives that are assumed to give better results. Through interviews and the authors' professional experience in the data industry, here are enhanced criteria to improve KPIs.

1. Relevant: KPIs should be aligned with the organization's goals, objectives, and strategies, ensuring they contribute to the company's overall success.
2. Measurable: KPIs must be quantifiable, allowing for accurate and consistent tracking of progress and performance over time.
3. Actionable: Good KPIs should guide decision-making and inform actions that drive improvement in performance.
4. Time-bound: KPIs should have a specific time frame for measurement, such as weekly, monthly, or quarterly, enabling organizations to track performance and progress over time.
5. Simple: KPIs should be easy to understand, calculate and communicate, both for those measuring them and for those using the results to make decisions.
6. Comparable: Effective KPIs should enable comparison across different time periods, teams, or departments, allowing for benchmarking and identification of best practices.
7. Specific: KPIs should be clearly defined and focused on a particular aspect of the organization's performance, ensuring that they provide actionable insights.
8. Balanced: A good set of KPIs should offer a balanced perspective on the organization's performance, considering various aspects like financial performance, customer satisfaction, internal processes, and employee engagement.

We discuss better KPI structure for decision-making processes in organizations. Once again, we use two functions marketing and supply chain for illustration. Figure 5 illustrates some of the critical KPIs measured by top-down organizations. This study will demonstrate how supply chain and marketing KPIs intersect with customer satisfaction and emphasize the importance of

integrating these KPIs to drive better decision-making and improve the overall customer experience.

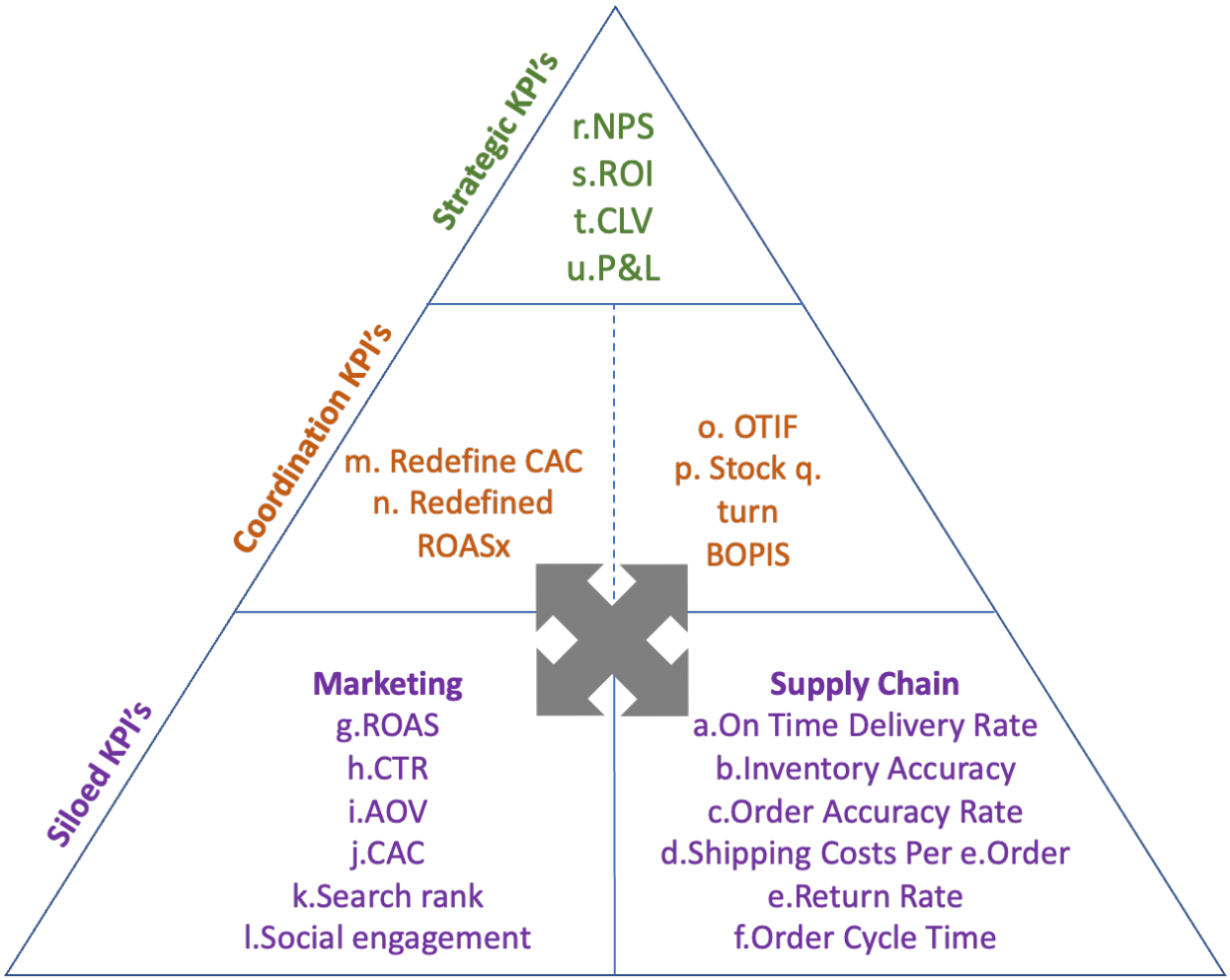


*Figure 5. KGI's and KPI's*

Organizations can categorize their KPIs into three main groups to better understand their performance from various perspectives: 1) siloed supply chain and siloed marketing, 2) coordination, and 3) strategic. These classifications help in assessing individual department performance, interdepartmental collaboration, and the organization's overall alignment with its objectives.

