

# Impact of Data Quality on Marketing Attribution and Campaigns

Ankush Ramprakash Gautam  
Senior Manager, Engineering at Datastax  
Frisco, Texas

## ABSTRACT

This article explores the significance of data quality and timeliness in the success of marketing data attribution for businesses. Traditional approaches to collecting and processing marketing attribution data often fall short in delivering desired results, as outlined in this study's discussion of challenges. By gaining insights into attribution models and the influence of data quality on them, businesses can enhance their data capture strategies to bolster the effectiveness of [1] marketing attribution models.

## General Terms

Data Quality, Attribution

## Keywords

Data Pipelines, Data attribution, Data Quality

## 1. INTRODUCTION

[2] Marketing data attribution, an aspect of marketing involves assigning credit to different marketing touchpoints based on their impact, on specific outcomes like conversions or sales. It requires tracking all customer interactions from the ad seen to the purchase and properly crediting each touchpoint for its role in influencing consumer decisions. [3] Statistical modeling methods are commonly employed for this purpose. The attributed data allows marketers to assess the effectiveness of marketing channels and campaigns empowering them to optimize strategies and improve return on investment (ROI). [4] Data driven attribution helps marketers identify performing keywords, ad placements and touchpoints enabling them to adjust campaigns. This tool is essential for boosting marketing efficiency by facilitating monitoring, analysis and refinement of campaigns to maximize ROI and achieve desired business goals. Leveraging marketing data attribution provides advantages such as enhanced ROI, decision making capabilities, increased operational efficiency and improved customer satisfaction.

## 2. ATTRIBUTION DATA CHALLENGES

Marketing data attribution poses a range of challenges, for marketers involving customer journeys across channels and devices. The process includes navigating through attribution

models with their biases and limitations managing data from multiple systems and dealing with the complexities of tracking user activity across devices. Additionally offline conversions such as in store purchases or phone orders present hurdles to overcome. Staying vigilant against ad fraud and bot traffic is crucial to ensure attribution. Adhering to data privacy regulations further complicates the collection and processing of user data while striving for compliance. Internal organizational barriers can also create discrepancies in attribution metrics. To tackle these obstacles effectively marketers need to leverage technology solutions to integrate data comprehensively across departments and gain a deep understanding of customer behavior patterns. Successfully addressing these challenges is vital for marketers to make informed decisions and optimize their marketing strategies efficiently.

### 2.1 Attribution Data Financial Impact

In the world of business marketing attribution plays a role, with financial impacts. It helps marketers identify the channels and strategies that drive conversions, optimize budget allocation, minimize inefficiencies and ultimately achieve a better Return on Investment (ROI). By knowing which marketing efforts contribute to conversions companies can allocate resources to high impact initiatives such as time, manpower and technology investments. This strategic resource allocation allows for maximizing outcomes with the resources at hand. Making real time adjustments to campaign performance based on attribution data leads to campaign effectiveness, higher conversion rates and increased revenue. Moreover, attribution assists in optimizing [5] Customer Lifetime Value (CLV) by identifying touchpoints that lead to repeat purchases and customer retention for revenue growth. By reducing [6] Customer Acquisition Costs (CAC) through channels identified by attribution data overall cost effectiveness is enhanced. Furthermore, attribution data offers insights into customer behavior and preferences that influence decision making and the financial performance of the entire organization. Effectively leveraging these insights can result in improved results and foster sustainable growth for businesses.

