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# Multi-Attribute Decision Making of Transition from Reserve Click & Collect to Pre-paid Click & Collect in Retail Industry: Analytic Hierarchy Process Method

Master's Thesis

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## Abstract

This research focuses on exploring the transition from Reserve Click & Collect to Pre-paid Click & Collect models within the retail sector using Analytic Hierarchy Process (AHP). AHP helps in selecting the most suitable model by evaluating criteria such as Cost Efficiency, Customer Experience, Pick-up Rate, Sale Amount, and Cost of Operation. A focus group of ten managers experienced in Click & Collect activations provided data through a survey for AHP analysis. Pair-wise comparison matrices were created, normalized, and analyzed to determine the importance weights of each criterion.

The findings revealed that the Pre-paid Click & Collect model scored significantly higher in terms of overall suitability compared to the Reserve Click & Collect model. The consistency of the responses was validated using the Consistency Ratio (CR), ensuring the reliability of the results.

The research argues that switching to Pre-paid Click & Collect will boost customer satisfaction and operational efficiency in the retail sector. Recommendations for successful implementation include developing a comprehensive plan, investing in supporting technology and training, and promoting the benefits of Pre-paid Click & Collect to customers.

This research provides valuable insights and a structured approach for retail decision-makers considering a transition to Pre-paid Click & Collect, aligning with industry best practices and data-driven analysis.

**Keywords:** *Analytical Hierarchy Process (AHP), Reserve Click & Collect, Pre-paid Click & Collect, Multi-attribute Decision Making, Retail, Cost Efficiency, Customer Experience, Pick-up Rate, Sale Amount, Cost of Operation*

## 1. Introduction

The retail industry is constantly evolving, with new technologies and business models emerging all the time. Retailing has changed dramatically and quickly over the last 20 years, mostly because of the emergence of the direct-to-consumer web channel and a continuous increase in information technology capabilities (Gallino and Moreno, 2014; Piotrowicz and Cuthbertson, 2014; Verhoef et al., 2015). Satisfying the customer needs and providing better consumer experience, companies are trying to use every channel. The term "omnichannel" has evolved significantly over time, reflecting the changing nature of customer expectations and the increasing sophistication of retail technology.

### 1.1. *Early days: Multichannel and cross-channel*

In the early days of e-commerce, retailers focused on establishing a presence in multiple channels, such as brick-and-mortar stores, websites, and mobile apps. This approach was known as "multichannel" retailing. Retail operations management must adapt to the diverse and varied market demand in an omni-channel world while becoming more and more consumer-led (MacCarthy et al., 2016).

### 1.2. Omnichannel: A holistic customer experience

The term "omnichannel" began to gain traction in the early 2010s. Omnichannel retailing goes beyond cross-channel by focusing on creating a truly integrated customer experience that transcends individual channels. In an omnichannel environment, all customer touchpoints are interconnected, and customer data is shared across the organization to provide a personalized and consistent experience.

The goal of omnichannel retailing is to put the customer at the center of the experience, providing them with a personalized and relevant journey regardless of how they interact with the brand. This requires a deep understanding of customer behavior and preferences, as well as the ability to collect and analyze data from across all channels.

In a nutshell, omnichannel retailing and omnichannel fulfillment enable customers to place orders across multiple platforms, and inventory and other fulfillment assets can be flexibly used across channels to fill orders from any location (Taylor et al., 2019).

### 1.3. Omnichannel Retail today

Today, omnichannel is considered the gold standard for retail customer experience. As customer expectations continue to rise, retailers are investing heavily in omnichannel initiatives to differentiate themselves and drive sales.

The objective of omni-channel retailing is to provide customers with multiple channels (online and offline) via which they can locate, purchase, receive, and return products, all while maintaining a uniform and seamless view of the physical and data flows across its agents (retail store, delivery service, and data service provider) (Saghiri et al., 2017).

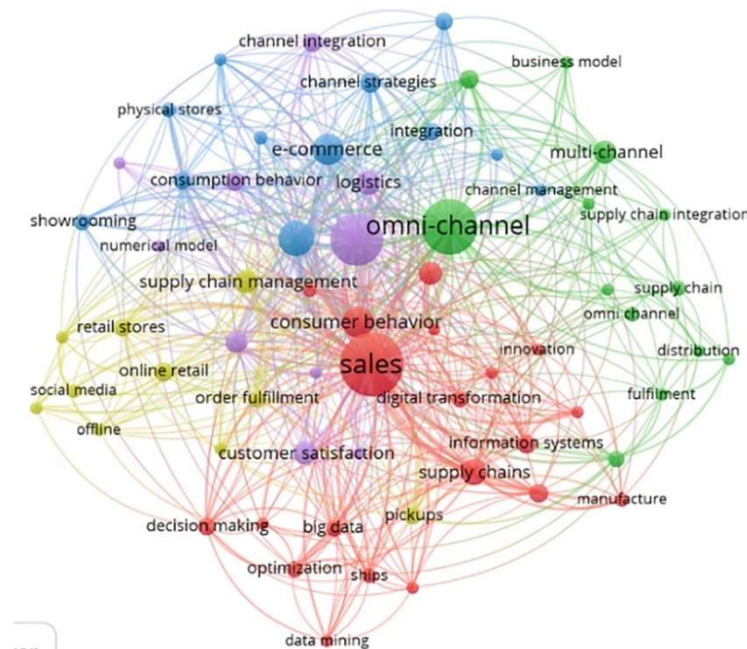


Figure 1 KCN map of five clusters of related keywords of omnichannel retailing.

### 1.4. Optimizing Omnichannel Efficiency:

There are two different models which are used for Click and Collect method. They are called Reserve and Pre-paid. Reserve Click & Collect is a retail strategy that allows customers to reserve products online then pick and pay them up at a physical store location

(Cotarelo et al., 2021). Pre-paid Click & Collect involves customers purchasing products online and then picking them up at a physical store location (Sharma & Dutta, 2023). In the realm of omnichannel retail, a notable shift has emerged from the traditional Reserve Click & Collect (Reserve C&C) model to the more contemporary Pre-paid Click & Collect (Pre-paid C&C) approach.

