ONAPPROACH

The Best of OnApproach's Decision Maker Blogs

Data Analytics Collection for Credit Unions. Beginning the Journey to Data Optimization.

made with Beacon

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Introduction

The financial services industry is facing a period of sweeping changes in the forms of fintech disruption, challenging regulations, and evolving member preferences and expectations. In order to remain relevant in this new arena, credit unions must be able to integrate and optimize data.

Thank you for reading the "Best of OnApproach Blogs" e-book. Financial services is dramatically changing right in front of our eyes, and credit unions have been challenged to keep up. Data analytics may have been a competitive advantage for years, but today it is a necessity. In this e-book, we have compiled 12 of the best blogs from the OnApproach blog, The Decision Maker, to help you better understand today's financial services arena, and create actionable insights to improve decision making at your credit union.

Key Topics

- Challenges facing credit unions today and in the future.
- What is "Big Data"?
- Significance of utilizing data to create actionable insights

We hope you find this ebook valuable and that data analytics improves your ability to better serve your members.

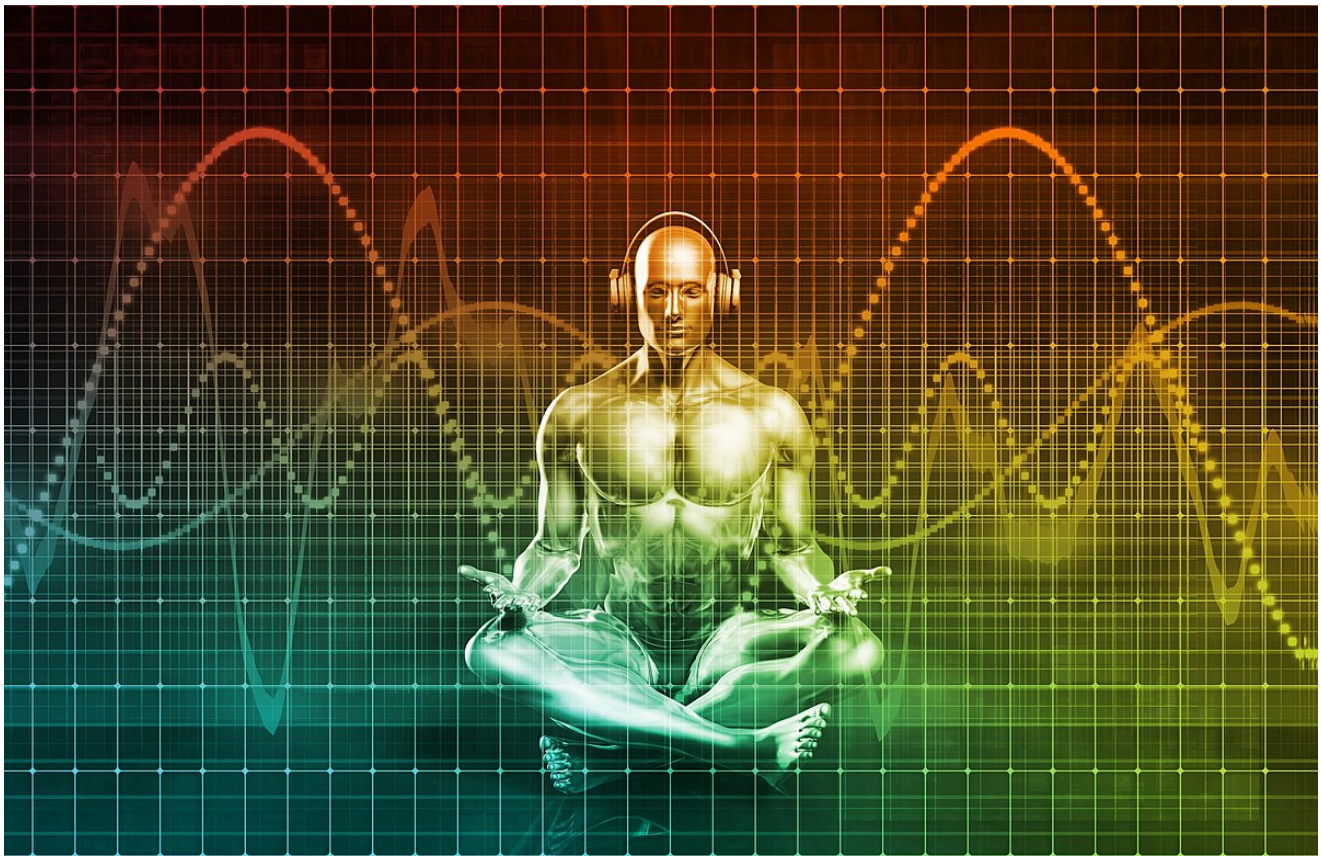
Sincerely,

- The Team at OnApproach

The Comfort of Data-Driven Decisions

As the next generation begins making financial decisions, credit unions will be able to comfort them with data-driven product recommendations.

By Nate Wentzlaff



Recently, my wife and I were shopping for a mattress. We began the process by "trying out" mattresses by how they felt. My wife ***thought*** she preferred firm mattresses, while I ***thought*** I preferred soft ones. As we tried mattress after mattress, my wife would ask me, "what do you think about this one", in which I would usually reply, "It feels pretty good to me". We became frustrated by a complicated search for a large budget item until we found a mattress store that comforted us with data. The mattress store (Becker Furniture World) is locally owned with only 8 locations (does this sound familiar to your credit union?). They approached mattress shopping from a data-driven way. By using an analytic data

model (developed by Sleep to Live Institute), they are using analytics to aid customers in their mattress investments through data sensors and user input. The data comforted us enough that we decided to purchase one of the mattresses it recommended.

Data Acquisition from Users

When we walked into the Becker Furniture World, it was different than all the other mattress stores. There was a futuristic-looking canopy near the front of the store. Curious to see what this machine was, we asked a store associate and were informed that it collected data from our bodies and sleeping patterns to recommend the best mattresses. Before entering the contraption, we entered in personal data about ourselves using ranges for age, weight and height, along with other qualitative data including where we currently have pain and our sleeping preferences. After entering in our personal data, we both laid down on the bed (hooked up to data sensors).

Data Collection

When we laid down on the data-collecting bed, sensors began collecting valuable data about our bodies and the pressure we were applying to the mattress. This data was then sent to the Sleep to Live's data pool, and a report was printed for us. The report displayed statistics about us and recommended mattresses throughout the store (with the option to order a custom made mattress).

Analytic Data Model

Sleep to Live Institute used their analytic data model to give us a data-driven recommendation for mattresses that would give us the best sleep possible. Utilizing this data, we found the mattress that would meet both our needs.

Feeling empowered by the analytics conducted by Sleep to Live, we finally made the decision that was stressing us out.

Data Science

Utilizing the latest sleep science, Sleep to Live is giving people the power to make data-driven decisions about their precious sleep. The days of buying a mattress based on how it currently feels are coming to an end. A new era of data analytics is transforming sleep (as well as the credit union industry), and how we make decisions to improve our health. This is a critical decision for people and can make or break a relationship with their mattress provider. A positive experience can convert a customer for life and will establish a strong level of trust with the mattress brand.

