

2017 Research Update

Data Analytics/Big Data in Financial Services Research Conducted in Cooperation with Georgia Tech's Scheller College of Business





a monetization is revenue generation from available data sources or real time streamed data by instituting the discovery, capture, storage, analysis, dissemination, and use of that data. Said differently, it is the process by which data producers, data aggregators and data consumers, large and small, exchange sell or leverages data generated through business operations as well as data associated with individual actors and with electronic devices and sensors participating in the internet of things. Closely associated with data monetization are the emerging data as a service models for transactions involving data by the data item.

Executive Summary

The results are in – Georgia-based FinTech companies are making positive progress in their march toward becoming more data-centric and reaping the potential rewards of data analytics and big data technologies.

It is clear that the general awareness of data analytics and big data has reached critical mass at the majority of organizations in the 2016 survey versus 2014."

Mark Pearson, FinTech Strategist and Consultant

Here are some of the key results:

- ROI from data analytics programs is improving at FinTech companies.
- Management commitment to data analytics investments is improving.
- While Risk Management and Fraud Prevention continue to lead data analytics investments, other functions within the FinTech organization such as the Call Center, Customer Service, IT, Sales and Marketing are getting stronger.
- FinTech executives are maturing their thinking on how to productize and monetize data analytic services.

More organizations are making progress in getting to grips with the value that can be derived from the data that they are accumulating."

Brian Mahony, Chief Strategy Officer, Elavon, Inc.

Big Data 2020 Advisors:

- Don Campbell, Managing Principal, RightCourse, LLC
- Brian Mahony, EVP and Chief Strategy Officer, Elavon
- Mark Pearson, FinTech Strategist and Consultant
- Sudheer Shava, Professor of Finance, Director, Quantitative and Computational Finance (QCF) Program, Scheller College of Business, Georgia Institute of Technology
- Bob Skiba, EVP, Incomm; Chairman of Network Branded Prepaid Card Association



asked whether data analytics will be a competitive advantage for their organizations in 2020, survey respondents data-centric management practices and product/services have to be

TAG FinTech 2014 Big Data 2020

Introduction

In 2017, FinTech management teams are increasing their focus on the potential that data analytics offers to their business. As FinTech organizations gather better insights into their customers, markets, and competition, they are looking for ways to utilize this knowledge to improve revenue generation, business planning and their internal operations. For many Fintech companies, cultivation of good data is the missing link.

inTech organizations including banks, merchant processors, payment solutions, pre-paid cards and gateways generate oceans of data daily. Millions of transactions stream through sophisticated computer systems with little opportunity to stop to explain themselves.

In 2014, the FinTech Society of the Technology Association of Georgia launched a primary research study to determine the state of data monetization in the Georgia-based FinTech community. Our goal was to answer a simple business question: what are your current data analytics capabilities in 2014, and where will they be in 2020? We wanted to determine the extent to which FinTech organizations were using data analytics and big data technologies to enable revenue growth, get closer to customers and/or to differentiate themselves from the competition. With this benchmark in place, we would update the research every couple of years to measure the progress toward 2020.

Georgia FinTech Community Ecosystem	Georgia based Statistics
Georgia FinTech companies	90+ ²
Worldwide payment transactions that pass through the computer systems of Georgia-based FinTech companies (estimated).	118 Bil.1
Payment transactions by Georgia-based companies	36 Bil. ²
Value of U.S. purchase volume by Georgia FinTech companies.	\$2 Tril. ¹
Merchants serviced by Georgia FinTech companies.	3.9 Mil. ²
Number of Georgia-based employees working in the FinTech sector (estimated).	30,000+2
Revenue of top 50 Georgia-based FinTech companies (2014). Note: Includes revenues of public companies and estimates on some private companies. Includes revenues of some out-of-state organizations that have a large presence in Georgia (estimated).	\$72 Bil. ²