This transition holds promising benefits and disadvantages for retailers. In this thesis, we will investigate some of the attributes, critical for Click & Collect activation, and their relative importance for choosing most appropriate Click & Collect model. Firstly, cost-efficiency strategy, moving from Reserve to Pre-paid will mitigate expenses associated with holding unpaid inventory, a common challenge in Reserve C&C. Secondly, it enhances the overall customer experience by minimizing wait times during the pick-up process. Notably, the pick-up rate for Pre-paid Click & Collect surpasses that of Reserve Click & Collect, presenting a compelling opportunity for retailers to boost sales. Encouraging customers to make additional purchases which is called cross-sale while in-store for order retrieval becomes a tangible avenue for revenue augmentation.

In essence, the move from Reserve Click & Collect to Pre-paid Click & Collect not only addresses operational inefficiencies but also strategically aligns with customer-centric practices, positioning retailers to capitalize on decrease Click & Collect sales opportunities and replace these sales with Home Delivery method which is more cost efficient E-com methodology. But with these benefits, it should not be forgot that there is an additional cost to prepare IT infrastructure and complete the transition project.

In conclusion, this paper analysis the decision of transition from Reserve Click & Collect to Pre-paid Click & Collect within the dynamic landscape of the retail industry. Commencing with a meticulous literature review, we delve into the existing body of knowledge surrounding the benefits and disadvantages associated with this paradigm shift. Subsequently, the methods employed to quantify and assess these advantages and disadvantages will be delineated, incorporating Analytic Hierarchy Process method. The ensuing sections will illuminate the results derived from this study. Ultimately, we aim to draw meaningful insights from our findings and engage in a robust discussion regarding the profound implications for the retail sector. By elucidating the multifaceted dimensions of this transition, this research endeavors to contribute substantively to our understanding of contemporary retail practices.

## **2. Literature Review**

### **2.1. Omnichannel Strategies in Retail Industry**

Omnichannel retail strategy has become a new trend in the retail industry, transforming the way retailers interact with their customers (Asmare & Zewdie, 2022). This strategy involves consolidating all customer touchpoints into one holistic experience, providing a seamless shopping experience across all channels. Retailers can achieve this by integrating their online and offline channels, allowing customers to shop and interact with the brand through various channels, including social media, mobile apps, and in-store (Gerea & Herskovic, 2022). Click and collect is one such omnichannel capability that allows customers to purchase products online and pick them up in-store.

Omnichannel capabilities have become increasingly important for retailers as they seek to meet the changing needs and expectations of customers (Lazaris & Vrechopoulos, 2014). The evolution of the retailing landscape has resulted in a shift towards a transactional and short-term focus, with relationship marketing becoming more critical (Bothorel, 2020). Retailers that adopt omnichannel strategies can build better relationships with their customers by

providing a seamless shopping experience across all channels, resulting in increased customer satisfaction and loyalty (Gerea & Herskovic, 2022). By integrating click and collect into their omnichannel capabilities, retailers can enhance the customer experience and create cost savings for themselves.

The importance of omnichannel capabilities and click and collect has been widely discussed in the literature, with many studies highlighting the benefits of these strategies. In summary, omnichannel capabilities, including click and collect, have become an essential aspect of the retail industry, allowing retailers to provide a seamless shopping experience and build better relationships with their customers.

## **2.2. *Click & Collect Services***

Click & Collect services have become increasingly popular in the retail industry, offering customers the convenience of ordering products online and picking them up in-store (Tyrväinen & Karjaluoto, 2022). Click & Collect refers to a shopping model where customers order products online and collect them in-store at a designated location. This model has various forms, including Reserve Click & Collect and Pre-paid Click & Collect (Jara et al., 2018). Reserve Click & Collect allows customers to reserve items online and pay for them in-store during pickup, while Pre-paid Click & Collect requires payment online during the ordering process (Jara et al., 2018). Both models offer benefits to customers and retailers, including increased convenience and reduced shipping costs (Tyrväinen & Karjaluoto, 2022).

Click & Collect services are essential for customers who value convenience and flexibility in their shopping experience. For retailers, these services can increase customer loyalty and sales, as well as reduce shipping costs and improve inventory management (Kembro & Norrman, 2022). Click & Collect services can also be used as a tool for marketing and data collection, allowing retailers to gather information about customer preferences and tailor their offerings accordingly (Aktas & Meng, 2017).

In conclusion, Click & Collect services have become an integral part of the retail industry, offering benefits to both customers and retailers. These services have various models, including Reserve Click & Collect and Pre-paid Click & Collect, and are essential for providing customers with convenience and flexibility in their shopping experience. Retailers can use Click & Collect services as a tool for marketing, data collection, and inventory management, leading to increased customer loyalty and sales. As the COVID-19 pandemic has highlighted the importance of contactless pickup options, Click & Collect services are likely to continue to grow in popularity in the future (Bonetti et al, 2017; Grenwal et al, 2017).

## **2.3. *Overview of Reserve Click & Collect Model***

Reserve Click & Collect model is a popular strategy that allows customers to check the availability of an item in-store and reserve it before visiting, without the need for payment. It is a part of the buy-online-and-pick-up-in-store (BOPS) strategy that retailers increasingly adopt for order fulfillment (Shi et al., 2018). However, this model has some weaknesses and missing points that can hinder its effectiveness. For instance, the model does not provide customers with the option to pre-pay for their reserved item, which can lead to longer wait times and potential frustration (Shi et al., 2018). Additionally, the model does not allow for real-time inventory updates, which can result in customers reserving items that are no longer available (Jocevski et al., 2019).

Another weakness of the Reserve Click & Collect model is that it can lead to a decrease in impulse purchases. Customers who reserve items online may be less likely to make additional purchases in-store, as they have already completed their intended purchase (Redine

et al., 2022). This can result in a loss of potential revenue for retailers. Besides these points, for retailers' perspective, it creates some deficiencies. Fake orders and cancelling the order cause high cost of transportation and also affect the inventory management system. Overall, the Reserve Click & Collect model has limitations that can impact its effectiveness and customer satisfaction.