Financial Health Problems

Just as my wife and I were initially confused in the investment decision of a new mattress, many credit union members are confused when it comes to making decisions to improve the financial health of their family. They have tried a lot of products by how they "feel" and what they have heard from friends and other untrustworthy sources. Unfortunately, like buying a mattress, the decisions made on financial products have consequences and members have to lie in the bed they made (pun intended). Credit unions should be collecting data from members to improve their financial health.

Member-Centric Analytics

When members interact with their credit union, they should be presented with a similar program that Becker Furniture World presented to my wife and me. They should be able to enter their financial goals and pains for a personalized output. The good news is, credit unions have the "sensor data" of members' financial lives, and it is located within the transactions that members have been conducting on a daily basis. By integrating transactional data and member-input data, with the guidance of a member-centric data model, product recommendations can be presented to members in a comforting experience.

7 Challenges of Implementing a Big Data & Analytics Solution

By Austin Wentzlaff

Most credit union leaders are familiar with the concept of Big Data and business intelligence, but many fail to fully understand the significance they have on their credit union and its future. Big Data & Analytics can provide credit unions with the ability to make better decisions that positively affect member relationships and ultimately their top and bottom lines. There are several obstacles in the Big Data & Analytics process that need to be overcome in order to achieve success. These obstacles typically take an extensive amount of time to conquer, especially the first time they're encountered. Credit union leaders should consider the following challenges before implementing a Big Data & Analytics solution:

1. **Data Quality** – In a credit union, data is coming from many disparate sources from all facets of the organization. In order to overcome this, a data warehouse is essentil. However, when a data warehouse tries to combine inconsistent data from disparate sources, it encounters errors. Inconsistent data, duplicates, logic conflicts, and missing data all result in data quality challenges. Poor data

quality results in faulty reporting and analytics necessary for optimal decision making.

2. **Understanding Analytics** – The powerful analytics tools and reports available through integrated data will provide credit union leaders with the ability to make precise decisions that impact the future success of their organizations. When implementing a Big Data & Analytics solution, analytics and reporting will have to be taken into design considerations. In order to do this, the business user will need to know exactly what analysis will be performed. Envisioning these reports will be difficult for someone that hasn't yet utilized a Big Data & Analytics solution and is unaware of its capabilities and limitations.
3. **Quality Assurance –** The end user of a Big Data & Analytics solution is using reporting and analytics to make the best decisions possible. Consequently, the data must be 100 percent accurate or a credit union leader will make ill-advised decisions that are detrimental to the future success of their business. This high reliance on data quality makes testing a high priority issue that will require a lot of resources to ensure the information provided is accurate. The credit union will have to develop all of the steps required to complete a successful Software Testing Life Cycle (STLC), which will be a costly and time intensive process.
4. **Performance** – Implementing a Big Data & Analytics solution is similar to building a car. A car must be carefully designed from the beginning to meet the purposes for which it is intended. Yet, there are options each buyer must consider to make the vehicle truly meet individual performance needs. A Big Data & Analytics solution must also be carefully designed to meet overall performance requirements. While the final product can be customized to fit the performance needs of the organization, the initial overall design must be carefully thought out to provide a stable foundation from which to start. Major customizations are extremely expensive.
5. **Designing the Solution –** People generally don't want to "waste" their time defining the requirements necessary to properly design Big Data & Analytics solution. Usually, there is a high level perception of what is wanted out of a Big Data & Analytics solution. However, they don't fully understand all the implications of these perceptions and, consequently, they have a difficult time adequately defining them. This results in miscommunication between the business users and the technicians developing a Big Data & Analytics solution.

The typical end result is a Big Data & Analytics solution that does not deliver the results expected by the user. Since the Big Data & Analytics solution is inadequate for the end user, there is a need for fixes and improvements immediately after initial delivery. The unfortunate outcome is greatly increased development fees.

6. **User Acceptance** – People are not keen to changing their daily routine especially if the new process is not intuitive. There are many challenges to overcome to make a Big Data & Analytics solution that is quickly adopted by an organization. Having a comprehensive user training program can ease this hesitation but will require planning and additional resources.
7. **Cost** – A frequent misconception among credit unions is that they can develop a Big Data & Analytics solution in-house to save money. As the foregoing points emphasize, there are a multitude of hidden problems in developing a Big Data & Analytics solution. Even if a credit union adds a data "expert" to their staff, the depth and breadth of skills needed to deliver an effective result is simply not feasible with one or a few experienced professionals leading a team of non-BI trained technicians. The harsh reality is an effective do-it-yourself effort is very costly.

Implementing a Big Data & Analytics is a significant undertaking that should fully thought out before initiating. Fortunately for credit unions, there are industry experts with extensive experience dealing with the challenges associated. With the help of CUSO collaboration, Big Data & Analytics is no longer out of the reach for credit unions. Credit unions now have the ability to leverage their data to make fact-based decisions that positively affect their institution and position them to remain competitive in the ever-changing financial services industry.

The Purpose of Analytics

As credit unions continue to invest in analytics solutions, they should focus on the purpose of analytics; Making data-driven decisions to better serve members.

By Nate Wentzlaff

Big data and analytics are a couple of the most used buzzwords throughout the credit union movement. You can't avoid these terms no matter where you try to hide. Many vendors promise analytics that will be a panacea to the movement. They continue to make bold claims that are sure to perk an executive's ears (and drive sales for the vendor). Although there are many powerful products available to credit unions, they must understand the purpose of analytics before they begin their journey.

The Movement has Shifted!

Many credit unions have been great at making decisions in the past because they were able to know their members intimately. While these relationships are still essential today, the credit union movement is shifting into a new age of data. As credit unions expand their membership base, encourage digital banking, and face a new wave of regulations that expect a robust amount of data, they no longer have the luxury of relying on personal relationships and intuition as they have in the past. Data is now one of the most valuable assets credit unions have, and they should begin harnessing it to begin learning about their members and tailoring service to them.

Data, Data Everywhere, Not a Drop of Insight

Data is being produced at an alarming rate. Every device throughout the credit union movement is now gathering an ever-expanding array of data. From the core to call centers, mobile banking to ATM's, credit unions are swimming in an ocean of data. Unfortunately, data is only as valuable as the decisions it influences. A robust data warehouse that sits on the shelf won't assist credit unions in their effort to better serve their membership. In order to marry data with decisions, credit unions must understand their data.

Analytics to the Rescue?

Simply building (or buying) an analytics solution will not produce value for credit unions. Many times, analytics solutions sit in IT as another system to maintain. Without executives' involvement, a credit union's analytics program will just be another shiny tool in the toolbox. Beginning with the end in mind, credit unions must establish the reason they are building an analytics program, and the decisions that will be changed through the insights produced.

Data-Driven Decisions

Knowing what to do and acting on it are two very different things. Humans are always making lists of what they are going to do that usually end up in the trash the next time they clean out the "junk pile". Analytics are only able to establish what a credit union should do; making decisions is up to the credit union employees. If credit unions don't have a plan for implementing insights derived from the analytics solutions, they would be better off investing elsewhere. Implementing analytics is not a technical initiative, it is a cultural one. Once credit union leaders begin harnessing data to make better decisions, they will be able to revolutionize the business processes that make up their credit union.

