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The Mastercard Digital Engine™: Using AI to Spot Micro Trends for Effective Customer Engagement

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Introductory Note

Raja Rajamannar, chief marketing and communications officer of Mastercard, describes the dwindling of consumer attention and explains how marketers can follow Mastercard's example and use emerging AI technology to engage consumers meaningfully, authentically, and in real time.

Consumer attention spans are getting shorter by the day, and for good reason. Every day, people are bombarded with roughly 10,000 advertising messages. Seeking a reprieve, many consumers look for platforms that provide what I call a ‘pure ad-free heaven’ devoid of advertising interruptions.

According to a 2020 industry study by Edelman, nearly seven in ten adults worldwide use one or more methods to avoid ads, changing their media habits to see fewer ads (49 percent) and using ad blockers (48 percent).¹ Those numbers will surely rise in the years ahead.

This noisy ad landscape is a nightmare for marketers who want to reach consumers with messages they would actually welcome – relevant, personalized offers that drive engagement and boost the advertiser’s return on investment (ROI).

Moreover, a 2021 Gartner report found that 63 percent of digital marketing leaders struggle to deliver personalization because they are still scaling up their use of emerging technologies.² Consumers are ignoring most branded content or deeming it irrelevant – costing brands a fortune in lost customers and revenue.

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That is the mindset which led digital marketers at Mastercard to

reimagine their framework. From the onset, the goal has been to engage consumers with content that is personalized, contextually relevant, and in the moment. To accomplish this, the team created the Mastercard Digital Engine™ with artificial intelligence (AI) and machine learning (ML) at its core.

The AI-Powered Mastercard Digital Engine™

How does it work?

1. The engine spots micro trends all over the world as it wades through billions of conversations on the Internet. Micro trends range from a new cuisine like sushi burritos and disappointment over ballet dancers going on strike, to a rise in contactless payment options at the onset of the pandemic.
2. Since Mastercard creates experiences for consumers by tapping into their passions – think culinary, travel, sports, music, entertainment, and more – the engine instantly matches micro trends with our current experiences and offers, suiting them to consumers’ preferences and passions.
3. Armed with a deep analysis of the micro trend, the marketer can then decide whether to engage consumers and launch a campaign with a Mastercard Priceless experience, offer, or reward. The campaign can be launched on multiple media platforms in minutes (not months) with custom content pulled from Mastercard’s rich library of relevant copy. And it can be taken down the second the trend has run its course.

Not only is AI facilitating the Mastercard Digital Engine™ and enabling it to act with zero or near-zero lag for maximum impact, ML and natural language processing (NLP) are also integral to accelerating its impact, allowing us to measure the

effects in real time, optimizing who receives what content and when. This trifecta is game changing.

The AI processes we have employed thus far include: named entity recognition (NER) algorithmic approach, graph-based (PKE), and unsupervised keyword extraction (YAKE), to name a few. The algorithm is then further refined by using Word Mover’s Distance, Isolation Forest, and One Class SVM to remove irrelevant micro trends.

In addition to its real time response that matches consumer interests and desired experiences with a micro trend, the engine also boosts the relevance of our content by capturing both short-lived and long-term trends to help marketers deliver a personalized message in a contextually adaptable way.

The following examples showcase these capabilities.

Micro Trend No. 1: Celebrity’s Breaking News

A celebrity announced a big career transition, and the news generated significant online buzz. The Mastercard Digital Engine™ spots a spike in conversation about the celebrity and matches it with a behind the scenes video on Priceless, Mastercard’s consumer platform which features experiences, offers, and rewards for cardholders. A creative campaign is instantly created from personalized, contextually relevant and timely content.

In an authentic and meaningful way, we were able to drive higher engagement and click-through rates. The campaign, which was active for a two-day period, drove significantly greater awareness, consideration, and conversion than campaigns delivered by traditional methods:

- 100 percent higher engagement rates (engagement rates: social platforms calculate this as interactions divided

by a number of impressions; interactions are likes, shares, comments, etc.)

- 254 percent higher click through rates as compared to benchmarks
- 85 percent reduction in cost per click

The relevance of the message, an assertive creative campaign, and the real time model of the engine allowed us to generate a cost-effective outcome that surpassed our objective's key performance indicators (KPIs).

Micro Trend No. 2: Latest Tourist Passions

A European tourism board enlisted the Mastercard Digital Engine™ to help promote its country to residents of an adjacent nation, hoping to drive cross-border travel and thereby generate economic growth. We worked closely with the tourism board to define the strategy and implement the tactics.

The engine spotted relevant micro trends and matched them with compelling content and offers available to consumers instantly. The resulting ads fell into three passion categories – travel, culinary, and culture – driving clicks to the tourism board's website.

