

A quantitative study on the impact of emotion on social media engagement and conversion

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Abstract Academic understanding of social media remains limited. The use of emotion in social marketing and advertising, for example, is particularly under-researched. This study aims to understand how brands leverage emotion on social media and to measure how this affects engagement and conversion. Employing an objectivist research paradigm, the authors measure and analyse the conversion and engagement metrics of 46 different social media campaigns, with a total reach of over 2.3 million people and more than 55,000 engaged participants. The study proves that, in the right conditions, emotional content can be leveraged to improve conversion and engagement rates.

KEYWORDS: on social media, social media advertising, social media engagement, social media conversion, social media campaigns

INTRODUCTION

A need for a deeper understanding: Literature context and gaps

The reach of social media has been growing exponentially for the past 30 years. What started as humble bulletin board systems has evolved into a plethora of different platforms with different uses and audiences.¹ Facebook,

the largest social media platform, boasts an astonishing 2.1 billion members.² With over 3.196 billion social media users, and almost 1 million new users every day, the relevance of social media cannot be denied.³ At the same time, however, the academic and business world have yet to catch up to this new reality. Most Fortune 500 companies

still fail to turn a profit on their social media presence.⁴ Meanwhile, there is a strong need for better academic understanding of social media and how to best leverage such knowledge.

Most brands treat social media as just another advertising channel, and therefore fail to grasp the emotional component of social media interactions, which are essential in forging lasting relationships and increasing brand equity. Few existing studies address emotion in social media, and even fewer analyse the effect of brands leveraging emotion.

Given the scarcity of research on the topic of social media, to understand the power of emotion in brand messaging, it is necessary to broaden the scope to include studies that look at how emotional advertising or marketing impact on consumer behaviour in general. There is little agreement on the topic of emotional messaging and who it works best with.

When it comes to the subject of brands and emotion on social media, there is an important gap in the literature. This may be because the use of social media as a mainstream marketing channel is a relatively recent phenomenon. The fact that most social media studies are based on surveys and interviews with small sample sizes, could be an indication that most researchers have difficulty gaining access to raw data from existing brands, or are limited by a lack of budget to run their own campaigns for the sake of new research. By accessing global social media campaigns for a well-established brand, the present paper aims to address this gap. There is an academic and practical need for this kind of research. This undertaking will offer insights into a new, growing industry that businesses are yet to fully understand.⁵

Research objectives

This project aims to provide both academics and practitioners with a better understanding of how brands can use emotion in social

media. To achieve this, the project must achieve the following research objectives:

- determine how emotional brand messaging in social media impacts on engagement and conversion;
- identify whether distinct demographic groups react differently to emotional messaging;
- develop a rational/emotional model for practitioners to use to facilitate the decision-making process about what kind of content to use; and
- contribute to the literature on social media.

Research questions and hypotheses

To provide a better understanding of social media for both academics and marketers, this study aims to answer the following research questions:

RQ₁: Is emotional messaging or rational messaging more effective in stimulating conversion and engagement in social media for brands?

RQ₂: Will the results hold true and not differ greatly between nationality, culture, age or gender?

The answers to these questions will help brands and social media professionals make better-informed decisions about the use of emotion in their messaging, providing a deeper understanding of how emotion impacts engagement and conversion, and with what demographics it is most effective. With these questions in mind, the authors have drawn from their experience in the field to produce the following hypotheses:

H₁: When it comes to stimulating engagement and conversion, the use of emotional messaging on social media is more effective than rational messaging.

H₂: The results will hold true and not differ greatly between culture, age or gender.

LITERATURE REVIEW

Brand equity, emotion and purchase intent on social media

Internet users spend one in every three minutes online using social media.⁶ With over 3.3 billion active social media users worldwide,⁷ the provision of social media has progressed a long way from its humble beginnings in the early 1990s.⁸ However, although the impact and popularity of social media is undeniable, the effect is still not fully understood and there is little academic information on the subject.

In a study by Mander,⁹ four out of ten social media users reported following several brands on social media, with one in four following a brand from which they intended to make a purchase. This demonstrates how social media platforms no longer simply support interaction between private users. Mander¹⁰ elaborates, 'Digital consumers are now almost as likely to say they use social to follow the news as they are to identify it as a platform for keeping in touch with friends'. Behaviour on social media is changing from a mostly personal platform, to a platform that is used to interact with and receive information from the outside world. Brands are increasingly recognising this change and are expected to spend more than US\$70bn in social media advertising this year.¹¹ The amount of budget brands dedicated to social media has more than doubled in recent years.¹²

A study by Sashi¹³ demonstrated how social media can help an audience evolve from users to customers, and from customers to loyal fans. This is achieved through the power of repeated positive interactions, which in turn help generate satisfaction, brand equity and an emotional bond. Another study that deals with the brand equity created by social media relationships between brands and their fans is by Kim and Ko;¹⁴ their study also supports the theory that positive interactions with a brand on social media lead to increased brand equity. According to Kim and Ko,¹⁵ users follow

brands to receive information on products, and in 49 per cent of cases this results in a purchase.

The idea that repeated positive interactions with a brand will result in improved brand equity is not new — it has previously been explained by Keller's¹⁶ brand equity model. Social media interaction represents the top of Keller's brand equity model pyramid — the 'resonance' stage — which is the most desirable level of brand equity and the most difficult to achieve. It is easy to see why social media represent the ideal channel to achieve the different categories of resonance: behavioural loyalty, attitudinal attachment, sense of community and active engagement.

The study that most closely resembles the research of Keller.¹⁷ Although it does not measure conversion, this empirical study goes to great lengths to show that emotional messaging on Facebook drives more engagement than rational messaging.

One of the most extensive studies conducted about emotion in social media is by He *et al.*¹⁸ In this study, the authors discuss the importance of emotional entrainment, which can also be described as emotional contagion, on social media. He *et al.* explain, 'entrainment plays an important role in social networks where users' emotions are publicly sensible to each other'. Brands could and should leverage this emotional entrainment to encourage an emotional culture that is conducive to positive movement down the conversion funnel.

Sia *et al.*¹⁹ illustrate how online communities tend to display stronger emotions than traditional person-to-person communication, indicating that emotion is a key factor in social media exchanges. This concept also extends to interaction with brands. A study by Ko²⁰ indicates that anticipated positive emotion, derived from making a purchase or engaging a community, is more responsible for commercial desire on social networks than other factors such as social identity. The data suggests that it is

not enough simply to group users by social identity, but that an emotional engagement has to occur, and a clear emotional payoff must be evident, in order to increase commercial desire. Most brands on social media take the first step of grouping users by social identity by setting up brand fan pages (eg Coca-Cola fans); however, they rarely follow through on creating meaningful emotional engagement or establishing any emotional payoff as a result of a purchase.

