

DATA DRIVEN MARKETING ASSOCIATION

THE ULTIMATE GUIDE TO ATTRIBUTION

IDENTIFY THE BIGGEST ATTRIBUTION CHALLENGES
— AND LEARN HOW TO RESOLVE THEM

SEPTEMBER 2019

The Ultimate Guide to Attribution

DDMA is proud to present this white paper on attribution. Written by eleven attribution experts — each bringing their own vision and experience to the table — this white paper unites extensive and valuable knowledge so you can deliver effective marketing.

In Chapters One, Two and Three, experts will explain what attribution is and why it is so important. Chapter Four will introduce the preconditions needed to start with attribution. Finally, Chapter Five will discuss eight of the most common challenges in attribution, each of them paired with relevant expert recommendations.

The white paper is written as a ‘read what you need’ document: each chapter can be read independently, making it quick and easy for you to find answers to specific questions. Enjoy!

About DDMA

DDMA is the association for the data driven marketing industry in the Netherlands. As this is one of the fastest growing sectors in Western Europe, we aim to raise its level by increasing the knowledge and knowhow of those involved. Together with our 300+ members (brands and agencies), we share insights on how businesses can leverage data and multiple channels to create a seamless customer journey and interaction. A DDMA membership acts as a badge of endorsement, indicating that you are a trusted organisation that takes responsibility for self-regulating the industry.

PARTICIPANTS



in

Boudewijn Beks
Product Specialist Lead,
Google



in

Alex Pepermans
Head of PPC
iProspect



in

Marnix Bakker
Team Lead
Nochii Online Marketing



in

Ilona van de Bildt
Sr. Solutions Engineer
Analytics
Google



in

Bert Van Dijk
Product Manager Search
Advertising
Reprise



in

Wouter van der Heijden
Digital Analytics
Consultant
De Nieuwe Zaak



in

Roel Overgoor
Global Digital Marketing
Manager
Philips



in

Denise Visser
Product Manager Experimentation
bol.com



in

Ruben Mak
Head of Data Science
Greenhouse



in

Rob Van den Berg
Senior Online Marketeer
NUON Marketing & Sales
Nederland



in

Lauryan Feijen
Cluster Lead Digital
Customer Engagement

Executive summary

The first-ever digital ad was placed in 1994, with Yahoo! and Google being among the first to jump on the bandwagon. Fast-forward to today and digital advertising has become a massive industry where, in 2018 alone, \$629 billion was spent on media worldwide¹². Following this growth, questions of media effectiveness have become increasingly relevant; what is the return on investment, and how can we know where to put our next marketing dollar?

Research by BCG and Google has shown that companies with successful data-driven marketing strategies save up to 30% in costs while generating 20% more revenue. They also identified the **six key factors** contributing to this, including attribution. For us, attribution is the art and science of assigning a value to each of the marketing touchpoints that make up a customer journey. It's a concept that has been around for a while, and touches on different business angles including technology, knowledge, organisation, and marketing strategy.

Being “less wrong”

Attribution is widely believed to be complex, and, assuming that the perfect solution isn't available anyway, people often prefer to stick with what they know. But continuing to use, say, the last-click attribution model, means that you ignore some crucial factors of your customer's buying process. So what should we do — (endlessly) wait for the perfect solution, or start now by taking small, incremental steps?

Before starting your attribution journey, there are some things to consider. Is the media usage within your organisation complex and fragmented? Then the opportunity will be bigger, but so will the challenge. To ensure you take the right steps at the right time, calculating the following three critical success factors is essential: knowledge development, marketing technology and organizational implications. Start simple, and grow from there.

Turning challenges into opportunities

We've now covered the theory. In practice, the challenges faced by marketers are only slightly different. In collaboration with a group of industry experts, DDMA and Google identified the eight most common challenges of attribution — and subsequently came up with suggestions for turning them into opportunities:

- **Challenge #1: Insights or action? |**
Attribution only adds value if you action on insights. Optimise within each channel first, then focus on the larger cross-channel questions.
- **Challenge #2: Model selection |**
What model do you select if data-driven attribution is not available?
- **Challenge #3: Tool selection |**
When selecting a tool, focus on the decisions it will allow you to make.
- **Challenge #4: The impact of branding |**
The impact of branding is hard to measure as it's often a long-term investment. Use brand trackers to validate your results.
- **Challenge #5: The implications for (partially) offline companies |**
We share examples of how leading companies tackle this.
- **Challenge #6: Combining attribution with other approaches |**
Combining granular (attribution) and aggregated (media mix models) approaches is key to understanding the bigger picture.
- **Challenge #7: The validity of your analysis |**
Media channels can only be (dis)credited if they have been used to full potential, so optimise your strategy before putting it to the test.
- **Challenge #8: The validity of your results |**
Double check the validity of your results by continuously running tests.

¹² <https://www.emarketer.com/content/emarketer-total-media-ad-spending-worldwide-will-rise-7-4-in-2018>

Index

1. Analysing media effectiveness	5
2. The potential of attribution	7
3. A matter of mindset: “Be less wrong”	8
4. Ready, set, go!	9
4.1 – The relevance of attribution	9
4.2 – Preconditions	9
4.3 – Where to start?	10
5. The 8 most common challenges	12
5.1 – Gaining insight or taking action	12
5.2 – Which attribution model to use	13
5.3 – What’s the best tool for you?	15
5.4 – Evaluating branding using a performance—based attribution model	16
5.5 – Integrating offline and online touchpoints	17
5.6 – Merging attribution with Media Mix Modeling	18
5.7 – Delivering the best customer experience	19
5.8 – Incremental effect experiments: what if you hadn’t advertised?	20
6. Conclusion	22
7. Contributors	23

1. Analysing media effectiveness

The first—ever digital ad was placed by HotWired* on 27th October 1994¹, marking the beginning of a new era in the advertising world. Soon after, Yahoo! and Google started distributing their first search ads. Fast—forward to today and digital advertising has become a massive industry where, in 2018 alone, \$629 billion was spent on media worldwide². Following this growth, questions of media effectiveness have become increasingly relevant: what is the return on investment, and how can we know where to put our next marketing dollar?