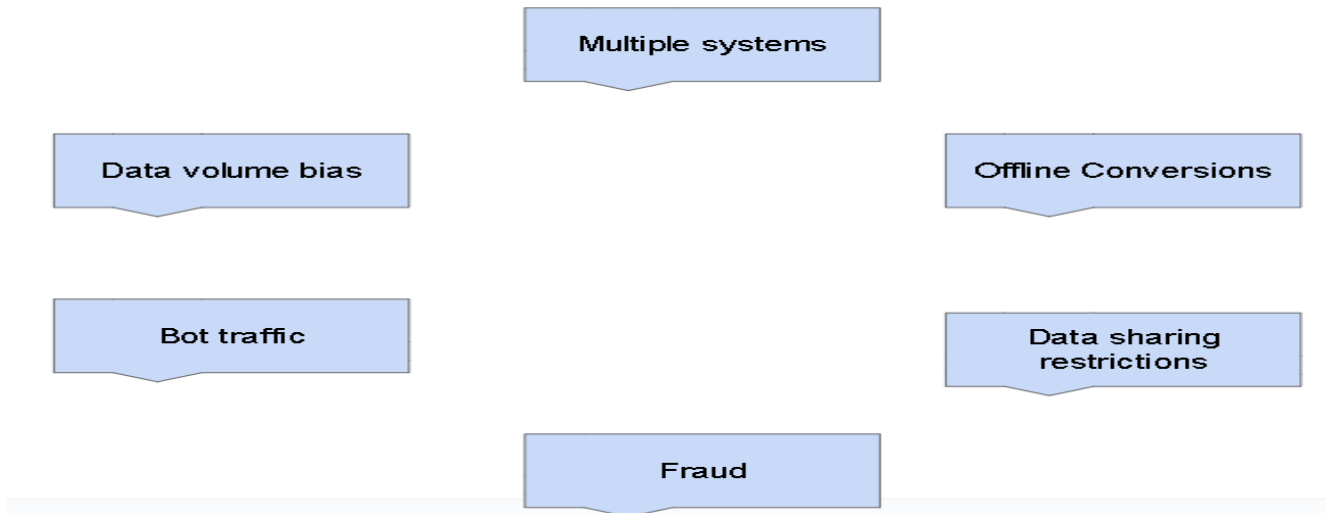


Figure 1: Attribution data challenges

### 3. ATTRIBUTION MODELS

[6] Several marketing attribution models are frequently employed by businesses to evaluate the effectiveness of their marketing efforts. The choice of an appropriate model is influenced by factors such as the nature of the business, the complexities of the customer journey, available data sources, and organizational objectives.

#### 3.1 Single Touch Attribution Models

Within the realm of marketing, diverse attribution models evaluate the influence exerted by marketing channels and touchpoints on conversions achieved. [7] Single-touch attribution models, exemplified by first-touch and last-touch models, place emphasis on either the initial or final customer interaction. First-touch attribution attributes conversion success to the initial interaction, thereby underscoring the significance of brand awareness. In contrast, last-touch attribution solely credits the final interaction, disregarding the cumulative impact of prior touchpoints. Position-based attribution models, such as U-Shaped and W-Shaped models, allocate credit across multiple touchpoints encountered during the customer journey, while prioritizing initial and final interactions. These models take into account the contributions made by various touchpoints, thus providing a more comprehensive understanding of the customer journey.

#### 3.2 Multi Touch Attribution Models

In the field of marketing, [11] multi touch attribution models play a role in understanding how different touchpoints impact a customer's journey. These models help identify which touchpoints contribute to conversions offering insights for decision making. Three popular multi touch attribution models include Linear Attribution, Time Decay Attribution and Algorithmic Attribution. Linear Attribution treats all touchpoints equally to provide a view. On the other hand Time Decay Attribution gives weight to touchpoints near the conversion point due to their temporal influence. Algorithmic Attribution uses machine learning to analyze data and determine the impact of each touchpoint. This knowledge enables marketers to make choices, optimize marketing strategies and achieve business success.

#### 3.3 Custom Attribution Models

In the field of marketing attribution personalized attribution models have emerged as an approach offering businesses a customized way to measure the effectiveness of their marketing interactions. These models blend elements from attribution frameworks or use data driven insights to improve marketing strategies. For example hybrid models combine elements from models to meet the needs of a business. On the other hand data driven models utilize analytics to analyze customer data and extract detailed insights based on observed behavior rather than strict rules. By utilizing custom attribution models businesses can accurately attribute conversions to marketing interactions. This enables them to make choices, optimize their marketing budget and enhance efficiency and effectiveness.

#### 3.4 Marketing Mix Modeling

[8] Marketing Mix Modeling (MMM) is a method used to understand how different marketing channels and factors collectively influence a company's performance. It goes beyond analyzing touchpoints by combining offline metrics to provide a holistic view of marketing effectiveness. MMM helps organizations comprehend the impact of initiatives, like advertising, promotions and public relations. Firms can leverage MMM to improve their marketing strategy and allocate budgets wisely. Boost marketing efficiency. By utilizing data and sophisticated statistical models MMM quantifies the effects of marketing activities on metrics such as sales, brand recognition and customer engagement. It assists marketers in recognizing the relationships among channels and their collective influence on business outcomes. Moreover MMM aids in identifying marketing mixes that maximize returns while minimizing expenses. This methodology has become essential for data driven marketers looking to make informed decisions regarding their marketing investments. MMM offers a dependable framework for assessing effectiveness, empowering organizations to strategically allocate resources, optimize campaigns and achieve growth.