In management operations, KPIs serve as numerical targets that all departments strive to achieve. However, it is true that department-specific numerical targets can inadvertently promote siloed supply chain. To address this issue of siloed KPIs, it is essential to have a proper understanding of established metrics like ROI (return on investment), CLV (customer lifetime value), and NPS (net promoter score), which have long been considered indicators of customer satisfaction and KGIs (key goal indicators). This entails accepting a certain degree of inefficiency. In other words, each department must understand the hierarchy of KPIs and work on improving their respective KPIs while also being mindful of the KPIs of other departments.

Below is a list of potentially useful KPIs for reference (align numbering with pyramid – maybe 1a and 1b, 2 and 3). Table 3 “KPI list” describes various KPIs in each category and elaborates the examples of calculation formulas and systems measuring data.

Siloed Supply Chain KPIs: These KPIs are specific to operational departments and measure their performance without considering the impact on other departments.

Siloed Marketing KPIs: Siloed marketing KPIs focus on the performance of marketing activities and their effectiveness in driving sales and customer acquisition.

Coordination KPIs: Coordination KPIs measure the efficiency and effectiveness of collaboration between different departments, such as supply chain and marketing, to achieve shared goals.

Strategic KPIs: Strategic KPIs are high-level indicators that reflect the organization's overall performance and alignment with its objectives.

Table 3 considers formulas and data sources which will help calculate the KPIs for the business, allowing performance analysis across different departments, coordinating efforts, and making strategic decisions.

*Table 3. KPI List*

| KPI Classification | KPI | Formula | System Sourcing |
|---|---|---|---|
| Siloed Operation KPIs | a. On-Time Delivery Rate | (Number of orders delivered on time / Total number of orders) x 100 | Transportation Management System (TMS) |
| | b. Inventory Accuracy | (Accurate inventory count / Total inventory count) x 100 | Warehouse Management System (WMS) |
| | c. Order Accuracy Rate | (Number of error-free orders / Total number of orders) x 100 | Warehouse Management System (WMS) |
| | d. Shipping Costs Per Order | Total shipping costs / Total number of orders | Transportation Management System (TMS) |
| | e. Return Rate | (Number of returned orders / Total number of orders) x 100 | Customer Relationship Management CRM |
| | f. Order Cycle Time | Average time taken from order placement to order delivery | Warehouse Management System (WMS) and Transportation Management System (TMS) |
| Siloed Marketing KPI's | g. ROAS (Return on Advertising Spend) | Revenue generated from ads / Advertising cost | Marketing analytics tools (e.g., Google Ads, Facebook Ads Manager) |
| | h. CTR (Click-Through Rate) | (Number of clicks on an ad / Number of ad impressions) x 100 | Marketing analytics tools (e.g., Google Ads, Facebook Ads Manager) |
| | i. AOV (Average Order Value) | Total revenue / Total number of orders | E-commerce platform (e.g., Shopify, Magento) or Enterprise Resource Planning (ERP) system |
| | j. CAC (Customer Acquisition Cost) | Total marketing and sales costs / Number of new customers acquired | Marketing analytics tools (e.g., Google Analytics) and accounting system |
| | k. Search rank | Varies depending on the search engine and keywords targeted | Search engine analytics tools (e.g., Google Search Console, SEMrush) |
| | l. Social engagement | Varies depending on the social media platform and engagement metrics (e.g., likes, shares, comments) | Social media analytics tools (e.g., Facebook Insights, Instagram Insights) |
| Coordination KPI's | m. Redefined CAC | (Total marketing and sales costs + operational costs+labour fee) / Number of new customers acquired | Marketing analytics tools, accounting system, and ERP system |
| | n. Redefined ROAS, considering operational costs | (Revenue generated from ads) / (advertising cost + operational cost) | Marketing analytics tools and ERP system |
| | o. OTIF (On-Time In Full) | (Number of orders delivered on time and in full / Total number of orders) x 100 | Transportation Management System (TMS) |
| | p. Stock turn | Cost of goods sold / Average inventory value | Enterprise Resource Planning (ERP) system |
| | q. BOPIS (Buy Online, Pick up In-Store) | (Number of BOPIS orders / Total number of orders) x 100 | E-commerce platform or ERP system |
| Strategic KPI's (KGI's) | r. NPS (Net Promoter Score) | Formula: % of Promoters - % of Detractors | Customer Relationship Management (CRM) system and survey tools |
| | s. ROI (Return on Investment) | (Net profit / Investment cost) x 100 | Accounting system and Enterprise Resource Planning (ERP) system |
| | t. CLV (Customer Lifetime Value) | verage purchase value x Purchase frequency x Average customer lifespan | E-commerce platform (e.g., Shopify, Magento) or Enterprise Resource Planning (ERP) system and Customer Relationship Management (CRM) system |
| | u. P&L (Profit and Loss) | Gross profit - Total operating expenses | Accounting system and Enterprise Resource Planning (ERP) system |

By categorizing KPIs into these groups, organizations can gain a comprehensive understanding of their performance from multiple angles. This approach enables organizations to identify strengths and weaknesses at both the departmental and organizational levels, fostering collaboration and alignment with broader business goals.

### 5.3 New Channel Management

Figure 6 describes the complexity of partners and omnichannel processes.