None of the studies analysed above deal with emotional versus rational brand messaging and how it affects conversion.

Consumer behaviour, the sales funnel and the use of emotional advertising by brands

Given the paucity of research on emotional messaging in social media, it is useful to look instead at the general use of emotion in advertising and marketing and its impact on consumer behaviour. Many studies have been conducted on the power of emotion with regard to affecting and predicting consumer behaviour. 'A considerable body of research has recognised emotion as one of the more important factors in specific consumer responses to marketing stimuli and consumer behaviour in general'.²¹ Although there is much research available on the subject, there is little consensus as to what is more effective — emotional or rational. Most existing literature attributes the difference in efficacy of emotional versus rational as a factor dependent on age, gender, culture and/or timing.

Studies such as the one by Albers-Miller and Stafford²² attribute the difference in consumer response to emotion as being related to culture. In this study, 'southern' cultures have the tendency of being more emotionally oriented than their northern counterparts.

It is a popular stereotype that females are more emotional than males. If this is true, they should therefore react more favourably to emotional content. Some studies, such as

the one by Birnbaum and Croll,²³ show that these stereotypes can become self-fulfilling and result in more females self-reporting emotional responses. However, empirical studies, such as that by Fisher and Dubé,²⁴ show that females and males have similar reactions to emotion, and that no gender has a predisposition to react more favourably to emotional content.

Other researchers seek to explain the divergence in the effectiveness of emotion as a question of age. One such idea, coined by Carstensen *et al.*,²⁵ is the theory of 'socioemotional selectivity', which states that as a person grows older and perceives time to be more limited, he or she will be more likely to make decisions based on emotion. Others such as Sudbury-Riley and Edward,²⁶ however, believe the opposite to be true. In their study, participants were shown advertising copy and were asked to rate its effectiveness.

RESEARCH METHODOLOGY

Research paradigms

Understanding the differences in research methodologies and selecting the best fit for each project is an essential part of any research. Positivism or constructivism, qualitative or quantitative, hard data or soft data — which is the best approach to research? The answer depends on the researcher's point of view, the objective, and the resources and time available.

Whether the researcher adheres to positivism or constructivism dictates the research paradigm and the tactics used to gather data. Positivism 'argues that reality exists external to the researcher and must be investigated through the rigorous process of scientific inquiry'.²⁷ Meanwhile, constructivism believes that meaning is 'constructed, not discovered'.²⁸ The related idea of interpretivism believes that, 'natural reality (and the laws of science) and social reality are different and therefore require different kinds of method'.²⁹ The authors

of the present paper, however, agree with Auguste Comte, the father of sociology, who in the 1800s coined the term ‘positivism’ and believed that the same strict rules and methods used in scientific research should be applied to social sciences.³⁰ The research carried out in this article will therefore follow a positivist research paradigm.

Procedure

To remain true to a positivist research paradigm, the study uses only numerical, hard data gathered through quantitative field experiments run on Facebook and LinkedIn on behalf of the University of Liverpool Online brand.

Field Experiment 1 was run on the University of Liverpool Online Facebook page for two months in 2018 and comprised 36 different A/B tests. Each individual test consisted of two advertisements that used the same media assets; the only difference was in the text: one used emotional copy, and one used rational copy. Using the same visual assets was important in order to avoid any influence that different images or videos might have on results. In this way, it was possible to attribute any difference in results solely to the use of emotional vs rational messaging. The copy for each A/B test portrayed the same message, but one was decidedly more emotional. For example, the rational version of one advertisement said, ‘Earn an MSc in Management online to back up your skill set and build your confidence to lead teams and make high-level decisions’, while the emotional version stated, ‘Does the next level seem out of reach? Earn an MSc in Management to build up your skill set to lead teams and make high-level decisions with confidence’. The meaning of the advertisement is thus unchanged, but the emotional version makes a stronger appeal to emotion.

To ascertain whether the results were platform-dependent, a similar experiment was then conducted using seven individual A/B test on the University of Liverpool Online LinkedIn page.

Appendix A provides a summary of all the advertisement copy used in the field experiments.

To analyse the results of the experiments, the study uses the following units of measurement: unique click-through-rate (U-CTR) for engagement — that is, any click on the advertisement by a unique user; and conversion rate (CVR) — that is, when a user successfully fills out a lead-generation form. The average U-CTR and CVR rates for emotional and for rational advertisements are then calculated to see which advertisement is superior in terms of engagement and conversion. (NB: As the section on data analysis will explain, for any comparison to be valid, it must be based on equal reach; for this reason, the results of each A/B test are weighted accordingly.)

As the article will discuss, where the numbers are greater for emotional messaging, this supports Hypothesis 1: ‘when it comes to stimulating engagement and conversion, the use of emotional messaging on social media is more effective than rational messaging’.

To test Hypothesis 2, ‘the results will hold true and not differ greatly between culture, age or gender’, the results of these experiments will also be analysed according to these demographic traits.

Participants and sampling technique

The two field experiments reached over 2.3 million people. This audience represents the total number of users who were shown one or more advertisements during the research phase. An estimated 2.4 per cent of these users engaged with the advertisements, translating to over 55,000 engaged participants. The only demographic similarity between these people was that they were all (or at least, all claimed to be) college graduates. This study focused on men and women aged between 25 to 64 years from the following 65 countries:

- *Africa*: Angola, Ghana, Kenya, Uganda, South Africa;

- *Asia*: Hong Kong, Japan, Malaysia, Singapore, South Korea;
- *Caribbean*: Aruba, Barbados, Cayman Islands, Dominican Republic, Jamaica, Puerto Rico, The Bahamas, Trinidad and Tobago;
- *Gulf Cooperation Council (GCC)*: Bahrain, Oman, Qatar, Saudi Arabia, United Arab Emirates;
- *Europe*: Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, Norway, Northern Macedonia, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine;
- *North America*: Canada, the USA.

This research targets participants in a vast list of countries to understand whether the efficacy of emotion changes from culture to culture. When the results are analysed they will be grouped into the above-mentioned regions, with the exception of Nigeria and the UK, which will be separated because of their strategic importance to the University of Liverpool Online. As per the age-based targeting groups specified by Facebook, the present research uses the following age groups: 25–34, 35–44, 45–54, 55–64 and 65+.