1. Nilson Report(2014)

2. TAG FinTech Society research in coordination with GA Tech and Raymond James Copyright, 2016, Technology Association of Georgia, Georgia Institute of Technology and Raymond James, 2016



What we have learned from our research in 2014

- 2014 FinTech organizations are not investing sufficiently to become data-driven.
- While FinTech organizations believe that data analytics/big data should play an important role in their business, few organizations see it as a competitive advantage today.
- Data analytics was used primarily to support risk management and fraud prevention – clearly mission critical areas.
- Data analytics/big data projects are generally viewed as not delivering a meaningful ROI; however, areas are emerging where organizations are starting to see value.
- The adoption barriers organizations face are as much managerial and cultural as they are science and technology.
- Data collaboration will increase in importance for FinTech organizations.



The results of the 2014 survey were telling. While most FinTech companies were beginning to invest in data analytics technologies, these programs had yet to yield meaningful results (appropriate ROI for the business unit or enterprise).

In 2014, while FinTech management might give lip service to data initiatives taking root in their organizations, the inconvenient truth is that the FinTech community is lagging in their use of data and analytics to drive their businesses compared to other industries"

Don Campbell, Managing Principal, RightCourse, Inc.

During the fall of 2016, it was time to refresh our research and see what had changed in the FinTech community. With the help of the Scheller College of Business at the Georgia Institute of Technology, the FinTech Society of the Technology Association of Georgia (TAG) updated the research to determine whether the march to 2020 was on schedule as promised.

Organizations are clearly recognizing that having a data monetization strategy is necessary. Large financial services companies are viewing data monetization as a revenue expansion opportunity. Small FinTech start-ups often view the data monetization as the "company maker."

At TTV Capital, we do believe data monetization is important for both ends of the spectrum, however, we recognize that smaller companies need to plan accordingly in terms of revenue generation to survive long enough to have a proven, successful data analytics solution.

Evidence that a tipping point is imminent is the success of models like Cardlytics, whereby major financial institutions are monetizing their data.

Sean Banks, Partner, TTV Capital, Chair, TAG FinTech Society



hat is a Data-Centric Enterprise?

An operational strategy that puts data at the center of the operation, versus on the side for reporting purposes only. As a central repository, traditional business applications are optional visitors to the data. As a central repository, all areas of the business can use data to drive their business.



We saw some very positive progress in some key operational areas, and marginal progress in others. On balance, as the march towards 2020 continues, we envision a Georgia FinTech community that will truly be empowered through data."

Don Campbell, RightCourse

What has Improved Since 2014?

- Data analytics investments are up FinTech organizations are investing more in their data analytics capabilities – from technology to improving skill sets.
- Competitiveness 52% of respondents in 2016 believe their organizations are very competitive in data analytics solutions, and 38% believe their organization will be **ahead of competitors** by 2020.
- Better focus on data 58% of respondents believe their organization is more data-centric than in 2014.
- Revenue generation about half of the new data analytics projects underway are revenue-generating a significant increase over 2014.

The FinTech community is evolving strategically toward using data as a raw material to manufacture a wide variety of new products and services. These products/services will promote a closer working relationship with customers and channel partners, and improve the FinTech organization's competitiveness.

What has the FinTech Community Learned?



We should be smarter and more proactive by using data to understand our customers better."

Survey responder.

As we learned in our 2014 study, the use of data analytics was found mostly on risk management and fraud prevention. Data analytics programs on the revenue generating side of the business such as sales, marketing, customer service, and new product, were low on the development list. When initiatives in this area happened, they were often pinpoint efforts – maybe experimental in nature.



"Delivering data insights and analytics ranks as the top opportunity for data monetization." Brian Mahony , Elavon

"It's difficult to express to executive management the potential value of investing in data capabilities."

Survey responder.



In 2016, we learned those pinpoint programs grew in scope to become more **revenue-focused**. Respondents shared that while progress was made, management commitment and the lack of the right technology tools continued to impact the organization's ability to achieve the desired results.