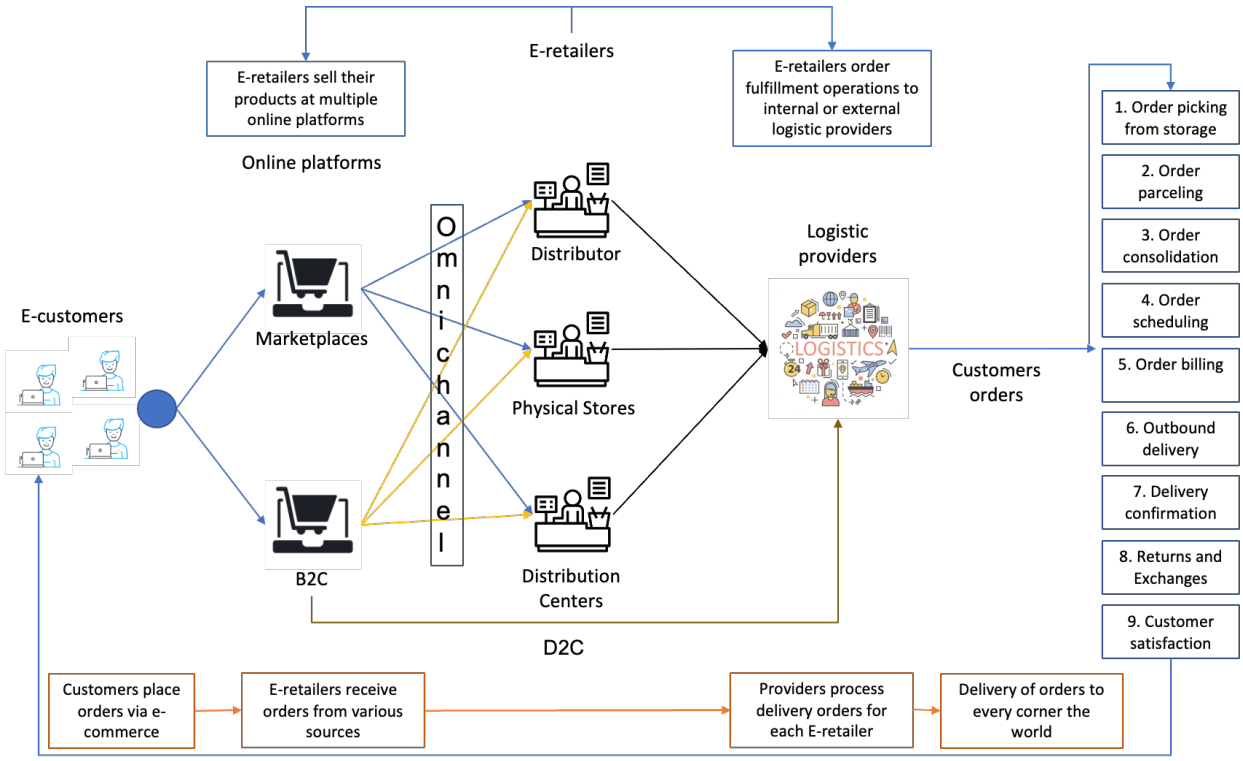


*Figure 6. Multichannel Relationship and Consumer Journey*

The multiple channel order cycle encompasses a series of steps from order placement to fulfillment, with multiple channels and intermediaries involved. This thesis will explore the stages of the order cycle, focusing on the perspective of a multichannel and the various entities involved in the process, such as distributors, physical stores, distribution centers, and logistic providers. For exemplification, we will illustrate the scenario of a customer placing an online order. We will discuss recommendations for using this framework to achieve better customer satisfaction through alternative strategies, including vertical integration, fewer providers, better technology integration, and RFID implementation.

Order Placement and Receipt:

Customers place orders online via e-commerce platforms, such as marketplaces or individual websites. Retailers receive these orders from various sources, consolidating them for further processing. Customers have the option to place orders online through various channels, including e-commerce platforms, marketplaces, or individual websites. Once orders are received from these different sources, retailers consolidate them for further processing. This approach helps retailers manage their supply chain more efficiently and ensure timely delivery to customers. By streamlining their operations, retailers can improve customer satisfaction, gain a competitive advantage, and succeed in the ever-evolving retail industry.

Order Routing and Processing:

Retailers route the received orders to the appropriate fulfillment partners, such as distributors, physical stores, or distribution centers. These partners are responsible for processing the orders, preparing them for shipment, and coordinating with logistic providers.

Order Fulfillment and supply chain:

Retailers may choose to handle order fulfillment internally or outsource it to external logistic providers. These providers are responsible for various stages of the order fulfillment process, including:

a) Order Picking: Retrieving items from storage and preparing them for shipping.
b) Order Parceling: Packaging items securely for shipment.
c) Order Consolidation: Grouping multiple items or orders to optimize shipping efficiency.
d) Order Scheduling: Coordinating the shipment of orders to meet delivery timelines.

Order Billing and Invoicing:

Retailers generate invoices for each order, which include product prices, taxes, and shipping fees. These invoices are sent to customers and used for financial reconciliation and tracking purposes.

Outbound Delivery and Last-Mile Providers:

Orders are handed over to last-mile providers for delivery to the end consumer. These providers could include courier companies, postal services, or specialized delivery services.

Omnichannel Fulfillment Strategies for Retailers:

To cater to customer preferences and provide a seamless shopping experience, retailers may employ various omnichannel fulfillment strategies, such as:
a) BOPIS (Buy Online, pick up In-Store)
b) Click and Collect
c) Curbside Pickup

Delivery Confirmation and Tracking:

Retailers and logistic providers utilize tracking systems to monitor order progress and provide customers with real-time updates. Delivery confirmations are recorded once the customer receives their order.

Returns, Exchanges, and Customer Satisfaction:

Retailers manage returns and exchanges in accordance with their policies, ensuring customer satisfaction. This process may involve coordination with fulfillment partners and logistic providers.

To further improve customer satisfaction within the multichannel retail framework, consider the following alternative strategies involving vertical integration, fewer providers, better technology integration, and RFID implementation:

**Vertical Integration:** Pursue vertical integration to control various stages of the supply chain, from manufacturing to distribution and retail. This approach can lead to greater control, improved quality, and faster order processing, ultimately resulting in higher customer

satisfaction. For example, Zara, a fashion retailer, successfully utilizes vertical integration to maintain control over its supply chain, enabling it to quickly respond to changing fashion trends.

