



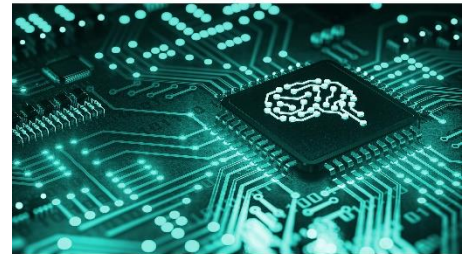
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Harnessing the Potential of Deep Mobile Analytics

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The sheer amount of data that we produce and consume is exploding at an unprecedented rate globally. Data growth analysis shows that most of the world's data today has been generated in just the past two years. On average, every human created at least [1.7 MB of data](#) per second during 2020. By 2025, [463 exabytes of data](#) is expected to be generated each day by the global population.



The pace is only going to accelerate. Ubiquitous smartphone adoption and ever-increasing consumer dependence on mobile devices are the major growth drivers, with mobile data volumes predicted to [increase tenfold](#) over the next five years.

With mobile users creating billions of touchpoints each day, highly valuable—and in many cases actionable—data points are flowing across every operator network. Yet, according to [Forbes](#), less than 0.5 percent of that data traffic is properly analyzed to extract any additional value. A key reason for this is the unwieldy weight of the traffic concerned. A typical network in South America, for example, will have some two billion data events occurring every single day. Until now, cost-effectively analyzing these data points to create customer insights has proved to be an insurmountable technical and operational challenge.

Enter AI and ML: cost-effective data insights

In the past, operators have primarily marketed to their customers along traditional campaign lines using mass, non-personalized SMS offers to purchase top-up or airtime bundles, perhaps

sent once a month. Typically, conversion rates for such campaigns are below one percent. But recent advances in data visualization are offering the opportunity to completely transform operators' understanding of customer behavior and buying patterns. The huge volume of data that users are generating on their mobile devices today, combined with new AI and machine learning-led capabilities in data analytics, means that operators can now gain more insight than ever before into what customers are doing, what their needs are, and when is the optimal moment to get in touch with them. This new ability to microsegment and micro-market to customers based on real-time requirements—whether for top-up, small loans, or mobile wallet transactions—can deliver conversion rates of up to 10 percent, meaning a more than tenfold increase in marketing success for operators and a significantly improved user experience for mobile customers.

The great technology leap forward in operators' ability to visualize these billions of daily customer touchpoints has been cloud-based machine learning and AI, which provide the ability to manage, process and analyze data in much more economical ways than previously possible. Machine learning and AI offer the processing capability to find highly targeted “needle in a haystack” data at cost levels that make business sense for operators. The key to unlocking the potential of data has always been whether it can be processed at a cost point that allows a profit, and AI and ML are finally delivering the elasticity that is making operators' big data ambitions a reality. For example, to examine a base of 50 million customers, the cost of analyzing all the customer datasets generated and producing actionable results may now be around only €1,000-2,000 per day which, from an operator perspective, represents an attractive business model.

Know your customer: right offer, perfect time

What datasets can be analyzed and how can these be monetized to boost revenue for operators and better meet customer needs? It all comes down to granularity and real-time analysis into what the customer is doing in that moment. All networks offer a range of static datapoints, such as what handset a customer is using, their typical data spend and other standard CRM insights. But the ability to add real-time data about a customer's interaction with their device creates the opportunity to detect patterns and build segmentation that can form the basis of much more effective marketing campaigns, and create happier, more loyal customers.

Every time a phone tries to connect to the operator network—to check an email, load a TikTok video, or look at sports results—a data event is generated. Operators can look for general patterns in these events to deliver timely offers that could be more tailored to potential interest areas, such as football, gaming, business and so on. As an example, when the football World Cup tournament is on and data usage might be higher, operators could offer prepaid customers who are running very low on data credit a short-term data pack that allows the customer to stay connected. With five billion prepaid customers around the world—and each engaged in an ongoing natural lifecycle of running out of data or airtime—the ability for operators to instantly offer top-ups, product bundles or even extend small loans to ensure continued connectivity provides huge value to both customer and service provider.