Machine Learning

As credit unions establish analytics programs and make decisions based on the insights gathered, they will be able to establish machine learning. When credit unions consistently make decisions utilizing an analytic data model (ADM), the model will be able to learn from past decisions and adjust accordingly (while considering an ever-changing economic environment). With models learning from models, credit unions will become smarter as they journey into a financial services industry that is in the middle of being revolutionized.

Analytics in Action

After assessing all the data and insights gathered from their analytics program, it is up to the credit union leaders to put this data into action. Empowering middle management and front-line employees with a single version of the truth (SVOT), and a strategy to put it into action, will bring credit unions into a new era where they use data to better serve their members. The same spirit of collaboration and community that began the credit union movement will be stirred up again through analytics in action.

The Dirty Data Debacle

By Peter Keers

Credit unions today are increasingly aware of the mountain of valuable data accumulating in their core and other operational systems. With technology evolving at a rapid pace, opportunities to leverage this data are becoming not only more available but also more affordable than ever before.

As a result, credit union decision makers are anxious to ramp up Big Data & Analytics initiatives. However, before plowing ahead with an investment in hardware, software, and services, it is important to consider the risk lurking within the data itself: dirty data.

Dishing Up the Dirt

The official title for dirty data is “poor data quality”. However, that seems too clinical considering the mess that dirty data can make for an important Big Data & Analytics program. Yet, when program champions are warned of the dangers of

dirty data, they are often skeptical. They point to the source systems from which they plan to pull data and note, correctly, that there appear to be few issues due any dirty data. In fact, they doubt that there is much a data quality issue since these systems run just fine.

This is a common misconception. Operational systems often have many dirty data secrets. There are several reasons for this.

1. **Transaction processing may allow too much flexibility in accepting data**. While there are many input filters that force correct data entry, there are often instances where dirty data is allowed. For example, suppose data entry for "State" allows both "NY" and "New York" or even "New Yrk". These different variations will cause a load failure in the Big Data & Analytics data warehouse unless more expensive software code is written to account for the variations.
2. **Current data and legacy data don't match**. It is typical that historical data will be desired in a data warehouse to support trending analysis. Attempts to load data archived from previous versions of operational systems often fail due to incompatibly with current data. This can be especially true in situations where a past merger has mixed data from different core systems.
3. **Integrating data from non-integrated systems**. One of the premier attractions of building a Big Data & Analytics capability is the prospect of integrating data from disparate operational systems. The majority of credit unions have best-of-breed stand alone systems that perform work outside the core processor. These systems have limited, if any, data integration functionality. Yet, from a decision making perspective, the data from these multiple systems needs to be integrated in order to provide meaningful information. In many cases, properly integrating data for this purpose is not easy and careful efforts must be undertaken to bring everything together to create "one source of truth".

Dealing With the Mess

It is very common for Big Data & Analytics initiatives to uncover Dirty Data even at credit unions that pride themselves on following strict data quality standards. To what is the best means for dealing with the mess?

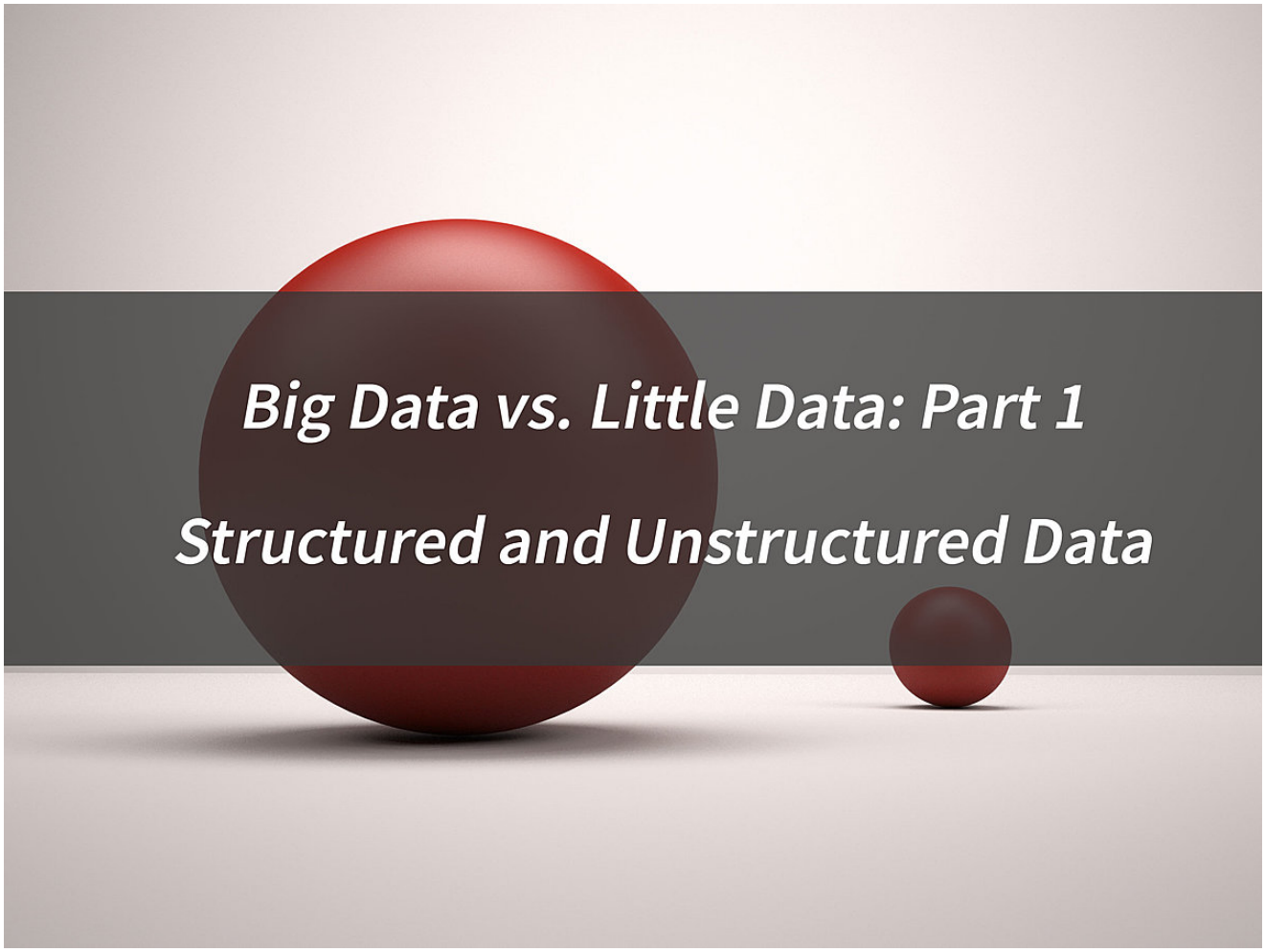
1. **Expect data quality problems.** In planning for Big Data & Analytics programs, employ risk management practices regarding data quality. Credit unions that underestimate this risk and do not prepare contingencies to deal with it will suffer the consequences.
2. **Clean up operational systems**. Take time in the early stages to perform a data quality audit on operational systems. By identifying and correcting dirty data at the source, headaches can be avoided when developing a Big Data & Analytics project.

