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Renee Boucher Ferguson

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DOUGLAS HAGUE (BANK OF AMERICA MERCHANT SERVICES) INTERVIEWED BY RENEE BOUCHER FERGUSON

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Douglas Hague, chief analytics officer at Bank of America Merchant Services

Douglas Hague has an interesting path in front of him. The former senior vice president of vendor analytics at Bank of America is now chief analytics officer at Bank of America Merchant Services. While Merchant Services is technically a separate business — it was launched in 2009 with First Data — Hague's ascension to the C-suite is notable in that it's one of the first analytics roles to report directly to the CEO at Bank of America Merchant Services.

That has some implications for strategy and for long-term planning, according to Hague.

To put things in context, here are the numbers on Bank of America: As a financial institution, it is one of the world's largest. It services about 51 million consumers and small businesses, with operations in more than 40 countries. It has about 5,300 retail banking offices, 30 million online users and more than 13 million mobile users. Lesser known is the fact that Bank of America is a major wealth management provider, and plays a big hand in corporate and investment banking and trading, across a range of asset classes. Bank of America Merchant Services handles payment processing and other services for about 300,000 merchants across the United States, processing about 13.5 billion transactions annually.

Hague first spoke with *MIT Sloan Management Review* contributing editor Renee Boucher Ferguson about his

use of analytics to make strategic business decisions — and finding talent to enable that process — in January 2014. He spoke with *MIT SMR* again in February, after being named Chief Analytics Officer.

I think congratulations are in order.
Thank you. It's an exciting new role for me.

It is exciting. And, I must say, it ties nicely into our research. We're finding that to achieve better outcomes, some companies are organizing differently around analytics. One way in which they're doing that is by elevating analytics to a C-level role. What does it mean to you that there is now this new role of a chief analytics officer within Bank of America Merchant Services?
My new position is head of sales and portfolio analytics, and I'm the chief analytics officer for Bank of America Merchant Services. The exact definition of the role is still a work in progress.

What does it mean to me that there's a new role? One, it's a recognition of the importance of analytics in the use of data, and not just reporting on data. And it's recognition that a company has to take analytics beyond the data and information, and into the real insights that impact decisions every day in the corporation.

My goals and objectives basically are corporate goals. I don't have separate goals that would say "analytics is going to do this." My job is to ensure the success of each of our lines of business, to enable them to meet their business goals.

Can you talk a little bit about what your objectives are as you settle into your new role, and how you plan to move into that phase of real insights and decisions?
Some of it is determined by the name of my group, which is Sales and Portfolio Analytics. The real focus is ensuring that we are selling. Bank of America Merchant Services has a large sales force. Part of my job is to ensure, through analytics, that the right leads, and the right information, are available to our sales force and to make them as efficient as possible so that we can drive revenue growth and serve more merchants across our markets.

At the same time, my role is also to examine the portfolio, which — if you think about it in terms of analytics — means joining all of our information sources together. The goal is to understand and move the portfolio through the major and strategic decisions that are necessary to analyze at the portfolio level, versus an individual client or an individual lead area.

So, it's the combination of these two areas that is really my focus in the first six months to a year: being able to join all the information together for portfolio decisions, while at the same time improving detail all the way down to the individual lead level for our sales force.

Do you see that joining of information as an IT challenge or more of a data analytics challenge? Where do you draw the line?
One of the unique situations that we're in, with respect to the joint venture between Bank of America and First Data, is that our IT is outsourced. Due to this, the responsibilities for the analytics and the related IT are combined — there is no separate chief technology officer within this joint venture. So, all of that is consolidated under the chief analytics officer.

We had choices when we developed the role and title. We really want to show that this isn't just a technology role, but that the focus is the use of information and decisions being made. There are instances of technology that I'll manage, but driving business decisions is the most critical work.

In addition, one may have a chief data officer, but due to the size and focus of the Bank of America Merchant Services' business, [that post is] really consolidated under one position that I'll be managing. So, I do have IT issues I'm going to have to deal with. I will have data structures flows and databases that I have to deal with.

But as you're doing analytics, you have to have the data first before the mathematicians and the analytics can really flow smoothly. So, we have some analytics today, some great skills and talent, but they struggle at times with the information architecture, data flow, and data quality.

Broadly speaking, how did you see Bank of America use analytics in your former role?

Bank of America uses analytics in every aspect of their business. It's everything from the retail banking, where you have traditional marketing, customer satisfaction, product purchasing — many things that you'll see in a retail company. There are also the risk groups that are analyzing the risk to the bank and to customers, everything from credit risk, to market risk, and operational risk. The team also went through a lot of portfolio analysis, so they are trying to make sure that they make the different customers' lives easier through connecting the product and service offerings.

Behind a lot of that is the analytics. The company serves individual consumers — most people are very familiar with the banking centers and Merrill Lynch Advisors — we serve large and small businesses, and also the institutional investors served through trading and portfolio management. A lot of the investment decisions are backed by the analytics. There are also areas across the infrastructure, where there is a very large network and a portfolio of technology infrastructure. An example of analytics in this space is optimizing the network traffic and data storage.

One of the newer areas of analytics is in supply chain. The team is working to understand the behaviors of vendors and the risks that vendors bring to the company when they make outsourcing decisions.

It sounds like some areas within Bank of America are at different levels of analytics maturity. How did you determine which ones are up to speed, and which ones you needed to pull up?

