Abstract    Mobile adoption is causing a big transformation in consumer behaviour, yet there is still very limited evidence about the value of mobile as a marketing channel. This paper summarises the findings from a series of cross-marketing effectiveness studies that were initiated by the Mobile Marketing Association. Using an approach that leverages individual-level data and regression analysis, these studies aim to quantify the value of mobile in the mix and provide insights about the specific value of mobile formats such as banners, audio, video and native, as well as targeting methods including location targeting.
KEYWORDS: mobile advertising, ROI, advertising effectiveness, media mix optimisation, mobile formats, location targeting

BACKGROUND
With the ever-increasing pressure on marketers to achieve profitable growth and a laser focus on their bottom line, the need to understand the impact of their marketing and which part delivers the highest return on investment (ROI) is critical. At the same time, as mobile investment is increasing at the fastest rate of any media, new questions emerge in terms of its actual contribution to business results. Mobile adoption is causing, without doubt, a major transformation in consumer behaviour, yet there is still very limited evidence about the value of mobile as a marketing channel. Within that context, questions have emerged in terms of the possible limitations of mobile. Indicatively:

- Can marketers create meaningful advertising experiences given the size of the screen?
- Do consumers find mobile advertising to be intrusive or invisible (small banners)?
- What is the quality of mobile data and can marketers use them to target consumers with more relevant experiences?
- Lastly, can all the above be done at scale?

Considering the above context, there is a need to quantify the value of mobile in the marketing mix and better understand the way in which mobile advertising tactics work in relation to their media cost and to other channels. The ultimate goal is to help marketers optimise their budgets and make the right allocations to mobile advertising.

In response to this need, the Mobile Marketing Association (MMA) initiated an industry-wide research program (SMoX) to address these critical questions, with the support of key MMA members (Vodafone, TWC, Pandora, InMobi, xAd, Tremor Video, Facebook, Turkcell, Millennial Media, Verve, Urban Airship, Yahoo!, WEVE, MXM, Meredith, Videology, Twitter, Hello World, Avea and AT&T Adworks) and the participation of leading marketers (The Coca-Cola Company, Walmart, AT&T and MasterCard).

The MMA selected Marketing Evolution to design and lead the research overall as well as Millward Brown Digital to lead the technical integrations and data collection (including sales data match). The goal was to develop a new approach to scientifically assess the value of mobile in the mix using real in-market campaigns. By building a methodology that includes real-life campaigns, the resulting research would allow for complete visibility into media effectiveness across the entire mix. The methodology includes experimental design and statistical modelling conducted on a continuous basis over the duration of the campaign. Exposure data are collected for all media and new technological innovations are employed to measure mobile’s value even if the allocation to mobile media is low, which is usually a hurdle for many other methodological approaches. Measurement includes sales behaviour, foot traffic to stores and brand impact, thus providing a comprehensive view of advertising ROI. The first SMoX studies were executed for in-market campaigns with leading brands including AT&T, Coca-Cola, Walmart and MasterCard.

Executive summary
The findings from studies conducted in the USA and China show that mobile is a strong contributor to campaign performance, driving results across the entire purchase funnel. From upper funnel metrics like awareness and image, to purchase intent and even actual foot traffic and sales lift, the empirical evidence proves that mobile has a strong contribution to campaign results, in
many cases being twice as efficient relative to the campaign average and justifying a double-digit allocation of the entire media mix (not just digital) to mobile. While each campaign was different in its goals, target and overall impact, it is estimated that such a reallocation to mobile would produce significantly better results for the campaigns overall, without the need to invest additional funds.

With that in mind, the findings also show a number of ways to optimise this double-digit mobile investment and make it work harder. These recommendations will be addressed later in more detail but include: uncovering the relative value of different ad formats and mobile channels in relation to their cost; using location and context-based targeting to reach consumers; taking advantage of creative to optimise mobile performance; and better integration of mobile with other channels. Layered across these in-campaign studies is the analysis of different advertising responses based on frequency, so that impact can be optimised and diminishing returns managed.