3. **Avoid loading expensive junk.** Having a wealth of historical data sounds wonderful but it might be cost prohibitive. It might make more sense to load less (dirty) historical data and have shorter trending opportunities when the Big Data & Analytics project is first launched.
4. **Go slow when integrating data from multiple sources.** Ambitious plans to bring everything together at once may need to be tempered with the idea that successful integration takes time. Choose integration projects not only based on strategic importance but also on project complexity. Big Data & Analytics initiatives are long-term learning processes. Taking on the more manageable integration projects in the early years may allow a tradition of success to take hold and drive the program forward in the future.

Big Data vs. Little Data: Part 1

Structured and Unstructured Data

By Austin Wentzlaff



It's clear now: Data can be one of a company's most valuable assets if properly stored, managed and analyzed. What's unclear to many however, is what data is the most valuable and how to harness the value of each type of data. There are two main types of data: "Big Data" and "Little Data" or, respectively, unstructured data and structured data. Both types of data can deliver a significant amount of value to a credit union. However, figuring out how to harness each type of data can be a challenge when dealing with the array of different data sources. Finding a healthy balance is key to delivering value without succumbing to analysis paralysis.

Little Data: Structured Data

Little Data, typically, is found within a credit unions operational systems. Systems that are highly structured and require proper inputs to make them function properly. These types of systems include, but are not limited to, Loan Origination Systems, Core Systems, Credit Card Processing Systems, etc. These systems collect member and account information in a conformed fashion and, even more importantly, the transactions that are generated. These transactions represent the behavior of a member. It is fairly easy, with the right tools, to find specific member and the account-related (transactions) information that member has done with the credit union in a structured data source and thereby track behavior.

Big Data: Unstructured Data

Big Data is found in unstructured data sources that generate far more data points (behaviors) than the structured data sources. A few examples of unstructured data sources are social media (Facebook, LinkedIn, Twitter, etc.), CRM, ratings/comments, etc. These sources are very difficult to analyze manually on a case by case basis. The sheer amount of data generated by these sources often causes this data to be underutilized or completely not used at all. This data, however, is just as valuable, if not more valuable, than the structured data from the Little Data sources.

The Tools Needed

Mining value out of Little Data and Big Data is equally important but just as challenging and complex in both.

Little Data (Structured Data) can be mined with common business intelligence tools and languages such as Structured Query Language (SQL). In order to maximize the value of the data, however, the structured data sources must be fully integrated and normalized. The integration is achieved by establishing data infrastructure, commonly implemented via a data warehouse or data model. Integration using a data warehouse can allow a credit union to get a complete 360 view of their members by linking transaction data across all subject areas. Data integration also creates a "a single source of truth" so a credit union can "know" everything about their members through their behaviors (transactions).

Big Data (Unstructured Data) can be mined with more advanced "Big Data" tools such as Hadoop, Cloudera, and MongoDB. These tools are not for the data beginner but are necessary for the evolution from Little Data to Big Data. For example, Big Data tools can allow credit unions to make sense out of data that is not easily done manually. These tools allow a credit union to comb through tens

of thousands of comments, ratings, and likes in seconds and finding relationships that would otherwise be overlooked. Insight derived in this way in areas such as member sentiment can often more valuable than data collected in a structured form such as a loan application.

Conclusion

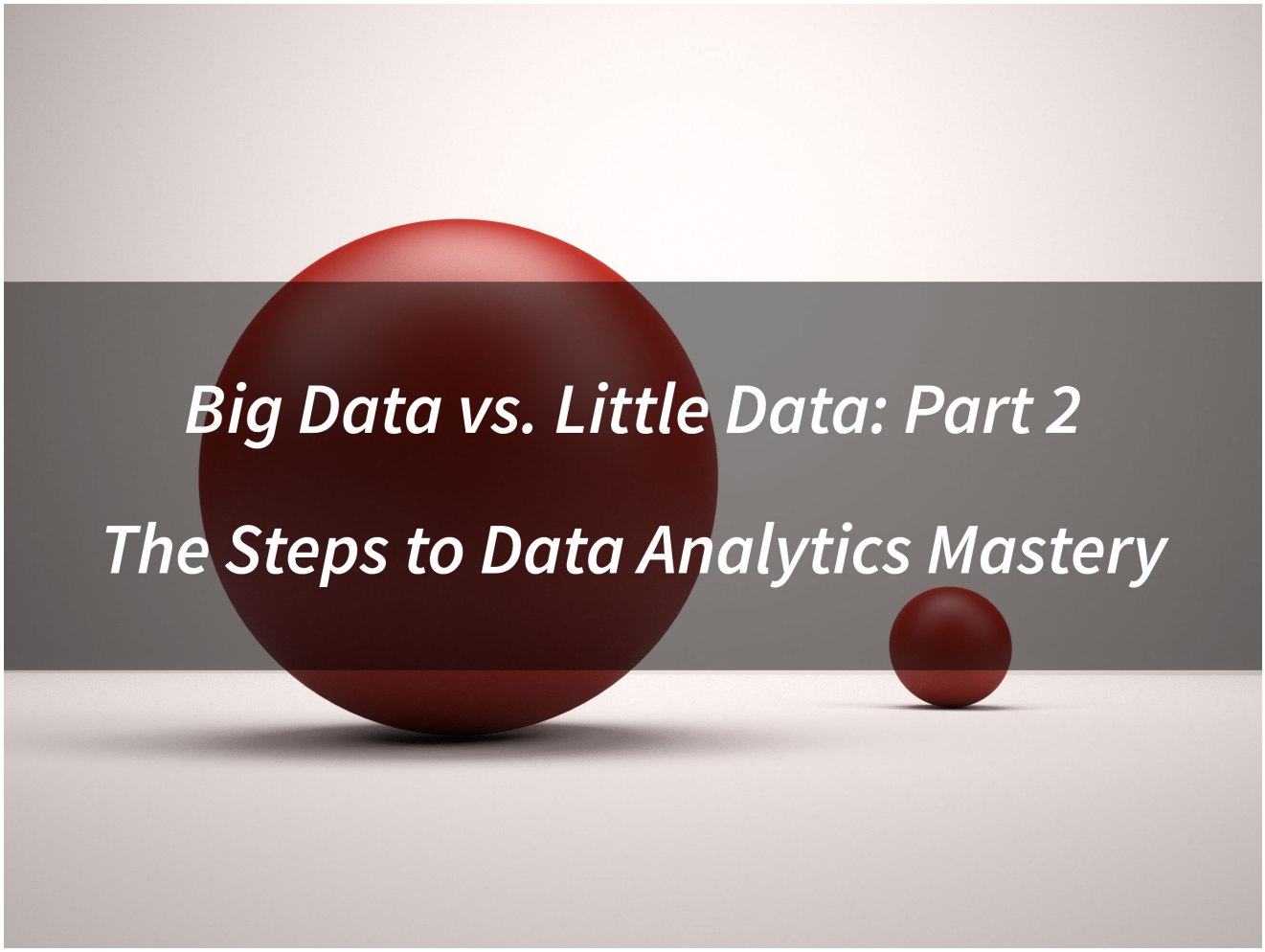
In the world of data and data analytics, credit unions must leverage ALL the data accessible to them. Credit unions should start with the structured data within their own operational systems by developing the data infrastructure to manage, store, and analyze the data. Once the credit union has all of their structured data in a single repository, planning should begin to leverage unstructured data from available data sources.