Pursuing vertical integration can offer greater control over the various stages of the supply chain, from manufacturing to distribution and retail. However, it may not always be the cheapest option in the short term. Despite this, vertical integration can lead to improved quality and faster order processing, ultimately resulting in higher customer satisfaction. Zara, a successful fashion retailer, is a good example of how vertical integration can enable a company to maintain control over its supply chain and quickly respond to changing market trends. However, it's important to note that the costs associated with vertical integration may not always be immediately offset by the benefits. This approach requires a more nuanced consideration, particularly for achieving long-term market dominance.

**Consolidate Providers:** Streamline the supply chain by reducing the number of providers involved in the order fulfillment process. Partner with reliable, high-performing providers that can handle multiple tasks, such as warehousing, order processing, and last-mile delivery. Consolidating providers can lead to increased efficiency and better coordination, ultimately benefiting the customer experience. Amazon's Fulfillment by Amazon (FBA) program is a prime example of consolidating multiple services into a single provider for e-commerce businesses.

**Integrate Advanced Technologies:**

a) Implement advanced inventory management systems to optimize stock levels, minimize stockouts, and ensure product availability. Walmart, for instance, has invested heavily in its inventory management technology to maintain accurate stock levels and reduce lead times.

b) Utilize artificial intelligence (AI) and machine learning algorithms to enhance personalization, automate customer support, and optimize pricing strategies. Stitch Fix, an online personal styling service, leverages AI to personalize clothing recommendations for its customers.

c) Adopt an integrated order management system to streamline order processing and fulfillment workflows, enabling real-time communication between retailers, distributors, and

logistic providers. Shopify, a leading e-commerce platform, offers an integrated order management solution for businesses to manage their entire fulfillment process efficiently.
d) Leverage data analytics and business intelligence tools to monitor customer behavior, identify trends, and make informed decisions to improve customer satisfaction. ASOS, an online fashion retailer, uses data analytics to analyze customer behavior and optimize its product offerings.

**Implement RFID:** The use of RFID (Radio Frequency Identification) technology in the fashion industry has proven to be a cost-efficient alternative that supports profitability and inventory accuracy. RFID enables real-time tracking of individual items, reduces manual errors, and optimizes restocking processes. Some additional benefits include:

a) Enhanced supply chain visibility: RFID allows for real-time tracking of products throughout the supply chain, leading to better decision-making and inventory management.
b) Improved loss prevention: With RFID, retailers can quickly identify and locate missing items, reducing shrinkage and theft.
c) Streamlined returns process: RFID enables faster processing of returns, leading to improved customer satisfaction.
d) Better customer experience: By maintaining accurate inventory levels and ensuring product availability, RFID contributes to a seamless shopping experience for customers. Mango-multichannel, a fashion retailer, has implemented RFID technology across its supply chain, resulting in improved inventory accuracy, better customer service, and increased sales.

By incorporating vertical integration, reducing the number of providers, adopting advanced technology solutions, and implementing RFID technology, retailers can create a more efficient and customer-centric multichannel retail framework. These strategies can lead to enhanced customer satisfaction, increased loyalty, and sustained growth in the competitive retail landscape.

The multichannel retail order cycle is a complex process that involves various channels, intermediaries, and supply chain providers working together to ensure the efficient delivery of

orders to the end consumer. By understanding and optimizing each stage of the order cycle, retailers can enhance their operational efficiency, improve customer satisfaction, and achieve sustainable growth in the competitive multichannel retail landscape.

### 5.4 New Human Capital Activation

After building comprehensive technical capabilities, developing integrated KPI structures, and selecting strategic partners, these efforts alone may not suffice. Managers must activate the most crucial asset, human capital. Without motivating staff, deploying, and implementing coordinated operations between functions becomes challenging. Human capital activation is vital for achieving high financial performance and an exceptional user experience. To activate human capital and resolve silos between marketing and supply chain departments, we propose a three-step solution inspired by business frameworks such as the 7S framework invented by **Peters and Waterman (2004).**

Step 1: Establishing Shared Values

At the core of this solution lies the establishment of shared values, which requires unwavering commitment from top leadership. CEOs must effectively communicate their vision and instill shared values throughout the organization, ultimately shaping the organizational culture. For instance, interviews with successful companies reveal that an experimental culture embracing collaboration between marketing and supply chain divisions can be cultivated through consistent and dedicated leadership. A Japanese mail-order company exemplifies this by encouraging employees to undertake numerous experiments since its inception.

Diversity and inclusion play critical roles in this step, as psychological safety, and a wide array of ideas from diverse perspectives are essential for experimental culture. Employees should feel comfortable expressing their opinions without fear of retribution, fostering an environment conducive to innovation and collaboration.

Step 2: Adapting Organizational Structure

Alongside full commitment by top management, an appropriate organizational structure is necessary for facilitating coordination. Each division should be treated equally and cooperate effectively.

Anacoa (2004) introduced some types of organizational structures through three lenses to analyze organizations. Each structure has both advantages and disadvantages, but a strong hierarchy and functional structure would contribute to siloed teams. Nowadays, modern organizations should develop flexible organizational structures to unleash the experimental mindset of the individual.

Some companies have attempted to create cross-functional teams to accelerate collaboration, but many have failed due to insufficient delegation of authority. To avoid this pitfall, organizations must ensure that cross-functional teams have the autonomy and resources required to accomplish their goals.

Another approach involves implementing employee exchange programs between different divisions. It can foster mutual understanding and appreciation for the challenges faced by each department. These programs can be in the form of job rotation or temporary assignments, giving employees hands-on experience in different roles and promoting empathy and a collaborative mindset.

