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HOW TO MOVE TOWARD A MORE DATA-DRIVEN DECISION-MAKING APPROACH?

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As the world recovers from the effects of the COVID-19 pandemic, retail businesses are ready to face new challenges on the road to recovery. Businesses are relying on data-driven leadership to gather insights into market demands and react quickly to consumer trends. A/B testing is a powerful tool to add to your arsenal that will add tailwind in your race to beat the competition. Through A/B testing, retail manufacturers and industry leaders can rely on not just business instincts but also statistical evidence while making crucial decisions.

A/B testing can be used across different departments and functions such as pricing, promotion & markdown strategy, assortment planning, store operations, visual merchandising, customer service, human resources, and others. It can target improvement in various metrics such as margins, sales, footfalls, customer satisfaction, conversion, etc. A/B testing can be broadly performed at two levels - at the offline retail store level or at a customer level. In this paper, we will highlight a case on identifying the right markdown strategy to sell leftover inventory.

As part of the end-of-season sale, a retailer wants to sell their remaining inventory and has devised a markdown strategy. The retailer could possibly choose a “Buy one Get one” (BOGO) offer or mark a 50% discount on their product to sell more units. The price point of the products in both cases remains the same but the sale pattern of the product could vary vastly depending on a multitude of internal and external factors.

Hypothesis

- Setting up the business objective
- Identifying the unit level of experiment
- Estimating business constraints

Experiment Setup

- Identifying test stores
- Matching algorithm to map control stores
- Design KPIs to measure performance

Analysis

- Track KPIs to measure success.
- Build reports to assess experiment outcomes
- Large scale rollout

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Hypothesis

The hypothesis is that the markdown strategy will help in selling more units of the product. However, we are presented with two strategies with similar selling price but vary in the product offering and customer choices. The primary objective of the experiment is to identify the optimal strategy that will not only help in driving more sales but also results in better margins than the other strategy.

How to set up the experiment?

A/B testing will yield optimal results when the experiment is performed independently. It is ideal to run only a single markdown experiment at a time to understand its effects in isolation. Running multiple promotions or markdown events in the same stores could lead to unreliable outcomes that might affect the decision-making process. For our scenario, the different markdown strategies need to be deployed at different stores.

Since our experiment is run at a store level, it is recommended that the retailer choose the store sample at random that is representative of the entire store population. If the store sample is not chosen at random, we might introduce selection bias to the experiment and the results cannot be validated for the larger store population. Further, it is crucial to have a sizeable sample for our test. A sample size lower than the recommended threshold would not be enough to detect a difference in lift. This leads to a possible error where we expect a lift, but the difference is statistically insignificant due to the small sample size. Typically, a sample size of 7%-10% of the population stores is recommended for optimal results with a minimum of at least 5%. So, the retailer can choose the sample size and experiment duration based on their business constraints while making note of the recommendations.

The retailer in our example sells their product through 1,250 stores across the US which include the retailer's own brick-and-mortar stores and third-party sellers on the marketplace. However, to run the experiment, the retailer is constrained to their own offline stores to exercise full control of the markdown process bringing the population of the store universe to 1000 stores. For optimal results, the retailer chose to identify 10% of the population (100 stores) across the country for the experiment. Further, sampling was stratified by state which meant 2 stores were picked at random from each state in the US, and a different markdown strategy was assigned to the test stores.

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What are the key components of the experiment design?

- After the sample stores for the test are selected, the next step is to identify the right control stores for the experiment. Control stores are those stores where the experiment is not set up to establish a baseline for our estimation.

- It is imperative that the control stores are identical to the test stores to eliminate the effects of external factors and to isolate the impact of the experiment. Matching will be done on business-related attributes such as financial metrics (sales, quantity, transaction, etc.) and store attributes (store size, location, store layout, etc.). Further, to obtain more robust results, matching will also be done on external factors such as customer demographics, competitor index, weather, and macro/microeconomic indicators to name a few.

- The matching algorithm also factors in the seasonal trends that might affect the sales of the product accordingly.

- The recommended ratio of test stores to control stores is 1:5 i.e., for every test store in our experiment, we match with 5 similar control stores to record our observations. However, in view of sample size constraints, the matching ratio can be restricted to 1:3.

- Once the test and control stores are determined, the onus lies on the retailer to ensure that the stores are equipped to run the experiment and that no other experiments are running in parallel that might affect the sales of the product.

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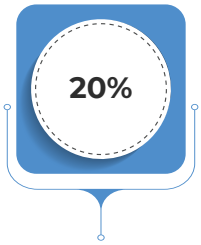
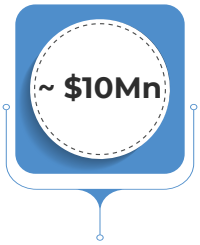
Assess the results of the experiment to make an informed decision before doing a larger rollout:

Business leaders can observe the lift and impact of the pre-determined metrics such as quantity, total sales, or margin. In our scenario, stakeholders can identify the best strategy that will help sell more units of the product without compromising on the margins.

The retailer in our case study has noticed that the 50% discount price strategy has resulted in an additional lift of 20% as compared to the “Buy One Get One” strategy. Consumers were responding better to a discount strategy rather than purchasing more of the same product. The experiment has not just revealed the ideal markdown strategy but also helped the retailer understand the price elasticity of demand for the product.



Estimated lift in units sold



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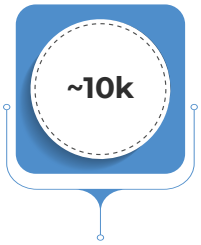

Additional units sold since rollout

CONCLUSION

A/B testing is a proven methodology that will take the uncertainty out of the decision-making process for any organization. However, the testing process need not be an operational challenge for decision-makers. IA’s Test$mart does the heavy lifting part of experiment design, store matching, and reporting so that the business can focus on making the right decisions. Test$mart will seamlessly integrate into your organization’s workflow and work in tandem with your current business tools. TestSmart is the leading choice for A/B testing implementation in the market and comes highly recommended by our clients. TestSmart’s design is highly intuitive and versatile and will work with your organization’s needs to deliver accurate results and drive performance.

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www.impactanalytics.co

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info@impactanalytics.co

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