Media effectiveness in the digital era

Allowing marketers to measure a direct relationship between the first point of contact and moment of purchase, the first thing to revolutionise digital advertising was conversion. But, what happens if a person is exposed to several ads? Can the individual impact of each ad still be measured? As media spend increases and digital media channels and online activities diversify, this question has become increasingly important. A demand which has ultimately led to the emergence of the term ‘conversion—attribution’, which, from now on, we will refer to as ‘attribution’.

The white paper

As it turns out, attribution has long been a sensitive issue for the industry – impacting on many aspects including technology, organisation, and marketing strategy. How can this be tackled? Is there a way of establishing which advertising media are most effective for achieving our objectives?

Aiming to answer these questions, DDMA brought together a group of attribution experts in 2018. The ultimate goal? Identifying the biggest attribution challenges in the Netherlands, and thinking of ways to resolve these. This white paper has been written as a ‘read what you need’ document; each chapter can be read on its own, making it much easier for you to find answers to your specific questions. Enjoy!

Defining attribution

When speaking of attribution, this white paper will stick with the following definition:

“Attribution is the act of assigning a conversion value to each of the various contact moments that have contributed to a conversion.”

The above definition comprises a number of key elements, each of which we’ll illustrate with an example.

Conversion: The desired outcome/ goal of your website/ shop. For a holiday booking site, the ultimate conversion would be the booking of the holiday itself.

Conversion value: The value of the conversion. When booking a holiday, this would be the total booking cost e.g. £1,000.

Touchpoints: These are all the points of contact a customer experiences in the buying process. When booking a holiday, this could be anything from the first impression of a banner on an external news website, the click—through after seeing a video ad on a video platform, the opening of a newsletter, or the act of clicking on a search ad. Offline points of contact count too: visiting a physical travel agency is also considered a touchpoint.

Contributions: As there tend to be several moments that contribute to a buying decision, a buying process rarely consists of just one touchpoint. One touchpoint will have more impact than the other; an inspiring YouTube video is more likely to determine your next holiday destination than an impersonal banner placed by a travel agency.

Example: Attribution in practice

Mr. Jones wants to book a holiday, and travel agency DDMA Travel wants to provide it for him. Mr. Jones visits an online news website to check out some news, and he sees a banner placed by DDMA Travel offering ‘special deals

for sunny holiday destinations'. After reading his news articles, Mr. Jones moves on to YouTube to watch videos of his hero Johan Cruyff. Before playing the selected video, an ad is shown promoting the white sandy beaches of Bali, full of people enjoying their wonderful vacation. On his way home, Mr. Jones spots a roadside billboard promoting early booking discounts with [travel agency XX].

The next day it's raining, making Mr. Jones long for a sunny vacation even more. He searches for holidays on Google, clicks on an ad served by DDMA Travel and uses their website to compare the best deals. After talking to his family, he decides to book a 14-day holiday to Bali with DDMA Travel.

The banner on the news website, the YouTube ad, the billboard, the Google search – and even the weather – are all contributors to Mr. Jones' final buying decision. So, how can you establish the individual value of each of these touchpoints? That's where the attribution model comes in: providing insight into the added value of each individual element, the combined value and how the overall marketing message can be optimised.

¹ AdWeek, October, 2014. 20 Years of Digital Advertising: From Banner Ads to Sponsored Snapchats.

² Global Ad Spending: The eMarketer Forecast for 2018. May, 2018. Ad spending worldwide will rise 7.4% to \$628.63 billion in 2018.

2. The potential of attribution

Companies work hard to achieve their (growth) objectives. [Research by BCG and Google](#)³ has shown that the companies that are successful in their data—driven marketing save up to 30% in costs while generating 20% more revenue. They also identified six success factors, such as strategic partnerships, specialist skills, agility, connected data, automation and actionable measurement. The latter, combined with the right specialist skills, clearly indicate the potential of attribution.

Attribution helps companies to realise objectives more efficiently. Various studies have shown that applying attribution models can help increase return on investment (ROI) by a potential 20—40%⁴, with an average increase of 5% in conversions using the same budget. However, 56%⁵ of the researched companies⁶ are not currently benefiting from this efficiency, revealing an area of opportunity to not only work hard but also smarter.

Research from 2017 reveals that 81% of companies use some form of attribution⁷. Out of those companies, 44% use the 'last click' model. This is the most traditional and basic model of attribution, which only looks at the very last point of contact. We'll go into the various attribution models a little later, in chapter 5.2.

The current market can generally be perceived as 'adolescent'; most organisations are familiar with attribution, but less than 50% have actively used it to move forward. This white paper will take a closer look at the mindset around attribution, the organisational preconditions needed to get started with it, and the eight most common challenges that come with it.

³ BCG—Google Data—Driven Marketing Assessment 2017. N=40 European companies across 8 industries.

⁴ The State of Marketing 2013, IBM's Global Survey of Marketers. Global Summit 2013, n.d. Web.

⁵ International Journal of Research in Marketing. The path to purchase and attribution modeling: Introduction to special section and The effectiveness of different forms of online advertising for purchase conversion in a multiple—channel attribution framework. September, 2016.

⁶ Econsultancy—AdRoll, the State of Marketing Attribution. N=1000 practitioners from Europe, North America and Asia Pacific. September, 2017.

⁷ Econsultancy—AdRoll, the State of Marketing Attribution. N=1000 practitioners from Europe, North America and Asia Pacific. September, 2017.

3. A matter of mindset: “Be less wrong”

In 2014, the DDMA published ‘Conversion Attribution: The Blue Ocean for Marketers’, a white paper outlining a maturity model describing four levels of maturity for attribution within organisations: “float”, “dock”, “sail” and “autopilot”. It explains what an organisation looks like during each phase and identifies what actions can be taken to move up. In this white paper, however, we aim to equip you with the tools needed to make a start with attribution – regardless of the maturity of your company. No matter what stage your organisation is in, attribution will always be profitable.

Attribution offers a way of judging the added value of marketing channels. That said, it is based on a model, which is always merely an *approach* to reality. In order to make an attribution model as trustworthy as possible, it is therefore key that all touchpoints are considered. Unfortunately, this isn’t always possible in practice: a buying process might include external factors that are invisible or immeasurable.