To structure equal relationships between divisions, a matrix organizational structure is one of the optimal solutions. In this structure, employees report to functional and project-based managers, enabling better communication and coordination across departments. While a matrix structure can present its own challenges, such as increased

complexity and potential conflicts in priorities, it can significantly enhance interdepartmental cooperation when managed effectively.

By expanding on the strategies outlined in Step 2, organizations can cultivate an organizational structure that promotes collaboration and coordination between marketing and supply chain departments. This can help maximize efficiency, improve decision-making, and ultimately lead to better overall performance.

Step 3: Implementing Systematic Approaches

The final step in motivating employees to collaborate involves adopting systematic approaches that support and reward interdepartmental coordination. The following ideas can be implemented to enhance collaboration between marketing and supply chain departments:

Compensation and Incentive Programs: Design compensation packages that reward employees for successful collaboration with other departments. This may include bonuses, profit-sharing, or other incentives tied to cross-functional team performance, encouraging employees to prioritize cooperation and shared goals.

Skill Development and Training: Offer training programs that encompass both marketing and supply chain topics, helping employees gain a better understanding of each other's roles and responsibilities. Encourage cross-training and the sharing of best practices, fostering empathy and appreciation for the challenges faced by each department.

Collaborative Workshops and Events: Organize regular workshops, seminars, or team-building events that bring together employees from both departments to work on shared objectives and develop a deeper understanding of each other's roles. These events can facilitate relationship-building, open dialogue, and the exchange of ideas.

Digital Collaboration Tools: Implement digital tools that facilitate collaboration, such as project management software, communication platforms, and file-sharing systems. These tools can help streamline workflows, ensure transparency, and maintain open lines of communication between departments.

Performance Evaluations: Incorporate collaboration-focused metrics into performance evaluations, ensuring employees are assessed on their ability to work effectively in cross-functional teams. This can encourage individuals to develop and maintain strong working relationships with colleagues from other departments.

To summarize, the three-step solution for activating human capital to address silos between marketing and supply chain departments involves:

1. Establishing shared values through top leadership commitment and fostering a diverse and inclusive experimental culture.
2. Adapting organizational structures by promoting cross-functional teams and implementing employee exchange programs.
3. Implementing systematic approaches, including compensation, promotion, training systems, collaborative workshops, and IT tools that encourage collaboration.

By adopting this structured and academically grounded solution, organizations can effectively activate their human capital, leading to better coordination between marketing and supply chain departments. Consequently, this will result in improved financial performance and an enhanced user experience in the multichannel retail industry.

## 6. Conclusion

In the highly competitive retail landscape of today in the digital age, the need for a comprehensive approach to align customer demand and inventory management has never been more critical. Siloed operations between marketing and supply chains in organizations hinder growth and profitability, leading to suboptimal customer experiences and potentially damaging brand loyalty. The fashion industry has been used as an exemplar given the issues represented here are broadly applicable to other industries. This study has validated several hypotheses through interviews with fashion experts and a thorough review of the literature. The findings reveal that the root causes of these silos can be attributed to fragmented technology platforms, a lack of integrated KPIs across departments, and over-reliance on multiple channels and providers.

The consequences of these siloed operations are numerous and detrimental to businesses. Excess inventory, stockouts, inefficient use of advertising budgets, suboptimal product recommendations, high return rates, and delayed deliveries are all potential outcomes of this lack of coordination, ultimately eroding customer trust and brand loyalty. To overcome these challenges and ensure a superior customer experience, businesses must take a holistic approach that addresses both marketing and supply chain concerns.

The study has proposed several possible solutions to break down these silos and improve coordination within businesses. These include creating an integrated data warehouse that connects marketing and supply chain, developing new integrated KPIs that track both supply chain and marketing activities, consolidating partners and channels to simplify the supply chain, and encouraging closed-loop communication among different departments to enhance collaboration.

In addition to these solutions, the findings suggest that businesses should also focus on establishing appropriate incentives for employees to promote cross-functional collaboration. The development of performance metrics that consider both marketing and supply chain factors can play a significant role in motivating employees to work together towards common goals. Furthermore, investments in technology that facilitate seamless integration between various platforms and systems can substantially contribute to improved coordination and alignment between customer demand and inventory management.

By adopting these strategies, businesses can better align their marketing and supply chain operations, ultimately leading to a more efficient and profitable organization. This holistic approach will enable businesses to offer a superior customer experience, fostering stronger relationships with their clientele and driving long-term success in the competitive world of retail.

In conclusion, this study has underscored the importance of breaking down silos between marketing and supply chain management. The alignment of customer demand and inventory management is crucial for delivering a superior customer experience and driving sustainable growth in the sector. By implementing the proposed solutions and focusing on integrated KPIs, employee incentives, and technological advancements, businesses can navigate the challenges presented by the dynamic retail landscape and achieve lasting success.

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# Appendix

## Appendix 1 - Fashion e-commerce landscape

The fashion industry was selected as the research subject for several reasons. We furnish data supporting these reasons, analyze the environment encompassing the American fashion industry, and draw comparisons with other industries.

1. Market Scale and Growth Trend
    a. Market size and growth
    b. Percentage of E-commerce sales
    c. Mobile shift
2. Importance of Inventory Management, Marketing, and Technology Investment
    a. Marketing investment
    b. Inventory management
    c. Technology investment

1-a. Market size and growth

The fashion industry was primarily chosen for this research due to its substantial market size and high digital/mobile sales ratio. Statista reports that US fashion sales, encompassing clothing, footwear, bags, and accessories, amounted to $180.5 billion in 2021, an increase from $144.8 billion in 2020. This constitutes approximately 23.51% of the US e-commerce market, making the fashion industry the largest of all industries.