This AI-powered campaign delivered higher metrics than similar but traditional campaigns that the tourism board ran, targeting the neighboring nation. Both were on the same media platforms and had similar goals. Mastercard Digital Engine™ delivered:

- 16 percent lower cost per reach
- 20 percent more people reached
- 87 percent lower cost per engagement
- 25 percent higher rate of engagement
- 38 percent lower cost per click
- 96 percent higher click-through rates

Micro Trend No. 3: Trendy Traveler Experiences

A national airline teamed up with Mastercard to build a sweepstakes campaign designed to attract travelers to a culinary series in a popular domestic destination. The Mastercard Digital Engine™ spotted seven micro trends, matching them to pre-identified digital ads, called creatives, and copy in various categories. We engaged consumers with customized content that was contextually relevant and in the moment. The campaign generated the following results compared to campaigns that employed traditional methods:

- 29 percent lower cost per click (CPC)
- 37 percent higher click-through rate (CTR)
- 32 percent lower cost per engagement (CPE)
- 43 percent higher engagement rate (ER)

Key Findings

We know the engine works because over the last two years Mastercard has launched more than 500 successful campaigns across twenty countries for either itself or its partners. Our initiatives have covered a wide variety of categories ranging from sports and music to travel and food, as well as e-commerce, philanthropy, and diversity, equity, and inclusion.

AI is a one-of-a-kind technology that is driving a higher standard of marketing effectiveness. A game changer, the Mastercard Digital Engine™ delivers much higher campaign metrics than those of traditional campaigns. We have measured a statistically significant subset of these campaigns, applying strict test and control methodology to arrive at the following results:

- **Reach multiple**
 - average is 1.8 times
 - median is 2.0 times
 - range is 0.6-9.1 times

- **Click-through rates multiple**

- average is 4.1 times
- median is 2.2 times
- range is 0.8-21.4 times

- **Engagement rates multiple**

- average is 3.2 times
- median is 2.0 times
- range is 0.8-15.9 times

Sentiment, which we have also observed, usually varies across regions. In the Latin American market where the engine is used quite broadly, we have observed an improvement of eight percentage points in positive and neutral sentiment toward Mastercard.

We are also seeing differences across passion categories. For instance, categories with larger followings, such as sports, music, and food, do well. Localization is also important. Soccer does well across most regions but does not fare well in the U.S.

Another key discovery concerns the duration of campaigns. Short campaigns with a small number of creatives generally do not perform as well as longer campaigns or campaigns with more creatives.

We have always known that, without the power of AI, this could not be done in anything near real time.

Nothing Will Influence The Marketing Field More Than AI

We started this journey a few years ago with the goal of designing a marketing tool that could successfully cut through today's crowded and cluttered landscape, credibly reaching consumers who tune out messages because they prefer frictionless experiences. Fueled by AI, the Mastercard Digital Engine™ is an effective and efficient machine that builds campaigns that drive real time, impactful engagement and ROI.

Turning to the power of AI was a natural step from the beginning. From learning deeply about consumers to enabling hyper-personalization, to optimizing programs, we have always known that, without the power of AI, this could not be done in anything near real time.

Since the engine's inception, we have been delighted to see how quickly AI technology and ML are advancing. ML ensures that the engine improves with every execution, picking up better, more dynamic trends by the day. Thanks to ML, we will continue to hone our ability to spot appropriate micro trends. We also look forward to advancements in empirical measurement.

The progress of NLP is also fascinating to observe and put into use. Scaling our engine globally and into many languages would have been hugely more difficult even a couple of years ago. Think of the colloquial nuances and adaptation of each language in different locales; the Spanish spoken in Spain is quite different from the Spanish spoken in Mexico or Puerto Rico.

AI, ML, and NLP allow us to act with zero or near-zero lag time for maximum impact. And that impact can also be measured in real time so campaign optimization can happen instantly. (We define optimization as determining who receives what content, and when.)

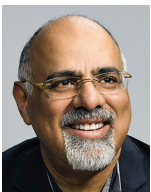
If you still believe that AI's speed can be matched by manual methods, think again. The lines between machines and humans are blurring in ways that were once unimaginable. As marketing practitioners aided by AI, we can have a finger on the pulse of every stage of the marketing life cycle, make sense of it, and act, yielding highly effective outcomes instantly, an effect termed *quantum marketing*.

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The Mastercard Digital Engine™ is engaging, enlightening, and empowering. Because of its globality, we are seeing many common threads and unifying themes. We are also seeing notable differences in how it operates across regions. For example, the development of the natural language models that exist today varies dramatically from one language to the next. We need to bring more access and equality into the information technology framework, ensuring inclusion and equity. As we continue to improve our capabilities, this social responsibility must be a bigger part of a digital marketer's handbook.

Our engine has taught us so much. Principally, it has ingrained in us an unswerving belief that AI is a necessity for engaging customers in a meaningful and authentic way in real time. It is the only alternative to manual methods today because making a human connection is everything. ■

Author Bio



Raja Rajamannar is Chief Marketing and Communications Officer and President of Healthcare at Mastercard. He is leading the company's innovative marketing transformation and evolving its identity. Raja is President of the World Federation of Advertisers and serves on several boards. He is an inaugural member of Forbes' CMO Hall of Fame and one of Business Insider's World's Most Innovative CMOs. Raja is the author of the Wall Street Journal best-selling book *Quantum Marketing*.

Endnotes

1. <https://www.insiderintelligence.com/insights/ad-blocking/>
2. <https://www.gartner.com/en/newsroom/press-releases/-gartner-says-63--of-digital-marketing-leaders-still-struggle-wi>