As a result of the weaknesses and missing points of the Reserve Click & Collect model, many retailers are transitioning to the Pre-paid Click & Collect model. This model allows customers to pre-pay for their reserved items, reducing wait times and potential frustration. Additionally, it provides retailers with real-time inventory updates, ensuring that customers reserve items that are available. The Pre-paid Click & Collect model also allows for a seamless in-store experience, as customers can simply pick up their items without the need for additional payment or wait times. Overall, it seems that the Pre-paid Click & Collect model is a more efficient and effective strategy for retailers to adopt in the current retail industry.

#### ***2.4. Evolution to Pre-paid Click & Collect (Buy Online Pick in Store)***

The transition from Reserve Click & Collect to Pre-paid Click & Collect has been driven by several reasons, including the desire to improve the customer experience and increase operational efficiency (Contributor, n.d). Pre-paid Click & Collect allows customers to pay for their items online before arriving at the store, making the process more seamless and reducing the amount of time spent waiting in-store (Jara et al., 2018). Additionally, pre-payment reduces the risk of customers changing their minds or failing to pick up their items, which can lead to wasted time and resources for the retailer (Stöcker et al., 2021).

Industry trends have also played a significant role in driving the transition to Pre-paid Click & Collect. As consumers increasingly turn to online shopping, retailers have had to adapt their strategies to remain competitive. Pre-paid Click & Collect is a key component of an omnichannel approach to retail, allowing retailers to seamlessly integrate their online and offline operations (MacKenzie, 2013). Moreover, the rise of mobile technology and social media has made it easier for customers to research products and compare prices, making it more important than ever for retailers to provide a convenient and streamlined shopping experience (Dwivedi et al., 2021). By offering Pre-paid Click & Collect, retailers can meet these evolving customer expectations and stay ahead of the curve.

Despite the benefits of Pre-paid Click & Collect, there are also some potential drawbacks to consider. For example, some customers may be hesitant to pay for items upfront, preferring to wait until they have physically seen and inspected the product (Tyrväinen & Karjaluoto, 2022). Additionally, retailers may face logistical challenges in managing inventory and ensuring that items are available for pickup at the designated time (Tyrväinen & Karjaluoto, 2022). However, with proper planning and implementation, these challenges can be overcome, and the benefits of Pre-paid Click & Collect can be realized.

#### ***2.5. Customer Experience and Satisfaction***

The transition from Reserve Click & Collect to Pre-paid Click & Collect can have a significant impact on the overall customer experience (Vyt et al., 2022). By moving to a pre-paid model, retailers can further streamline the process, reducing wait times and improving the overall experience for customers (Dalin-Kaptzan, 2020). This improved experience can lead to increased customer loyalty and repeat business, as well as positive word-of-mouth recommendations.

Research has shown that customer satisfaction levels may be higher in the pre-paid model compared to the reserve model (Jara et al., 2018). This is so that, having already paid for the



item and being able to pick it up whenever it suits them, pre-paid models give customers more assurance and control over their purchase. These benefits can lead to higher customer satisfaction levels and increased customer loyalty.

However, customer adaptation to the pre-paid model may take time and effort (Lorenzo-Romero et al., 2020). Some customers may be used to the reserve model and may need to be educated on the benefits of the pre-paid model. Retailers can address this by providing clear communication and guidance on the new process, as well as offering incentives such as discounts or promotional offers to encourage customers to try the new model (Jocovski et al., 2019). The transition to a pre-paid model can have a positive impact on customer experience and satisfaction, but retailers must be mindful of the potential challenges in customer adaptation and take appropriate steps to address them (Lorenzo-Romero et al., 2020).

## **2.6. Operational Efficiency**

One of the key benefits of transitioning from Reserve Click & Collect to Pre-paid Click & Collect in the retail industry is the potential for improved operational efficiency. This can manifest in a variety of ways, including changes in inventory management, order processing time, and overall supply chain management (Goedhart, 2023). By streamlining the click and collect process, retailers can reduce the time and resources required to fulfill customer orders, ultimately increasing their bottom line and improving customer satisfaction.

Order processing time and inventory management are two areas where Pre-paid Click & Collect can have a significant impact on operational efficiency (Dalin-Kaptzan, n.d.). By allowing customers to pre-pay for their orders, retailers can reduce the time required to process transactions and fulfill orders. This can lead to a faster turnaround time for click and collect orders, as well as a more streamlined inventory management process. Retailers can use real-time inventory data to ensure that they have the right products in stock to fulfill customer orders, reducing the likelihood of stockouts and improving overall customer satisfaction.

In addition to the direct benefits of improved order processing time and inventory management, Pre-paid Click & Collect can also contribute to improved supply chain management (Mohammadian & Fatahi Valilai, 2022). By integrating multiple channels and devices, retailers can create a more cohesive and efficient supply chain, reducing the likelihood of bottlenecks and other issues that can impact order fulfillment. This can lead to higher average sales to existing customers, as well as incremental sales due to the availability of new channels and devices (Mohammadian & Fatahi Valilai, 2022). The transition from Reserve Click & Collect to Pre-paid Click & Collect can have a significant impact on operational efficiency in the retail industry, improving customer satisfaction and contributing to increased revenue.

## **2.7. Impact on Sales and Revenues**

The transition from Reserve Click and Collect to Pre-paid Click and Collect has been shown to have a significant impact on sales and revenues in the retail industry (Ologunbe, 2023). By implementing a pre-paid click and collect system, retailers can further streamline the process and reduce friction for customers, potentially driving incremental sales and revenue.

Case studies and data analysis have demonstrated the potential benefits of pre-paid click and collect systems (Ologunbe, 2023). For example, a study on customer retention strategies in the e-commerce fashion business in the United Kingdom found that offering click and collect services can drive incremental sales from additional purchases in-store (Ologunbe, 2023). Customers frequently find value in click-and-collect services because they provide more convenience and flexibility, which lends credence to this.

The success of pre-paid click and collect systems ultimately depends on the strategic planning and analysis of a retailer's customer needs (Contributor, n.d.). By conducting a thorough analysis of customer behavior and preferences, retailers can tailor their click and collect services to meet the specific needs of their target audience, potentially driving greater sales and revenue. Additionally, the implementation of pre-paid click and collect systems requires careful consideration of the associated costs and logistics (MacKenzie, 2013). However, with the right strategy and execution, pre-paid click and collect systems can offer a significant boost to a retailer's sales and revenue.