1-b. Percentage of E-commerce Sales

The fashion vertical's e-commerce share of total retail sales is 37.9%, which surged during the COVID-19 crisis. In the 2022 Statista Global Consumer Survey conducted in the United States, 51% of respondents indicated they had purchased clothing online within the past 12 months.

Consumers maintain that items within the fashion category, including clothing, shoes, bags, and accessories, are more likely to be purchased online than in other categories. The online component is important since e-commerce has exacerbated the problem of organizational silos, suboptimal decision-making, and customer experience.

1-c. Mobile shift

The shift to mobile commerce is a critical aspect warranting attention. Fashion verticals represent one of the sectors experiencing the most rapid transition to mobile commerce. The proportion of mobile traffic to fashion e-commerce already exceeds 50%. A prevalent trend among consumers involves searching and reviewing items on their mobile devices before making an actual purchase on their desktop or completing the entire process on their mobile devices.

2-a. Marketing investment

Digital marketing within the fashion industry necessitates various technical capabilities and significant investments. For instance, the fashion industry has emerged as the most crucial sector for social commerce. In addition to basic e-commerce digital marketing initiatives, such as search and video advertising, social media engagement on platforms like Instagram, Facebook, and Tiktok significantly impacts brand sales. One study revealed that 46% of customers preferred watching a product video on social media before making a purchase. Live-streamed purchases have been demonstrated to increase conversion rates by 30% and reduce return rates, with approximately 81% of brands planning to increase their investment in social media. Leading companies, such as Adidas and Nike, are spearheading the development of metaverse-based campaigns, characterizing the fashion industry's use of cutting-edge marketing techniques across various media.

2-b. Inventory management

In the fashion industry, supply management is an essential aspect, particularly when compared to other verticals, due to the distinct characteristics of the fashion sector. The industry is

distinguished by rapidly evolving trends, high turnover rates, and a constant demand for novel products. These attributes make effective supply management especially crucial for fashion e-commerce enterprises. Additionally, the fashion industry confronts rigorous demands in relation to inventory management from both profit-oriented and socially responsible standpoints. Surplus stock is now susceptible to social scrutiny, not solely in terms of forfeited profit but also in the context of sustainability. Statista research reveals that 42% of consumers favor eco-friendly and sustainable products.

2-c. Technology investment

The fashion industry's investment in supply chain and marketing, which constitutes the research topic, is noteworthy. Grand View Research asserts that the fashion segment accounted for the largest share (32.6%) in the e-commerce software market in 2019. This is attributable to the rising adoption of online shopping for clothing, bags, accessories, and jewelry. Low digital entry barriers for clothing merchants have prompted the adoption of online platforms to expand their customer base. This investment encompasses marketing and supply chain software, including marketing automation, product information management, and enterprise resource planning tools.

The magnitude and growth rate of these extensive markets, in conjunction with the significance of marketing and supply chain management, substantially contribute to the relevance of our research themes. Furthermore, McKinsey research indicates that fashion industry executives perceive the most substantial capability gap in supplier management and enhancing customer experience. This thesis endeavors to propose a more operationally influential solution within the fashion industry, an arena experiencing dramatic transformations and spearheading other verticals in the realm of e-commerce. Using the empirical context of the fashion industry, an arena experiencing dramatic transformations and spearheading other verticals in the realm of e-commerce will facilitate the thesis to deliver on its goal to propose a conceptual framework with an operationally influential solution generalizable across industries.

**Appendix 2 - Interview guide**

These considerations were incorporated to formulate our depth interview guide as below:

First set of 9 questions:

1. How would you describe the company's organizational structure from a leadership perspective?
2. What is the company's mission, and how does it inform the overall responsibilities of the organization?
3. In your experience, what is the biggest challenge in improving the user journey for customers?
4. Why do you believe this challenge is particularly significant, and how have you attempted to address it in the past?
5. Are there common challenges or differences between marketing and supply chain that impact the customer experience? If so, could you provide some examples?
6. How do you collaborate with supply chain teams, and are there any key performance indicators (KPIs) that are used to measure the success of these collaborations?
7. Why does production have significant power in the organization, and how does this impact the customer experience?
8. How integrated is the company overall, and to what extent do you prioritize cross-functional collaboration over maximizing KPIs within specific divisions?
9. Looking to the future, what do you anticipate being the most significant challenge or problem related to the customer experience? Do you believe it will primarily be a coordination issue or something else?

Upon discovering that coordination was a significant factor in the impact of siloed supply chain, additional questions to probe the issue further were asked during the interviews. These questions aimed to understand the key factors that impact customer satisfaction in

the e-commerce industry, successful strategies for aligning marketing and supply chain, common challenges faced by e-commerce companies in delivering a seamless customer experience, the use of data analytics to inform decision-making processes, the most critical metrics for measuring customer satisfaction in e-commerce, and the impact of emerging technologies on the customer experience.

Below you will find the additional set of 7 questions:

1. What are the key factors that impact customer satisfaction in the e-commerce industry, and how can e-commerce companies improve these factors to enhance customer satisfaction?
2. How do e-commerce companies approach the alignment of marketing and supply chain, and what successful strategies have they implemented to achieve this alignment?
3. What are the most common challenges that e-commerce companies face in delivering a seamless customer experience, and what are some practical ways to overcome these challenges?
4. How do e-commerce companies use data analytics to inform their decision-making processes, and what are some practical methods for leveraging data to improve customer satisfaction?
5. What are the most critical metrics for measuring customer satisfaction in e-commerce, and how do these metrics vary across different industries and markets?
6. How can technology be used to enhance the customer experience in e-commerce, and what emerging technologies may significantly impact the industry?
7. What are the current and future trends shaping the e-commerce industry, and how can companies stay ahead of the curve in delivering an exceptional customer experience?