Ultimately, attribution is not an easy subject. We all know what we want, but we don’t always know what is possible. The market identifies various factors that are currently obstructing the switch to a new attribution model, including:

- Lack of knowledge;
- Limitations in technology;
- Lack of time;
- Too much different data;
- Internal politics.

The question that remains with each of these examples, however, is “*don’t you want to be less wrong?*” As mentioned before, attribution models can generate meaningful results. Although the science hasn’t yet been perfected, and various experts admit that the perfect solution won’t be available for another couple of years, but only sticking to the last—click attribution model risks ignoring multiple key factors in the complex buying process. In other words: would you rather wait three years to make an enormous jump at once, or spend the next three years making small steps towards improvement? The latter is a very different and much more optimistic mindset; every small step can bring you revenue.

⁸ Digital Maturity Benchmark tool. Google in partnership with Boston Consulting Group.

4. Ready, set, go!

Before diving into the world of attribution models and conversion value distribution, it's important to establish what stage your organisation is, for instance with Google and BCG's digital maturity benchmark⁸. Are you ready to fully benefit from attribution? How do you even know? In order to help you answer this question, this chapter will look at the preconditions and processes that need considering. We also give you tips on how to get started and outline ways in which the business impact and expectations of conversion attribution can be conveyed to your company.

4.1 The relevance of attribution

Before we look at *how* relevant attribution is, we'd like to ask whether it is relevant at all. In other words, just how complex is the actual customer journey? How many points of contact does a customer experience in the path to purchase, and how long is the average customer life cycle? A rule of thumb is that the longer and more complex a journey is, the more potential there is to generate revenue by identifying the cost-effectiveness of each channel.

Still, when attribution seems relevant in theory, there is often another challenge: how does an attribution project compare to other projects your company could be investing in? Asking this often leads to a paradox – the more you want to know about the potential value of attribution, the bigger the investment beforehand. After all, it means that you need to look at more data, which requires knowledge and potentially more technology. It's for this reason that the industry deals with 'analysis paralysis' – in other words, advertisers tend to spend so much time analysing that they fail to subsequently act on their findings. That's why it's much better to start small, and from there, slowly build towards a more complex attribution model.

The goal of attribution

Applying attribution of success can offer value in the two leading questions of performance-based marketing:

- Maximising volume
- Most efficient spend of the current budget

Whether your budget is set, or whether it grows with your generated revenue, an attribution model can significantly help you answer the above points. When trying to allocate your media budget more efficiently, attribution can help identify which channels generate the most and least revenue by offering a comprehensive view of the real ROI of different channels. As such, the value of attribution (or the act of defining which method to use) is not so much a case of defining a model, as it is to take action based on its generated insights. Better insights mean better decisions, and will subsequently help you spend your next marketing dollar with more confidence.

4.2 Preconditions

In order to fully benefit from attribution, an organisation must be in compliance with certain preconditions, though these vary depending on the context. Things like complexity and digital maturity play a key role in the process of deciding what needs to be done. If you want to learn more about this, we recommend that you read '*Conversion Attribution: The Blue Ocean For Marketers*' (DDMA, 2014), a white paper in which the various stages of organisational maturity are discussed in great detail. For each of the four maturity phases, it looks at key factors such as culture, technology, knowledge, objectives and resources.

The aim of this white paper is to equip you with the tools needed to make an immediate start, as we believe that attribution can generate value with every step towards maturity. That's why this white paper will only distinguish between basic preconditions and advanced preconditions.

Getting started with attribution – the basic preconditions for your company:

- The importance of digital media has been recognised, as well as a need to create better insights in order to achieve growth and/or efficiency objectives.
- There is support for exploring the possibilities of attribution.
- Business objectives, online conversions and KPI's are clear.
- A substantial number of customers are being exposed to multiple ads before making a purchase.
- You using multiple marketing channels for your online marketing campaigns and track these activities using analytics to measure and analyse their impact.

Advanced preconditions: taking it further

If digital marketing has long been a crucial part of your organisation and your marketing department includes a devoted digital team, preconditions shift from awareness to the creation of processes that allow you to structurally apply the insights gained from attribution within the wider organisation. These processes will take place within the fields of knowledge, technology and organisation.

□ *Knowledge and support*

If you work in an organisation with multi-layered marketing and digital departments, a precondition would be that each layer recognises the added value of multi-touch attribution. In addition, they should all be familiar with the concept of assigning a set value to each touchpoint prior to conversion. Switching to this new way of value distribution has an impact on the entire (digital) marketing department, and so it should be your goal to acquire 'ambassadors' within higher management, who can support the project with budget and resources.

A precondition within digital teams is that knowledge around analysis and data procession is deepened and expanded. Data scientists are crucial to connecting data streams and tech solutions when standard solutions aren't within reach.

Besides, it won't just be business intelligence or analysts who will need to work with the attribution model, since media buyers and

campaign specialists will also need to use it for insights into the customer journey. This way, attribution won't only be used to assess which touchpoints bring most value, but to also look at why and how this happens, ultimately making it possible to act on these insights.

□ *Technology*

Existing organisations with a mature marketing department often comprise a variety of technologies, including tools for analysis, data management, back-end integrations, etc. When looking at technology, switching from last-click to multi-touch attribution has an impact on every single aspect of a very complex machine. As such, preconditions in the field of technology are not based on specific setups or attribution tools, but rather focus on mapping out the entire marketing technology landscape – including relevant data streams from media activity within your organisation.

□ *Organisation (culture & objectives)*

Organisational structures, responsibilities and targets within digital departments of larger organisations are often built up in silos divided by various online and offline channels. This structure clashes with the way in which a user experiences multiple touchpoints in a user journey, rendering it impossible to utilise paid media in a holistic way. As a result, we see fragmented campaigns with an insufficient business impact that harm the customer experience, as well as channel reports that contradict each other or focus on incomparable KPI's.

The precondition here is clear: breaking the silo structure by employing cross-channel project teams and embracing channel-transcending reporting and KPIs. In doing so, it is equally important that digital targets are not made up of channel-specific KPIs but instead target wider business objectives such as ROI, profitability, and customer value.

4.3 Where to start?

Attribution is a complex matter impacting on many departments and stakeholders. You'll have to deal with marketing, communications, finance, analytics, IT, sales, legal, and perhaps even more. How can you navigate this complexity if you really want to try and be 'less wrong'?