### **2.8. *Technology and Infrastructure***

The transition from Reserve Click & Collect to Pre-paid Click & Collect requires specific technological requirements (Jara et al., 2018). Retailers must ensure that their online platforms are equipped to handle the pre-payment process, including secure payment gateways and real-time inventory management systems (Ologunbe, 2023). These technological requirements are critical to ensure that the transition to Pre-paid Click & Collect is seamless and that customers can complete their transactions quickly and easily. Retailers must also consider the impact of these technological changes on their existing systems and processes, and ensure that they have the necessary resources to implement and maintain these changes.

Infrastructure changes are also necessary when transitioning to Pre-paid Click & Collect. Retailers must ensure that their physical stores are equipped to handle the increased volume of orders, including additional storage space for pre-paid orders, and dedicated pickup areas for customers (Jara et al., 2018). Additionally, retailers must consider the impact of these changes on their existing supply chain and logistics operations, including the need for additional staff to manage the increased volume of orders and the potential for longer wait times for customers (Arifovic et al., 2022). These infrastructure changes are critical to ensure that the transition to Pre-paid Click & Collect is successful and that customers have a positive experience.

### **2.9. *Challenges and Limitation***

The transition from Reserve Click & Collect to Pre-paid Click & Collect can present several challenges for retailers (MacKenzie, 2013). These difficulties could include the requirement to put new systems and technology into place, teach employees on new protocols, and efficiently manage inventory and order fulfillment.

While Pre-paid Click & Collect offers several benefits for both customers and retailers, there are also limitations and drawbacks to consider (Romaine, 2018). For example, customers may be hesitant to pre-pay for items that they have not yet seen in person, which can impact conversion rates and overall sales. Retailers may also need to consider the potential impact on their existing return policies, as Pre-paid Click & Collect orders may require different procedures for returns and exchanges.

Another limitation of Pre-paid Click & Collect is the potential impact on customer convenience and flexibility. While the pre-paid model may offer greater predictability and efficiency for retailers, it may also limit the ability of customers to make last-minute changes to their orders or pickup times. This can be particularly challenging for customers with unpredictable schedules or urgent needs. Additionally, customers may be deterred by the need to pre-pay for items, particularly if they are uncertain about the quality or suitability of the product (Dannenberg et al., 2020). As such, retailers may need to consider offering alternative payment and pickup options to cater to a wider range of customer preferences and needs.

### **3. Methodology**

#### **3.1. Analytical Hierarchy Process Methodology**

The Analytical Hierarchy Process (AHP) is a powerful decision-making methodology that provides a structured framework for dealing with complex problems involving multiple criteria and alternatives. Developed by Thomas L. Saaty in the 1970s, the AHP has gained widespread recognition for its ability to elicit and quantify subjective judgments in a rigorous and systematic manner.

The Analytical Hierarchy Process (AHP) is a powerful decision-making methodology that provides a structured framework for dealing with complex problems involving multiple criteria and alternatives. Developed by Thomas L. Saaty in the 1970s, the AHP has gained widespread recognition for its ability to elicit and quantify subjective judgments in a rigorous and systematic manner.

One of the key strengths of the AHP is its flexibility in handling diverse decision scenarios, ranging from simple selection problems to complex strategic planning processes. By facilitating pairwise comparisons between criteria and alternatives, the AHP helps decision-makers prioritize factors based on their relative importance and impact on the overall objective.

Moreover, the AHP incorporates mathematical principles to derive weighted priorities, ensuring a consistent and logical approach to decision-making. Through the calculation of priority vectors and consistency ratios, the AHP enhances the transparency and robustness of the decision-making process.

We delve into the principles, applications, and benefits of the Analytical Hierarchy Approach, shedding light on how this methodology revolutionizes decision-making processes and empowers stakeholders to make sound and informed choices.

#### **3.2. Scope:**

##### **3.2.1. Determination of the importance weights of decision variables.**

Importance weights of decision variables are one of the most sensitive parts of the Analytic Hierarchy Process. This step quantifies the importance of the decision variables in making an influence on the overall decision. Generally, it has been done through pairwise comparison methods. Each of the variables compared with the other takes to develop importance weight to prepare a hierarchy of variables. The derived weights indeed reflect the preferences or priorities of decision makers and serve as the basis of comparing the alternatives.

##### **3.2.2. Selecting and ranking the alternatives with respect to decision variables.**

Once the decision variables' importance weights are calculated or determined, alternatives have been evaluated and ranked. In this step, the weighted importance has been utilized to analyze every alternative concerning the decision variables. By comparing each of the alternatives systematically, the AHP method derives a rank order in which the alternatives could be preferable. Thus, the ranking helps to make a well-informed or rational decision by indicating the best alternatives.

### 3.3. Steps:

#### 3.3.1. Identification of the decision problem

- **Goal definition:**

Defining the goal is the first step of solving the decision problem. In this step, the goal must be specified, which is the ultimate purpose of the decision to be achieved. A well-specified goal provides direction and focus, ensuring that all following steps are guided to the desired output.

- **Identification of the decision variables:**

Decision variables are the key factors that can affect the decision. These variables are the critical components to be considered to reach the desired goal. This will ensure that the important aspect is included in the decision-making process.

- **Identification of the decision alternatives:**

These alternatives are the possible courses of action which could be found or at least generated to attain the goal. These alternatives are different courses of action, which can be taken. A complete number of the provided alternatives make alternative availability broad, which could be helpful during the evaluation process.

- **Construction of the decision hierarchy:**

To draw the hierarchy of the decision is to structure the goal, decision variables, and alternatives. Therefore, this hierarchy summarizes the parts of a problem in a manner that allows systematic analysis in manageable parts and helps to understand the relationship between the different elements and, through the process of evaluation.

#### 3.3.2. Construction the pair-wise comparison matrix

This is the most critical process in AHP in which the alternatives or decision variables are ranked pair-wise in respect of their importance or preference. Here, each element is then compared with every other element, and such judgments are expressed in terms of a numerical value using a 1 to 9 scale and based on that a matrix is constructed, and such matrix takes the values of decisions for various alternatives in a structured way of reflecting the preference of decision maker.