We estimate that applying these recommendations will increase marketing ROI from mobile by as much as 100–160 per cent, but doing so also begins to shed light on what is possible for mobile and for marketing overall. Mobile can be a catalyst to upgrade all marketing operations to become more agile and achieve the paradigm of ‘right message to the right person at the right time, at the right price’ across the purchasing process.

**DETAILED SMoX FINDINGS**

**Methodology overview**

The research applies Marketing Evolution’s cross-media attribution modelling approach, which has been independently reviewed by the Advertising Research Foundation through two separate official reviews and leverages new approaches to providing a granular read for mobile.

In brief, the approach focuses on creating individual-level datasets for analysis, which contain key information on the respondent (demographic, psychographic), their media exposure to all elements of the campaign, and the key performance indicators (KPIs) under consideration. These KPIs can be either survey based — awareness and other brand metrics — or behavioural, based on sales or store visitation data. In essence, unlike time series (eg marketing mix modelling), which aggregates data across a country or regions within it, this approach focuses on individuals, and models how all media touchpoints and demographic characteristics interact to influence marketing outcomes.

The methodology for SMoX starts with complete detail on every dollar planned in the media mix. The detailed media plan is connected to digital ad servers and all the leading syndicated databases for reach, frequency and composition to calculate ad delivery down to the individual consumer level. A representative cross-section of consumers is sampled so that a robust individual consumer dataset can be analysed.

**Mobile measurement methodology in detail**

Cross-media mobile measurement is complicated by the fact that the mobile device has its own ID (MUID) and has to be matched to other media exposure IDs, such as from digital, television, etc. In addition, mobile campaigns are typically smaller, and therefore not easily measured by time-series or attribution modelling techniques. While a number of methodological approaches have been developed to measure mobile, including laboratory experiments, self-reported measurement for mobile or click-through recruitment to capture the value of mobile, the MMA was committed to an approach that leverages real-world measurement and individual-level data as the basis for analysing mobile’s role in
the mix. With this in mind, the SMoX research studies included extensive technical integrations with mobile media properties so that mobile ads could be delivered to consumers in the panel at the levels of frequency and exposure dictated by the research design. The approach includes matching the publisher’s user base via their unique mobile device ID (free of PII) with the panel platform used for fieldwork, which also collects these mobile device IDs (panellists opt in to share this ID). This rather complex technical integration allows for natural in-market field experiments and the observational research desired, thus enabling the collection of rich individual-level data for all media, including mobile. In essence, the publishers can target those panellists with predefined amounts of bonus impressions, which allows the researcher to control the experiment, while also ensuring that the panellists get exposed naturally in their usage of the publisher’s app or mobile site. Once panellists are exposed, the platform recognises this and sends them a survey invitation. Summarising, by targeting panellists directly, we have managed to significantly improve the mobile approach by having large sample sizes of full survey, incentivised respondents participating. Furthermore, their frequency of exposure is known, as opposed to other methods that only recognise control versus exposed — allowing us to develop our lift to frequency response functions.

Analysis
For each consumer the dependent variables include sales (measured through data appends to sales databases or sales panels) as well as branding metrics (measured through survey), foot traffic, or other behavioural measurement such as downloads. The analysis leverages logistic regression models that isolate the contribution of exposure to various media activities to sales (or any other KPI). The model also controls for other factors, including behavioural characteristics and demographics of the individuals in the sample. Profile variables are appended at the individual consumer level including a wide range of data (2,000 digital behavioural data fields, geo-spatiotemporal data such as the distance they live from a store, the type of neighbourhood the individual lives in, the local weather conditions, local economic conditions). All analysis connects back to individual media exposure patterns across all media. Individuals fall into exposed/control or heavier/lighter cells, making it possible to evaluate the incremental impact of each creative message in each form of media, across all the media in the mix. The analysis also allows for interaction and synergy effects across media. The representativeness of the sample is easy to confirm, because the data appends allows us to compare the population dynamics to the overall population and a wide number of variables.