This analysis of real-time customer behavior enables the building of customer profiles that can more accurately determine likely customer behavior, including predictive buying behavior, and deliver clear insight into the best moment to engage the customer and promote ease of purchase. To deepen the analysis, adding one more layer—the past behavior of the customer—creates a much richer picture of an individual customer and increases operators' ability to anticipate and meet individual needs. For example, analysis may show that certain customers have been targeted with a specific TikTok app offer three times in the past and didn't respond, so a different offer may be generated. Alternatively, the offer could be presented at a different time, such as outside of office hours, to maximize the chance of attention, engagement, and conversion.

Deep dive: continuously optimizing algorithms

The algorithms running on customer interaction datasets are engaged in continuous learning cycles, always looking for better opportunities to engage with the customer. Deep mobile analytics (DMA) involves experimenting, testing, and identifying the most preferred engagement methods from all possible channels. To train the algorithm to look for similar customers with similar behavioral patterns, communications are sent to a large group (perhaps 100,000 customers) via a variety of different channels—Rich Communication Services (RCS), SMS, voice and so on. Based on the results, algorithms are built that can decide the right channels and optimal timing for communications to groups of customers.

To deliver optimal results, analytics service providers are now harnessing the very latest and most sophisticated models developed by data scientists, including neural networks, Random Forest machine learning techniques, vector analysis, mathematical formulae, and multi-dimensional models. Data is put through all available models, as part of a continuous testing and learning process to see which delivers the best results, often incorporating an element of handcrafting and refinement to ensure that the error and confidence rates fall within defined parameters. In practice, if the objective set by the operator is to maximize the number of customer transactions to a set figure (for example, 100,000 transactions per day at a revenue rate of \$2), the models must be trained to a high confidence level and run until the expected conversion rate is hit and the increased figure is delivered. Profit maximization will be different for each operator in each geographic region—factoring in credit card rates, varying costs per transactions and so on—so any modelling can be automatically adjusted to account for different volume and pricing considerations.

Fully automated model for digital inclusion

Interestingly, these techniques are now being leveraged for financing new handsets. Data analytics can examine a customer database to flag users with a handset that is more than three years old and identify upgrade opportunities, including an offer to pay in installments, based on automated customer profiling and financial scoring. For customers without a credit history or

even without a bank account, operators now can assess creditworthiness based on an automated analysis of operator-held data (for example, whether a long-term customer is demonstrating a steady top-up pattern). This opens the possibility for offering small loans and credit services to less bancarized markets and customers that simply wasn't possible in the past. From identifying unbanked customers who would benefit from mobile wallets to ensuring users have access to up-to-date handsets, operators and data analytics providers are today at the nexus of enabling digital and financial inclusion—the global push toward which has assumed even greater urgency and importance in the post-COVID world.

Harnessing deep mobile analytics provides a measurable impact for operators in terms of maximizing revenues and creating greater customer satisfaction and loyalty, and for mobile customers themselves, with the ability to benefit from relevant, timely offers that meet their exact needs. Moreover, crucially, deep mobile analytics can be accomplished by analytics technology providers with no impact on customers' data privacy, an increasingly pressing concern for mobile users. All data belongs to the operator, and any data analytics results linked to the customer are hashed, anonymized, and encrypted, mitigating the risk of privacy breaches and ensuring the integrity of customers' personal data at all times.

So, what is the vision for the future? Mobile transactions, including top-up, will move globally to online and fully automated. We can already see that happening, driven by the powerful combination of enabling technologies such as bancarization and smartphones and the use of deep mobile analytics to better address the requirements of individual customers. Increasingly, the data goldmine within the network will be connected to other industries such as banking and retail. In tandem, operators will be looking to harness their network data to optimize their own internal operations, from optimizing network rollout and capacity management to radio planning and security.

One thing we can be sure of is that solutions will continue to be built that use mobile network data in a much more intelligent way to revolutionize the customer experience, expand revenue streams across interconnected industries, and push forward the digital transformation of our businesses and communities.