DATA ANALYSIS

Introduction

The extensive field experiments conducted for this project offer valuable insights into the use of emotion in brand messaging and the effect that it has on engagement and conversion on social media channels. The field experiments reached an audience of more than 2.3 million social media users on Facebook and LinkedIn. How this audience interacted with the advertisements they saw,

provides some clarity into how emotion can affect consumer behaviour. Previous studies such as Sia *et al.*³¹ He³² and Lee³³ have already discussed the importance of emotion in social media. How brands should leverage social media, however, remains unclear in both theory and practice. As Li and Stack³⁴ explain, most brands are still struggling to turn a positive return on investment (ROI) on their social media presence. The present article argues that brands that want to be more successful in this digital space must further embrace the emotional aspect of social media. These field experiments were designed to fill a gap in the literature through the use of hard data to measure any uplift in conversion and engagement because of emotional messaging. Overall, the results confirm that the use of emotion in social media messaging can have a positive effect on conversion and engagement.

Field Experiment 1

Field Experiment 1 (FE1), which ran for a total of 64 days and reached a total of 2,333,683 users, constitutes the most important and largest part of the research conducted. This experiment comprised 36 different A/B tests with a total of 72 different advertisements (see Appendix A). Although more than 2 million people saw these advertisements, only those that clicked on one of the advertisements may be considered engaged participants. The unique clicks metric, therefore, helps define how many users became active participants. In total FE1 yielded 55,356 participants. Emotional advertisements reached 1,265,914 people and generated 1,028 leads with 29,702 unique clicks. Rational advertisements reached 1,067,769 people and generated 693 leads with 25,654 unique clicks. The average conversion rate of emotional advertisements is 3.46 per cent and of rational advertisements 2.70 per cent, while the engagement rate of emotional advertisements is 2.35 per cent and of rational advertisements 2.40 per cent. The results have been re-weighted for

equal reach. As the numbers indicate, the emotional advertisements created more leads and a higher average conversion rate (avg CVR). The rational advertisements, however, resulted in a slightly higher engagement rate (avg U-CTR). The data helps answer the question whether emotional messaging or rational messaging is more effective in stimulating conversion and engagement in social media for brands. From these results, one can see that Hypothesis 1: 'when it comes to stimulating engagement and conversion, the use of emotional messaging on social media is more effective than rational messaging' is supported when it comes to conversion, but not to engagement. These results are 99 per cent significant for both conversion and engagement. The results for Z-score and *p*-value are 2.706 and -4.945 for U-CTR and CVR respectively. The *p*-values and Z-scores for the results in engagement and conversion show that both results are statistically significant with 99 per cent confidence. The results reveal that the use of emotion led to better conversion, in this case by means of more leads being generated. This is a very significant discovery when it comes to improving brands' social ROI. Increasing social ROI is a priority for brands, as the majority are yet to unlock the full economic potential of social media.³⁵ On the other hand, rational messaging led to more engagement. One would think that more engagement would lead to more conversion, and as such the results would be consistent for both. The findings of Lee *et al.*³⁶ may help to explain this discrepancy — as Lee *et al.* explain, rational messaging can perform better when it is combined with emotional messaging. It is possible that there is some overlap between those who saw both emotional and rational advertisements, resulting in an uplift in engagement for the rational advertisements.

Results by country

Every company has its key market, be it around the block or around the world. The

right approach for marketing and advertising in each country can vary in important ways. The authors hypothesised that the results would be consistent for all countries, yet the data indicates otherwise. The answer to the research question whether the results will hold true and not differ greatly between nationality, culture, age or gender is therefore no. Table 1 illustrates how these results change according to the country targeted.

As discussed previously, Nigeria and UK are separated from their regions because of the strategic importance that they hold for the brand. The average UK U-CTR for emotional advertisements is 1.85 per cent and is statistically significant with 99 per cent confidence, whereas the UK CVR rate is 6.62 per cent, making it the winner with a confidence rate of 90 per cent.

Although the overall results of FE1 led to statistically significant results with 99 per cent confidence, when broken down into individual regions/countries, the results were for the most part not statistically significant. To achieve statistical significance for all geographies, the experiment would have to continue to run until it gathered a bigger sample or there was a larger difference in conversions and unique clicks. Thus, for the time being, the results hint at a possible outcome, but are not suitably robust to draw scientific conclusions worthy of an objectivist research paradigm. With this in mind, the authors will focus this geographical analysis mostly on the results that are statistically significant, namely, those gathered for the Africa region, the UK and the GCC.

According to Albers-Miller and Stafford,³⁷ 'southern' cultures respond better to emotional advertising. The present results, however, indicate otherwise. Does the way an audience reacts to emotional messaging necessarily relate to their emotionality? The authors had to dig deeper into the existing research to find a potential explanation for these results.

The results indicate that the emotionality of people from different countries does not

Table 1: Results by region

	Leads	Unique Reach	Average clicks	Average U-CTR (%)	CVR (%)
<i>Emotional</i>					
Africa	40	64,744	2,160	3.34***	1.85*
Asia	25	41,360	668	1.62 [†]	3.74 [†]
Caribbean	50	104,663	4,875	4.66 [†]	1.03 [†]
Europe	0	3,926	21	0.55 [†]	0.00 [†]
GCC	38	215,595	4,169	1.93 [†]	0.91*
Nigeria	214	274,583	7,177	2.61 [†]	2.98 [†]
North America	0	2,047	12	0.59 [†]	0.00 [†]
UK	393	320,696	5,935	1.85***	6.62*
<i>Rational</i>					
Africa	66	64,744	2,647	4.09***	2.49*
Asia	27	41,360	684	1.65 [†]	3.95 [†]
Caribbean	51	104,663	4,875	4.66 [†]	1.05 [†]
Europe	0	3,926	17	0.43 [†]	0.00 [†]
GCC	50	215,595	4,108	1.91 [†]	1.22*
Nigeria	193	274,583	7,326	2.67 [†]	2.63 [†]
North America	0	2,047	10	0.49 [†]	0.00 [†]
UK	283	320,696	4,789	1.49***	5.91 [†]

Statistical significance: ***99% confidence; **95% confidence; *90% confidence; [†]not significant

seem to be the biggest determinant in how well they react to emotional messaging on social media. Clifton³⁸ shows that the UK does indeed score higher than average on the emotionality scale. However, most countries targeted in the Africa region and all the countries targeted in the GCC region score higher than the UK in emotionality. Respondents from Africa and GCC, nonetheless, reacted decidedly better to rational messaging. Countries in GCC, such as Bahrain, Oman, Qatar and UAE all rank within the top 20 most emotional countries, according to Clifton,³⁹ yet the emotional advertisements performed poorly in these countries.