#### 3.3.3. Identification of the importance weights of decision variables

- **Normalize the comparison matrix:**

Normalization of the comparison matrix is used to transform the pair-wise comparison values to add up to a constant scale; that is, the sum of each column is one. In this way, the comparison data is standardized, which makes the weights derived in the next step meaningful.

- **Calculate the Eigenvector and Eigenvalue:**

It is a mathematical process, which is followed with the process of deriving the priority vector (weights) from the normalized comparison matrix. Eigenvector represents the relative importance of each decision variable, whereas the eigenvalue is used to check the consistency of the comparisons.

- **Calculate Consistency Index and Consistency Ratio:**

Calculation of the Consistency Index (CI) and Consistency Ratio (CR) is the measurement of the level of consistency in the pair-wise comparison. The CI is calculated from the Eigenvalue, and the CR is computed by comparing the CI with a random consistency index. The CR should be less than 0.1, and it is generally accepted to indicate a justifiable degree of consistency in the judgements.

### 3.3.4. Selection of the best alternative

The last step in the AHP process is the choice of the best alternative. With the combination of the weights of the decision variables and the evaluations of the alternatives, a composite score of each alternative is derived. The alternative with the highest score is the best choice. This step synthesizes all the information and judgments made in the process, leading to a rational and well-supported decision.

## 4. Analytical Hierarchy Process

### 4.1. Identification of the decision problem.

- **Goal definition:** Choosing the most suitable Click & Collect model
- **Decision Variables:**
  - Cost Efficiency
  - Customer Experience
  - Pick-up rate
  - Sale amount
  - Cost of Operation
- **Decision Alternatives:**
  - Reserve Click & Collect
  - Pre-paid Click & Collect
- **Decision Hierarchy:**

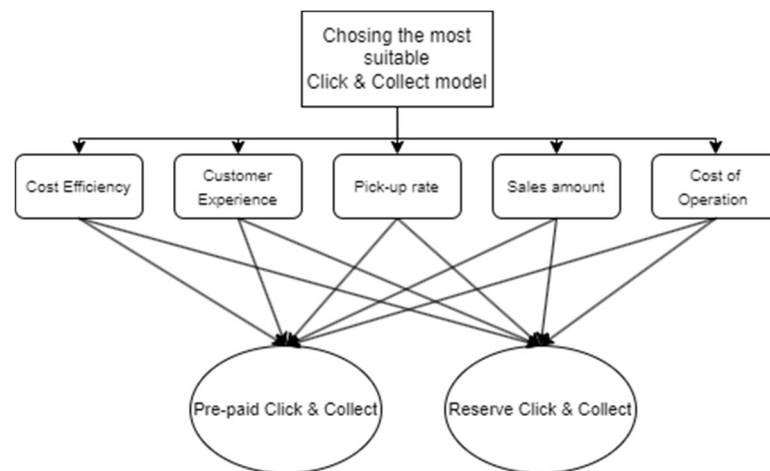


Figure 2 Decision Hierarchy

4.2. Construction of Pair-wise Comparison matrix

- Questionnaire I: Selecting the most suitable Click & Collect model, criteria prioritization

If you were to compare the following pairs of criteria for selecting the most suitable Click & Collect model, which criteria would you prioritize? Please mark your preference for each pair on the proposed scale.																				
	9	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	9		
Cost Efficiency														X						Customer Experience
Cost Efficiency														X						Pick-up rate
Cost Efficiency												X								Sale amount
Cost Efficiency					X															Cost of Operation
Customer Experience									X											Pick-up rate
Customer Experience			X																	Sale amount
Customer Experience	X																			Cost of Operation
Pick-up rate							X													Sale amount
Pick-up rate			X																	Cost of Operation
Sale amount				X																Cost of Operation

Table 1 Questionnaire 1

	Definition	Explanation	Intensity of importance
<b>SAATY 1-9 SCALE</b>	Equal Importance	Two activities contribute equally to the objective	1
	Weak importance of one over another	Experience and judgment slightly favor one activity over another	3
	Essential or strong importance	Experience and judgment strongly favor one activity over another	5
	Demonstrated importance	An activity is strongly favored, and its dominance demonstrated in practice	7
	Absolute importance	The evidence favoring one activity over another is of the highest possible order of affirmation	9
	Intermediate values between two adjacent judgments	When compromise is needed	2,4,6,8

Table 2 SAATY 1-9 Scale

<b>Decision Criteria</b>	Cost Efficiency	Customer Experience	Pick-up rate	Sale amount	Cost of Operation
Cost Efficiency	1	0,200	0,200	0,333	5
Customer Experience	5	1	1	7	9
Pick-up rate	5	1	1	3	7
Sale amount	3	0,143	0,333	1	6
Cost of Operation	0,200	0,111	0,143	0,167	1

*Table 3 Comparison Matrix*

#### 4.3. Identification of the importance weights of decision variables

- Normalize the comparison matrix

Equation 1. 
$$b_{ij} = \frac{a_{ij}}{\sum_{i=1}^n a_{ij}}$$

	Cost Efficiency	Customer Experience	Pick-up rate	Sale amount	Cost of Operation
Cost Efficiency	0,070	0,082	0,075	0,029	0,179
Customer Experience	0,352	0,408	0,374	0,609	0,321
Pick-up rate	0,352	0,408	0,374	0,261	0,250
Sale amount	0,211	0,058	0,125	0,087	0,214
Cost of Operation	0,014	0,045	0,053	0,014	0,036

*Table 4 Normalized Comparison Matrix*

- Eigenvector:

Equation 2 
$$w_i = \frac{\sum_{j=1}^n c_{ij}}{n}$$

Eigenvector
0,087
0,413
0,329
0,139
0,033

Table 5 Eigenvector

- Eigenvalue

Decision Criteria	Cost Efficiency	Customer Experience	Pick-up rate	Sale amount	Cost of Operation
Cost Efficiency	1	0,2	0,2	0,33	5
Customer Experience	5	1	1	7	9
Pick-up rate	5	1	1	3	7
Sale amount	3	0,143	0,333	1,000	6
Cost of Operation	0,2	0,111	0,143	0,167	1

$$\begin{matrix}
 \text{Eigen} \\
 \text{vector} \\
 0,087 \\
 0,413 \\
 0,329 \\
 0,139 \\
 0,033
 \end{matrix}
 \times
 \begin{matrix}
 \text{Eigen} \\
 \text{value} \\
 0,444 \\
 2,442 \\
 1,821 \\
 0,764 \\
 0,166
 \end{matrix}
 =$$