A simple start would be to look at attribution in the current web analytics package, or *within* digital media channels. Though it will have a smaller impact, this approach will help you achieve results much quicker, with less organisational complexity.

Spending too much time analysing or overcomplicating a problem is a common pitfall; trying to find a solution by getting other departments onboard may seem like a smart move, but before you've all reached agreement circumstances are likely to have changed again. That's why it's best to look at attribution like a process of growth: start small, and from there onwards, slowly expand to other departments, better solutions and more knowledge.



5. The 8 most common challenges

Are people, technology, and the organisational structure in your company all in compliance with the preconditions? Congratulations! This means that your team is ready to fully benefit from attribution.

However, reality has taught us that moving from the very start of attribution to a system where total media efforts are controlled using an overarching distribution model comes with many challenges. These will be discussed in the following section, along with guidelines – including practical examples and concrete recommendations – on how they can be addressed within your organisation.

5.1 Gaining insight or taking action?

In a perfect attribution world, analysis and action would be joined together. There would be one integrated dataset for all media channels, towards which the attribution model could easily be adapted. Results of these analyses would then be automated and fed back into advertising systems in real-time, and generated insights would automatically be turned into actionables. This is what we would call an ‘actionable single source of truth’, and perfect though it may sound, reality tends to face marketers with a number of challenges.

There will always be another data point or channel to add, and models are never fully finished. This leads to a lack of action, and subsequently, a loss of business impact. The challenge is therefore to balance this imperfection: when should you be investing in analysis, and when is it time to move into action?

Start with action: Maximise possibilities within channels

The beginning is simple in that it’s always best to start with action. It’s always a good idea to take full advantage of possibilities within a media channel, as these ‘single-channel attribution solutions’ (e.g. Google Ads Attribution) will help you look further than just the last click. Practical applications of this would be deduplication of affiliates, looking at the impact of generic search keywords, or

measuring the impact of all social interactions. What’s more, solutions are often in real-time, easily implementable and fully automated – it doesn’t get more actionable than that.

Add simple analyses: Look beyond the channels

The challenge gets more complex when we start looking at cross-channel attribution, with tools often unable to measure all points of contact. Examples of this would be a lack of cross-device behaviour, display impressions, and cost data. That said, we can still look at ways to ‘be less wrong’ even in these cases. Most web analytics platforms offer insights into attribution, which, along with some simple excel work, can be used to create basic attribution analysis. It would, for example, be possible to make a comparison between the media channel’s revenue share and the relevant costs. Based on this, you’ll be able to take immediate action such as budget allocation or target adjustments within each channel.

Be driven by analysis, but try not to ‘boil the ocean’

All marketers are looking for perfect attribution. Still, some questions seem unanswerable even when all required steps have been taken. An extra analytical step might be necessary – but how does this work?

First of all, it should be emphasised that the perfect answer doesn’t exist; after all, we’re only trying to ‘be less wrong’. Moreover, it’s important to have a clear view of the problem and what it is that needs resolving. Try not to ‘boil the ocean’ with a bias for action, is the starting point: attribution only adds value when it leads to a change of course.

To find the right methodology, a number of factors should be taken into account. As a starting point, concentrate on the methodology that provides you with insights based on which you can make confident decisions. The biggest challenge here is the allowed degree of insecurity, often woven through the analytical culture of an organisation. Where some

organisations are happy with generic market research, others like to test whatever there is to test. The choice is yours.

- Availability: Can an already existing study help you find a direction?
- Granularity: What level of detail is needed? Is a channel—wide answer enough, or are you looking for campaign—level analysis?
- Effort: Is it possible to answer your question? And if so, how much effort will it require?
- Impact: Is the impact on media efficiency worth the effort?
- Insights: Will you learn anything new (will the penny drop)?

As described earlier, attribution is only valuable when it leads to a certain action. This requirement makes the connection between analyst and marketer essential, though marketers can often make considerable progress on their own, too. Think about how accurate you want your analysis to be in order to take action and, as with so many other things, start with the basics and only start expanding towards new methodologies, tools, or challenges from there onwards.

So, where to start?

- Start with action: utilise the attribution solutions within your media channels.
Example: implement your data—driven attribution model in Google Ads.
- Add simple analysis: explore the possibilities within your current channel transcending tools, such as your web analytics package.
Example: how does the conversion rate of your channel relate to the overall media budget?
- Finish with bespoke analysis for your biggest challenges, but ‘ry not to ‘boil the ocean’. Formulate a clear problem statement, and focus on insights and impact. Seek analytical assistance if needed.
Example: measure the increase in brand—related searches following your YouTube campaign. Quantify this, and incorporate it into your budget allocation.

5.2 Which attribution model to use

“Let’s talk about attribution models,” said the marketing manager. He asked the analyst, “What models are there and which one should I choose?”. Like the marketing manager, anyone looking into attribution has to choose between various options, which is why this chapter aims to provide insights that can help you make all the right choices.

- *Rule—based attribution models*

Most people start with rule—based attribution models. As there is often a Last Click attribution model already in place before media buy is assessed, this is a good starting point for testing whether the chosen attribution solution corresponds to the numbers provided by Last Click.

The second step is to compare it with other rule—based attribution models such as First Click and linear attribution (equal distribution across all contact points of a customer journey). Key insights can be gained from analysing the shift in value across channels when comparing Last Click to First Click or linear attribution. Results will be a first indication of which channels contribute to what stage of the customer journey, and what the true impact of an attribution cycle will be. Is the difference too small for substantial impact? Then you might want to re—evaluate the attribution project; it is very possible that the customer journeys simply aren’t offering enough touchpoints, in which case none of the other attribution models will generate any substantial impact either.

- *Data—Driven Attribution*

Once an initial exploratory analysis based on data—driven attribution is complete, it’s time to decide which model best suits your needs. In addition to the earlier mentioned First Click, Last Click and linear models, there are various other rule—based models to choose from.

Data—driven attribution uses an algorithm that leverages historical data to decide the value of a touchpoint within a certain customer journey. Instead of basing an entire model on business rules chosen by humans, data—driven attribution models typically build

on the estimated odds of conversion during various touchpoints of the customer journey. Increased conversion chances for any of the points of contact influence how conversion value is distributed across all touchpoints.