One potential explanation as to why rational advertisements outperformed emotional advertisements in the GCC region is related to religion. Behboudi *et al.*⁴⁰ and Punama and Safira⁴¹ put forth an interesting theory, explaining that Muslims tend to react better to rational advertisements,

arguing that Muslims are more likely to perceive the use of emotional messaging in advertisements to be manipulative or even unethical.⁴² Punama and Safira elaborate, ‘Results show that respondents with higher religiosity place greater importance of the Islamic ethical elements of the advertisement’. The advertisements in FE1 are especially susceptible because they aim to sell master’s degrees, and the preference for rational advertisements by Muslims is supposedly even higher when it comes to ‘high-involvement products’.⁴³ This link to religion could help to understand why rational advertisements performed better in predominantly Muslim societies in the GCC, although it fails to explain the results obtained in Africa, in countries with primarily non-Muslim populations.

Here, it is important to remember that the advertisements used in this study were all in English, so it is likely that the level of English spoken in each country influenced

how well the emotional variants performed in that country. By setting Facebook and LinkedIn to target English speakers only, the authors made sure that the advertisements were only seen by people who could speak English. The problem, however, is that social media targeting cannot account for the level of the user's English proficiency, only for the fact that they interact with English content sufficiently often to be considered an English speaker at the most general of levels. This explains the difference in results in countries with different English proficiency scores.

According to studies by Harris⁴⁴ and Dewaele,⁴⁵ there is a positive connection between language proficiency and emotion: the more proficient a speaker, the more emotional they are in said language. While the campaigns targeted only English speakers, the level of their fluency varied, and the effectiveness of emotional messaging along with it. Harris and Gleason⁴⁶ explain, 'a second language is less emotionally evocative than a first'. This was something the authors had not considered beforehand, but which does help to explain why some results conflict with the emotionality levels associated with the countries tested.

In the UK, where English is the native language for the majority of the audience, the emotional advertisements outperformed the rational ones. By contrast, despite GCC countries ranking high in emotionality,⁴⁷

they rank low on the English proficiency index⁴⁸ hence the rational advertisements provided better results.

It has been found that, 'bilingual speakers experience reduced emotionality when speaking their second language'.⁴⁹ The results achieved in Africa support theory. In Nigeria, although the results are not statistically significant, the emotional advertisements performed better. In the rest of Africa, by contrast, where English fluency rates are lower, the rational advertisements won out. In the future, it would be interesting to research this theory by testing each country in its native language.

Results by age

As is to be expected, the overall results by age group offer the same conclusions as the overall data seen above — emotional advertisements led to a better average conversion rate (avg CVR), and rational advertisements to a better engagement rate (avg U-CTR). Table 2 illustrates the results by age group, weighted for equal reach.

What is especially interesting here is how the efficiency of emotional messaging increases with age. From the youngest age group to the oldest, the average conversion rate for emotional advertisements increases by 98 per cent, yet only increases by 72 per cent for rational advertisements. These results seem to corroborate Carstensen

Table 2: Results by age

	Leads	Unique Reach	Average clicks	Average U-CTR (%)	CVR (%)
<i>Emotional</i>					
25–34	104	192,855	4,250	2.20	2.45*
35–44	161	192,855	4,347	2.25	3.70***
45–54	262	192,855	5,402	2.80†	4.85***
<i>Rational</i>					
25–34	85	192,855	4,384	2.27*	1.94
35–44	105	192,855	4,583	2.38***	2.29
45–54	177	192,855	5,294	2.75†	3.34

Statistical significance: ***99% confidence; **95% confidence; *90% confidence; †not significant
The reach for each group has been made equal, and the results have been weighted accordingly.

et al.'s⁵⁰ theory of socioemotional selectivity, by which as a person grows older, they are more likely to make decisions emotionally. Although there is no such tendency in the engagement rates, it is the conversion rates that represent actual decision-making. Therefore, the results do follow socioemotional selectivity theory.

Results by gender

Although Fisher and Dubé⁵¹ explain that no gender has a predisposition to react more favourably to emotional content, this was not the case in this field experiment. Females clearly reacted better to emotional content compared with males. This is not a case of erroneous self-reporting because of pre-existing stereotypes, as evidenced by Birnbaum and Croll.⁵²

A clear preference for emotional content can be observed here. The average U-CTR for emotional messages is 2.20 per cent for males and 2.68 per cent for females. It is true that females converted and engaged better for both rational and emotional advertisements compared with men. The data, however, demonstrate that emotional social media messaging is more efficient for females than for males.

Facebook uses a binary gender model to target advertising; the results are therefore divided accordingly. The audience reached was 31 per cent female and 69 per cent male, but the results have been weighted to make reach equal. It is important to note that the statistical significance was not calculated as in the above figures between emotional versus rational, but rather between the emotional results for males versus the emotional results for females. This is because the point of this calculation is to determine which gender responds better to emotion. The average uplift on engagement and conversion for males and females shows that emotional messaging has a better effect on females. When it comes to engagement, rational advertisements are still better, but by a smaller margin than for males. When

it comes to conversion from emotional messaging, there is a 12 per cent greater uplift for females.

Field Experiment 2

Field Experiment 2 (FE2) was designed to see whether the results from FE1 would generalise to social media platforms other than Facebook. This experiment took place on LinkedIn, a platform that provides marketers with a different set of data. Instead of unique reach, the analytics provide impressions. To adjust for this fact, there are some differences in the way metrics are calculated, as can be seen below. The results are surprising. The engagement rate was higher for emotional advertisements, yet the rational advertisements had a higher conversion rate. This is the opposite of what can be seen on Facebook. However, when one looks at geo-groups and countries individually, the results seem to validate the conclusions made in FE1 with higher conversion rates for emotional advertisements.

As seen in Table 3, at first sight the data gathered on LinkedIn would appear to contradict the overall results from FE1. However, when one breaks down the data by country or region (Table 4), the conclusions from FE1 remain valid. In FE1, for example,

Table 3: Results for Field Experiment 2

	All emotional ads	All rational ads
Clicks	4,995	3,969
Engagements	9,214	7,003
Leads	342	355
Impressions	603,766	603,766
Engagement rate (%)	1.53***	1.16
Avg CVR (%)	6.85	8.94***

***Significant at 99% confidence

These numbers were weighted and adjusted to provide equal impressions. Without unique reach, it is impossible to calculate a unique click-through-rate. One must instead calculate an engagement rate by dividing the total number of engagements by the number of impressions. The conversion rate is still calculated by dividing the leads into clicks.