In addition to the above, the overall recommendations provided in this paper are also based on meta-analysis of over 100 studies measuring mobile in isolation using control/exposed design as well as Marketing Evolution’s Benchmark database.

Marketing questions
The overall goal of SMoX is to scientifically assess the value of mobile in the mix and help marketers use mobile more effectively to drive their business goals. The learning agenda covers the following key areas:

1. quantifying the contribution of mobile in the mix and its ability to drive results across the purchase funnel;
2. investment level that should be devoted to mobile to optimise marketing ROI;
3. insights and best practices to achieve the best results from mobile.
Some of the specific questions we set out to answer include:

1. What value does mobile create relative to other marketing investments?
   (a) in terms of branding;
   (b) in terms of sales;
   (c) in terms of foot traffic?
2. What is the relative impact and ROI of different types of mobile marketing?
   Across different sectors and markets? For different types of campaigns and budget sizes?
3. How can we make mobile work to its full potential?
   (a) What are the best practices that explain why some mobile ads work better than others?
   (b) How does mobile advertising work as a complement to other media, such as television?

Key findings

What value does mobile create relative to other marketing investments?

For each of the campaigns that we measured, our analysis focused on isolating the contribution of exposure to mobile versus exposure to other media, and evaluated that in the context of the advertising spend invested in each area. Based on the above, the findings from the campaigns that we measured as part of SMoX show that mobile is an efficient driver of campaign performance, driving results across the purchase funnel. Specifically:

- AT&T measured a campaign that was aimed to maximise the awareness of a new handset (Motorola Moto X). Within that context, mobile delivered twice the awareness (number of people who became aware) per dollar spent compared to television and digital.
- MasterCard measured an advertising campaign with the goal of increasing the association of the card with travel. Within that context, mobile was 1.7 times more efficient in terms of driving image (‘Good Card to Carry When Travelling’) compared to the campaign average.
- Walmart measured its annual Back to School campaign and mobile was by far the most efficient channel, driving almost twice the sales versus the campaign average and more than twice compared to television. It also drove verified foot traffic, with location ads producing a significant lift versus control.
- Coca-Cola measured the first ever national campaign for Gold Peak tea in North America. Within that context, mobile delivered results across the board, driving 25 per cent of top-of-mind awareness, 9 per cent of image ‘Home Brewed Taste’ conversions and 6 per cent of sales with 5 per cent of budget.
- Finally, Coca-Cola in China tested a campaign for the Chinese New Year, and within that mobile offered nearly double the ROI over television and was twice as efficient in driving sales compared to the campaign on average. In total, 8 per cent of the sales generated by the CNY campaign were attributed to mobile, which was only 4 per cent of the total mix.

What share of the media mix should go to mobile?

Based on the research findings and the optimisation analysis that was conducted, participating marketers would have an opportunity to use their media dollars more efficiently if they increased the allocation of mobile in their mix. For context, these studies span across a number of different product categories and were conducted during different times, most of them in 2014. Yet the evidence from these studies suggests that in most cases the optimal allocation of mobile in the mix should be double digit, significantly higher than what was actually invested in mobile (Table 1).
Numerous factors influence the exact levels of optimised allocation of mobile, including target audience, product category, KPI and size of total advertising budget, as well as the creative that was used in each channel. Additionally, time as it reflects the market evolution in terms of best practices, standards, available units and pricing will probably influence the absolute levels of mobile allocation in the mix. Although pricing of mobile inventory will eventually catch up with increasing supply, we expect that the increase in mobile reach through higher smartphone penetration, as well as gains in effectiveness through new standards and best practices, will continue to push the share of mobile even higher, probably in to the 20–30 per cent range. The MMA is planning to conduct additional studies in more sectors in order to better understand and isolate the influence of the above factors and how they contribute to optimisation.

