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DISCUSSION SUMMARY
RESEARCH & ADVISORY NETWORK

Improve Customer Experience with Actionable Artificial Intelligence

ANALISE POLSKY

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DISCUSSION OVERVIEW

Artificial intelligence and related forms of advanced analytics hold enormous potential for marketers to expand and deepen customer intelligence, improve business processes, and deliver engaging customer experiences. But many marketing organizations are just getting their feet wet in leveraging these technologies. To learn about the opportunities and challenges, IIA spoke with Analise Polsky, Business Solutions Manager, SAS Best Practices and Jonathan Moran, Principal Product Marketing Manager, SAS Customer Intelligence Solutions.

Please give an overview of the growing role of artificial intelligence and advanced analytics for marketing and customer intelligence.

Analise Polsky (AP): AI and analytics help marketers develop a more comprehensive and insightful understanding of customers. Automating the generation of that understanding helps maximize the efficiency and reach of marketing programs. Think about the wealth of data available from customer information systems, mobile applications, websites, call centers, and third-party data sources. You can't process it manually or fast enough to meet the demands of the business and its customers. Both AI and analytics facilitate how quickly we learn about customer needs and preferences, the kinds of products and services to offer, and how best to engage with customers within and across channels.

Jonathan Moran (JM): Brands are realizing that customer experience is becoming the sole differentiator, more so than the traditional four Ps of marketing. Customers, especially when connecting on mobile devices, expect instant response, with relevant information and services, anytime and anyplace. They expect the provider to recognize them and treat them individually. As Analise suggested, the only way to do that for large brands with speed and at scale is to automate. Brands must rely on cognitive computing and machine learning and other artificial intelligence techniques to handle the volume to begin with, and

then to personalize interactions and deliver exceptional customer experiences.

What are some examples of innovative and productive applications that you're seeing?

JM: We work with large telecom providers and financial services firms that are driving automated decisions into marketing channels, often in real time. They use AI algorithms as the decision-making brain behind next best offers and next best actions in call centers, web sites, and mobile channels. They do this at high rates of speed and against customer bases that can be in the hundreds of millions. They see the results in terms of improved uptake rates because the offers are delivered instantaneously and are analytically "thought through" to fit the individual customer. It's no longer a matter of pushing the offer du jour through all channels. Customers get the right offer, even if that means no offer at the moment.

On the service side, we see companies automating customer interactions including returns, inquiry replies, and service concerns. One telecom provider was trying to manually address 10,000 service concerns a day that came in through various channels. The teams couldn't handle the volume, and the process wasn't scalable. Through a combination of text mining, sentiment analysis, natural language processing, and content categorization, they were able to automatically and intelligently interpret requests

coming in from all electronic channels – email, social, and web. Then route requests where they should go, sometimes to specific departments for manual attention, but increasingly to automated reply engines. It's a win all around. Customers get better and faster service, are more satisfied, and have a better experience. The company can handle the volume and meet service level agreements. And the aggregated information helps the company continue to improve its processes, offerings, and customer interactions.

A third example is how online retailers are injecting more digital intelligence into generating what are called "personalized product sort orders." When a customer searches for a product on a web site, the first one or two products displayed have got to be relevant, especially if the customer is on a mobile device that has limited real estate for display. If I'm searching for shoes, I'd like to see pairs in my preferred style and available in my size, perhaps ones that I've looked at in past sessions, or a selection shaped by historical customer information – all the details the retailer knows about me and my preferences. The decision of what products to display has got to be automated and instantaneous. And it has got to make sense to the individual customer, not a broad segment. If the selections are right, it increases the chances of continued interaction and a sale. If they're wrong, the customer may feel that the brand isn't a good fit for their shopping preferences.

Stepping back a bit, what kinds of problems or situations in marketing really call for AI?

AP: Jon's examples show how powerful, versatile, and pragmatic advanced analytics and AI techniques can be. With the help of AI, organizations can dare to tackle a lot of new data-intensive problems and opportunities. If I step back, I'd say you need AI techniques in three basic situations. One, when you want to interpret large volumes of data coming from

multiple and disparate sources. Two, when you find yourself stuck in a cycle of manual data processing – some businesses are still manually coding and analyzing social media data. And three, when there's need for nuanced and customized output such as a specific recommendation for an individual customer or a business decision.