## Glossary of terms

It serves as a reference guide for readers who may be unfamiliar with certain terms, improves clarity and accessibility of technical or specialized information, and helps avoid confusion or misunderstandings.

| Term | Meaning |
|---|---|
| 3PL (Third-Party Logistics) | A 3PL is a company that provides outsourced logistics services, such as warehousing, transportation, and order fulfillment, to e-commerce businesses. By working with a 3PL, companies can focus on their core business activities and benefit from the logistics expertise and infrastructure provided by the 3PL. |
| AI (Artificial Intelligence) | AI refers to the development of computer systems that can perform tasks typically requiring human intelligence, such as decision-making, pattern recognition, and language understanding. In e-commerce, AI is used in various applications, such as chatbots, personalized recommendations, and fraud detection. |
| AOV (Average Order Value) | AOV is a key metric in e-commerce that measures the average total of every order placed with a merchant over a defined period. It's calculated by dividing total revenue by the number of orders. Increasing AOV is a strategy that can boost revenue without having to acquire new customers. |
| API (Application Programming Interface) | An API is a set of rules and protocols that allows different software applications to communicate with each other. In e-commerce, APIs enable the integration of various systems, such as shopping carts, payment gateways, and shipping providers, to create a seamless user experience. |

| Term | Meaning |
| --- | --- |
| AR/VR (Augmented Reality/Virtual Reality) | AR and VR are immersive technologies that overlay digital information onto the physical world (AR) or create entirely digital environments (VR). In e-commerce, AR/VR is used to enhance customer experiences, such as virtual try-ons, interactive product demos, and 3D visualizations. |
| Attribution Modeling | Attribution modeling is a method used in digital marketing to determine how credit for conversions is assigned to different marketing channels. For example, a business might want to know whether a sale should be attributed to a click on a search ad, a social media post, or an email campaign. |
| Big Data | Big data refers to extremely large datasets that can be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions. In e-commerce, big data can be used for a variety of purposes, including customer segmentation, personalization, and predictive analytics. |
| CAC (Customer Acquisition Cost) | CAC refers to the total cost associated with acquiring a new customer. This includes the costs of marketing and sales efforts. In the context of e-commerce, the aim is to keep CAC as low as possible while maximizing the customer's lifetime value. |
| CDP (Customer Data Platform) | A CDP is a software system that collects, stores, and organizes customer data from various sources, such as websites, mobile apps, and CRM systems. CDPs enable businesses to create unified customer profiles and deliver personalized marketing experiences based on a customer's preferences and behaviors. |

| Term | Meaning |
| --- | --- |
| Churn Rate | This is the rate at which customers stop doing business with an entity in each period. In e-commerce, this could mean the rate at which customers stop buying from a website or unsubscribe from its services. Reducing the churn rate is crucial for business growth. |
| Click-and-Collect | Click-and-collect is a hybrid e-commerce model where customers buy or order goods from a company's website and pick them up in a physical store or designated pickup point. This model combines the convenience of online shopping with the immediacy of brick-and-mortar retail. |
| Commerce Media | Commerce media refers to the integration of advertising and marketing efforts within the e-commerce ecosystem. It aims to create seamless shopping experiences by blending content, advertising, and commerce to drive sales and engagement directly within online retail platforms. |
| Commerce Suites | Commerce suites are comprehensive software solutions that provide businesses with a wide range of tools to manage their e-commerce operations. These suites typically include capabilities for managing products, orders, customers, marketing, and analytics, as well as integrations with various payment gateways and other third-party services. |
| Conversion Rate Optimization (CRO) | CRO is the process of testing and adjusting various elements of a website or marketing campaign to increase the percentage of visitors who take a desired action, such as making a purchase or signing up for a newsletter. Techniques used in CRO include A/B testing, user experience design, and behavioral analytics. |

| Term | Meaning |
| --- | --- |
| CRM (Customer Relationship Management) | CRM is a technology used for managing all a company's relationships and interactions with customers and potential customers. The goal of CRM systems is to improve business relationships, assist in customer retention, and drive sales growth. |
| Cross-Docking | Cross-docking is a logistics strategy where incoming goods are directly transferred to outbound transportation with minimal or no storage in between. It's used to expedite the delivery process and reduce storage costs. |
| Customer Lifetime Value (CLV) | CLV is a prediction of the total value a business can reasonably expect from a customer throughout their relationship. It helps businesses identify their most valuable customers and allocate their marketing resources more effectively. |
| D2C (Direct-to-Consumer) | D2C is a business model where manufacturers or brands sell products directly to consumers, bypassing traditional retailers or intermediaries. This approach allows for greater control over branding, customer relationships, and pricing. |
| Demand Chain Management | Demand Chain Management is a method of managing supply chains with a focus on the demand side or the consumer's needs. It aims to align the supply chain with customer demand, ensuring that products and services are available when and where they are needed. This approach can help reduce inventory costs and improve customer satisfaction. |

| Term | Meaning |
| --- | --- |
| Dropshipping | Dropshipping is a retail fulfillment method where a store doesn't keep the products it sells in stock. Instead, when a store sells a product, it purchases the item from a third party and has it shipped directly to the customer. This eliminates the need for the retailer to handle or store inventory. |
| DWH (Data Warehouse) | A data warehouse is a large collection of business data used to help an organization make decisions. It's a key component of business intelligence and is used to analyze and report on data relevant to an organization's operations. A data warehouse stores historical data, making it possible to analyze trends, performance over time, and other strategic and tactical insights. |
| Dynamic Pricing | Dynamic pricing is a pricing strategy in which businesses set flexible prices for their products or services based on market demand, competitor prices, and other factors. E-commerce businesses often use dynamic pricing to optimize their revenue and profit margins. |
| ERP (Enterprise Resource Planning) | ERP is a software system that integrates various business functions, such as finance, human resources, manufacturing, and supply chain management, into a single platform. ERP solutions help businesses manage their resources more efficiently and make data-driven decisions by providing real-time access to information across the organization. |