We have used frameworks in the literature. There's an analytics maturity model that Tom Davenport published, and we took that four or five years ago and modified it for Bank of America. It was in his original *Competing on Analytics*, and he keeps maturing the model over time. The analytical leaders in each of the areas looked at it and determined where their business was—they rated themselves. And then we said, "Okay, here's where we want to be over the next time period." And we look toward that, and we review it periodically. We come back and look at the progress that they've made in maturing each business, and understand the nuances.

We've always used data. It is a part of our culture at Bank of America and is the foundation that has been the leading edge for many years. It has continued to expand

across the businesses, and the application and the techniques change. But making decisions through information and mathematical techniques to enable a better decision is what it's all about.

When you're bringing up different departments to another level to make better decisions, are there certain steps that you follow?

Yes. There really is a structure that I've learned over time, and through other people's experiences. You have to have your data first. Now, you don't have to have perfect data — and some people spend too much time trying to get perfect data — but you have your data; you have your reporting; you have your analytics; and then you have your quantitative and predictive modeling. And you go in that order.

People have to be able to trust your information and the analysis and the work that you're doing. And that really starts around data. Then you filter it, you cut it, you do different things with it, and you put it into reports. People get to know the data. Now, as soon as you have information, you can start to do some analytics, and then modeling soon after that, and you mature them all. But you can't mature the modeling without the right data — you can't bring in 15 PhDs to start with if you don't have your data. So, there is a balance to how good you have to have your data — how broad and what kind of volume you have as you're bringing it up to each level.

It's interesting that you said you don't have to spend too much time on getting data perfect, because we hear so much about how data has to be good and clean.

Data has to be good, data has to be clean, and data quality is a journey. But if you wait to have perfect data, you will not get started on this journey. And it is a journey. Data quality, data management, ensuring clean data — that is probably one of the things I focus on the most, so that the people trust the information.

But when you start from nothing, an 80% solution helps a decision maker make a decision. Because in the absence of that data, they will make a decision anyway, and they will use their instinct and gut to do that, but if they can be guided by data, that's the goal.

That's where the analysts have to be able to articulate the limitations of the data. It is critical that they open up and talk about the limitations in the analysis that they've done. Because if the analyst doesn't talk about the limitations, then the decision maker may actually believe that that information is perfect. But that's where the analyst can [say], "Okay, 5% of my data is missing," or "I don't have this particular field or this particular country in my dataset, so I'm blind there. But given all the rest of the data, this is what I would recommend." And then the decision maker can take into account the assumption that the analyst made.

You've talked about data quality—is that the basis of trust, or are there other ingredients that go in?

Data quality is a big portion of it; does the analyst have the right data? But there's also the question of, does the analyst understand the business well enough to make the

recommendations that they're making? Depending upon who the decision maker is, and the skill set of the decision maker, they will poke; they will ask questions around the mathematics. So if they get a feeling that the analyst doesn't know the limitations of their data, they will ask questions. If they feel the analyst doesn't understand the business and didn't look at the full picture, they will ask questions there.

So, it's really around the data. Do you know and understand your data fully? Do you know and understand the mathematics that you're using? And then, do you know and understand the business? There are three areas you generally get questioned on. And if you can answer all their questions quickly on each one of those, that's where you earn their trust.

When building a team of analysts that can help influence business decisions, what types of skills do you look for? Do you look for domain expertise or analytics expertise, or both?

It's the old answer — it depends. And it really does. I happen to lead what we call our QMAP program, or Quantitative Management Associate Program, which is the college hire campus for this skill set. We are looking for a balance.

So, we don't expect domain knowledge when they start. What we expect is the mathematical capability to manage data and structure problems, but also the ability to communicate it to business partners. We can teach domain knowledge.

That's coming out of college. Once you're hiring experienced people, it changes, and it depends upon the position in your team. If you're looking for the leader — the translation of data and information into a business problem, and vice versa, the business problem into the mathematics — that's what we look for more in the leaders. There are a lot of people on our teams that are very, very good data analysts or data scientists. They learn over time about the business. But we don't expect every single person to know that. We expect them to learn over time.

One last question: I mentioned that we are seeing companies organize differently around analytics. Can you talk broadly about how you see organizations organize around analytics?

First of all, I think it heavily depends upon the number of businesses and the number of personnel that you form in an analytics team. If you have — and this is a hypothetical example — if you have 5,000 analytics people in your corporation of 250,000 employees, you are going to organize differently than if you have 20 analytics people in a 100-person company.

I think it's critically important that your analytics teams are connected to their lines of business, and that they support and the decision makers. When you get too large of an organization, then it's very difficult — and I don't think [it's] wise — to centralize. There's too much distance between the organization and the decision makers and the people developing the information for them.

As you get smaller, it's easier to centralize; however, it is a difficult and constant balancing act for an organization. Centralizing has all the benefits of better training, skill growth, and career paths, but has the down side of losing connectivity to the business. Decentralization has the exact opposite issues.

In general, it appears that data, information management, analytics, and quantitative modeling are here to stay and more and more critical for most businesses to drive competitive leadership in their industry. How we organize, the skills we need, and the decisions to be made are all challenges for those in the space, be they Chief Analytics Officers or other analytics leaders.

About the Author

Renee Boucher Ferguson is a contributing editor for the Data & Analytics Big Ideas Initiative at *MIT Sloan Management Review*.

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