Determining the right tools will be critical. It is very important that Little Data tools (SQL Database / Data Warehouse) are connected to, or compatible with, the Big Data tools (Hadoop, Cloudera, and MongoDB). If the data warehouse does not support the move from structured data to unstructured data there will be a serious loss of value. While both Big Data and Little Data are extremely powerful, the marriage of the two is where the real value lies.

Big Data vs. Little Data: Part 2

The Steps to Data Analytics Mastery

By Austin Wentzlaff



In my previous blog, Big Data vs. Little Data: Part 1 - Structured and Unstructured Data, I discussed the two main types of data that should be top of mind for any organization thinking of becoming truly "Data-Driven." In the world of data and data analytics, credit unions must leverage ALL the data accessible to them but the journey of mastering data analytics can be very tricky.

Determining the right tools will be critical. When it comes to data and data analytics, the order in which you introduce new tools is extremely important. In order to make each step up the analytics curve effective as the last, credit unions must consider the following steps:

Little Data

Step #1: Data Access – The first step in an analytics strategy is simply getting access to the data necessary for analytics. Although this may seem like a fairly easy task, credit unions may find it difficult to get access to the data they are looking for. It may be due to the level of skill needed to the extract the data, difficulty in making the data useful, and/or due to a vendor's unwillingness to provide the data. Whatever the challenge might be, data access is an extremely important task in becoming analytically proficient and will need to be tackled right away.

Step #2: Data Management – Data management may be the most difficult step in the process of becoming analytically-driven credit union. It is also the most important step. Data management typically involves a data warehouse or data model. The data model is the foundation of all of the following steps: Reporting, Forecasting, Predictive Modeling, and Optimization. Without a solid data infrastructure, analytics is incredibly difficult (near impossible). Although it may not always be visible to the end users, the data model (middleware) is definitely the most important part of data analytics. Side note: a data model should be as granular (transaction-level) and near real-time as possible.

Possible Tool and Resource Need: Microsoft SQL Server, Data Architect, Database Analyst

Step #3: Reporting – Reporting, also known as descriptive analytics, is the most simplistic form of analytics a credit union (or any organization) can utilize. While reporting is possible with tools such as MS Excel, it becomes increasingly difficult as multiple data sources and data volumes are introduced. Performing trending analysis, from multiple different source systems requires a data warehouse and, more than likely, a more advanced data visualization tool (e.g. Tableau) that can handle larger data sets than MS Excel can accommodate.

Possible Tool and Resource Need: Data Visualization Tool (Tableau, MS PowerBI), Report Developer

Big Data

Step #4: Forecasting – Forecasting is the process of making predictions of the future based on past and present data and analysis of trends. It allows credit union employees to make data-driven decisions that reflect the predictions of the future and ask "what if" questions. With the ability to more accurately forecast and run various scenarios, credit unions will be able to better serve their members and improve business processes by allowing them to tailor their daily activities to the organizational goals.

Possible Tool and Resource Need: Report Developer/Statistician (Data Scientist)

Step #5: Predictive Modeling – The ability to predict the future is one step ahead of forecasting. Instead of running a scenario such as "what if our net interest margin increased by X%," predictive modeling allows the credit unions to actually increase their net interest margin intelligently. The credit union can look back at years of history and predict future risk of their current loan portfolio and a member's likelihood to default in addition to what they already know using FICO. Big data tools and other relational database tools must rally around a predictive model to bring predictive analytics and automated decisions to credit union leaders. The new CECL regulation will require predictive modeling.

Possible Tool and Resource Need: Big Data Tool (e.g Hadoop), Data Scientist

Step #6: Optimization – As decisions are made around the predictive analytics, patterns will emerge and the tools will be able to recognize them (machine learning). As the tool and data scientist "studies" the history of trends and patters found in the predictive data model, the model will optimize decisions based on previous results. For example, if a marketing campaign targeted at certain members produces a new set of data, the tool will bring this data into the data model and optimize the predictions it interprets from the data.

Possible Tool and Resource Need: Big Data Tool (e.g Hadoop), Data Scientist

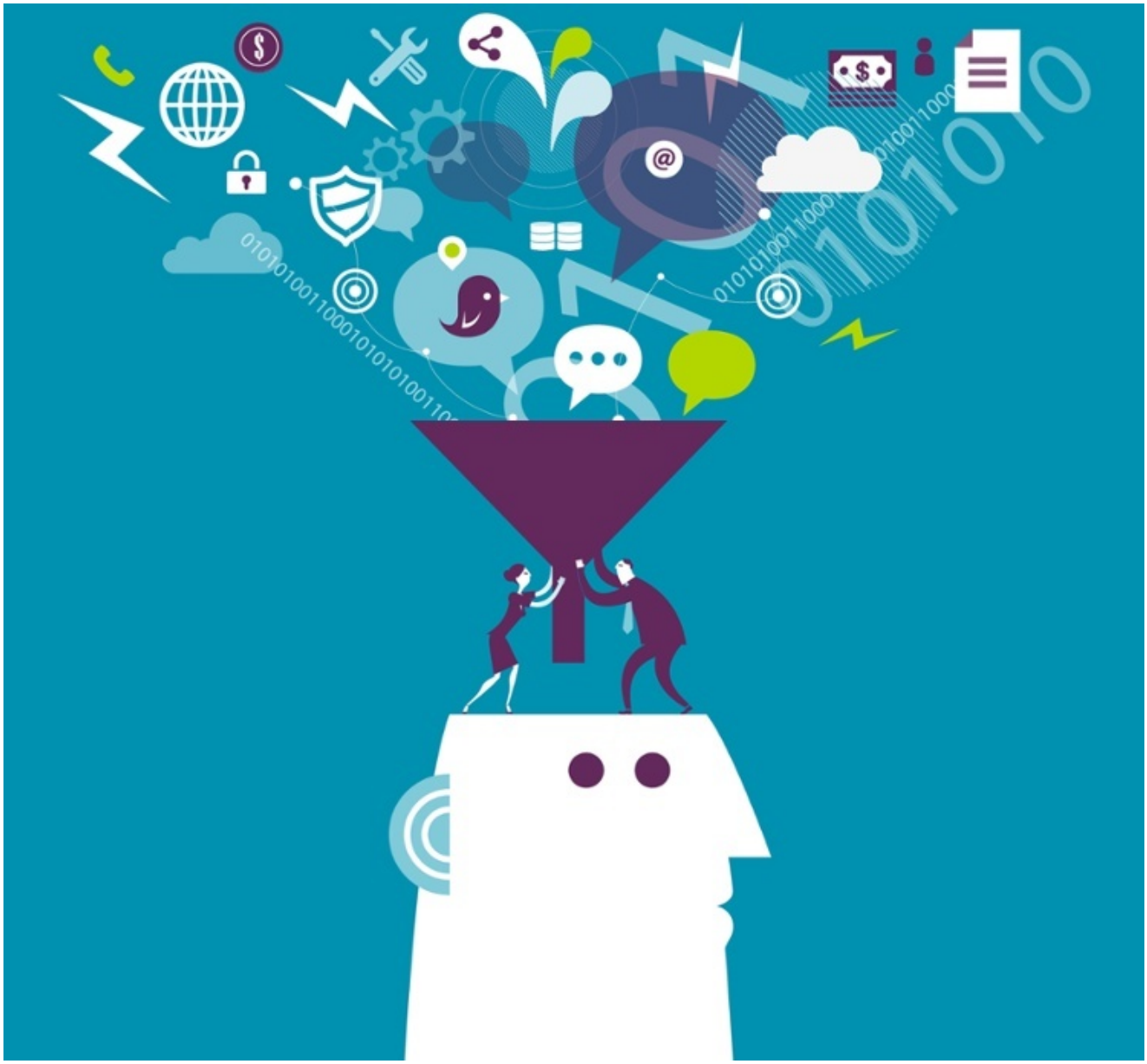
Analytics is a journey. It requires several processes and ordered steps that cannot be skipped. It is often thought that the better the "tool" you have, the better you analytics will be. While this may be true, there needs to be an order in which these various tools are rolled out. Data infrastructure or the data model is the most important step but is often overlooked because it is middleware. Without it, tools such as Tableau and Hadoop cannot assist in their part in data analytics mastery.