Eigenvalue
0,444
2,442
1,821
0,764
0,166

**Table 6 Eigenvalue**

- Calculate Consistency Index and Consistency Ratio

Equation 3 .  $\lambda_{\max} = \frac{\sum a_j w_j}{w_1}$

$\lambda_{\max} = 5,432$  (Largest Eigenvalue)

Equation 4 .  $CI = \frac{\lambda_{\max} - n}{n - 1}$

CI= 0,108 (Consistency Index)

<i>Dimension</i>	<i>RI</i>
1	0
2	0
3	0.5799
4	0.8921
5	1.1159
6	1.2358
7	1.3322
8	1.3952
9	1.4537
10	1.4882

**Figure 3 Random Index Table**

n=5(Number of Variables) => RI = 1.1159 for (Random Index)

Equation 5  $CR = \frac{CI}{RI}$

CR = 0,0968(Consistency Ratio)

Equation 6 . CR < 0,1 is okay (Consistent) can be used for calculation.

0,0968 < 0,1 **Consistent**

4.4. Identification of the importance weights of decision variables

- Questionnaire II: Compare the alternatives for each of the variables

<p align="center"><b>"Cost Efficiency" perspective, which model might create better results?</b></p> <p align="center">Please mark your preference for each pair on the proposed scale.</p>																				
	9	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	9		
Reserve Click & Collect																			X	Pre-paid Click & Collect

Table 7 Questionnaire II Question 1

<p align="center"><b>"Customer Experience" perspective, which model might create better results?</b></p> <p align="center">Please mark your preference for each pair on the proposed scale.</p>																				
	9	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	9		
Reserve Click & Collect																			X	Pre-paid Click & Collect

Table 8 Questionnaire II Question 2

<p align="center"><b>"Pick-up Rate" perspective, which model might create better results?</b></p> <p align="center">Please mark your preference for each pair on the proposed scale.</p>																				
	9	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	9		
Reserve Click & Collect																			X	Pre-paid Click & Collect

Table 9 Questionnaire II Question 3

<p align="center"><b>"Sale Amount" perspective, which model might create better results?</b></p> <p align="center">Please mark your preference for each pair on the proposed scale.</p>																				
	9	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	9		
Reserve Click & Collect									X											Pre-paid Click & Collect

Table 10 Questionnaire II Question 4

<p align="center"><b>"Cost of Operation" perspective, which model might create better results?</b></p> <p align="center">Please mark your preference for each pair on the proposed scale.</p>																				
	9	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	9		
Reserve Click & Collect					X															Pre-paid Click & Collect

Table 11 Questionnaire II Question 5

**SAATY 1-9 SCALE**

<b>Definition</b>	<b>Explanation</b>	<b>Intensity of importance</b>
Equal Importance	Two activities contribute equally to the objective	1
Weak importance of one over another	Experience and judgment slightly favor one activity over another	3
Essential or strong importance	Experience and judgment strongly favor one activity over another	5
Demonstrated importance	An activity is strongly favored, and its dominance demonstrated in practice	7
Absolute importance	The evidence favoring one activity over another is of the highest possible order of affirmation	9
Intermediate values between two adjacent judgments	When compromise is needed	2,4,6,8

*Table 12 SAATY 1-9 Scale*

- Comparison Matrix:

Comparison Matrix		
Cost Efficiency		
<b>Decision Criteria</b>	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	1	0,111
Pre-paid Click & Collect	9	1

Comparison Matrix		
Customer Experience		
<b>Decision Criteria</b>	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	1	0,111
Pre-paid Click & Collect	9	1

Comparison Matrix		
Pick-up Rate		
<b>Decision Criteria</b>	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	1	0,111
Pre-paid Click & Collect	9	1

Comparison Matrix		
Sale Amount		
Decision Criteria	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	1	1
Pre-paid Click & Collect	1	1

Comparison Matrix		
Cost of Operation		
Decision Criteria	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	1	5
Pre-paid Click & Collect	0,200	1

- Normalized Comparison Matrix:

Normalized Comparison Matrix		
Cost Efficiency		
Decision Criteria	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	0,100	0,100
Pre-paid Click & Collect	0,900	0,900

Eigenvector
0,1
0,9

Normalized Comparison Matrix		
Customer Experience		
Decision Criteria	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	0,100	0,100
Pre-paid Click & Collect	0,900	0,900

Eigenvector
0,1
0,9

Normalized Comparison Matrix		
Pick-up Rate		
Decision Criteria	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	0,100	0,100
Pre-paid Click & Collect	0,900	0,900

Eigenvector
0,1
0,9

Normalized Comparison Matrix		
Sale Amount		
Decision Criteria	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	0,500	0,500
Pre-paid Click & Collect	0,500	0,500

Eigenvector
0,1
0,9

Normalized Comparison Matrix		
Cost of Operation		
Decision Criteria	Reserve Click & Collect	Pre-paid Click & Collect
Reserve Click & Collect	0,833	0,833
Pre-paid Click & Collect	0,167	0,167

Eigenvector
0,833
0,167

- Comparison Alternative Matrix

Comparison of alternative matrix					
	Cost Efficiency	Customer Experience	Pick-up Rate	Sale Amount	Cost of Operation
Reserve Click & Collect	0,100	0,100	0,100	0,500	0,833
Pre-paid Click & Collect	0,900	0,900	0,900	0,500	0,167

- Selection Scores

Comparison of alternative matrix						Decision Variable	Importance Weight
	Cost Efficiency	Customer Experience	Pick-up Rate	Sale Amount	Cost of Operation	Cost Efficiency	0,087
Reserve Click & Collect	0,100	0,100	0,100	0,500	0,833	Customer Experience	0,413
Pre-paid Click & Collect	0,900	0,900	0,900	0,500	0,167	Pick-up rate	0,329
						Sale amount	0,139
						Cost of Operation	0,033

X

Alternatives	Selection Scores
Reserve Click & Collect	0,180
Pre-paid Click & Collect	0,820

Table 13 Selection Results

## 5. Discussion of Results

### 5.1. Interpretation of the Analysis results

The main objective of this study is to investigate the transition from Reserve Click & Collect to Pre-paid Click & Collect models using Multi-attribute Decision Making. To achieve this goal, the Analytical Hierarchy Process analysis aims to help decision-makers in the retail industry select the most suitable Click & Collect model. In this process, decision-makers were asked about the correlation of attributes affecting Click & Collect and which model would yield better results with comparing these attributes.