The algorithms used for calculating these estimations can vary, with examples including Shapley value, (Hidden) Markov Models, Survival Models, and various other regression methods. It's difficult to elect a clear winner out of these methods since there are multiple factors in deciding what makes a model satisfactory, including underlying data, the quantity of data, and the selected variables. As always, 'garbage in = garbage out': data quality often plays a larger role in a model's quality than the exact method used for estimating conversion chances. Again, it is important to 'be less wrong': the goal is not just to reveal the ultimate truth, but also to take a step closer to better decision making. For that reason it's important to consider practical matters when selecting an attribution model - and don't be afraid to commit to the model you select.

- *Model configurations*

For both rule-based and data-driven attribution, there is often a need for additional configurations before a decision on model type can be made. An example would be deciding on a "look-back window" for impressions and clicks: up to how many days between a conversion, impression, and click do you count points-of-contact as part of the customer journey?

Another option would be 'idle time': what is the maximum time allowed between points-of-contact in order for them to be counted as part of the same customer journey - and once a customer has made a conversion, does the customer journey start from scratch or does it keep running?

For many of these configurations, there is not a singular configuration that reveals the truth. Rather, it's about doing an 'educated guess', based on knowledge of the specific advertiser, the customer journey, and the product or service.

Customer journeys in the automotive industry are often long, and the configuration and attribution model of choice should ideally reflect that. Internal business considerations can also play a role in configuration - it's recommended that you opt for a configuration and model that are easy to interpret for those who need to work with it. When exploring potential configurations, another thing to consider is their actual impact on the outcome; if small configurations don't cause any major changes, there is no need to worry so much about the exact type.

- *Know your data and model's weaknesses*

Since underlying data is so important, knowing for which media buy you might be missing data is key. Where click data is often readily available, impression data is only accessible to certain channels. As impression data can generally provide you with a more comprehensive view of the customer journey, it's important to know exactly when you can and cannot access them - especially since media buys that don't have access to impression data are likely to be underestimated.

Impression data also has different value for each media buy; when it comes to search, for instance, a lack of clicks is far more likely to decrease the impact of an ad than, say, an online video that is rarely clicked on anyway. If the opportunity to use cross-device data arises, this is your chance to obtain richer customer journey data.

However, the same goes here: some media buys will reap more rewards from cross-device solution than others. For example, using Facebook cross-device will help Facebook inventory perform better as it means that users are already logged in for each media buy, making it much easier to mutually connect them. This won't always be possible for other types of media buy.

Finally, it's crucial that you remain critical towards methodology when using cross-device; no method is 100% accurate and unjustly identifying traffic as coming from the same user is a possible risk of cross-device methods.

Recommendations:

- Start by analysing attribution models, and compare their potential impact.
- Evaluate whether the quantity and quality of your data are sufficient for you to make decisions based on data—driven attribution. If not, choose the rule—based model that best suits the needs of your company.
- Know the weaknesses of your model and its underlying data.

5.3 What's the best tool for you?

In a perfect world, we'd all use data—driven attribution tools in which all impressions are considered, cross—device would be activated, and insights into all data sources – including offline touchpoints and conversions – would be provided. Ideally, we'd also be able to rectify returns and calculate which marketing channel realises the highest rate of profit.

It would be brilliant if we could accurately predict our spending budget, as well as the conversions we'd lose if we decided to pause a certain channel or campaign. Of course, these tools would need to include fully automated integrations with all our bidding tools so as to automatically optimise each of our budgets based on true attribution. And last, but not least, this tool would be available within our budget.

In the real world, however, such a tool is yet to be developed. And challenges faced by the market are multifold; GDPR/AVG, ITP 2.0 and walled gardens are all measures keeping us from measuring as accurately as we'd like, causing the quality of our data set to deteriorate. Even if we did possess a tool with all the aforementioned features, these industry trends will still keep us from generating perfect data and insights. In other words, don't strive for perfection!

With this in mind, how can we ensure that we pick the best possible tool? To begin with, it would be helpful to see which attribution opportunities from each tool are already in use. This will save you in costs and is generally a good place to start, especially if attribution is still an uncovered area within your company.

Start small, and expand from there. Slowly introduce people to the idea of attribution by letting them work with simple tools and

models, and gradually prepare them to make the next step towards advanced attribution. Tools such as Google Ads (formerly Adwords), Visual IQ and Google Analytics all offer various attribution models.

Whether you're using a standard tool or one that is bespoke, always make sure that you're working with data of the highest quality before you start comparing attribution models and analysing tools. As with tools, there is no such thing as perfect data, which means that, in order to keep the margin of error to an absolute minimum, all data affected by us needs to be collected as accurately and optimally as possible. Make sure you do this before you do anything else, as you don't want to risk making any key decisions based on incorrect data (plus, convincing people that making adjustments based on attributed data is profitable could be a challenge). What is often overlooked is the challenge that comes with bringing together cost data from different channels and correctly connecting these to the website data, but doing so is vital to making effective decisions. One channel can generate twice as many attributed conversions as the other, but if this means that costs are also doubled, its effectivity should still be questioned.

As soon as all data is in order, it's time to start analysing and reviewing existing attribution opportunities. A few questions to consider:

- What insights does this tool provide?
- What data does it apply to (e.g. a certain marketing channel, a specific advertising network)?
- What questions does it answer?
- What actions can I take based on its provided insights?
- Will it allow me to automatically optimise campaigns or budgets?
- Will it help me apply automated bidding?
- How far back does it go?
- How many touchpoints does it consider?

Once these elements are identified, start working on the basis of what's already there. This will inevitably lead to limitations – and that's a good thing, as it will allow your organisation to grow within the area of attribution, while also providing evidence for a business case on why you should be purchasing

a tool that is fully bespoke. The limitations mentioned earlier will help you compile a list of basic requirements; what results have been achieved so far, which limitations have been hit, and how will results change once these limitations are gone?

Using these insights will allow you to do a rational cost—benefit analysis. Other than technical licensing, implementing a custom tool requires a lot of implementation time, both in hours and time—to—value (the time between the start of implementation and moment that implementation and data collection have provided sufficient insights for real analysis).