Table 4: Field Experiment 2 results by region

	Leads	Reach (impressions)	Clicks	Total engagements	Engagement rate (%)	Average CVR (%)
<i>Emotional</i>						
Caribbean	77	145,303	1,279	2,303	1.58***	6.02***
GCC	33	135,125	618	1,027	0.76	5.34
Nigeria	38	30,107	317	692	2.30***	11.99†
<i>Rational</i>						
Caribbean	33	145,303	963	1,634	1.12	3.43
GCC	95	135,125	879	1,552	1.15***	10.77***
Nigeria	22	30,107	220	451	1.50	10.00

Statistical significance: ***99% confidence; †not significant

These numbers were weighted and adjusted for equal impressions. Except for conversion rate in Nigeria, all campaigns provided statistically significant results.

the impact of emotional messaging on Facebook correlated to the English fluency rate of the targeted country. For FE2, this theory would still appear to hold true. In the Caribbean and Nigeria, the emotional advertisements outperformed the rational advertisements. In many of these countries, English is an official language and people speak it at a native level. By contrast, rational advertisements were once again the clear winner in GCC countries. Indeed, the rational advertisements in GCC countries performed so well that they helped skew the overall results in favour of rational advertisements. This field experiment shows that the efficiency of emotion depends on the audience's fluency in the language of the advertisement, and that this theory holds true across different social media platforms.

RELIABILITY AND VALIDITY

Overall, the research revealed some important conclusions that were both reliable and valid. FE1 was the largest experiment, and it resulted in reliable data that led to valid observations. This hard data shows an important connection between English fluency and the efficacy of emotional messaging. The level of fluency is an essential consideration, as the results were consistently better for emotional variants in

those countries that boast high rankings on the English Proficiency Index (EF 2017), regardless of where those countries placed on the emotionality ranking.⁵³ These conclusions were reliable and platform-agnostic because the authors were able to reproduce the same results in both Facebook and LinkedIn using distinct A/B tests. In addition to the lessons learned about fluency, FE1 also provided conclusive data about gender and age. A clear and statistically significant variance was observed. Females reacted better than males when faced with emotional content. In addition, the older the audience, the higher the emotional uplift on conversion.

CONCLUSION AND DISCUSSION

The data gathered through this research provides exciting insights into the field of social media marketing and advertising. With over 2.3 million people reached, and more than 55,000 engaged participants, this is one of the largest social media studies conducted to date. Furthermore, it is the only study with an objectivist research paradigm that deals with the use of emotion by brands and its effect on conversion and engagement. The findings offer new academic knowledge in a relatively uncharted field and have practical and useful implications for managers.

The data reveals a reality that is more nuanced than originally anticipated by the authors. For example, the data supports Hypothesis 1, ‘when it comes to stimulating engagement and conversion, the use of emotional messaging on social media is more effective than rational messaging’, but only if the conditions are right. The use of emotion only drives engagement and conversion rates when the advertisements are in the audience’s native language. When embarking on this research, the authors had not considered the relationship between native language and emotion. As previous research demonstrates, a person is more likely to be emotional in his or her native language.^{54,55} Therefore, the higher the fluency/native rate of the audience in the language of the content, the higher the efficacy of emotional messaging. The relationship between language and emotion proves that Hypothesis 2, ‘The results will hold true and not differ greatly between nationality (culture), age or gender’, is not supported.

Furthermore, there are additional demographic characteristics that can determine how an audience will react to emotional messaging. FE1 revealed that females react more favourably to emotional content than males. FE1 revealed a conversion uplift from emotional content which was 12 per cent greater among females than males. Age also helped determine the emotional uplift on conversion. Carstensen *et al.*’s⁵⁶ theory of socioemotional selectivity was proven right: the older the audience, the more decisions were taken emotionally. This explains why the uplift to conversion was 26 per cent higher for emotional advertisements than for rational advertisements when comparing age groups from youngest to oldest.

One of the most interesting takeaways of this research is that how well the audience reacted to emotional messaging had nothing to do with the emotionality of people of a specific culture or country, but more to do with the demographic characteristics

explained in the foregoing text, namely, age, gender and fluency. This explains how countries in the GCC, despite being highest-ranked in terms of emotionality,⁵⁷ had a clear preference for rational content. Each of the four research objectives established at the beginning of this project have been achieved. Overall, the research provided objective and statistically significant insights into the often misunderstood world of social media. Brands will be able to leverage these conclusions to make better-informed decisions about their social media.

Management implications

The failure by brands to get the most out of social media is corroborated by the work of Li and Stacks.⁵⁸ One of the main goals of the present research was therefore to provide social media practitioners with insight into social media that could help them improve their work. The authors perceived that the failure of many brands using social media is due to a lack of understanding of how to leverage emotion. When brands lack emotional intelligence, the results can be devastating for the brand. There are many examples of brands damaging their brand equity by being emotionally numb, yet there is little understanding of how brands can best leverage emotions for a positive result. The conclusions of this research can offer a good starting point. Based on these conclusions, a rational/emotional content model can be created, as seen in Figure 1.

When using this model, the first step is to decide where to place a specific audience based on demographics, namely age, gender and fluency in the language of the content. For example, a young male with a low fluency rate would be placed on the rational/left side. An older female and native speaker would be placed on the emotional/right side — and so on. Depending on where the audience places, the model calls for emotional or rational content at each step of the way. The reason that the brand awareness step includes rational content for both sides

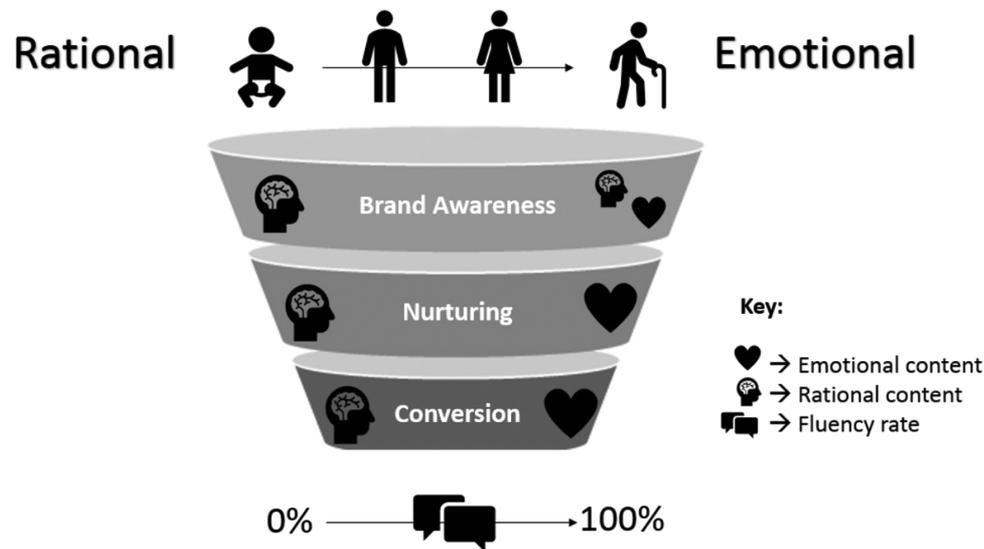


Figure 1: A rational/emotional content model that social media practitioners can use to determine when in the sales funnel to use emotional or rational messaging

of the spectrum is because rational content was often showed to improve engagement. When it came to taking a decision/creating conversion, however, the uplift of emotional messaging was a lot stronger if the demographic characteristics were met.