After establishing the aforementioned steps for data master, determining the right tools will be critical. It is very important that Little Data tools (SQL Database / Data Warehouse / Data Visualization Tool) are connected to, or compatible with, the Big Data tools (Hadoop, Cloudera, and MongoDB). If the data warehouse does not support the move from structured data to unstructured data there will be a serious loss of value. While both Big Data and Little Data are extremely powerful, the marriage of the two is where the real value lies.

The Data Warehouse is not Enough

Relying solely on a data warehouse, without an enterprise data management strategy, is a recipe for disaster.

By Nate Wentzlaff



Credit unions are beginning to invest heavily in big data and analytics. When deciding how to allocate funds in this space, leaders are awash with buzzwords and conflicting advice. One of the most common terms used within big data and

analytics is: data warehouse. Deciding whether to build or buy a data warehouse is an important strategic decision for credit unions. Unfortunately, many decision-makers get lost in discussions about storage capacity, data processing, data visualization, etc. All of these concepts are important. However, data warehousing is not the solution. It is a powerful tool in an enterprise data management (EDM) strategy.

Without master data management (MDM) to define data elements, agree on business terms, and document the logic of data integration, the data warehouse will be confusing to end users. Because data fields are defined differently throughout a credit union's source systems, terms are used interchangeably (without the same meanings). This will bring more confusion. A data warehouse, which is supposed to be the Single Version of Truth (SVOT), must have an effective EDM strategy to reach its fullest potential.

Most Valuable Asset

The internet has made data the most valuable asset in the credit union industry. Credit unions are realizing the value of their data and are tailoring their budgets to invest accordingly. Understanding that data is the most valuable asset of the credit union is the first step toward developing an EDM strategy. However, a search for the word *data* will bring up thousands of conflicting pages instructing credit union leaders to handle their data in certain ways (while also mentioning their latest and greatest analytics applications).

Enterprise Data Management (EDM)

While credit union leaders begin to mine their data for golden information, confusion will set in if data is not thought about in a strategic mindset from the beginning. Raw data from a single source system has value; however, once credit unions begin assessing all their different streams of data, they will soon realize how complicated it is to effectively integrate them into their SVOT. Before building a data warehouse and everything else needed for effective analytics, credit unions must establish an EDM strategy.

Analytic Data Model

After developing the EDM strategy, business leaders must work to establish an analytic data model (ADM) that will be used to bring all the data together. This is where many credit unions are making the mistake of handing over the data warehouse to the IT team. Without intimate involvement from the business, the data warehouse will turn into another database that will become confusing to end users. The ADM is where IT meets business. The business must define and own

all the logic that will be needed to meet their reporting needs. IT must maintain the integrity of all data that is populating the data warehouse.

Semantic Layer

After building the ADM, a semantic layer should be built to establish common business terminology from the data warehouse. Building a semantic layer has three benefits:

- Eliminates the need for users to have database language skills
- Gives users the freedom to build ad hoc reporting
- Establishes common business terms for all data consumed from the data warehouse

The third benefit is usually overshadowed by the first and second. Ad hoc reporting is only as good as its underlying datasets, and how they are used for decision making. Understanding and documenting how the semantic layer is delivering data from the data warehouse will establish an SVOT that is easy to communicate throughout the credit union.

Master Data Management

In order to begin lveraging analytics in daily activities, credit union leaders must finally develop an MDM strategy. Just as human languages change over time, definitions of data will change as the credit union journeys into new ventures. This requires effective management of metadata ("data about data"). Storing "data about data" seems redundant, but it is one of the most valuable aspects of big data and analytics. The language of the credit union will be determined by its leaders through metadata, and as any good student of history knows, language is very powerful in changing the course of any country (or credit union).

Continuous Analytics Improvement

As credit unions advance into the future, their analytics requirements will change along with business and IT innovations. Establishing an EDM strategy, ADM, and semantic layer will be essential for building advanced analytics. Managing data is the responsibility of business and IT. A data warehouse alone is not sufficient for building analytics. Analytics will only be as powerful as the underlying data and how it is managed. As credit unions develop their EDM strategies, the data warehouse will continually improve and become a powerful tool to advance the credit union into the future.

Credit Unions Must Collaborate for Big Data & Analytics

"Alone we can do so little; together we can do so much" – Helen Keller

By Austin Wentzlaff

The credit union industry (or credit union movement as it's often referred to) is probably one of the most collaborative industries in the United States, if not the entire world. Unlike other organizations, credit unions share everything from ideas to secrets. They truly care about the welfare of the industry and its millions of members. It's great! Collaboration benefits credit unions in several ways – however, in my opinion, one way in particular presents the biggest opportunity.

The Challenge

According to Credit Union Financial Exchange (CUFX), Credit Unions spend millions of dollars independently integrating similar technologies. From what

we've seen, this is especially true in what I define as Credit Union Big Data and Analytics. Credit Union Big Data and Analytics is comprised of data integration (data warehousing), report writing, and the creation of predictive analytic models and applications. Today, credit unions spend a significant amount of time and money building their own isolated solutions to satisfy pressing reporting needs.

While this may solve the short term problem, the unique design hinders the ability to share reports and pool data with other credit unions. Different credit unions often spend resources building similar reports and dashboards. This begs the question that was recently raised by John Best of CU Wallet and Best Innovation Group. Can credit unions be considered as technology companies that deliver financial services, or are they financial service companies that use technology?

The Opportunity

Big Data and Analytics presents a tremendous opportunity for credit unions but it becomes a REAL opportunity with collaboration. You're probably thinking, "How can we collaborate our big data and analytics efforts with other credit unions? Every credit union's data sources are different..." In order for credit unions to collaborate their big data and analytics efforts, they need to have an industry standard data model - a data model that does not discriminate against core system, loan origination system, etc - a truly holistic solution.