The attributes affecting Click & Collect were identified through a focus group study with ten managers and senior managers who had previously worked on and successfully completed Click & Collect activations in a retail company.

To begin the AHP analysis, meaningful data was needed, so a survey was completed with the same group. The survey questions were prepared by taking examples from previously conducted surveys and were revised multiple times to ensure accurate answers. The question sets used for the survey were shared under the headings “4.2. Construction of Pair-wise Comparison Matrix;” • Questionnaire I: Selecting the most suitable Click & Collect model, criteria prioritization and “4.4. Identification of the importance weights of decision variables” • Questionnaire II: Compare the alternatives for each of the variables.

Using all the responses from the same ten participants, a comparison matrix was first created. This is the most critical process in AHP, where the alternatives or decision variables are ranked pair-wise in respect of their importance or preference. Each element is then

compared with every other element, and such judgments are expressed in terms of a numerical value using a 1 to 9 scale. Based on that, a matrix is constructed, reflecting the decision maker's preferences.

Normalization of the comparison matrix is used to transform the pair-wise comparison values to add up to a constant scale; that is, the sum of each column is one. This standardizes the comparison data, making the weights derived in the next step meaningful.

From this normalized matrix, the Eigenvector (Importance of Weight of Each Criterion) was found, and by multiplying this vector with the comparison matrices, the Eigenvalue was obtained.

Equation 3  $\lambda_{max} = \frac{\sum a_{jw} - w_1}{w_1}$

$\lambda_{max} = 5,432$  (Largest Eigenvalue )

Equation 4  $CI = \frac{\lambda_{max} - n}{n - 1}$

Equation 5  $CR = \frac{CI}{RI}$

For n=5(Number of Variables) , the corresponding value from the Random Index (RI) table is 1.1159.

Using 4<sup>th</sup> and 5<sup>th</sup> equations, CI was found to be 0.108 and CR was 0.0964.

Although this process was completed for all survey responses, only two out of ten CR values were less than 0.1, indicating that only two surveys were consistent and usable for rest of the calculation.

Comparing the roles, competencies, and authorities of these two respondents, the decision was made to select the Product Owner of Retail Fulfillment as the decision-maker.

The survey responses from this individual showed a CR of 0.0964, indicating suitability for AHP analysis.

In the final part of the analysis, comparison matrices were created from the five responses to the second part of the survey. These matrices were normalized, and the Eigenvectors for each matrix were determined.

By placing these five Eigenvectors side by side, a 2x5 Comparison of Alternative Matrix was obtained. The product of this matrix and the Eigenvector from the first part of the survey (Importance of Each Criterion) yielded the Selection Scores as below.

Alternatives	Selection Scores
Reserve Click & Collect	0,180
Pre-paid Click & Collect	0,820

As seen from this score, Pre-paid Click & Collect appears to be the most suitable Click & Collect model based on the decision-maker's responses.

Examining this result, it is correct to conclude that transitioning from Reserve Click & Collect to Pre-paid Click & Collect is more suitable for the retail sector.

By the time this study was conducted, the decision had already been made, and the results for a retail company are discussed in the following section.

**5.2. Highlighting the yearly results of Reserve and Pre-paid Click & Collect models in Retail Market**





	Reserve Model	Pre-paid Model	Delta
Demand	401.000 €	169.000 €	 58%
Retail Cost Efficiency			 1.090.000 €
Pick-up Rate	46%	82%	 78%
Net Sales	10.000.000 €	7.000.000 €	 30%

Table 14 Highlighting the yearly results Click & Collect Yearly Comparison

The shift to a Pre-paid Click & Collect model presents several key benefits, despite an expected decrease in demand. This model is particularly advantageous due to the following reasons:

**5.2.1. Demand and Cost Efficiency**

- **Demand Decrease:** C&C demand has decreased from €401,000 to €169,000 as consumers are required to pay before checking their items in-store. This reduction is anticipated but leads to a significant drop in order volume.
- **Cost Efficiency:** The decline in demand translates into a substantial decrease in L1 costs, with the Retail Cost Efficiency showing an improvement of €1,090,000. This cost-saving is a direct result of handling fewer orders and optimizing retail operations.

**5.2.2. Increased Pick-up Rate and Store Traffic**

- **Pick-up Rate:** The pick-up rate has increased dramatically from 46% to 82%, indicating that consumers feel more committed once they have pre-paid. This increase in pick-up rate brings more traffic to the stores, with a show-up rate exceeding 93%.
- **Net Sales Impact:** Although net sales have decreased by 30% (from €10,000,000 to €7,000,000), this reduction is partly due to consumers perceiving less benefit from the delivery option compared to pre-paid. Moreover, Click & Collect Share of Business (SOB) decreased from 4% to 1% compared to e-commerce.

**5.2.3. Operational and Financial Benefits**

- **Stock Availability:** The model has led to a net sales improvement of €1,043,000, driven by eliminating allocated but unconverted orders. These "ghost consumers" who do not show up to pick their reserved orders have been removed, leading to more accurate stock availability.
- **Store Operations Optimization:** Significant savings in store operations have been realized, with over 11,600 work hours and a theoretical budget of €100,000 saved.



Store staff now spend less time preparing orders, which increases workforce availability and optimizes overall store operations.

#### **5.2.4. Consumer Preference Shift**

- **Home Delivery Preference:** The reduction in Click & Collect net sales suggests a shift towards home delivery. This shift helps balance the L1 cost savings by potentially increasing e-commerce net sales. As consumers opt for home delivery, the overall efficiency and profitability of the operations improve.

### **5.3. Implications and Recommendations for Retail Industry**

The findings of this study provide several important implications and recommendations for the retail industry, particularly regarding the transition from Reserve Click & Collect to Pre-paid Click & Collect. Through the application of the Analytic Hierarchy Process (AHP) method, this research offers a data-driven approach to evaluating and selecting the most suitable Click & Collect model.