What is the impact of reallocating to mobile?

Considering the above findings, a reallocation to mobile at the above levels would drive incremental impact for each campaign, making the existing budgets of these campaigns work harder. Indicatively:

- For AT&T this would mean 12 per cent higher awareness for the Moto X.
- For Walmart, this would mean a potential 6 per cent increase in actual sales for Back-to-School groceries.
- For MasterCard this would reinforce the image of the card (‘Good Card to Carry When Traveling’) by 7 per cent.
- For the Coca-Cola Company in the USA, it would drive 4 per cent incremental sales for Gold Peak tea.
- For the Coca-Cola Company in China, mobile could drive an increase in profits from the campaign of 7 per cent.

All the above are based on simulations founded on the models that were derived for each study and they assume that the total advertising budget of each campaign would remain the same.

How can we make mobile work to its full potential?

Our research identified specific areas where marketers can focus in order to further increase the impact of their mobile investment. They are as follows:

1. Optimise the price-to-value dynamic by (a) format and (b) channel to obtain more ROI.
2. Use location and context targeting to boost ROI.
3. Focus on creative (leverage A/B testing or design for synergy) to increase creative impact.

We conclude the section with an analysis of the impact of applying these recommendations and simulating the impact that they would have to the campaigns that were tested.
Optimise the price-to-value dynamic by format and channel to get more return on investment

**Mobile display**
What is the influence of ad unit size on performance? Conventional wisdom suggests that larger ad formats work better than smaller units, providing more creative flexibility (additional messaging and ability to show product shots) and stopping power. Yet size does not really matter as much as the relationship of impact to cost. Within this context, our research showed that the larger unit significantly exceeded the performance of the smaller one in relation to its price, driving 2.5 times more impact at 1.5 times the cost, suggesting that marketers could significantly improve their results by leveraging that unit.

**Mobile native**
Mobile native advertising, which is a blend of content and commercial messaging, performs significantly better than mobile display, delivering up to 10 times the impact for five times the price premium, according to our studies. But in contrast to display, native ads build impact at lower frequency, possibly because this richer type of content unit causes greater attentiveness. Yet our empirical data suggest that these units also respond to frequency more quickly, which means that they reach diminishing returns a lot sooner. Considering the significantly higher cost per exposure, marketers need to manage frequency more actively when they use this format, or invest in creating additional assets and doing creative rotation in order to keep the message from reaching saturation.

**Audio and video**
Our studies illustrate that audio and video are worth the price premium over mobile display advertising. Audio on a mobile device, like traditional audio, does fine with repetition. In our studies, mobile audio continued to build impact without facing significant diminishing returns until a dozen impressions or so over the campaign duration, and was shown to drive a variety of KPIs including awareness, image and purchase intent.

On the other hand, video performed similarly to native, building impact at lower frequency and showing diminishing returns at a lower average frequency. According to our studies, at a low frequency mobile video was found to be up to 6.5 times more effective compared to display for three times the price premium. Based on the above, marketers would significantly benefit from investing in mobile video over display, especially for KPIs like image and sales. Yet also in this case they would need to be mindful of the different mechanics of video in relation to number of exposures and either actively manage frequency or introduce creative rotation.

An interesting finding about mobile video comes from comparing the performance of the same video ad when used across different screens. Specifically, comparing video in mobile versus cable television, we see that those engaging in mobile video are far more attentive to the commercials on the smartphone screen, observing up to four times better results when exposed to mobile video, which is also priced at a discount compared to cable television. Once again, we find mobile video generating more impact at lower frequency, reinforcing the importance of managing frequency or building on creative rotation to optimise ROI.