Customer intelligence forms the foundation for shaping the customer journey – how the customer perceives and interacts with the brand, and how the brand anticipates and responds to customer needs, across the consider-purchase-consume cycle. The goal is to have relevant and meaningful interactions, and deliver engaging experiences, throughout the journey. If I'm a hotel guest, I might receive valuable information and suggestions prior to arrival, check in from my phone, and using a chat service on the hotel's website, work with a virtual host to plan activities and book hotel services. Some of those services utilize AI and have the ability to improve both how much guests spend and their overall experience. The services and applications are not only convenient but can be highly customized. Let's say I book a manicure at the spa and eat in the restaurant for breakfast but never dinner. When I turn on my hotel TV, a recommendation for a "pairing" appears on the screen – I can get a discounted massage to go along with my manicure followed by an afternoon wine and cheese tasting at the rooftop restaurant. All I have to do is hit "book now" on the screen and they will do the rest.

To the customer the process feels effortless and relevant. The goal is to have the customer feel, "This brand knows me. They understand what I like. They know what to serve me when." To the hotel it is a massive opportunity to generate revenue, deliver a better experience to the guest, and collect new information on guest preferences and activities. All of which feeds back into the learning algorithms of AI and informs the corresponding analytics.

We've mentioned some of the terminology of AI, which can get complicated. Please simplify it for us.

JM: Things get complicated because categories and methods overlap, people describe them in different ways, and they argue the boundaries. Within our Customer Intelligence division at SAS, we've been looking at artificial intelligence for a long time, and we focus on three basic types:

- *Cognitive computing* uses methods including data mining, pattern recognition, and natural language processing to mimic how the human brain works. That enables more human-like interactions with information systems.

- *Machine learning* enables systems to learn from data without being explicitly programmed, and to get smarter through experience with more data. So we can discover patterns "not visible to the naked eye" and get better at predicting future results.

- *Deep learning* goes farther to create useful abstractions from data, rather like "seeing both the forest and the trees." That enables systems to get better and better over time at very complex tasks such as voice and facial recognition.

In layman's terms the three types are: interact like humans, learn on our behalf, and master complex tasks. Cognitive computing and machine learning have been researched and developed across decades, starting with AI pioneers like John McCarthy and Herbert Simon in the 50s and 60s. And they're incorporated into marketing applications like those we've mentioned. Deep learning goes back almost as far but is not yet part of many marketing applications.

AP: What all the methods of analytics and AI have in common is mathematical algorithms that operate on data. An algorithm can represent steps to follow, a set of rules, or a guiding framework or structure for how you get to a solution. It's like a cooking recipe for mathematics. Some analytics have very specific intent, like understanding relationships among known business variables. Other analytics are more open-ended, discovering patterns and opportunities for optimization that people hadn't envisioned. You can test hypotheses using the data, and you can also let the data reveal the possibilities. And with today's advanced analytics and AI, systems can do these things using vast amounts of data very quickly and consistently.

Give us some examples of common marketing analytics applications that can get a boost from AI?

AP: Marketing processes may seem "tried and true" but are often lacking. Consider customer segmentation. Too often the segments we have come to rely on can be too broad-brush, mischaracterize customers, or be self-limiting or poorly defined. We can use AI to examine vast inputs across populations and geographic areas to readily identify patterns and similarities in behaviors and preferences and generate more refined customer segments. We can also work bottom-up from a detailed understanding of individual customers and their interactions with brands across channels as inputs to learning models. Over time, the models will expose patterns and relationships in larger populations. Instead of the broader generalizations diminishing the individual identity, they can enhance it, and all the actual details on individual customers can enhance the broader segmentations.

One objective is to make the understanding of a customer unique enough to personalize the experience. Another is to look across segments and understand how specific levers – pricing, content, promotions – impact them. With AI, marketers can do both of these with greater control and confidence in the results.

JM: Marketing can use AI to improve many basic processes, from campaign and lead management to email marketing, setting up event triggers, and calculating customer propensity and lifetime value scores. But those depend on the foundational ability to automate the collection and preparation of data, integrate data for analytics, and work in real-time on streaming data. As the organization gets better at those basics, all of its processes get a boost.