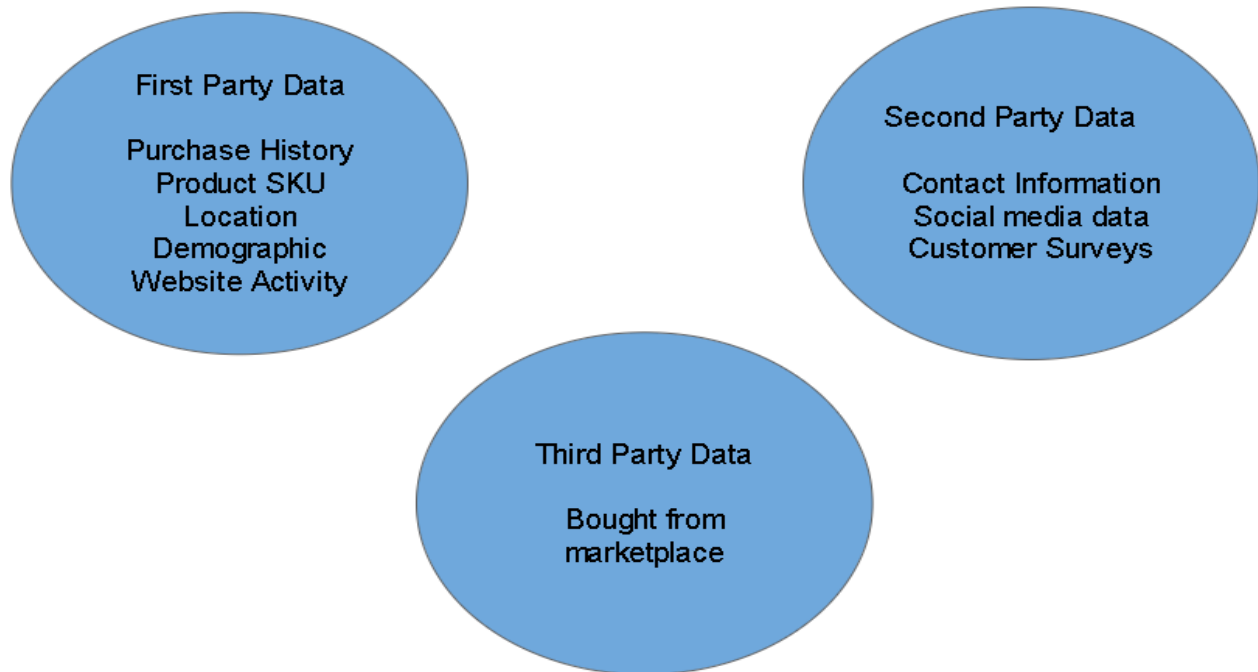


Figure 2: Types of data capture

### 3.5 Cross Channel Attribution Platforms

In the world of marketing, [9] cross channel attribution platforms have become a game changer, for marketers looking to accurately link conversions to specific interactions. These platforms analyze data comprehensively acting as hubs that blend information from marketing channels seamlessly. By using attribution models marketers can customize their strategies to align with their business goals. Visualizing touch journeys allows marketers to map out the customers path from the first interaction to making a purchase pinpointing crucial touchpoints that influence consumer choices. These platforms enable tracking ROI and optimizing marketing campaigns based on data insights. Real time reporting features and connections, with marketing and analytics tools further enhance their usefulness. With channel attribution platforms marketers can delve deep into customer journeys, refine their marketing tactics and ultimately boost business growth.

## 4. ATTRIBUTION DATA CAPTURE AND TRACKING

In the context of tracking attribution, the utilization of [10] UTM parameters and cookies is a common practice, but not the only approach. It is important to acknowledge that both UTM and cookies have inherent limitations in terms of their reliability.

### 4.1 First Party Data Capture

Businesses have methods to measure the success of their marketing efforts. To start, gathering user details, like email addresses and phone numbers through forms lets businesses connect actions, such as purchases to individual users and the channels they come from like email newsletters. Another approach is creating codes for marketing campaigns and sharing them across different platforms to monitor user engagement by tracking code usage on their website. Lastly embedding links in marketing materials such as emails and

social media posts and tracking conversions on the linked landing pages can help assess the effectiveness of each referral link. By using these tactics businesses can analyze their marketing campaigns effectively. Enhance their performance, for outcomes.