Big Data in Financial Services!

Data and analytics have always been critical to success in the financial services industry. Financial services companies consume large amounts of data, but they also generate massive amounts of data. It's no surprise that companies are recognizing not only the competitive advantage of developing better data analytics capabilities, but also the revenue generating potential of their data. Often data generated inside a company that may not seem valuable, may be a goldmine when combined with some other company's data and put to the right use.

Productizing data and developing multiple monetization strategies are imperative for success. As documented later in the report, Georgia's FinTech leaders understand what needs to be done and are increasing investments in people, systems and processes to harness their data and analytics capabilities.

One challenge is data often sits in silos and just hiring data scientists may not be sufficient. Data scientists that can analyze the data may not always have the domain knowledge or communicate in the same language as the business leaders who need to make the decisions.

Closer industry-academia partnerships through experiential learning and other collaborations would help even more in educating tomorrow's data scientists. As part of Georgia Tech, a world-renowned technical research university, Scheller College of Business is at the intersection of business and technology. Tech is a driving force for business and Scheller aims to educate the next generation of business leaders with a strong foundation of quantitative and technical skills and a solid, practical understanding of financial theory and institutional details so that they manage and drive innovation in FinTech in the future.

Sudheer Chava,

Professor of Finance, Finance Area Coordinator Director, Quantitative and Computational Finance (QCF) Program Scheller College of Business, Georgia Tech

Big Data 2020 Sample of Results

Not a Competitive Advantage

Competitive Disadvantage

Market Leaders

Very Competitive

FinTech companies are not convinced their current data analytics investments will keep them ahead of the competition.

How

No Threat

Significant Threat

Competitors/Disrupters will be a threat by 2020 with their data analytics capabilities.