The above findings are largely validated across most of our US studies, while similar insights were captured in China, where mobile video emerged as a key driver of performance, being on average about three times more effective compared to display, for a similar CPM. Also, in this case, mobile video seems to be significantly more effective compared to both television and digital video, illustrating that brands
can profit from distributing their video advertising assets through mobile channels.

**Formats and channels overall**

While we have made direct comparisons of one ad format versus another, marketers should think in terms of a mix of formats in order to maximise impact:

- The display ad banner is a good awareness builder and reminder, keeping a brand salient.
- Audio, video and native had greater influence on brand perceptions and sales.

The implication of this is that optimising a mix for mobile does not just mean increasing the overall allocation to mobile, but also optimising within mobile to better leverage the different formats and channels available. For instance, for Gold Peak tea, the recommendation was to increase the overall mobile allocation from 5 per cent to 10 per cent, but also to shift a larger share of that into mobile video and audio (versus display).

Future SMoX studies and additional research will hopefully provide additional granularity in terms of each of the above formats (ie linear video versus value exchange), but also shed more light into additional formats (rich media) and channels (search, messaging, etc).

**Use location and context targeting to boost return on investment**

One of the many dynamics that make mobile special is the fact that most people carry it with them all day. This creates opportunities for context targeting by time of day and by physical place. It is also possible to target a given audience based on where they have been in the past and in that way create rich audience profiles in ways that were not possible until now (ie a device ID that frequents in certain zip codes or in close proximity to upscale venues can be classified as an affluent consumer).

In terms of location-based targeting, Walmart used both approaches:

1. Audience targeting: by delivering messages to those that have visited the retailer in the past, and targeting them wherever they might be, Walmart increased the impact for the same ad unit over delivering advertising without retargeting by approximately 50 per cent.
2. Walmart also used proximity targeting to deliver the message when a consumer was ‘in range’ of Walmart. This approach proved to be 1.5 times more impactful than audience targeting, and 2.5 times more effective than when no location targeting was used.

A feature of mobile measurement is the ability to examine the influence of advertising delivery on foot traffic to a store location. In this analysis, which included tracking the actual location of panelists at different times after ad exposure, we found that location targeting also drove verified foot traffic, with location ads producing a significant lift versus control. Furthermore, we examined the impact location-targeted advertising was having and saw a differential response by ad unit type and type of location targeting. Based on this analysis we observed that:

- Location audience targeted ads with small display ‘pencil’ units had no impact on foot traffic (no significant store visitation lift).
- Location audience targeted ads with expandable ad units (displaying more information, including distance from nearest store and map) produced significant lift over the unexposed group. The same holds for pencil units when delivered at the time a person was in proximity of the Walmart store.
Finally, the strongest impact came from the combination of expandable ad unit and proximity targeting, generating the strongest lifts in foot traffic compared to control.

In addition to location targeting, our research also offers evidence about the value of targeting by time of day/day of the week. Arguably, marketers can use a number of channels to target people by time. In this case, mobile excels due to the fact that people carry their phones with them all day. Our findings in this area suggest that the opportunity varies by category and it largely relates to the time sensitivity of purchase/consumption. Depending on the category and the time bracket, we observed lifts from 30 per cent (for grocery shopping, for certain days of the week) to over 12 times for more time sensitive categories (for certain day parts).

Focus on creative (design for synergy or leverage A/B testing to increase creative impact)

Design for synergy

We observed variation in how different marketers approached the design of mobile advertising. Given that mobile is often used simultaneously with consuming other media, it makes sense to use creative cues across advertising platforms to reinforce the message. For example, in our studies the Coca-Cola Company used a ‘surround sound’ marketing strategy for their Gold Peak campaign, aligning the messaging and look and feel of creative across all media. In that study we observed synergies between those exposed to mobile and other media, achieving 23 per cent higher impact due to synergies.