Two recommendations:

- Assess the quality of your data and work with what’s already there; how much improvement can be made based on that?
- Decide what actions you can and cannot take using this data and establish whether a more advanced tool will help you overcome these (very specific and defined) challenges.

5.4 Evaluate branding using a performance—based attribution model

In general, each channel has its own specific properties. There is, of course, a world of different channels out there, but here’s a simple example: TV commercials, out—of—ome advertising, and online display advertising are often used for branding purposes. Aside from these, the channels most used for realising conversions are Paid Search or affiliates – this is also called performance marketing.

There is a certain tension between performance marketing and branding; using attribution can

make branding activities seem of little value. A video campaign costing \$100.000 that, when measured by a data—driven attribution model, only generates \$1,000 in revenue seems much less valuable and efficient than a \$500 Paid Search campaign with the exact same returns.

However, a video campaign’s primary goal is not to drive conversion rates – as it is with paid search campaigns – but rather to raise brand awareness. Each marketing activity has different objectives with different KPIs. The below table provides an overview of KPIs for both branding and performance marketing.

The measurability of branding activities

There’s no point in just fixating on data – especially when data isn’t fully complete (yet). Within each attribution model lies the opportunity to either record impressions and clicks or just clicks as touchpoints. To gain insight into a display or video campaign’s real value, an advertiser can decide to record impressions as well as clicks. However, it’s impossible to tell whether an impression means that the ad was actually seen by a person (an ad might have appeared at the bottom of a page). As such, it’s possible that attribution models taking impressions as a sign of success produce results that are too positive.

For this reason branding KPIs are often measured by means of questionnaires – results of which are not considered in the attribution model. A video campaign may only have generated \$1,000, but it could also have increased brand attitude from 20% of the target audience to 70%, which will ultimately have a massive impact on the brand and future sales.

Branding KPIs	Performance KPIs
Brand awareness (e.g. the logo should be recognised by 99% of the target audience)	Leads (e.g. 500 leads)
Brand knowledge (e.g. 90% of the target audience should know that the product is healthy)	Transactions (e.g. 5000 transactions)
Brand emotions (e.g. the brand should evoke positive feelings with 70% of the target audience)	Revenue (e.g. \$ 5,000,000 revenue)
Brand positioning (e.g. 80% of the target audience should rate the brand as premium and innovative)	
Brand attitude (e.g. 70% of the target audience should have a positive attitude towards the brand)	
Brand relationship (e.g. 30% of the target audience admits to being committed to the brand)	

The ultimate challenge is to provide better insights into all branding activities by bringing these two worlds together. As part of this, measurable elements in branding campaigns can be approached from a different perspective. Quantitative web analytics KPIs that say something about branding – think engagement KPIs such as pages per session or event interactions – can be set up as conversion goals in order to be considered in an attribution model.

Handling measurability

At this moment in time, integrating the worlds of branding and performance into one set of data is not yet possible – so it is essential to deal with it appropriately. Firstly, be critical when approaching attribution model results. Secondly, use your expertise, experience, and branding study outcome (campaign x increased brand awareness by 10%) to come up with your own, nuanced interpretation. This way, an online marketer can choose to set up a video campaign based on the attribution model prediction that it won't have a positive ROI but will add overall value.

As such, dealing with branding and performance attribution is still a world of its own, requiring an online marketer to have a natural feel for their brand, the customer journey, and its long term objectives.

Recommendations:

- Stay critical of attribution results and be conscious of the fact that not all activity impact can be measured.
- Use branding study outcomes, as well as your own experience and expertise to put attribution analysis into perspective; don't blindly trust the numbers.

5.5 Integrating offline and online touchpoints

Attribution goes beyond channels, data points and the organisational structures that impact on (customer) data. Both 'online' and 'offline' comprise multiple channels, each with their own specific opportunities and challenges. In this chapter, we'll be taking a closer look at the challenges marketers face when merging 'online' and 'offline', ultimately aiming to offer some practical guidance.

Challenges

First off, it's a good idea to organise your online attribution in such a way that all online channels are mutually connected. In other words, ensure the data quality of your web analytics is up to scratch. An example of this would be clearly organising your existing clients so that they can be easily identified.

Moving on, offline touchpoints come with two challenges:

1. Measuring offline channels as part of the customer journey.
2. Assigning online and offline touchpoints to an offline conversion.

Measuring offline channels as part of the customer journey

Offline touchpoints are much harder to measure than online touchpoints, but it is possible when using current techniques in a smart and efficient way. Let's look at some examples that Dutch brands have implemented:

1. **Nuon Vattenfall (Energy):** Letting telemarketing conversions take place on the same online platform allows attribution models to also take touchpoints prior to the phone call into account. This becomes much more difficult when looking at door-to-door sales, which typically include multiple offline conversions. However, as those customers have often already visited the brand website, the solution could be as simple as sending them a welcoming email. One click on the email will automatically connect the customer's historic website behaviour to the registration, both of which can then be considered a touchpoint.
2. **NS (Rail Transport in the Netherlands):** Loading a broadcast schedule of your TV ad into your attribution tool can help you measure how TV and radio impacts on your online traffic and revenue.
3. **Shipping company:** Using vanity URLs that can only be communicated via specific offline channels, such as mail, can help you measure the impact of these activities online. A vanity URL is a short, descriptive and (most importantly) memorable URL used for redirecting.

4. **Zijm (Automotive):** Some tools allow you to show dynamic phone numbers on your site, meaning that every customer is shown a different phone number for customer service. When calling this number, customer service departments will be able to track down the customer's online behaviour.

5. **Kees Smit (Home & Garden):** Kees Smit connects online and offline using QR codes or NFC chips, allowing customers to look up information on in-store products. This way, customers who like to browse offline are still being recognised online.

Assigning online and offline touchpoints to an offline conversion

Assigning online and offline touchpoints and channels is an activity that comes with many different challenges, including:

1. What do you do when customers have experienced digital touchpoints as well as telemarketing interactions? How can this be spread across channels?
2. How does customer service impact on digital engagement?
3. How can the (potentially overlapping) impact of door-to-door sales be recognised?

Typically, the above challenges are revealed when individual channels (often housed in separate teams or departments) claim their contribution to revenue. This leads to a situation where the sum of all revenue coming from individual channels is higher than the actual revenue growth recorded in financial reporting.