What

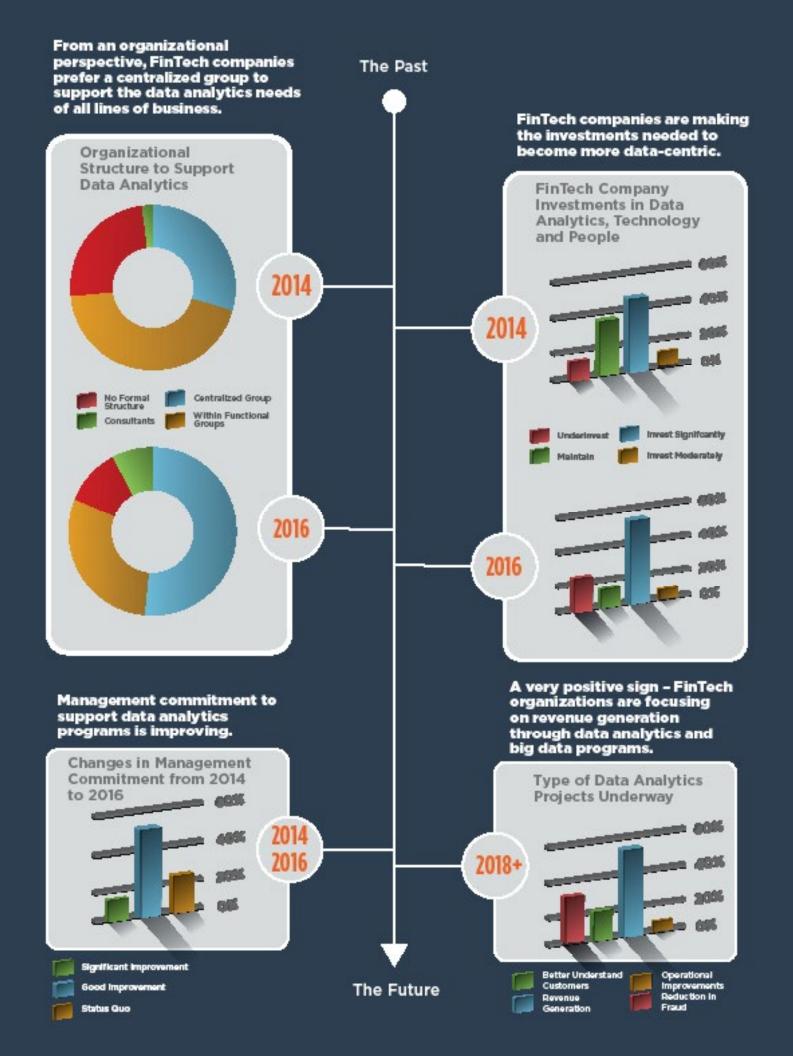
Returns Exceed Investments

Returns Greatly Exceed Investments

Returns Equal Investments

ROI for data analytics programs has improved since 2014

Why





FinTech companies are still not leveraging Big Data and Analytics to the extent that companies in other industries do. Risk and Compliance needs are driving many of the initiatives yet revenue driven programs are still lagging."

Survey responder.

Successful data analytics applications are often built in concentric circles, starting from the center, or kernel, and growing in scope from there (i.e. the opposite idea of pealing an onion). Once a successful kernel has been delivered, organizations continue to bring broader sources of data to add perspective and dimension.

The lack of established business processes that utilize today's analytic/big data capabilities means that you have to build the business process first (often from scratch) before the technology/ operations capabilities can be justified and built."

Survey responder.

Big Data in Financial Services!

At Vesta, we recognize the revenue potential of merchants using risk/fraud-related data to target specific consumer groups (i.e. big data-based decisions analyzing the creditworthiness of the unbanked/underbanked).

For large merchants, Card Not Present transactions are of increasing concern as the buying public continues to move to the Internet for their shopping. Our experience shows that merchants are saving millions of dollars through the analysis of big data to reduce fraud.

The TAG-FinTech and the Georgia Tech Scheller College of Business study validates that Risk Management and Fraud Prevention are the most common users of data analytics. But, increasingly, companies are focusing on their core business while they outsource omni-channel payment acceptance and fraud prevention to third parties with deep expertise and competitive business models.

Tom Byrnes, Chief Marketing Officer, Vesta

"It's tough for FinTech organizations to innovate when the cost and complexity of maintaining legacy systems weighs so heavily on many organizations."

Don Campbell, Managing Principal, RightCourse





"Whereas business objectives for data analytics were varied 2 years ago, now they have skewed towards revenue generation with nearly half of respondents saying that generating revenue is the top objective of their investments in data initiatives."

Brian Mahony, Elavon

Rank the business areas that improved their use of data analytics over the past 2 years.

Best Progress	Status Quo	Least Progress
1. Risk management	1. Human Resources	1. Product R&D
2. Sales	2. Marketing	2. Fraud Prevention
3. Finance	3. Operations	3. Operations
4. Fraud prevention	4. Customer Services	4. Accounting
5. Marketing	5. Product R&D	5. Marketing
6. Operations	6. Accounting	

Business Benefits of Using Data Analytics (Listed in order from 2016 Research Results)

- 1. Increased revenue from better focus 8. Cross-sell opportunities
- 3. Margin improvement
- 5. Manage credit and operations risk
- 6. Improved Sales & Marketing
- 7. Better business decisions
- 2. Customer profiles and segmentation 9. Better response to customer needs - customer service
- 4. Understand how products are used 10. Enhanced products/customer solutions
 - 11. Sales tracking and performance
 - 12. Better competitive analysis
 - The Big Data 2020 research results correspond with our experience that merchants will concentrate on their core business and will deploy their big data resources to that extent. Secondary activities, such as (omni-channel) payment acceptance and fraud prevention are being outsourced to third parties with deep expertise and competitive business models." Tom Byrnes, Chief Marketing Officer, Vesta

Where Can We See the Improvements?