With the help of the rational/emotional model, practitioners will be able to make informed decisions on when and how to use emotion at different stages of the sales funnel, and when to opt instead for more rational messaging. This model demonstrates an important lesson for practitioners, namely that social media marketing requires a nuanced approach. What works for one audience might not work for another. Having a strategy that accounts for demographic differences can help reduce costs and improve efficiency. If this information can be used by marketers to improve engagement and conversion, it will help brands better leverage emotion on social media, giving them a greater chance to turn a positive ROI. To avoid revealing sensitive information, cost metrics were purposely omitted from this project. It is essential, however, to understand that each improvement in

conversion or engagement rates has a positive impact on costs. For example, the cost per lead (CPL) for a UK conversion was 31 per cent cheaper for emotional advertisements. Meanwhile, the CPL for Africa was 26 per cent cheaper for rational advertisements. Either way, it represents savings of thousands of dollars. Even a small difference in conversion rate can have a large impact on budget and income. The implications for managers are therefore very real and tangible, as they can have a direct impact on the bottom line.

The methodology utilised in this research can also be of help to social media professionals. Practitioners should be encouraged and empowered to conduct their own research. The myriad campaigns launched by brands every day present the perfect opportunity to run this type of A/B test. Brands tend to A/B test one image versus another, or one call to action versus another. However, A/B tests, when used as part of a bigger experiment, can also be used to provide insights into bigger, broader questions and hypotheses, in the same way that they were utilised in this research.

Limitations and delimitations

One of the biggest limitations of this research is the fact that it was conducted in English only. This decision was a purposeful delimitation dictated by business realities — the products offered by the participating brand are only available in English, hence the advertisements were all written in English. It would be interesting to investigate how the results would change were all the advertisements to be written in the native language of each country's audience. Although the content itself was varied, the study was restricted to the education industry, which could represent a potential limitation. Another purposeful delimitation was the exclusion of any financial data. Financial details such as campaign budgets, cost per lead, cost per engagement, and so forth were left out to respect the privacy of the brand involved. The inclusion of financial data, however, would lend the conclusions greater impact. Differences in conversion and engagement rates may seem small or insignificant, but in financial terms, they can make a huge difference on advertising budgets and brand income. Indeed, they can represent the difference between being profitable or not.

Future research

Running this type of research can be difficult for academics because of lack of budget or access. To give some context, the field experiments in this study cost approximately US\$50,000–US\$100,000 to run (the exact number cannot be divulged for the sake of confidentiality). If lack of budget is an issue, the authors would recommend academics to partner with practitioners in order to conduct similar studies. The result would be a win/win for both parties: the practitioner will improve his or her campaigns through optimisation, while the academic will be able to add to academic knowledge in a field where it is limited.

Language fluency turned out to be such a major factor for determining the efficiency of emotional messaging that it would be interesting to conduct future research in different languages to see if the same results can be obtained. Harris and Gleason⁵⁹ have already demonstrated that a native language evokes more emotion, no matter what that language might be. Nonetheless, it would still be interesting to see to what extent this holds true on social media. As this study was limited to the educational sector, it would also be useful for future research to run similar tests for a more diverse group of brands and industries. This study looked at differences in emotional and rational messaging in the form of text. Future research should look at other content formats, such as video or images. It is conceivable that the impact of emotion could be even stronger in more visual formats or that the fluency threshold would matter less. The authors hope that this study will inspire future researchers and practitioners to contribute to academic and practical knowledge on the subject of social media.

APPENDIX A

Table A1 describes the advertisements used in the field experiments. Note that some copy was tested several times with different creative assets. The creative asset was always kept constant within individual A/B tests to ensure that all differences in conversion and engagement could be attributed to changes in emotional vs rational messaging. All tests were for the same brand, the University of Liverpool Online.

APPENDIX B

Tables A2 and A3 present the raw data.

Table A1: AId experiments

Rational	Emotional
<i>Field experiment 1 (Facebook)</i>	
<p>Commercial pilot Sam Smith studied an MSc in Psychology and got a better understanding of his passengers. Psychology for non-psychologists. Gain knowledge applicable to every career with an online accredited programme.</p>	<p>Why do people behave like they do? Understanding psychology is useful no matter what business you're in. Psychology for non-psychologists. Commercial pilot Sam Smith studied an MSc in Psychology and got a better understanding of his passengers.</p>
<p>Study online to turn your interest in human behaviour into a career asset. Earn a BPS-accredited MSc in Psychology. No academic background in psychology needed.</p>	<p>Study psychology online and make a difference in people's lives, including your own. Turn your interest in human behaviour into a career asset. Earn a BPS-accredited MSc in Psychology. No academic background in psychology needed.</p>
<p>With a fully online MBA from the University of Liverpool you can customise the programme to suit your own career goals. Choose from four possible study paths Global Business, Entrepreneurship, Strategic Finance or Operations. My MBA, my way. Study online with a Russell Group university and collaborate with professionals around the world.</p>	<p>Searching for the perfect fit? With a fully online MBA from the University of Liverpool you can customise the programme to best suit your own goals and needs. My MBA, my way. Choose from four possible study paths Global Business, Entrepreneurship, Strategic Finance or Operations. Find the perfect fit for you!</p>
<p>Peter was able to apply what he learned immediately: 'I developed a business plan, brought a team together and completed an acquisition — all based on the entrepreneurship module'. What can an MBA help you achieve? Study online with a Russell Group university.</p>	<p>What do you need to accomplish? Peter was able to apply what he learned immediately to fulfil his goals: 'I developed a business plan, brought a team together and completed an acquisition — all based on the entrepreneurship module'.</p>
<p>What can an MBA help you achieve? Study online with a Russell Group university and gain the skills you need to start turning your goals into plans.</p>	<p>What can an MBA help you achieve? Study online with a Russell Group university and gain the skills you need to start turning your goals into plans.</p>
<p>PMI estimates that employers will need to fill around 2.2 million new project management-oriented roles each year through to 2027. Hone sought-after skills online while you work. Earn your MSc in Project Management online from Liverpool's AACSB-accredited Management School.</p>	<p>Are you prepared? PMI estimates that employers will need to fill around 2.2 million new project management-oriented roles each year through to 2027. Get ready for a project management boom. Earn your MSc in Project Management online the AACSB-accredited University of Liverpool Management School.</p>
<p>PMI estimates that employers will need to fill around 2.2 million new project management-oriented roles each year through to 2027. (Source in image PMI, 2017) Prepare yourself for a globally connected world. Earn your MSc in Project Management online from the University of Liverpool's AACSB-accredited Management School.</p>	<p>Are you prepared? PMI estimates that employers will need to fill around 2.2 million new project management-oriented roles each year through to 2027. Get ready for a project management boom. Earn your MSc in Project Management online from the AACSB-accredited University of Liverpool Management School.</p>
<p>Earn an MSc in Management online to back up your skill set and build your confidence to lead teams and make high level decisions. Gain skills for any sector. From the AACSB-accredited Management School of the University of Liverpool.</p>	<p>Does the next level seem out of reach? Earn an MSc in Management to build up your skill set to lead teams and make high level decisions with confidence. Gain skills for any sector. From the AACSB-accredited University of Liverpool Management School.</p>
<p>Explore the science of leading, coaching and motivating people with an online MSc in Organisational and Business Psychology. Inspire workplace culture. Gain a unique set of psychology-based skills applicable to any industry.</p>	<p>Understanding and motivating staff can never be automated. Champion the employee experience. Study an MSc in Organisational and Business Psychology online.</p>
<p>The WHO estimates around 450 million people globally suffer from a mental or behavioural disorder. Learn to manage mental health disorders. Gain sought-after skills with an MSc in Mental Health Psychology.</p>	<p>The WHO estimates around 450 million people globally suffer from a mental or behavioural disorder — you could help make a difference. Make a difference in people's lives. Gain sought-after skills with an MSc in Mental Health Psychology. No academic background in psychology needed.</p>