### 4.2 Server Side Tracking

In the realm of digital marketing, accurately tracking user journeys and measuring campaign success is crucial. To achieve this, incorporating concise, parameterless URLs in marketing materials is a recommended practice. These URLs enable straightforward monitoring of user behavior, with your server capable of attributing conversions to specific campaigns based on IP addresses or unique identifiers. Additionally, implementing server-side pixel tracking enhances data collection. These pixels capture specific user actions independently of cookies. Analyzing the collected data provides valuable insights into user behavior and helps evaluate campaign performance effectively.

### 4.3 Offline Attribution Models

Measuring the success of marketing campaigns involves using a variety of methods to evaluate their effectiveness. One approach is to use coupon and promotional codes to track how they are used in stores or, over the phone. This data helps businesses understand how well their offline campaigns are performing. Another tactic is to gather feedback from customers through surveys or questionnaires about how they heard about the company. By doing this companies can get an idea of which marketing channels are most impactful. Additionally businesses can use call tracking solutions that assign phone numbers to each campaign. By tracking calls companies can see which campaigns are driving phone inquiries and use that information for marketing strategies. These measurement methods help companies assess their marketing efforts, improve their tactics and allocate resources efficiently.

#### 4.4 Leverage Marketing Automation Platforms

A multitude of marketing automation platforms offer integral analytics and attribution capabilities. These platforms efficiently track user journeys across various channels without the reliance on cookies. Moreover, they often utilize first-party data and engage in behavioral analysis to effectively attribute conversions.

#### 4.5 Specialized Attribution Solutions

To address the inherent limitations of cookies and acquire valuable insights regarding multi-touch attribution, numerous organizations have undertaken the development of specialized attribution solutions. These solutions often leverage innovative data analysis methodologies and forge strategic partnerships with diverse data providers to enable comprehensive tracking capabilities.

### 5. DATA REQUIREMENTS

The data needs for marketing attribution cover components, for precise and efficient analysis. At the forefront is user interaction data, which monitors how users engage with marketing channels such as visiting websites clicking on ads and interacting on social media platforms. Conversion data, which represents desired outcomes like purchases or form submissions helps in attributing marketing efforts to results. Furthermore timestamps for each interaction and conversion offer insights into the sequence and timing of touchpoints. Channel details categorize interactions by marketing channels making it easier to attribute conversions to channels. Customer identity information allows for analysis across touchpoints if accessible. A defined attribution model dictates how credit is distributed among touchpoints. Data integration merges information from sources to present a view of the customer journey. Maintaining data quality and consistency is crucial for attribution analysis while complying with data privacy regulations ensures adherence to laws and obtaining consent. Lastly, leveraging analysis and reporting tools improves the understanding and visualization of attribution data.

#### 5.1 Impact of Data Quality and Data Freshness

The quality and freshness of data are critical for the accuracy and reliability of marketing attribution. High-quality data ensures accurate attribution by preventing the misattribution of conversions and uninformed optimization decisions. It also enables granular analysis, allowing marketers to make informed decisions about touchpoints, and facilitates prompt optimization by identifying underperforming channels for timely adjustments. Timely data helps provide a superior customer experience with relevant messaging and builds trust and credibility as decision-makers can be confident in the validity of the insights. Prioritizing data quality assurance and investing in technologies for real-time data collection and analysis are essential for successful marketing attribution.