We saw positive changes between 2014 and 2016 in the following areas:

- Management commitment to support data analytics initiatives. 58% of responders in 2016 saw good to significant improvement.
- Data sharing across department lines has improved significantly. The role of data analytics is gaining respect. It's not just the scary geeks in the skunkworks. Data scientists are being recognized as experts at interpreting difficult-to-understand data. Management still needs to learn to speak their language.
- While Risk Management and Fraud Prevention continue to lead in the use of data analytics, 2016 responders shared that Finance, Customer Service, IT and the Call Center all showed good progress.
- About half the responders indicated that the returns from data analytics exceed their technology investments - ROI is improving.



Whereas business objectives for data analytics were varied 2 years ago, now they have skewed towards revenue generation with nearly half of respondents saying that generating revenue is the top objective of their investments in data initiatives."

Brian Mahony, Elavon

What Will 2020 Look Like?

Multiple responders to the 2016 survey noted that becoming data-driven is a journey, not a sprint. This journey requires critical investments that cannot be overlooked including computer network and infrastructure, server architecture, data analytics software (including big data), data warehouses, data storage, data scientists and comprehensive training.

Data scientists and data analytics professionals represent the brain trust that make sense of the data. These individuals are trained to interpret the results of data and predictive analytics and explain their meaning to management.

As you might expect, the largest Georgia-based FinTech organizations were the most likely to be adding data analysts/data scientists (20+). The segment that showed the largest growth, however, was mid-sized and smaller organizations. There was about a 50% increase in respondents that planned hiring between 10-to-19 and those hiring 1-to-4 data analysts/data scientists.

The 2016 survey respondents suggested the following changes need to happen to evolve FinTech organizations to data-centric data monetizers.

Changes Needed by 2020 to Achieve a More Data-Centric Organization

(presented in order of most number of responses to least)

- 1. Increase investment in data analytics tools
- 2. Hire data scientists
- 3. Senior management commitment
- 4. Promote a culture that values data
- 5. Increase investment in IT infrastructure
- 6. Push data and decision making deeper into the organization

he 2020 FinTech Organization Profile: a highly agile and proactive enterprise driven by dynamic data that gives it a panoramic view of its revenue landscape. By 2020, FinTech companies will have integrated artificial intelligence and machine learning into their analytics systems to automate decisioning and traditionally manual business processes.





"There is still the same lack of skill being called out in the survey, but it appears that some of this may be attributed to business skill as much as technical skill. The mention of the business needing to lead the effort in some of the comments means that there is recognition that technical skill is not enough to deliver the promise of BD. Business leaders with knowledge of BD and process design are required to fashion the business processes that will deliver the returns for BD (and business) investments. "

Mark Pearson, FinTech Strategist and Consultant



According to our responses, 2020 begins to shape up like this

- Data solutions provided: Most organizations will be "providers of data insights and analytics." In second place were "end-to-end provider of solutions" and "provider of tools to help customers analyze their own data."
- Data sources: The two largest sources of the data (to be analyzed) are "data generated within the organizations" and "data collected from customer and suppliers."
- Organizational considerations: Most respondents believed that a "central team" of analysts that supported all parts of the organization was the best approach for their organizations. The second favorite choice was focusing analysts within functional areas or business units.
- Data as a competitive advantage: Most respondents believed that data analytics and big data would be a "*distinct competitive advantage*" for their organization.

When we asked what their organization should have done in the last two years, here are some of the responses:

- "Created a focused (data analytics) organization that can help across multiple departments."
- "Focus more heavily on "future capabilities" and value chains that include analytic/big data elements versus "data governance," "data movement," and "data processing.""
- "More investment in dedicated resources/infrastructure to prevent competing priorities from operational responsibilities."
- "Focused more on big data."
- "Upskilled our Data Management IT team, with someone who understands and has productized data on a large scale. We should eliminate the report writers and hire forensic data analysts."

Sense of Urgency to Evolve

The competitive FinTech market is getting tougher and tougher as companies struggle to differentiate their product and service set. When we asked about revenue generated from data analytics products/services, half of the respondents in 2016 believed that **competitors would be generating more revenue**. Clearly, big players like First Data, Elavon, Incomm, and SunTrust have the resources to invest in the core technology systems that enable data to be monetized.