In order to successfully assign online and offline touchpoints to offline conversions, it is crucial that:

1. Offline conversion is accurately recorded within your data.
2. Each touchpoint has a unique key per customer so that touchpoints can easily be connected or disconnected.
3. Touchpoints contribute to conversion (in other words, how does an offline or online touchpoint relate to the conversion?).

Following this, you'll be able to identify which touchpoints contribute to conversion and which ones don't, providing you with an overview of touchpoints that still require work. Available data gives you the opportunity to improve your analysis and apply it to the attribution models.

The above section has led to the following recommendations:

1. Map out which touchpoints are part of the customer journey - both online and offline. Then, identify which touchpoints are not being measured yet.
2. Work with digital analysts to think of ways to measure these touchpoints, so that they can be included within your attribution model. Let examples inspire you.

5.6 Merging attribution with Media Mix Modeling

Measuring how different media influence digital actions is not always easy. Where digital impact is relatively easy to measure thanks to the use of user data (cookies), offline data is generally aggregated. Chapter 5.5 looked at how user-level data can be collected for aggregated media (TV, radio, out-of-home), but what can we do if this doesn't work? Are there other ways of determining the perfect media mix? This chapter will offer guidance for those working with television attribution and media mix modeling.

Media mix modeling (or marketing mix modeling) is defined by Nielsen⁹ as "Marketing mix modeling looks at the historical relationships between marketing spending and business performance in order to help you determine your business drivers and how much you should spend—along with the best allocation across products, markets, and marketing programmes.". In short, it's an econometric methodology aimed at modelling media impact based on movements over time. Used to define media effectivity since the 1980s, media mix modeling is nothing new, but it's still a great approach to working with aggregated data. What's more, it's one of the very few methods that can be used for both digital and non-digital media analysis.

⁹ Nielsen: Solutions and Capabilities. Marketing Mix Modeling defined as: "Marketing mix modeling looks at the historical relationships between marketing spending and business performance in order to help you determine your business drivers and how much you should spend—along with the best allocation across products, markets, and marketing programmes".

However, it also has its downsides; it is often costly, takes long, and provides results that aren't granular enough. When it comes to digital, this means that it's possible to gain insight into effectivity of your banner ads, although you may not be able to tell the difference between, say, prospecting and retargeting tactics.

Another tool for gaining insight into the relationship between TV and digital is 'TV attribution', which looks at how TV impacts on digital while also trying to identify efficiencies between the two. Assessing the change in website behaviour when a TV commercial is aired, this tool basically puts broadcasting schedules against user behaviour.

The objective here is that broadcast advertising directly leads to more website traffic – for example – think of someone who uses their smartphone to look up something they just saw on TV (this is also called 'second screening'). TV attribution is particularly useful for capturing direct responses; long term impact ('branding') requires a different approach.

As this section has shown, there are a few things to keep in mind when trying to determine which media mix is right for you:

- Media mix modeling offers a view of media effectivity on an aggregated level, and allows you to take into account offline (TV, radio, print) as well as digital media.
- Media mix models lack granularity, and so it is important that they are used in conjunction with attribution in order to get a fuller understanding of all digital touchpoints.
- If you are interested in the impact of TV commercials on digital behaviour, you can use TV attribution to measure the extent to which your TV commercial directly leads to website traffic. However, please note that this can only measure 'direct response' and doesn't take into account the long term effects of branding.

5.7 Delivering the best customer experience

Attribution looks at the added value of all points of contact, but there are two touchpoints between a marketing channel and final conversion that are particularly

important: your marketing expression and your website. It's the customer experience that tells you whether you're appropriately catering for the traffic driven to your site by different marketing channels – and ultimately that's what drives conversions.

For maximum success, it is therefore key to ensure consistency between what is communicated across your marketing channels and on the relevant landing pages. Analyse behaviour of customers coming from a specific channel; if bounce rates are relatively high, it's likely that visitors coming from that channel had a different expectation of where they would end up (or perhaps the landing page didn't include any actions/clicks, making it much more difficult to measure user engagement).

Living up to a visitor's expectations isn't just a case of being consistent in your messaging, but also depends on whether the actual content resonates with them. If you know some of your website visitors fit a marketing profile for which official language is more appropriate and likely to lead to higher conversions, you can adapt the language used in their customer journeys accordingly, or even utilise a different means of communication altogether.

Creating user profiles and combining these with an understanding of their online behaviour and media touchpoints can help you decide what products or content to show to which user. A/B testing is an excellent way of verifying which content strategies work and which ones don't, allowing you to gradually personalise your strategy by targeting specific user groups with specific content.

Using Customer Relationship Management (CRM) information is desirable as it allows you to align content to a specific audience even more efficiently. If you know that a customer contract ends within two months, for example, sending them a relevant offer to encourage them to extend their contract – and start a new customer journey – would be a strategic move. Tailoring your content towards a specific target audience using data from your Data Management Platform (for digital activation of your CRM data) will thus significantly increase your success. If you successfully recognise your

customers, you will always be one step ahead of your competition.

Recommendations:

- Your website is the central touchpoint in the customer journey; no matter how effective your media channels, if the user experience doesn't live up to it, your overall media performance will still lag behind.
- In short, ensure that your marketing expressions and website are both fully in line with your visitors' expectations.

5.8 Incremental effect experiments: What if you hadn't advertised?

The sun rises after the rooster crows, and barometers fall when the weather worsens. Yet, stopping the rooster from crowing won't keep the sun from rising, and forcing the barometer to drop won't make it rain. These are classic examples of correlation versus causality; easy to understand for humans, but when it comes to attribution, it's one of the most complicated subjects.

For example: users in your retargeting segment are more likely to click on your ad and convert, but does that mean that the effectivity of your ad was higher or was it always going to be more likely as the user had already visited your site? Attribution provides insight into the individual value of the different marketing touchpoints in comparable customer journeys. Yet, it doesn't give any information on how many *additional* conversions you've generated; in other words, it doesn't measure the incremental value.