To validate the feasibility of the model, an examination of the three most well-known companies in the retail sector revealed that all of them prefer the Pre-paid Click & Collect model. Additionally, companies that previously used the Reserve model have transitioned to the pre-paid model.

When combined with the right decision-maker and properly conducted surveys, the AHP model has been validated as a suitable analysis method for obtaining valuable data through real-life examples.

Here are the key implications and recommendations:

Transitioning to Pre-paid Click & Collect is not just a tactical change but a strategic one that requires careful planning and execution. Retailers must consider the broader impact on their business model, customer relations, and competitive positioning.

**Recommendation:** Develop a comprehensive implementation plan that includes a timeline, key milestones, and metrics for success. Engage stakeholders across the organization to ensure buy-in and alignment with the overall business strategy. Regularly review progress and adjust as needed to stay on track.

The use of AHP in this study highlights the importance of data-driven decision making in the retail industry. By systematically evaluating the various attributes influencing Click & Collect services, retailers can make informed choices that align with their strategic goals and customer needs.

**Recommendation:** Retailers should adopt similar multi-attribute decision-making frameworks for other aspects of their operations. Implementing AHP or other decision analysis tools can provide a structured approach to evaluating complex decisions, ensuring that all relevant factors are considered.

Pre-paid Click & Collect can significantly improve operational efficiency within retail organizations. By having customers pre-pay, retailers can reduce the instances of uncollected orders, minimize inventory handling, and optimize resource allocation. This can lead to cost savings and more effective management of store operations.

**Recommendation:** Retailers should invest in technology and training that support the Pre-paid Click & Collect model. This includes upgrading point-of-sale systems, enhancing inventory management software, and training staff to handle Pre-paid Click & Collect

transactions efficiently. Continuous monitoring and adjustment of processes will ensure that the operational benefits are fully realized.

One of the primary benefits of transitioning to the Pre-paid Click & Collect model is the enhancement of the customer experience. The study's results indicate that Pre-paid Click & Collect scores significantly higher than Reserve Click & Collect in terms of overall suitability. By requiring customers to pre-pay for their orders, retailers can streamline the pick-up process, reducing wait times and ensuring a smoother transaction. This convenience can lead to higher customer satisfaction and increased loyalty.

**Recommendation:** Retailers should focus on promoting the advantages of Pre-paid Click & Collect to their customers, emphasizing the speed and efficiency of the service. Implementing clear communication strategies and user-friendly interfaces for pre-payment can further improve customer acceptance and satisfaction.

The transition from Reserve Click & Collect to Pre-paid Click & Collect presents a significant opportunity for retailers to enhance customer satisfaction, improve operational efficiency, and make informed, strategic decisions. By adopting the recommendations outlined in this study, retail organizations can successfully navigate this transition and achieve sustainable growth and competitive advantage. The insights gained from this research provide a valuable framework for retailers considering similar changes, ensuring that their strategies are grounded in data-driven analysis and aligned with best practices in the industry.

## 6. Limitations and future research

One of the primary limitations of this study is the sample size and scope. The focus group comprised only ten managers and senior executives from a single retail company. This limited sample size may not fully capture the diversity of perspectives within the retail industry. Future research could benefit from a larger and more varied sample to enhance the generalizability of the findings.

Geographical diversity is another area for future exploration. The study was conducted within a specific geographic region. Retail practices and consumer behaviors can vary significantly across different regions and cultures. Expanding the research to include multiple geographic locations could provide a more comprehensive understanding of the factors influencing the transition from Reserve Click & Collect to Pre-paid Click & Collect.

Lastly, the implementation of Click & Collect models can vary significantly depending on the technological infrastructure and operational capabilities of different retailers. This study did not account for these variations, which could impact the feasibility and success of transitioning from Reserve Click & Collect to Pre-paid Click & Collect.

To build upon the findings of this study and address its limitations, the following areas for future research are recommended.

Longitudinal studies that track the transition from Reserve Click & Collect to Pre-paid Click & Collect over time can provide a deeper understanding of the long-term impacts on customer satisfaction, operational efficiency, and overall business performance. Such studies can also identify any challenges or barriers that arise during the transition process.

Investigating consumer behavior and preferences in more detail can provide valuable insights into how customers perceive and interact with Click & Collect services. Understanding these preferences can help retailers tailor their services to better meet customer needs.

In summary, by addressing these limitations and pursuing future research in the suggested

areas, the retail industry can gain a more comprehensive understanding of the factors influencing the transition from Reserve Click & Collect to Pre-paid Click & Collect. This will enable retailers to make more informed, data-driven decisions that enhance customer satisfaction, improve operational efficiency, and achieve long-term success.

## **7. Conclusion**

In this study, the transition from Reserve Click & Collect to Pre-paid Click & Collect in the retail industry was evaluated using the Analytic Hierarchy Process (AHP) method within the framework of multi-attribute decision-making. The study identified various criteria that need to be considered during the transition process and structured these criteria into a hierarchical model and assist decision-makers in selecting the most suitable Click & Collect model by examining the correlations between attributes influencing these models and determining which model yields better results.

A focus group of ten managers and senior executives, experienced in Click & Collect activations, was utilized to identify the critical attributes affecting these services. A survey was conducted with this group to gather meaningful data for the AHP analysis. The survey was meticulously prepared and revised multiple times to ensure accurate and reliable responses.

The score which found with AHP analysis demonstrate that, based on the decision-maker's responses, Pre-paid Click & Collect is the most suitable model. This conclusion aligns with the observation that transitioning from Reserve Click & Collect to Pre-paid Click & Collect provides greater benefits in the retail sector.

The data which is taken from real sector also shows that the Pre-paid Click & Collect model provides greater benefits in the retail sector. Despite reducing demand, enhances retail cost efficiency, increases pick-up rates, and optimizes store operations. It also aligns with consumer preferences for home delivery, balancing out net sales and contributing to a more streamlined and cost-effective business model.

The study's findings suggest that retail companies should consider adopting the Pre-paid Click & Collect model to enhance customer satisfaction and operational efficiency. The results of this research provide valuable insights for retail firms evaluating their Click & Collect strategies, offering a data-driven approach to decision-making.

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