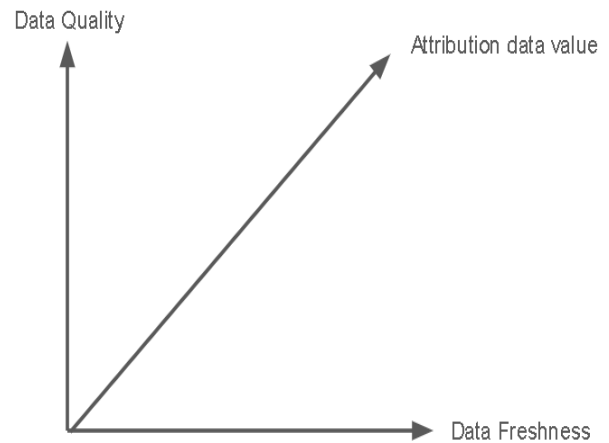


Figure 3: Attribution data value

#### 5.2 Data Limitations

Organizations encounter a variety of data related obstacles that hinder their ability to effectively utilize customer information. Challenges such as data, inaccuracies in data and the integration of data from sources are among the key issues faced. Strict privacy regulations can also limit organizations tracking abilities impacting the quantity and quality of data. To tackle these hurdles businesses need to embrace data management strategies and make use of tools and technologies. The implementation of a data governance framework, data security measures and the utilization of advanced data analytics solutions are essential for ensuring the quality, consistency, accuracy and security of data. Moreover organizations can exploit intelligence and machine learning algorithms to automate data processing tasks, improve data accuracy and recognize patterns and trends. Fostering a culture that values making decisions based on data equally crucial. By addressing these challenges related to data and deploying strategies for managing it organizations can unleash the potential of their customer information. This enables them to gain insights into their customers, provide experiences, enhance customer satisfaction levels and drive business growth.

#### 5.3 Measurement Limitations

Assessing the effectiveness of marketing campaigns and strategies can be quite challenging, due to obstacles that make it tricky to accurately assign credit. Multi channel attribution models often find it hard to properly distribute credit among the touchpoints involved in consumer journeys. Measuring the impact of marketing efforts like print ads or events continues to be a challenge. It's also tough to attribute long term outcomes such as brand recognition and customer loyalty. Furthermore external factors beyond a company's control, such as changes and competitor actions can significantly influence results achieved making the attribution process even more complex.

### 6. CONCLUSION

In today's world of marketing understanding attribution data is crucial. It gives marketers an insight into how customers interact with their brand from start to finish. This data driven strategy helps in tracking customer interactions across touchpoints starting from building brand awareness to completing a purchase. By analyzing this data marketers can gain insights into the performance of marketing channels and content strategies enabling them to make informed decisions and optimize their campaigns effectively. By utilizing attribution data marketers can pinpoint which channels are

most effective in driving conversions. This knowledge allows them to allocate their marketing budget wisely by focusing on initiatives that offer the returns. Additionally attribution data helps marketers comprehend the combined impact of touchpoints on the customer journey. This detailed analysis aids in identifying touchpoints and refining marketing strategies. Moreover, attribution data is instrumental in enhancing customer experiences. By recognizing touchpoints that significantly impact customer engagement and satisfaction marketers can tailor their strategies to provide meaningful experiences. This data centric approach does not boost customer satisfaction. Also fosters brand loyalty and drives business growth. In a market environment leveraging attribution data provides marketers with an edge. It gives them the ability to make informed choices, enhance their marketing strategies and boost business expansion. Through the use of attribution data marketers can acquire an insight into their clientele, develop more captivating interactions and ultimately reach their marketing objectives.

## **7. REFERENCES**

- [1] Marketing attribution model [Online] <https://www.insightly.com/blog/marketing-attribution-model/>
- [2] Marketing attribution definition [Online] <https://www.marketingevolution.com/marketing-essentials/marketing-attribution>
- [3] Statistical model definition [Online] [https://en.wikipedia.org/wiki/Statistical\\_model](https://en.wikipedia.org/wiki/Statistical_model)
- [4] Data driven attribution context [Online] <https://blog.google/products/ads-commerce/data-driven-attribution-new-default/>
- [5] Definition of customer lifetime value [Online] [https://en.wikipedia.org/wiki/Customer\\_lifetime\\_value](https://en.wikipedia.org/wiki/Customer_lifetime_value)
- [6] Customer acquisition cost definition [Online] [https://en.wikipedia.org/wiki/Customer\\_acquisition\\_cost](https://en.wikipedia.org/wiki/Customer_acquisition_cost)
- [7] Types of attribution models [Online] <https://www.factors.ai/blog/types-of-attribution-models>
- [8] Marketing mix modeling [Online] [https://en.wikipedia.org/wiki/Marketing\\_mix\\_modeling](https://en.wikipedia.org/wiki/Marketing_mix_modeling)
- [9] Cross channel attribution difficulties [Online] <https://www.measured.com/faq/cross-channel-platform-attribution-why-is-it-difficult/>
- [10] UTM parameters [Online] [https://en.wikipedia.org/wiki/UTM\\_parameters](https://en.wikipedia.org/wiki/UTM_parameters).
- [11] Multi touch attribution [Online] <https://segment.com/academy/advanced-analytics/an-introduction-to-multi-touch-attribution/>