A/B testing, or Random Controlled Experiments (RCT), offer a unique way of experimenting in the digital world by providing insights into causal effects. For these experiments, users are randomly divided into test groups (A) and control groups (B), and it's key that the meaning of comparing the two is always clearly defined. Common examples of A/B testing are creative, bid strategy and incremental effect experiments:

- Creative experiments test the impact of campaign creatives by showing different versions to group A and group B.
- Bid strategy experiments are very similar, except that they compare bidding strategies rather than creatives.
- Incremental effect experiments are different; where group A is shown various

ads, control group B isn't shown any (they call this the 'holdout group'). This experiment helps measure the 'incremental' impact of ads, by which we mean the *additional* impact of tested ads (as part of media buy) while the rest of media buy and other factors remain unchanged.

Incremental effect experiments are incredibly useful for preventing the causality problems that arise from conversion attribution, but it does come at a price. Purposely not advertising for the holdout group means partly losing potential positive impact of your ads, for which you'll have to compensate by paying opportunity costs.

As such, it may seem strategic to put just a small percentage of users in the holdout group, but it's important to realise that the smaller this group is, the longer your experiment will have to run before showing meaningful results. In practice this means that, compared to a 50% holdout group, a 10% holdout group will have to walk (nearly) 5 times as long for the same results. Letting your decision—making solely depend on incremental effect experiments would therefore not be a profitable way of consistently optimising media buy on a detailed level. If that is indeed your goal, conversion attribution would take you a lot further.

Besides, testing the incremental effect for each media channel would be technically unviable. Some channels don't support it, and for the ones that do it can be difficult to know whether the results are 100% accurate. What's more, drawing firm cross-channel conclusions based on only incremental uplift experiments is hardly ever possible. One of the biggest potential added values of conversion attribution is its ability to break silos and spread and optimise budgets across media channels. As soon as it appears that part of the media budget could be put to better use in another channel, this opportunity can immediately be put into action. In view of this, it's always desirable to use conversion attribution in addition to incremental uplift experiments.

For this reason, it's important to fully understand the pros and cons of conversion attribution and incremental effect experiments. While conversion attribution is suitable for continuous and detailed optimisation of media

buy within and across channels, it's important to realise that it never implies causality. Incremental effect experiments are mostly resistant to these causality problems and offer a much better estimate of the true effect, but due to opportunity costs, they are expensive.

That's why we highly recommend a combination of the two: conversion attribution for continuous optimisation of media buy, alternated with periodical incremental effect experiments on parts of the media buy that need further investigation.

Deciding what media buy needs assessing can be done based on insights from conversion attribution, whereas results from incremental effect studies can be used in order to adapt attribution models so that their results correspond to experiment outcomes. Following this plan, both methods can be used to mutually complement each other.

Recommendations:

- Conversion attribution does not show causality, and as such, it is required to combine attribution with periodical incremental effect studies.

Experiments are always attached to opportunity costs and are therefore less suitable for continuous optimisation than conversion attribution. In addition, it's technically impossible for incremental effect studies to run on all media channels, while conversion attribution makes it possible to spread media buy across all channels. For both shortcomings, using a combination of both methods is the best solution.

6. Conclusion

Data is not perfect. And attribution is not an easy topic. We all know what we want in the end, but we don't always know what is possible — especially since the market comes with multiple obstructions. This doesn't mean that marketing attribution isn't worthwhile; on the contrary, optimising your marketing spend by gaining a better understanding of the data available to you is now more important than ever. It is all about the mindset in the end: we can't be perfect, but we can definitely be “less wrong”.

That's why, in this paper, we have outlined pragmatic approaches that will help you set up and execute attribution within your company in order to make the most out of your data. Your marketing mix (and attribution) is a network of interacting and ever-changing channels and touchpoints that should be considered as a whole.

In Chapters One, Two and Three, we explained what attribution is and why it is so important. Chapter Four introduced the preconditions needed to start with attribution. Finally, Chapter Five discussed eight of the most common challenges in attribution — each of them paired with relevant expert recommendations.

As a summary, the following best practices should be considered when introducing, or applying, attribution modeling:

1. Make sure your data is measured as accurately as possible. Data quality is key.
2. There is no such thing as perfect data, a perfect tool, a perfect model, or a perfect methodology.
3. With that in mind, you need to choose which approach makes most sense in which situation, and take it step by step.
4. In addition, you need to understand both the limitations and strengths of your tools, data, and chosen model.
5. It's also key that you understand how to interpret your data: what is it telling you?
6. And finally, always keep testing and iterating: learning means growing.

7. Contributors

- Marnix Bakker (Nochii)
- Boudewijn Beks (Google) ¹⁰
- Rob van den Berg (Nuon)
- Ilona van de Bildt (Google) ¹¹
- Bert van Dijk (Reprise)
- Lauryan Feijen
- Wouter van der Heijden (De Nieuwe Zaak)
- Ruben Mak (Greenhouse)
- Roel Overgoor (Philips)
- Alex Pepermans (iProspect)
- Denise Visser (bol.com)

Sources:

1. AdWeek, October, 2014. 20 Years of Digital Advertising: From Banner Ads to Sponsored Snapchats.
2. Global Ad Spending: The eMarketer Forecast for 2018. May, 2018. Ad spending worldwide will rise 7.4% to \$628.63 billion in 2018.
3. BCG—Google Data—Driven Marketing Assessment 2017. N=40 European companies across 8 industries.
4. The State of Marketing 2013, IBM's Global Survey of Marketers. Global Summit 2013, n.d. Web.
5. International Journal of Research in Marketing. The path to purchase and attribution modeling: Introduction to special section and The effectiveness of different forms of online advertising for purchase conversion in a multiple—channel attribution framework. September, 2016.
- 6, 7. Econsultancy—AdRoll, the State of Marketing Attribution. N=1000 practitioners from Europe, North America and Asia Pacific. September, 2017.
8. Digital Maturity Benchmark tool. Google in partnership with Boston Consulting Group.
9. Nielsen: Solutions and Capabilities. Marketing Mix Modeling defined as: “Marketing mix modeling looks at the historical relationships between marketing spending and business performance in order to help you determine your business drivers and how much you should spend—along with the best allocation across products, markets, and marketing programmes”.

^{10,11} Contributions from Google limited to sections 3, 4.2, 5.1, 5.2, 5.3, 5.6 and 5.8.