I also see an opportunity to use AI to get marketing and advertising out of their silos and working together better. Marketing technology focuses on the processes I just listed. Ad technology focuses on monetizing audiences through mobile push and display advertising. Where brands join their martech and adtech data and processes, we see some awesome use cases and the ability for brands to cross chasms they previously haven't been able to address.

For example, we help brands identify customers via their mobile devices, and recognize when they approach and cross a geofence onto a property such as a hotel, retailer, airport, or gas station. We can combine what we know about individual customers to greet them ahead of time, when in the past we were only reactive. We can engage with them better, be more proactive and helpful, make better suggestions and offers, and deliver that exceptional customer experience. Marketers need to get martech and adtech working together not only to enhance the customer experience, but also to approach the holy grail of optimizing the mix of messaging and interactions across channels – an application that relies heavily on AI.

What are some of the main challenges when leveraging AI in marketing?

AP: Balancing current need against what is new and exciting. We should be both optimizing the business and looking for new problems to solve. We should look at the customer journey both rigorously and creatively. Do we even understand the core intentions of our customers? Are they trying to complete a purchase? Or conduct research? Do we understand the connections between what the customer is trying to do and what we need to make as business decisions? For example, we can track the customers as they move around our retail store, where they stop and what they are looking at. What are all the ways that data would be useful? How would it feed other models or information we have about customer purchasing behaviors or shopping patterns? What new things can we do with it? Keep those business and customer objectives well-defined and aligned while prototyping, developing, and deploying AI applications.

A second challenge we've already touched on – gathering and integrating the data inputs for analysis. Often this means evaluating or reevaluating standing practices around the distribution, sharing, and use of data by different departments. This can be as much of an organizational and cultural issue as a technical one. Are people across departments ready and willing to share their data and adjust their data management methods and business processes to help deliver a better customer experience? In the case of machine learning, the examples serve as the basis for learning. You need solid data to get good models.

JM: When considering a business initiative, people often ask, "What's going to be the hardest part – people, process, or technology?" At this early stage of the AI-in-marketing game, it's a bit of all three.

Do you have the people and skills to use AI technology and methods, and how do you build experience? Do you also have people to automate the tactical processes in place today? Do you have people who understand customer journeys and where AI makes sense? And as Analise just mentioned, are they ready to work together? Then are your business processes consistent enough to be automated? Must you start

small in scope and ambition, and grow over time? Finally, is your technology modern enough to handle all the data, and process it as fast as customers and processes demand? Just as importantly, can the technology scale as you expand the number and breadth of AI applications? So the challenge is to keep people, process, and technology capabilities advancing together in reasonable proportion.

How far along are companies in putting AI to work in marketing, and what can accelerate their progress?

JM: The majority of companies are researching and understanding what AI is, how they can apply it to marketing data and processes, and whether they have the needed skills and experience. For example, in the cognitive computing domain, what are our abilities in text mining, natural language processing, and sentiment analysis? For machine learning, how good are we at embedding algorithms and decision automation in marketing processes and delivering new insights to marketers? For a company new to AI, my advice is to start small. I'd add that you should also anticipate and plan for how fast you can ramp up, and work with experienced vendors that can help accelerate your capability development.

More advanced companies accelerate their progress by getting good at transferring knowledge, experience, and applications across departments or lines of business. Every new initiative has a head start. What part of your business has the most experience and applications in advanced analytics and AI? What can marketing learn from them?

The most important thing to accelerate may not be the development of AI applications, but rather the consumption of AI-generated insights by business people. They need to get used to information and recommendations that may be not just new but counterintuitive to how they've worked in the past. We help customers through a framework called "guided

analytics." The idea is to take the relevant analytics from different SAS models and applications and bring them together into "analytical decision helpers" for specific roles or processes. The helpers are embedded into the marketer's information systems and workflow. That can make the marketer much more efficient by automating information delivery and analysis, and serving up new insights that in the past might have taken weeks of special effort to generate.

The helpers also make the marketer more effective through observations and recommendations. Mr. or Ms. Marketer, here's a potentially useful combination of digital asset and a customer segment that you haven't explored. Or you're in danger of overloading some customers with email communications. Or here's another way to rank product recommendations. Guided analytics help people get comfortable with their analytics and put them to work in an automated, intuitive fashion.