Understanding the many dimensions of a customer can strengthen the long-term relationship.



Lingering fears of being laggards in a fast-moving market do shape the planning of other FinTech players. 57% of the responders believe that their organization will have remained about the same or lost ground to competitors. And 54% believed their competitors would be generating more or much more revenue.

Organizations continue to worry that they are not investing enough in developing their data as an asset. Competing priorities are cited as a major factor, and organizations are concerned that they are not keeping pace with their competition."

Brian Mahony, Elavon

In the 2014 research, we asked how easy it was to get to the data needed for analysis. At the time, responders expressed concern that it was only slightly better than adequate. Responders in 2016 believed that **strengthening the corporate IT infrastructure as the central repository of data was the best way to improve accessibility**. Also, on the positive side, responders in 2016 believed their organizations were doing a better job sharing data across the organization (across department boundaries).

To test the degree to which FinTech players would find value in collaborating with other industry organizations to share data, we found that organizations in 2016 were having trouble figuring out how to work with organizations to aggregate and share non-competitive data in a secure and productive manner. **Shared data might be part of the market fabric and help reduce fraud, improve risk management, and market segmentation.**

The Merchant View

At Vesta, we recognize the revenue potential of merchants using their risk/fraud-related data to target specific consumer groups (i.e. big data-based decisions analyzing the creditworthiness of the unbanked/underbanked can generate).

For large merchants, Card Not Present transactions are of increasing concern as the buying public continues to move to the Internet for their shopping. Our experience shows that merchants are saving millions of dollars through the analysis of big data to reduce fraud. They are also outsourcing to third parties with deep expertise and competitive business models omni-channel payment acceptance and fraud prevention.

The TAG-FinTech and the Georgia Tech Scheller College of Business study validates that while Risk Management and Fraud Prevention are the most common users of data analytics, management is turning their sights toward broader revenuegenerating activities.

Tom Byrnes, Chief Marketing Officer, Vesta



"Hindsight can be a wonderful teacher. Historical reporting (what happened last quarter/ last year) is the hindsight, the record of what has happened. If in fact history repeats itself, reports of past performance might be indicative of future performance. Sometimes hindsight provides actionable data. In other cases, though, it can send outdated signals.

With the current pace of change, FinTech organizations must be able to anticipate better what their future may hold. Executives need analytics tools that give them the ability to predict and plan for potential future outcomes."





"Confidence drops, however, with the shift to revenue generation-based ROI, fully half of the respondents believe that their competitors will be generating more revenue based on their big data investments."

Mark Pearson, FinTech Strategist and Consultant

What Issues are Holding FinTech **Organizations Back?**

Our research asked FinTech organizations to rank the impediments that impact the ability to become more data-driven as a corporate standard. Responders ranked the impediments below

What are the impediments impacting your organization's ability to use data analytics and big data to drive improved revenues and efficiencies. Ranked in order.

- 1. Competing priorities
- 2. Ownership of data is unclear
- 3. Ability to get data
- 4. Lack of understanding of the value of data analytics/big data
- 5. Existing culture does not encourage information sharing
- 6. Lack of skills
- 7. Lack of perceived ROI
- 8. Data privacy issues regulatory

Conclusion

Georgia-based FinTech organizations are making the strategic investments to become more data-centric. Based on the positive evolution between TAG FinTech's and the Scheller School of Business at Georgia Tech, we believe that 2020 will be an exciting time for the industry.

Instead of trailing other industries in the use of data to drive better decision, better analytics, better planning and better revenue generation, FinTech organizations of all types will be awakened to the power of data. The culture of the organizations will appreciate the power of data. Data will be more widely shared across the organization to enable operational efficiencies and staff will be empowered with more decisioning power that will streamline business processes.

