

FORBES INSIGHTS

# HOW PAYPAL TURNS CUSTOMER DATA INTO **SMOOTHER, SAFER COMMERCE**



SRI SHIVANANDA, SVP AND CTO OF PAYPAL

It's not uncommon for Sri Shivananda, senior vice president and chief technology officer of PayPal, to wander the halls of the digital payment giant's headquarters in San Jose, California, and take impromptu meetings with any of the thousands of engineers who work there. With a delighted, almost parental sense of pride, he swipes through his phone and holds up a picture he snapped during one such recent tête-à-tête: a machine prototype, all steampunk metal pipes, that one team built to tinker with new types of machine learning. "These interactions are what keep me relevant, help me learn new things," he says. Shivananda calls the practice "reverse mentoring," and it's as much for his own benefit as it is for theirs. Employees gain access to the company's C-suite and a sense of appreciation; he walks away with impressions of strengths, challenges and opportunities.

In other words, data. Data has been a primary fascination of Shivananda's since he was an engineering student in India, and it's the fuel that powers PayPal, from mitigating risk

and accelerating innovation to delivering on the ultimate goal of any business: giving its customers what they want. "Data is a force," he says. "And that force can turn into something of a burden — or something that truly liberates you, your business, the things that you do. Data, when tamed, can be an asset like nothing else."

## **SPEED VS. SECURITY: DATA HAS THE ANSWER**

Taming data has provided the answer to a central question underlying PayPal's business: How do you balance the competing demands for secure transactions and a frictionless customer experience?

Safety and speed are rival services, vying for priority. Imagine you've filled up a cart of retail therapy and are about to check out of an e-commerce site. A single mouse click is much more appealing than fumbling for your credit card and typing out a series of numbers —

but how long are you willing to wait for the system to run identity verification checks before the option loses its luster?

In a head-to-head competition, Shivananda says, safety always trumps convenience. “We are in the business of trust,” he says. “We will always bias towards making sure that safety and security’s never compromised. If there’s a bit of a speed loss, you can regain that speed. If there’s a bit of trust loss, you cannot gain the trust back.”

But for PayPal, customer satisfaction hinges on its ability to provide both — and that balancing act is made possible by a deep understanding of the individuals using its platform. PayPal processes approximately 27 million transactions a day, collecting reams of data about its customers’ spending patterns, behavior, location and more. This data is used to verify customer identities implicitly, so they don’t need to identify themselves explicitly every time they transact, giving users the promise of security while shaving valuable seconds off of purchase time. Data closes the loop between speed and safety: Within a two-second transaction, PayPal will conduct hundreds or even thousands of risk checks.

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“There used to be a time when, on every single checkout, you were signing in again and again,” says Shivananda. “Over the last few years, we worked on a feature called One Touch. And what One Touch allows you to do is to say, ‘As long as you’ve authenticated on PayPal, based on various heuristics about you — the machine you’re coming from, the location you’re coming from, the merchants you generally shop on — you don’t have to sign in.’”

# HOW DATA OPTIMIZES 4 AREAS OF PAYPAL’S BUSINESS

## 1. PERSONALIZATION

“We want to make sure that managing and moving money is very simple for anyone in the world,” says Shivananda. “Giving them a catered experience, the way that they would want it, is a key need.”

## 2. COMPLIANCE

“We operate in a little over 200 markets, and every one of those is a jurisdiction by itself,” says Shivananda. “The transaction is happening in about two seconds, and we need to make sure we take all obligations we have in every single country from a regulatory perspective and that we’re honoring them.”

## 3. RISK

“Every risk decision we make is better than the previous risk decisions we made, based on all of the information that we have on such risk decisions we’ve made in the past,” Shivananda says.

## 4. CUSTOMER SERVICE

By data mining customer support call transcripts, “you can start to predict if something is going to go wrong with that interaction,” says Shivananda. “We can leverage those insights and offer them the best remediation possible.”

## UNDERSTANDING CUSTOMERS IN THEIR CONTEXT

PayPal's core mission comes down to this: "We want to make sure that managing and moving money is very simple for anyone in the world," says Shivananda. "So how do you treat every single person as an individual in the context they're in and give them the best experience possible?"