AP: What Jon just described is key to building an analytic culture and enabling an enterprise to be better informed, more fact-based, and more insightful. Many information systems automate what's already familiar. Analytics and AI help people see the world differently, so you can't simply turn on an application and assume it will be used well. That's like throwing someone into the water and hoping they can swim. People need to develop familiarity and comfort with using analytics, which includes some appreciation of the logic behind the models and algorithms and a natural curiosity about technology. What accelerates this process? Having the analytics fit naturally into their workflows. Partnering less technically savvy individuals with people who can translate their needs into the capabilities of the technology. Targeted education or training. And a place where we people can go to get information and learn more. The goal is to minimize confusion and maximize people's understanding of the applications and benefits. What we've been saying about the customer experience also

applies to the employee experience – analytics and AI must be convenient and relevant. They must help solve a specific problem or achieve a valuable goal.

What do you see on the horizon for advanced analytics and AI in marketing?

AP: I may go a bit over the horizon. An objective is to get people to feel more connected with their data and all that it has to say. A lot of that effort today involves data visualization, which is getting very sophisticated. But I could see the marriage of the kinds of AI capabilities we've discussed with virtual or augmented reality.

If I'm in marketing for a retailer, put *me* in the store, observing and analyzing product movement, customer behavior, employee performance. Let me experience and explore what's happening, before the daily graphs and reports are generated. If we can make data more tangible, and put the marketers in the market context, we can reorient how we see and think about the business.

JM: I see more pervasive use of AI across the marketing functions we've discussed. I see applications of deep learning to train customer-touching applications to get better and better at what they do. As marketing systems get more automated and intelligent, and as digitally empowered customers become more and more reliant on their technology, I think that we'll see more machine-to-machine marketing. We won't just be marketing to the individual customer, but to the customer's device and the agents loaded on it.

So the brand might send messages and offers to my Fitbit or my smart watch that will then, at the proper time, inform me of what I might need or do. For this to work, the brand's systems must be more anticipatory while still operating in real-time. They must compete for the attention of the software in the customer's device. And they can leverage customer devices as another rich source of data on customers. The machines will be talking about and serving the customer "behind his back."

To wrap up, what are the top things that a marketing executive should keep in mind around AI and advanced analytics?

JM: Don't be afraid. The mathematics and models may be complex, but the technology and applications aren't as difficult as you might assume. You can draw on the experience of vendor partners and other experts to accelerate your progress in putting AI to work to improve business performance by improving the customer experience.

AP: AI is a business tool. It is about developing more symbiotic relationships between people and information systems. So keep the humans in mind, both customers and your fellow marketers, when it comes time to implement. Measure and define terms of success up front and consider how models may change over time. And no matter what type of analytics you are using, be sure to follow through on your digital commitments to customers – recognition, responsiveness, relevance, and responsibility in how you use their data to serve them.

Additional Information

To learn more about this topic, please visit sas.com/ci

About the Interviewees

ANALISE POLSKY

Analise Polsky's keen understanding of people in diverse cultures gives her depth and insight into data-driven and organizational challenges. As a Thought Leader for SAS Best Practices, she couples her diverse experience as an anthropologist and certified data whiz, to build core assets and deliver dynamic presentations. Her areas of focus include data visualization, organizational culture and change management, as well as data quality and data stewardship. Her multi-lingual background offers a unique ability to help organizations assess strengths and incumbent skills in order to drive strategic shifts in culture, policy and governance, globally. Analise puts the skills she learned while living in the Amazon to use in the corporate jungle – showing organizations how to evolve data practices and principles to meet ever-changing data demands.

JONATHAN MORAN

Jonathan Moran is responsible for global marketing activities for all SAS Customer Intelligence solutions. He joined SAS in March of 2008 bringing 7 years of industry experience with him, having worked in Global Professional Services and Sales Support roles at the Teradata Corporation. Over the past 15 years, Jonathan has had the opportunity to not only architect, develop, demonstrate, implement, and present on Customer Intelligence solutions, but he has also worked on-site with Fortune 500 customers across industries helping them solve unique digital marketing business issues. Mr. Moran graduated from North Carolina State University with an undergraduate double major in Marketing and Spanish Languages and Literatures. He also holds a MBA from North Carolina State University with a concentration in Technology Commercialization.

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