Rational	Emotional
<p>Earn a CIPS-accredited MSc in Operations and Supply Chain Management from the University of Liverpool's AACSB-accredited Management School. Prove yourself as a true strategist. Study online while you work from Nigeria.</p>	<p>Studying online gives you the flexibility you need to be able to spend time with your family. Flexible 100% online programmes. Study online while you work from Nigeria. Earn a CIPS-accredited MSc in Operations and Supply Chain Management from the University of Liverpool's AACSB-accredited Management School.</p>
<p>Earn a CIPS-accredited MSc in Operations and Supply Chain Management from the University of Liverpool's AACSB-accredited Management School. Impact every part of the business. Study online while you work.</p>	<p>You don't have to take a break from your career to study, you can do both with a CIPS-accredited MSc in Operations and Supply Chain Management from the University of Liverpool. Study online while you work.</p>
<p>From disease prevention through to lifestyle epidemics, gain the skills to change the lives of those around you with an APHEA-accredited Master of Public Health. Shape the future of public health. Study online with a leading UK research university.</p>	<p>Vaccinations, running water — lives are saved every day by public health initiatives. Help shape the future of public health by studying online with a leading UK research university. Make the world a healthier place. From disease prevention to lifestyle epidemics, gain the skills to change the lives of those around you with an APHEA-accredited Master of Public Health.</p>
<p>Get the skills and knowledge to drive growth and innovation through the use of technology. Leverage the power of technology. With an online MSc in Information Systems Management.</p>	<p>Sure, you know technology can improve your organisation's strategy, but do you have the leadership skills to make it happen? Leverage the power of technology. Earn an MSc in Information Systems Management online and get the skills you need to take projects forward.</p>
<p>It's estimated there will be 180 trillion gigabytes of information in the world by 2025 — could you unlock the power of big data and your own potential? (Source IDC 2016). There's big business in big data. Study online using a cloud-based server.</p>	<p>You can have all the data in the world, but what's the point if you can't find your way through it? It's estimated there will be 180 trillion gigabytes of information in the world by 2025 — get the skills to turn big data into the right data. Unlock your own potential with the power of big data. Study online in a cloud-based server to get real-world experience in the latest data techniques.</p>
<p>Earn an MSc in Cyber Security online and develop practical experience in response to real-world cyber-crime scenarios. What's your security strategy? Study online using a cloud-based server.</p>	<p>Hacking elections, data breaches, Wannacry — don't let your organisation be part of the next headline. Earn an MSc in Cyber Security online while you work. Protect yourself and your career. Study online using a cloud-based server.</p>
<p><i>Field experiment 2 (LinkedIn)</i></p>	
<p>Earn a BPS-accredited MSc in Psychology online to turn your interest in human behaviour into a career asset.</p>	<p>Do the complexities of human behaviour intrigue you? Study an MSc in Psychology online and make a difference in people's lives.</p>
<p>Choose from a range of elective modules to tailor your online MBA to your professional goals — your MBA from the AACSB-accredited Management School of the University of Liverpool.</p>	<p>What can an MBA help you achieve? Peter was able to apply what he learned immediately: 'I developed a business plan, brought a team together and completed an acquisition — all based on the entrepreneurship module'.</p>
<p>Hone sought-after skills online while you work. Earn your MSc in Project Management online from Liverpool's AACSB-accredited Management School.</p>	<p>Where do you see yourself in two years? Approach study like a project, begin with the end in mind. Earn your MSc in Project Management.</p>
<p>Back up your skill set with an MSc in Management online from the AACSB-accredited Management School of the University of Liverpool.</p>	<p>Prove that you don't just manage — you thrive! Study an MSc in Management online while you work.</p>

Rational	Emotional
Earn an APHEA-accredited Master of Public Health online from a leading UK research university.	From disease prevention through to lifestyle epidemics, gain the skills to change the lives of those around you with an online Master of Public Health.
Earn an MSc in Cyber Security online while you work and develop practical experience in response to real-world cybercrime scenarios.	Hacking elections, data breaches, Wannacry — don't let your organisation be part of the next headline. Protect yourself and your career — study an MSc in Cyber Security online using a cloud-based server.

Table A2: Field experiment 1

Ad Name	Reach	Leads	Unique clicks
Big Data — Lead Generation Form_Canada_1 — Emotional	2,047		12
Big Data — Lead Generation Form_Canada_1 — Rational	4,516	1	23
Big Data — Lead Generation Form_GCC Emotional	47,280	13	1,446
Big Data — Lead Generation Form_GCC — Rational	51,472	11	1,569
Big Data — Lead Generation Form_UK Emotional	653		1
Big Data — Lead Generation Form_UK Rational	3,818	2	23
Cybersecurity — Conversions_UK — Emotional	7,548	3	85
Cybersecurity — Conversions_UK — Rational	4,922		37
Cybersecurity — Lead Generation Form_Europe_1 — Emotional — Video	4,190		26
Cybersecurity — Lead Generation Form_Europe_2 — Emotional — Image	1,114		3
Cybersecurity — Lead Generation Form_Europe_1 — Rational	2,695		13
Cybersecurity — Lead Generation Form_Europe_2 — Rational	1,231		4
Cybersecurity — Lead Generation Form_Focus GCC — Emotional	51,824	7	1,457
Cybersecurity — Lead Generation Form_Focus GCC — Rational	49,232	8	1,066
Cybersecurity — Lead Generation Form_Focus GCC — Rational Copy	3,387		11
Cybersecurity — Lead Generation Form_Focus GCC — emotional	13,240		96
Cybersecurity — Lead Generation Form_Focus GCC — Rational	15,516		151
Cybersecurity — Lead Generation Form_High Priority GCC_1 — Emotional — Video	40,184	10	360
Cybersecurity — Lead Generation Form_High Priority GCC_2 — Emotional -Image	52,577	5	689
Cybersecurity — Lead Generation Form_High Priority GCC_1 — Rational — Video	5,112	3	28

