



Omni-Channel's and Click & Collect Accuracy in Large Retail Stores

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Currently retail organizations are re-inventing the way they do business and reach customers. Some of this is due to changes in technology and some is due to the environment in which they operate. Omnichannel retailing has played a major role in helping organizations interact with their customers.

One facet of Omnichannel that is of particular interest is Click & Collect technologies. These technologies allow users to check stock online, purchase online, and pick up in the store. With the need for social distancing and scaling back of retail operations, this particular technology and its processes are of great interest today.

In today's climate popular items such as disinfection wipes, toilet paper, and paper towels do not last on the shelves very long. In addition, many people do not want to venture out to the stores unless the products they need are in-stock.

Many people have used re-sale sites such as Amazon, eBay, Craigslist, and Facebook Messenger to sell popular items they have bought in stores. Popular items such as children's toys and video game systems can sell for much more 2nd hand. However, stores are often limited in the number they receive, and this requires customers to act quickly in order to purchase them. Click & Collect allows customers to see if these items are in-stock and it aids in quick purchasing. Due to these reasons and more, Click & Collect has become a very powerful tool to engage customers.

Click & Collect has become so popular that many 3rd party applications and websites have popped up that attempt to track the inventory of big-box stores. These applications utilize the retailer's own APIs, web scraping tools, and other technologies in order to identify stock.

Currently, many large stores offer customers the ability to view inventory and the availability of products. Customers can search for specific items and view the stock status with

near real-time accuracy. The 3rd party applications attempt to mimic this functionality and, in some cases, improve on it. One such way is by listing the actual number of items in stock vs. the binary in-stock/out of stock label. Above all the accuracy of reporting stock is most important.

This paper explores several aspects of Click & Collect, Supply Chain Technologies, Omnichannel, and Product Popularity. The main purpose of the paper is to evaluate the accuracy of retailer’s Click & Collect technologies as well as the accuracy of 3rd party tracking apps.

Specific technologies such as APIs, Social Media applications, and scraping tools were analyzed and their uses in omni-channel and Click & Collect were explored. The integration of these tools with CRMs and supply chains were highlighted in the paper. The idea that these tools enable Click & Collect functionality is presented and proven in the research.

The research was setup as follows: Two large retailers that currently utilize Click & Collect were compared against a 3rd party application for in-stock accuracy. The items tracked were selected through sampling 40 individuals of differing age and background. The individuals selected items they were likely to purchase through Click & Collect. The items were grouped in the following categories: Essential items, Popular Brands, or High 3rd Party resale value. From these categories, sub-categories were formed that included Groceries, Electronics, Clothes, Toys, Shoes, and Food. Table 1 shows the categories.

Table 1

Category	Number of Mentions
Groceries	15
Electronics	11
Clothes	10
Shoes	8
Food	8

Once items were identified, they were looked up on both the retailer’s applications and the 3rd party application to determine stock. Next, they were checked in-store to verify the accuracy of the applications. Since the 3rd party application provided an estimated number of items in-stock, this was verified as well. The verifications were recorded, and accuracy percentages were calculated. The findings show that Retailer 2 had the highest accuracy, while Retailer 1 and the 3rd Party Application had similar percentage of accuracy. The 3rd party’s amount in-stock prediction was not very accurate in either store. The findings are shown in table 2 and table 3.

Table 2

	Retailer 1			In-Store	Retailer's Apps Accuracy	3 rd Party Accuracy
	Mobile App	Web App	3 rd Party			
Groceries						
Product 1	In-Stock	In-Stock	18 In-Store	16 In-Store	Yes	Yes
Product 2	In-Stock	In-Stock	16 In-Store	Not-In-Store	No	No

Product 3	In-Stock	In-Stock	18 In-Store	3 In-Store	Yes	Yes
Product 4	In-Stock	In-Stock	12 In-Store	9 In-Store	Yes	Yes
Electronics						
Product 1	In-Stock	In-Stock	Quantity Limited	1 In-Store	Yes	Yes
Product 2	In-Stock	In-Stock	6 In-Store	5 In-Store	Yes	Yes
Product 3	In-Stock	In-Stock	2 In-Store	1 In-Store	Yes	Yes
Product 4	In-Stock	In-Stock	2 In-Store	2 In-Store	Yes	Yes
Toys						
Product 1	In-Stock	In-Stock	8 In-Store	8 In-Store	Yes	Yes
Product 2	Not-In-Stock	Not-In-Stock	Not-In Stock	2 In-Store	No	No

Table 3

	Retailer 2			In-Store	Retailer's Apps Accuracy	3 rd Party Accuracy
	Mobile App	Web App	3 rd Party			
Groceries						
Product 1	In-Stock	In-Stock	In-Store	8 In-Store	Yes	Yes
Product 2	In-Stock	In-Stock	In-Store	6 In-Store	Yes	Yes
Product 3	In-Stock	In-Stock	In-Store	10 In-Store	Yes	Yes
Product 4	In-Stock	In-Stock	In-Store	5 In-Store	Yes	Yes
Electronics						
Product 1	In-Stock	2 left	In-Store	2 In-Store	Yes	Yes
Product 2	In-Stock	In-Stock	Not-In-Stock	5 In-Store	Yes	No
Product 3	In-Stock	2 left	In-Store	2 In-Store	Yes	Yes
Product 4	In-Stock	In-Stock	In-Store	3 In-Store	Yes	Yes
Toys						
Product 1	In-Stock	In-Stock	In-Store	7 In-Store	Yes	Yes
Product 2	Not-In-Stock	Not-In-Stock	Not-In-Stock	4 In-Store	No	No

This study pointed out some short-comings in the identification of in-stock items. It is recommended that future research analyze how to best correct these issues. In addition, better understanding what products will be popular can help retailers plan ahead and acquire more stock to meet demand. Research in how to best do this is also recommended. The technologies in supply chain change frequently, understanding what changes will occur and when is an important research topic as well.