This synergy finding is consistent with a body of work dating back several decades to the measurement of radio and television synergies, which showed imagery transference when someone heard an audio ad after the television advertisement had played, so long as both used similar cues. Given that there are no costs associated with achieving message synergies, this is a high-value approach that too few marketers take advantage of today.

Leverage A/B testing

The production part of a marketing budget is often called ‘non-working media expense’. This is an unfortunate phrase, given that the Advertising Research Foundation reports that 70 per cent of ROI is due to creative execution, suggesting that the work that can be done with an A/B split test can increase the overall campaign ROI.

Unfortunately, most marketers we measured tested only one creative message in mobile, which misses a great opportunity to learn how different messages work for different audiences in mobile. In one of our studies where more than one message was tested, one message was found 70 per cent more impactful to a certain demographic group. The same marketer also had multiple creative messages and ran an A/B split test, where the stronger performing ad generated 20 per cent better results.

Best practices scorecard

Marketers applying all the above practices can gain significantly better results with their mobile advertising. While the projection of the upside is based on a small number of cases, the findings were very consistent, showing that the upside can be significant, ranging from 100 per cent to 160 per cent improvement in mobile ROI.

If each marketer applied these recommendations in terms of formats, targeting and creative, we estimate that it would significantly boost their KPIs (Table 2).

It is obvious from this analysis that optimising for mobile is a two-step approach. Increasing the allocation to mobile will certainly bring benefits to marketers who underinvest, but making the right mobile allocations will further improve performance.
CONCLUSION: USING MOBILE AS A CATALYST FOR CHANGE

There is no doubt that mobile adoption is causing a major transformation in consumer behaviour and in the process it is pushing the boundaries of innovation and marketing. The results from SMoX illustrate that mobile can be an effective part of the marketing mix. They also provide some direction and actionable ways for marketers to start taking advantage of mobile and increase the impact of their campaigns.

As the first comprehensive study of its kind, we hope that SMoX triggers more research, an evolution of measurement overall and a deeper understanding of attribution. We are at a point where many marketers understand that media has fragmented and is more addressable than ever. Marketers who employ the winning combination of greater mobile allocation and best practices will realise a significant competitive advantage. For these companies, mobile is the ideal catalyst for change, showing the way to a more agile, hyper-targeted real-time marketing.

Knowing that consumers check their phones on average 150 times a day, it is now possible for marketers to know, in real time, which neighbourhoods have a different perception (or behaviour) about their products or apps — and which advertising messages are most likely to change perceptions and behaviours. It is now possible for marketers to know if people went to the store after they were exposed to one of their marketing messages and whether they made a purchase or not. Gaining access to such data is unprecedented — and it is now possible with mobile.

There are still challenges, however. Integrating with data from other sources and acting on such insights is difficult even for these innovation leaders. It requires new structures that bring down silos between marketing and tech. It demands full integration of technology, media owners and agency partners in order to work seamlessly with the organisation. But it also opens up new possibilities to adapt creative across all media, including local television, radio, out-of-home and print, in order to take advantage of these insights across the entire mix. Applying such a vision for mobile goes beyond advertising best practices. It is an opportunity to leverage mobile strategically and use it to transform all marketing in order to drive stronger and closer consumer engagement as well as business growth.

Special thanks

The MMA would like to thank the marketers at AT&T, Coca-Cola, MasterCard and Walmart. They also thank the industry partners, including the Association of National Advertisers (ANA), the Advertising Research Foundation (ARF) and the American Association of Advertising Agencies (AAAA). They are grateful to the study supporters, Vodafone, the Weather Channel, Pandora, InMobi, Table 2: Incremental impact from mobile optimisation

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xAd, Tremor Video, Turkcell, Facebook, Millennial Media, Verve, Urban Airship, Weve, Yahoo!, Videology, Twitter, Meredith, MXM, AT&T Adworks, Avea and Hello World. They are also grateful for the willingness of the team at Marketing Evolution and Millward Brown’s Insight Express to work closely with marketers to achieve objective research.

References