| Term | Meaning |
| --- | --- |
| Last-mile Delivery | Last-mile delivery refers to the final stage of the logistics process, where a product is transported from a distribution center or warehouse to its destination, typically the customer's doorstep. This stage is crucial for customer satisfaction and has become increasingly important as e-commerce continues to grow. |
| LTV (Lifetime Value) | This is a prediction of the net profit attributed to the entire future relationship with a customer. It's an important metric as it gives an understanding of the total amount of revenue a business can reasonably expect from a single customer account. |
| M-commerce (Mobile Commerce) | M-commerce refers to the buying and selling of goods and services using mobile devices, such as smartphones and tablets. This can include mobile-optimized websites, dedicated mobile apps, and mobile payment solutions. |
| Marketing Automation | Marketing automation refers to the use of software tools and platforms to automate repetitive marketing tasks and processes, such as email campaigns, social media posts, and ad placements. These tools help businesses more efficiently manage their marketing efforts and analyze the effectiveness of their campaigns. |
| Marketplace | A marketplace is an e-commerce platform where multiple third-party sellers can list and sell their products or services. Marketplaces, such as Amazon or eBay, act as intermediaries between buyers and sellers, facilitating transactions and often providing additional services like payment processing, customer support, and dispute resolution. |

| Term | Meaning |
| --- | --- |
| Multichannel Retailing | Multichannel retailing is a strategy where a company sells its products on multiple platforms or channels. These might include a physical store, an online website, a mobile app, a catalog, or a third-party marketplace. |
| NFT (Non-Fungible Token) | An NFT is a unique digital asset that represents ownership of a specific item, such as artwork, collectibles, or virtual goods. In e-commerce, NFTs can provide proof of authenticity and ownership for digital and physical products and are increasingly being used for promotional and marketing purposes. |
| NPS (Net Promoter Score) | NPS is a customer loyalty metric that measures customer satisfaction and predicts business growth. It's calculated by asking customers on a scale of 0-10 how likely they are to recommend a company, product, or service to a friend or colleague. |
| Omnichannel | Omnichannel refers to a seamless and integrated approach to retail that provides customers with a consistent shopping experience across multiple touchpoints, including online, mobile, and physical stores. This strategy aims to make it easy for customers to interact with a brand or retailer through their preferred channel. |
| Order Management System (OMS) | An OMS is a software solution that helps businesses manage and track orders from multiple sales channels, such as online stores, marketplaces, and physical retail locations. An OMS can automate processes like order routing, inventory updates, and shipping label generation, improving efficiency and reducing errors. |

| Term | Meaning |
| --- | --- |
| OTD (On-Time Delivery) | OTD is a measure of process and supply chain efficiency which measures whether goods arrive by the time they were scheduled. It's a crucial indicator of the quality of a company's logistics, supply chain, and production processes. |
| OTIF (On-Time In-Full) | OTIF is a key performance indicator (KPI) used in supply chain management to measure the efficiency and reliability of order fulfillment. It tracks the percentage of orders that are delivered on time and in-full, without any missing or damaged items. A higher OTIF rate indicates a more efficient and reliable supply chain. |
| Personalization | In e-commerce, personalization refers to the practice of creating customized experiences for individual users. This can include personalized product recommendations, customized email messages, and website content tailored to a user's preferences and behavior. |
| PIM (Product Information Management) | PIM refers to the centralized management of product data across an organization, including product descriptions, specifications, images, and other related information. PIM systems help businesses maintain consistent and accurate product information across all sales channels, improving customer experience and streamlining internal processes. |
| Private Label | Private label refers to products that are manufactured by one company and sold under another company's brand. Retailers often use private label products to offer exclusive items or to compete with established brands on price and quality. |

| Term | Meaning |
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| Retargeting | Retargeting is a form of online advertising that targets users who have previously visited a website. By displaying ads to these users as they browse other sites, retargeting can help businesses re-engage potential customers who left their site without making a purchase. |
| ROAS (Return on Advertising Spend) | ROAS is a marketing metric that measures the effectiveness of a digital advertising campaign. ROAS helps online businesses evaluate which methods are working and how they can improve future advertising efforts. |
| SaaS (Software as a Service) | SaaS is a software licensing and delivery model where software applications are provided over the internet, rather than being installed locally on a user's device. This model allows for easier access, scalability, and reduced maintenance costs for businesses using e-commerce and marketing tools. |
| SEM (Search Engine Marketing) | SEM is a digital marketing strategy that involves promoting websites through paid advertising on search engine results pages (SERPs). The most common form of SEM is pay-per-clicking (PPC) advertising, where advertisers bid on keywords related to their products or services. |
| SEO (Search Engine Optimization) | SEO is the practice of optimizing a website's content, structure, and performance to improve its visibility on search engine results pages (SERPs). Higher search engine rankings can lead to increased organic (non-paid) traffic and visibility for an e-commerce site. |

| Term | Meaning |
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| White Label | White label refers to a product or service produced by one company and rebranded or repackaged by another company under its own name. In e-commerce, this can involve selling generic products under a retailer's brand or using white-label software solutions that are customized to a specific business's needs. |
| WMS (Warehouse Management System) | A WMS is a software application that helps businesses manage and optimize their warehouse operations, including inventory tracking, order processing, and shipping. WMS solutions help streamline warehouse processes, improve accuracy, and reduce operational costs. |