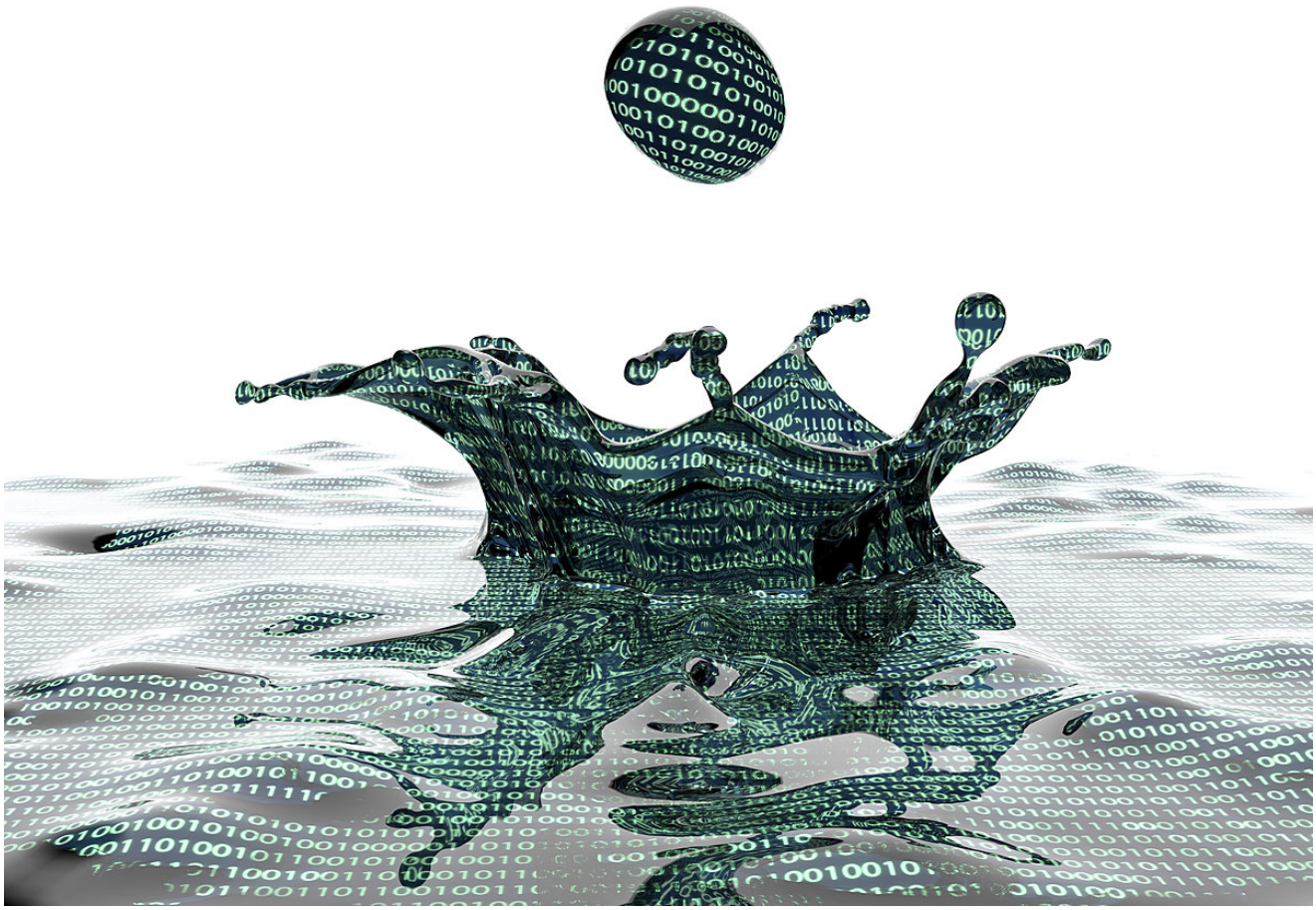
With an industry standard data model, credit unions have the opportunity to greatly reduce the resources needed to execute a Big Data and Analytics initiative. A common data model will enable credit unions to "connect" to each other, allowing them to share reports and analytics applications amongst each other. When a report, application, or predictive model is built by or for a specific credit union, that credit union will have the opportunity to exchange it with all other credit unions that are connected to the data model. As a result, all credit unions - big and small - can immediately and effortlessly benefit by using others' reports and applications shared in a place similar to the Apple App Store.

Essentially, standardizing a data model gets credit unions out of the report-writing game and into the analytics game. This means less time and money spent collecting data, and more time doing actual analysis. When you look at the amount of money big corporations spend on Big Data and Analytics, you have to think, "Is this something our credit union can do ourselves, or should we instead leverage the power of collaboration that already exists in the credit union industry?

5 Reasons to Pool your Data

Data pooling provides an opportunity for credit unions to take advantage of not just their own data, but truly "Big Data".

By Mark Portz



Data continues to prove itself as a necessity for decision-making in financial institutions. For years, major banks and innovative companies such as Google and Amazon have taken advantage of “Big Data” to gain better insights into their customer base and make business decisions to position themselves for the future. The credit union industry is finally beginning to take advantage of their data and utilize new technologies. However, credit unions are much smaller than major banks and simply don’t have the same quantity of data that banks are able to collect from their customers. Fortunately, data pooling serves as a great solution to this problem. Here are 5 reasons your credit union should participate in data pooling:

1. **Access to Diverse Data**

"Why do I care about the data collected from a credit union on the other side of the country?" This is a frequently asked question when discussing data pools. Of course, it is a valid question. The economy may be different in December in Alaska compared to Florida. However, it is important to recognize that this diversity can actually be a major advantage that should not be overlooked.

As Joe Breeden of Deep Future Analytics explains in a podcast with Best Innovation Group, titled The CECL Effect – How the New Credit Loss Rule will alter Financial Analytics, data diversity is healthy for pooling and advanced analytics. In the podcast he states, "If we get folks spread around the country, in a shared blind repository, then it gives us a better overall view of the scaling of the risk versus economics and other things." He continues to explain that "We leverage that pool to learn aspects that are in common, like economic sensitivities, but then also to calibrate to the individual… so you get the benefit of the whole, but specific to the individual institution."

2. **Affordable Access to Data Scientists**

Data scientists are highly skilled, highly demanded, and expensive resources. They play a major role in analyzing and creating predictive insights (such as ALLL forecasting for CECL) from raw data, which means there is a reason data scientists often earn $175k+ per year.

Credit unions simply don't have the same assets and hiring power as Google, Microsoft or the large banks which makes hiring a single data scientist a non-option. This is where the power of the data pool comes into play. If a data scientist works on a pool of data, consisting of the data from, say, 50 credit unions, those 50 credit unions get to split the cost of the data scientist, making advanced analytics much more affordable.

3. **Encrypted and Secure**

Another common concern around the topic of data pooling is the access to private information. In a proper data pool, all personally identifiable information (PII) is encrypted prior to leaving the firewall at the credit union. In the pool, the data is still anonymized. Only after the data reenters the firewall again, is it de-encrypted using a de-encryption key that only the credit union holds.

