



I D C E X E C U T I V E B R I E F

Managing Big Data in Motion Is Crucial for Customer Experience Management

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Adapted from *Big Data in Motion: The Medium is the Message*, by Maureen Fleming

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Big Data's Role in Customer Service

A hot trend in technology is the adoption of software and services that enable and support a great customer experience. Businesses collect a huge amount of data across a variety of sources to gain a better understanding of customers and their needs. Because brand managers are not certain which new data or interaction is the most critical, they collect as much data as possible.

This creates an explosion of data collected from external and internal sources, leading to another hot trend called Big Data, which consists of emerging techniques for managing the high-speed processing and analysis of huge volumes of data combined from many different sources.

The marketing and IT teams analyze this data and use the results to maintain recommendation engines to push out unique offers that align with customer needs. To improve their ability to respond rapidly and effectively to customers, businesses also revamp their inbound call centers and re-build self-service Web sites, completing the cycle of a great customer experience.

Increasingly, as brand managers see responding to customers as a competitive advantage, more and more data moves into Big Data collections in real time via messaging technology, and promotions pushed out to customers in near-real-time via messaging technology. Today, synchronizing data between internal systems in real time using messaging technology is more important than ever.

Without resilient and high-performance messaging middleware, enterprises will encounter difficulty meeting the goals of the customer experience team because the most common types of messaging middleware will be overwhelmed with capacity and performance problems. Similar to the trading systems of capital markets, advantage goes to those with the highest performance messaging middleware.

Customer Interactions: Risky When Imperfect

All investments in customer experience management -- from applications to infrastructure -- impact the quality of customer interaction, which can either strengthen or weaken the relationship. Internal systems work in tandem to either create a great experience that strengthens the relationship, or a bad one that weakens it. Examples include the following:

- Customers received offers at exactly the right time and accepted -- or the offer was made past the point of opportunity and the customer viewed the communications as spam
- Offers were well-targeted and met a need -- or the offers missed their mark and were considered to be a nuisance



- Inbound calls were a great experience, with the customer able to place an order or resolve a problem -- or the customer encountered problems to the point that they no longer want to do business with their provider anymore
- Self-service was either up-to-date and the customers were able to get what they needed -- or wasted their time because the website was ineffective

Bad Digital Experience Often Points to Problems with Internal Systems

If you ask just about anyone to discuss their experience with a store, vendor, or service provider, they will more likely than not discuss a bad experience, precisely and in detail. Here is a true story of a recent bad customer experience, which led to an instant decision to churn.

iPhone Upgrade Interaction Churns Customers

With the launch of the Apple iPhone 4S, a mobile customers' household members qualified for an upgrade. The customer went to the local mobile phone store to order two new phones for family members. The store didn't have the phone in stock, and while placing the order, the service representative pointed out that the Apple store in the mall had the phones in stock.

The customer decided to cancel the order and went to the Apple Store. There was a long line, but the phone was in stock. The customer decided to wait in line, and was still in line when the store closed. The Apple employees decided to keep the store open for everyone in line.

After waiting for more than two hours to purchase the phones, the Apple service representative said one of the family members wasn't qualified for the upgrade, which was inaccurate. The customer had to call the mobile carrier to find out what happened. After a half-hour discussion with call center staff, the customer was told that a hold was placed on the phone from the mobile store where the original order was placed, then cancelled.

When the customer explained what happened, the call center staff told the customer that she would have to wait for several days until the point-of-sale system was synched with the application that handled the upgrade qualification. This, of course, did not help the customer who was in line at that point for close to three hours. The customer knew that if she didn't purchase the phones that evening, there was no guarantee the phone would be in stock once the problem was worked out with the mobile carrier.

When the customer asked the call center to release the hold because of this, the customer was essentially told that that the possibility that the customer was trying to cheat the mobile carrier made the release of the hold too risky. When the customer explained that there were alternative carriers, and threatened to move to another service, the call center representative still refused to make the change.

The customer picked up mobile service from another carrier and transferred both phone numbers to the new carrier. The following week, the two other family members on the plan also switched from the carrier to the new one. The mobile operator that refused to provide reasonable service lost a premium family plan where three of the members were on a smartphone with a data plan, in addition to one member also on a data plan for a tablet device.

Even though the customer had not planned to switch, the decision was made to change mobile providers because of poor treatment during the interaction with the call center staff. The switch and provisioning of the new service was almost instantaneous. The cost to switch was very low. And the irony was not lost that the carrier essentially turned down business because of a theoretical financial risk that would have paid for itself in only a few months by retaining the customer's family plan.

The call center was available and responsive, but the customer interaction involved assessments based on faulty information caused by the failure of the mobile carrier to synchronize critical customer-touching systems in a timely fashion. The customer experience failed to extend through the integration infrastructure.