At its most basic, PayPal has two sets of customers — everyday consumers and the merchants that sell to them. But granular customer data allows PayPal to move away from this either/or and toward a more tailored approach. "We started to segment them and go: In merchant, there is a large-enterprise merchant and a casual seller and everything in between," says Shivananda. The more nuance detected about an individual, the more nuanced their experience. "We went from two [customer segments] to 12 to now 277 million."

PayPal equips merchants with capabilities that are built on that aggregate data but, importantly, without ever revealing actual user data to them, says Shivananda,

underscoring the company's commitment to customer consent and security. "PayPal never shares your payment information with any merchant. We send them an opaque, one-time-use token."

## THE FUTURE OF COMMERCE

If you've ever used a ride-hailing app or purchased a monthly subscription, you've made an implicit payment. Across commerce, payments are trending away from explicit transactions and going ambient, Shivananda says, where "you don't have to separately express the intent to shop and the intent to pay."

"These days, even if you go in-store, you no longer are dealing with necessarily taking out your wallet. Hopefully soon we'll start to see rings and wearables that you just need to be in front of the counter for you to pay. You don't want to be in the business of punching in a credit card number or typing in a user ID and password. You express your intent, that intent is stored in a secure way and every time you do a transaction, the payment just happens in the background."





Shivananda sees a future in which commerce is all around us. "There used to be a time when we would actually go to the store, but more and more, the stores are coming to us. And when that begins to happen, everything around you actually becomes a medium for shopping," he says. "Someday, your car will actually also be a shopping channel," just like voice assistants already are. "Our intent is to be the operating system for anything that takes payments."

## EXPERIMENTATION AT PAYPAL

PayPal doesn't yet have the predictive capabilities around customer preference that, say, an e-retailer might. "I don't know if we will ever have enough information to predict intent, because we are not an ecommerce engine. Today PayPal sees people at the checkout," says Shivananda. But they are asking the question, "'What happens ahead of the checkout on the merchant side?' We are trying to help merchants better close their transactions through a project to see how a customer is flowing through their whole site before checkout."

PayPal is also pushing the boundaries of its AI and machine learning (ML) capabilities, with applications from customer service and autonomous infrastructure to autonomous automation — PayPal engineers, Shivananda says, are currently experimenting with artificial intelligence that builds its own models.

"In my mind, AI will never replace IQ. I think the human-machine combination is where the value is," he says, explaining that he thinks of "AI more as augmented intelligence, versus artificial intelligence."

Shivananda, who fell in love with data as a student in India ("I actually set out to be an Air Force Pilot. I couldn't make it; that's how I find myself doing engineering," he caveats), explains that AI, ML and other frontiers of data science are not as new as they might feel. But they're explosive right now because advancements in computing capabilities have finally opened the door to a scalable analytics revolution. "Data has always existed," he says. "Now we are able to tame the data, and therefore we are beginning to see the value for the first time." ■

# THE 3 CHALLENGES FACING BIG DATA



## DATA EXHAUST

Often, companies have so much data, they don't know what to do with it. "If you don't organize your data, you're dealing with a data exhaust," says Shivananda, emphasizing the importance of governance and structure. Shivananda compares data flow to a stream of water. "If left unchecked, it can create mass havoc. But if you create the right channels," you have infrastructure to build on.



## THE SPEED OF INNOVATION

Technology's acceleration is ultimately a good thing. But keeping pace isn't easy. "Methods on how to leverage data are changing every single day," says Shivananda. "If you're working on methods from six months ago, you're behind." Companies need to stay ahead of industry trends and remain agile. "You need to be able to make nimble shifts."



## TALENT

As businesses design strategy around analytics, "there's not enough pre-qualified people able to help them in that journey," says Shivananda. The issue is cross-departmental. "When it comes to analytics, machine learning and AI, the whole company — people in legal, HR, finance, every other discipline — need to start to understand what that means. A horizontal talent upskilling needs to occur so everyone can align to capture that value that data presents to any one of us."