The impact of emotion on social media engagement and conversion

Ad Name	Reach	Leads	Unique clicks
Cybersecurity — Lead Generation Form_High Priority GCC_2 — Rational — Image	88,576	20	1,298
Cybersecurity — Lead Generation Form_1_UK — Emotional	124,448	180	2,558
Cybersecurity — Lead Generation Form_2_UK — Emotional	339		4
Cybersecurity — Lead Generation Form_1_UK — Rational	24,976	21	341
Cybersecurity — Lead Generation Form_2_UK — Rational	340		1
Information System- Lead Generation Form_HVA_1 — Emotional	25,400	10	475
Information System- Lead Generation Form_HVA_1 — Rational	29,576	22	812
Information System- Lead Generation Form_Nigeria — Emotional	37,616	25	1,525
Information System- Lead Generation Form_Nigeria — Rational	39,512	29	1,645
MHPS- Caribbean 1 — Q2 Ads- Emotional	4,370		41
MHPS- Caribbean 1 — Q2 Ads- Rational	6,380	1	124
Psychology — Lead Generation Form_UK_1 — Emotional	70,176	70	1,419
Psychology — Lead Generation Form_UK_2 Rational	32,720	57	736
Psychology — Lead Generation Form_UK_2 — Emotional	1,471		13
Psychology — Lead Generation Form_UK_1 — Rational	1,831	1	22
University of Liverpool Online — Lead Generation Nigeria — Emotional	116,224	55	2,097
University of Liverpool Online — Lead Generation Nigeria — Rational	168,831	115	4,391
MPH — Lead Generation Form_Caribbean_1 — Emotional	65,745	15	2,637
MPH — Lead Generation Form_Caribbean_1 — Rational	75,776	32	3,551
Psychology — Caribbean 1 — Q2 Ads- Emotional	15,680	6	569
Psychology — Caribbean 1 — Q2 Ads- Rational	14,992	7	610
Psychology — Lead Generation Form_UK_1 — Emotional	3,681	2	44
Psychology — Lead Generation Form_UK_2 Rational	1,277		11
Psychology — Lead Generation Form_UK_2 — Emotional	4,976	2	43
Psychology — Lead Generation Form_UK_1 — Rational	1,624		14
Psychology — Caribbean 1 — Q2 Ads- Emotional	18,868	29	1,628
Psychology — Caribbean 1 — Q2 Ads- Rational	17,632	16	1,062
Psychology — Lead Generation Form_UK_1 — Emotional	68,560	277	2,509
Psychology — Lead Generation Form_UK_1 — Rational	29,927	104	917
Psychology — Lead Generation Form_UK_1 — Emotional — orange image	2,595	1	22
Psychology — Lead Generation Form_UK_1 — Emotional — blue image	914		5
Psychology — Lead Generation Form_UK_1 — Rational — blue image	2,246	1	16
Psychology — Lead Generation Form_UK_1 — Rational — orange image	1,239		14

Ad Name	Reach	Leads	Unique clicks
MBA — Lead Generation Form_1% LAL_UK_Image- Emotional	75,104	23	1,075
MBA — Lead Generation Form_1% LAL_UK_Image- Rational	88,913	42	1,224
MBA — Lead Generation Form_Focus GCC Q2 Ads — Emotional	10,148	3	121
MBA — Lead Generation Form_Focus GCC Q2 Ads — Rational	17,224	12	276
MBA — Lead Generation Form_Focus ROW — Emotional	45,440	27	734
MBA — Lead Generation Form_Focus ROW — Rational	41,360	27	684
MBA — Lead Generation Form_Nigeria — Emotional	161,279	166	4,615
MBA — Lead Generation Form_Nigeria — Image- Rational	66,240	49	1,290
MBA — Lead Generation Form_1% LAL_Video- Emotional	936		10
MBA — Lead Generation Form_1% LAL_UK_Image- Emotional	103,329	52	1,302
MBA — Lead Generation Form_1% LAL_Video- Rational	2,433	3	29
MBA — Lead Generation Form_1% LAL_UK_Image- Rational	79,039	33	985
MBA — Lead Generation Form_HVA — Emotional	39,344	30	1,685
MBA — Lead Generation Form_HVA — Rational	44,584	54	2,221
University of Liverpool Online — Lead Generation — Image- Emotional	218		0
University of Liverpool Online — Lead Generation — Image- Rational	575		5
University of Liverpool Online — Lead Generation — Image — Emotional	124		0
University of Liverpool Online — Lead Generation — Image — Rational	221		2
UK_psych — Emotional	48,272	17	396
UK_psych — Rational	47,824	22	448

Table A3: Field experiment 2

Ad Name	Impressions	Clicks	Total engagement	Leads
MBA_Nigeria_Video_Rational	7,108	61	117	6
MBA_Nigeria_Video_Rational	5,578	36	63	2
MBA_Nigeria_Video_Rational	17,421	123	271	14
MBA_Nigeria_Video_Emotional	979	9	17	2
MBA_Nigeria_Video_Emotional	19,789	149	295	16
MBA_Nigeria_Video_Emotional	71,745	816	1,813	99

To provide equal reach, the following calculation was used to weight the data:

$$\frac{R1}{L1} = \frac{R2}{X}$$

where R1 stands for Reach 1, or the largest of the two reaches of test 1; L1 stands for the leads generated with that reach; R2 represents the smaller reach; and solving for X gives the leads that would have been generated proportional to the smaller reach. This step was repeated until all the numbers for leads and unique clicks were proportionally recalculated. As there is no such thing as a fraction of a click or lead, the numbers were then rounded up or down. This was done for all the raw data.

Statistical significance was tested using the statistical tool provided by Chopra.⁶⁰ The following formulas were used in Excel:

- to calculate conversion rate:
'=control_conversions/
control_visitors, for Standard Error:
=SQRT((control_p*(1-control_p)/
control_visitors))'
- to calculate Z-score:
'=(control_p-variation_p)/
SQRT(POWER(control_se,2)
+POWER(variation_se,2))'
- to calculate p-value:
'=NORMDIST(z_score,0,1,TRUE).'

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