This is not an unusual occurrence. The following are additional examples of guaranteed poor customer experiences tied to poor coordination and synchronization across customer-touching systems:

- Banks with non-synchronized products, making it difficult to update personal information and to get financial information through a single-source Web site or single call
- Re-engineered call centers without reliable coordination across the value chains responsible for delivery and fulfillment
- Complex onboarding of a customer
- Husband and wife or partners with joint responsibility for payment, and a lack of coordination between the call centers and customer databases

Enterprises have traditionally synchronized applications using a "least-cost" model. Frequently, that means batch-oriented file synchronization. But a problem arises when the business value of rapid updating is not well calculated and factored into profit considerations. When there is an imbalance in application-to-application refreshes relative to the value of up-to-date information, there is risk in eroding loyalty. Customers calling in with problems, for example, encounter resistance from call center workers, and view out-of-date transaction information in self-service Web sites.

Most enterprises are working to increase the speed of integration, but decisions should be aligned with customer-oriented initiatives. There are efforts by some organizations to trace high-value customer transactions through all systems that touch them. That makes it easier to determine which ones need to be event-enabled and attached to messaging infrastructure for event-driven updating.

Communicating Reliably in the Appropriate Response-Time Window

Big Data is the accumulation of huge volumes of little data, such as transactions, Web-site visitor paths, sensor data, GPS location data, and comments pulled from social sites.

Highly personalized promotions require context that is constructed by correlating all of this data to a promotional opportunity. However, by the time this data is moved, processed, and analyzed, the time required to make the offer may exceed the promotion-response window.

In other cases, there is an opportunity to alert when it is clear that there is a problem with a service offered. Those examples include travel delays, lost baggage, exceeding the limits in a mobile contract, exceeding the limits of a credit card, or a shipping delay for an item ordered online.

In both scenarios, there is an opportunity to improve a customer experience by interacting within a time window that is useful to the customer.

Some enterprises increase conversion rates by combining complex event processing (CEP) with their messaging infrastructure. CEP receives events and correlates them to patterns that, when found, require a response. CEP combined with messaging can increase conversion rates by sending promotional offers as their customers are shopping in a mall, calling in to a call center or completing an online transaction.

By integrating analytics while data is in flight, there is a significant opportunity to create highly contextualized offers in near real time. More importantly, there is an opportunity to interact with

customers when there is a problem, providing options and choices that prevent an irritated customer from calling in to the call center.

And even more importantly, an enterprise can also analyze data in flight to prevent problems so that a customer can actually have a good experience. For example, when customers sign up for an energy plan when they move to a new house, they want the energy turned on by the date stated. If there is a problem with the process, it is important for the energy utility to identify the problem and correct it before the turn-on date. That prevents a call to the call center, and creates an environment where the customer may be willing to receive and respond to appropriate promotional offers.

Pushing Out Communications and Promotions

Identifying when communications or promotions should be pushed out to customers is important in customer experience management, but for many consumer brands, managing the sheer volume of messages that theoretically might be sent to customers can pose problems.

There are commercials on TV that talk about slow network performance and delays in receiving communications from friends and co-workers. But when you trace back to the source of the problem, these delays actually can be caused by messaging infrastructure incapable of handling capacity volumes.

When the response window is tight, gaining a greater understanding of your existing messaging infrastructure and its service levels may identify problems in fully executing on the communications plan associated with the customer service initiative.

Managing Big Data in Motion

A great customer experience often depends on efficient and timely sharing of data among applications. Any customer experience initiative should also include the ability to detect problems that would hinder a positive customer experience or uncover new opportunities. Requirements of this infrastructure, which are built on an event-driven architecture, include the following abilities:

- Receive and reliably deliver all types of new data in real-time from internal and external sources to the Big Data systems for analysis and to recommendation engines
- Process and correlate new data in-flight to speed up processing and to determine whether there is an opportunity to generate an immediate response based on the new data
- Deliver offers in real-time to the customers' designated applications and mobile devices

There are wide variations across messaging middleware. Some messaging systems may not handle the capacity required for Big Data in Motion, or be reliable enough to push communications out to customers. A customer initiative that includes the implementation of Big Data technology should also include an assessment of current messaging middleware to determine whether higher performance messaging is required.

By the same token, if the initiative doesn't include automated problem detection, then the initiative really isn't a complete view of customer experience management.

Therefore, the ideal solution is capable of identifying the attributes of a great customer experience, monitoring the customer experience, and automating problem detection. For high-volume environments, that leads enterprises to look at combining CEP with high-performance messaging.

Conclusion

Today, associating customer experience management with Big Data is increasingly common. Associating customer experience management with automatic problem detection and prevention is less common, but is considered a competitive advantage by leading-edge consumer-oriented companies in energy, capital markets, mobile communications, airlines, and logistics.

Over the next few years, it will be common to see enterprises put together broader customer experience initiatives supported by Big Data and Big Data in Motion, which will be needed to communicate in an increasingly refined and relevant manner.

Over the past few years, there was substantial investment in social applications aligned with improving customer experience. IDC believes attention will turn more actively to automated problem detection and resolution to increase loyalty and to create a foundation where customers will respond to offers because of greater trust and perception of value.

That will put far more urgency on building event-driven systems to handle application-to-application synchronization on behalf of customers. We believe businesses that understand the importance of a customer-centered architecture today will be operating at a competitive advantage for the next several years.

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