Customers will have grown to appreciate the depth and richness of the data available from their suppliers. Data will help them better understand their businesses and, in turn, make better decisions.



inancial services companies are a good example of an industry focused on generating revenue by leveraging data. Credit card issuers and retail banks use customer transaction data to improve targeting of cross-sell offers. Partners are increasingly promoting merchant-based reward programs which leverage a bank's data and provide discounts to customers at the same time. We thank the Scheller School of Business at Georgia Tech for their contributions to the research. We also thank our advisory group that helped steer the research and interpretation of the results.

It will be interesting to see this report in another two years when the impact of EMV on fraud - and fraud prevention relying on big data will be fully visible. The 2014 and 2016 studies already suggest a strong fraud shift into the CNP space, anticipating significant changes to merchants and the FinTech industry."

Tom Byrnes, Chief Marketing Officer, Vesta

Research Methodology and Respondent Company Sizes

In 2014 and 2016, a questionnaire was sent to FinTech organizations in Georgia. To track the year-over-year progress, the questionnaires followed the same basic format and content to allow direct comparison between the two efforts. Approximately 40% of the 90+ FinTech organizations responded.

The goal of the market research was to learn the following:

- The role that data analytics and big data play in FinTech organizations.
- Whether FinTech organizations are achieving the measurable business value they want from their data science technology investments.
- The challenges that impede the transition to a data-driven organization.
- Whether their current technology infrastructure supports their goal to deliver data-centric products and services.
- The proactive changes management needs to make to become data-driven.

The FinTech segments of the respondents included (Note: many of the FinTech organizations in Georgia provide products and services in multiple product/service categories)

- 42% Merchant Processors
- 38% Payment Solutions
- 33% Bank or Financial Institution
- 29% Card Processing





"What lessons have you learned over the last two years?

Reinvest in the technology infrastructure that generates the benefits from Big Data Analytics. Generate the Maximum value on the 1st Impression with your FinTech solution: that drives interesting questions about what the best impression is to different segments and more."

Additional demographic data:

- 52% of the respondents represented organizations with more than \$1 billion in annual revenue, while 13% represented either early stage companies (4%) or organizations that generated less than \$10 million (7%).
- 50% of respondent organizations had more than 3500 employees, while 13% had less than 50.
- The highest number of respondents were in the Product Management (25%), Strategic Planning and Corporate Development (17%) and IT (17%).
- 58% of respondent organizations had 10 or more data analysts or data scientists on staff, while 17% had zero.

About The Technology Association of Georgia (TAG)

TAG is the leading technology industry association in the state, serving more than 35,000 members through regional chapters in Metro Atlanta, Athens, Augusta, Columbus, Macon/Middle Georgia, and Savannah. TAG's mission is to educate, promote, influence and unite Georgia's technology community to foster an innovative and connected marketplace that stimulates and enhances a tech-based economy. For more information visit the TAG website at www.tagonline.org or TAG's community website at www.hubga.com.

About TAG FinTech

TAG FinTech was founded in 2010 to address the specific needs of companies, individuals and investors serving the financial industry both domestically and abroad. Financial technology or FinTech encompasses products, solutions, services and information providers, which drive decisions, process payments and facilitate transactions for financial institutions. Revenue of the top 50 Georgia-based companies exceeds \$72 billion annually which places the state third in the nation behind New York and California. Together, the banking, insurance and capital markets consistently spend more on technology than any other industry. For more information about TAG FinTech, see www.tagonline.org/chapters-and-societies/fintech.



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Georgia Scheller College Tech∬of Business

Established more than a century ago, the Scheller College of Business has a distinguished history as part of a world-renowned technical research university. The College is internationally recognized as a leader in business education that's grounded in a deep understanding of how advances in technology affect the way business is conducted. Scheller provides undergraduate, graduate, doctoral, professional, and corporate education for some of the future's brightest business leaders, equipping them with the analytical skills to assess opportunities and apply appropriate technologies for a competitive advantage.

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