Data Scientist don't need to know your individual members' contact information, SSNs, etc., but all contributing organizations will benefit from sharing data that

provides insights into loan risk, for example. Post analysis, you will never even be able to tell your data was pooled, except for the increased accuracy in your results.

4. **Quantity of Data for Predictive Analytics**

Predictive analytics is no longer a luxury, but a requirement for upcoming regulations such as CECL. It is well-known that more data means more accurate results. Credit unions have potentially very insightful data to learn more about their members, but only if done collectively with the rest of the industry. There is simply not a large enough data set to perform accurate predictive analytics within the individual credit union. 95% of the credit unions in the United States are below $3.0 billion in Assets and do not have enough data to build accurate predictive models.

Fortunately, data pooling is coming to the rescue. Pooling data provides an opportunity to analyze a much larger data set. With a good model, each additional credit union participating in the pool will help to continue to decrease your margin for error and allow you to have more confidence in your data-driven decision making for the future.

5. **Near Real Time Industry Data for Peer to Peer Analysis**

Although it is highly valuable, it is currently very difficult for credit unions to perform peer to peer analysis in a manner that is near real time. Typically, the best option for credit unions to perform any sort of peer to peer analysis is to compare data captured in 5300 Call Reports. However, this data is collected only once a quarter and likely published at least a month after collection. Valuable insights can be gained from this type of analysis, and it would be beneficial for credit unions to have access to this data before it is 4-5 months old. For example, if you realize your credit union is behind on loan origination, what changes can be made today versus 5 months from now.

A proper data pool makes it possible for credit unions to access industry data and perform analysis on data that is updated daily. This makes it possible to stay on top of industry trends before they have passed.

To learn more, listen to the Joe Breeden BIGcast about data pooling and CECL at http://bigfintechmedia.com/Podcast/the-cecl-effect

5 Reasons to Use Credit Union Service Organizations (CUSOs)

"[CUSOs] provide a means to an end – allowing credit unions the capability to fulfill the financial needs of their members in a cost effective environment through efficient delivery channels. Plus, they attract the brightest and most innovative minds to the board table, bringing best practices of credit unions across the country, which is a priceless experience." – Doug Petersen president/CEO of Workers' Credit Union.

By Austin Wentzlaff

A Credit Union Service Organization (CUSO) is an organization formed and/or owned by one or more credit union(s) to provide a specific product or service within the industry. CUSOs provide credit unions a method to spur innovation,

increase efficiencies through specialization, and gain economies of scale. CUSOs leverage the power of collaboration that already exist within the industry to offer several benefits such as:

1. **Economies of Scale**

Economies of scale are achieved when a company produces goods and services on a larger scale while simultaneously lowering average input costs. CUSOs achieve economies of scale by producing goods or services for several credit unions rather than having a single credit union attempt to replicate the same benefit. By utilizing the power of collaboration, CUSOs can specialize on a given product or service which enables them to provide higher-value products and services at a much lower cost.

2. **Competitive Advantage**

CUSOs offer credit unions the ability to remain competitive by improving efficiencies and producing a wider array of products and services that would be unobtainable without CUSO collaboration. They enable credit unions to acquire scale and market power along with other resources such as capital and staff that far exceed their individual sizes. For example, A data warehouse takes about three years to build and has an initial cost of about $500,000 with an additional cost of $150,000 per year to support. With a Big Data and Analytics CUSO; however, credit unions can install a data warehouse for less than $50,000 and only $60,000 per year to support.

3. **Multiple Owners**

The collaboration of several owners spurs more innovative products and services because there are several different viewpoints, many of which are from the most innovative minds in the industry. Unlike most other vendors in the credit union space, such as Symitar, D + H, and Fiserv, CUSOs are required, by law, to have multiple owners. “There can be some overlap with the credit union, but the management team can’t be 100% the same,” says Guy Messick, an attorney with Messick & Lauer and general counsel to NACUSO. This is incredibly beneficial because there are more eyes looking over the books, so if any problems arise, they will likely come to light before they become a serious threat. Because of this, it should come as no surprise that credit unions with a CUSOs outperform credit unions with no CUSO.

4. **For Credit Unions by Credit Unions**

Owners' of CUSOs are, themselves, credit unions, so it is in their best interest to do what is best for credit unions. Rather than focusing solely on profit, CUSOs also focus on the overall well-being of credit unions and their members. Credit unions, not shareholders, are in control of the CUSO's product development roadmap and the CUSOs delivers on the roadmap by leveraging expertise of credit union executives. Using ideas from the best and the brightest in the industry ensures best practices are shared, resulting in the best products and services available.

5. **The Credit Union Movement**

CUSOs, by nature, are focused on the overall health of the credit union movement. CUSOs care about the credit union movement because they are part of the credit union movement. Utilizing a CUSO ensures that capital investment stays in the credit union movement and is redistributed to credit unions and their members. CUSOs invest in technologies that ensure the long term viability of the credit union industry. CU Wallet is a great example. Without them the only alternative would be Apple Pay which has no stake or interest in the long term viability of the credit union industry.

The Future of Analytics: Predictive Analytics

By Austin Wentzlaff

The promise of business intelligence and Big Data/Analytics has been around for years. Companies have been making claims that data-driven decision-making will revolutionize organizations but have failed to fully deliver. It is true that descriptive analytics (reporting) is necessary and valuable but in order to create real value (Return on Investment) for data analytics, organizations must think about the future. In order to achieve real value from Big Data/Analytics, organizations must execute predictive analytics.

Big Data/Analytics' Past: Business Intelligence

Organizations have been using business intelligence to analyze historical data for years. This was the promise many received when they were first sold business intelligence (BI) solutions. While BI is incredibly valuable, it is only just a fraction

of value when you start to consider analytics. Most of the past Big Data/Analytics (Business Intelligence) solutions were focused primarily on descriptive analytics. Descriptive analytics is the most simplistic form of analytics a credit union (or any organization) can utilize.

Descriptive analytics takes large data sets, commonly referred to as big data, and looks at what has already happened. Rather than trying to learn from the data and make predictions about how strategy can be altered, it aims to summarize the data. For example, a credit union can look at the average yield of their loan portfolio. Descriptive analytics can be also referred to as reporting, a practice already carried out by most credit unions today. The real value of descriptive analytics is the ability to, according to management guru Peter Drucker, "measure what you manage." As humans we are conditioned to work towards goals and descriptive analytics does an excellent job of telling us what progress we are making against those goals and prompts us to look for ways to improve.

The Future of Analytics (Predictive Analytics)

Predictive analytics harnesses patterns found in historical and transactional data to identify risks and opportunities. Through utilization of sophisticated statistical modeling techniques, machine learning, and data mining, predictive analytics looks at past and present facts to make predictions about future events. Predictive analytics allows financial institutions to look at loan portfolios and apply statistical models to affect the outcome of their future yield.

"One of the most well-known applications is credit scoring, which is used throughout financial services. Scoring models process a customer's credit history, loan application, customer data, etc., in order to rank-order individuals by their likelihood of making future credit payments on time." – Nyce, Charles (2007), Predictive Analytics White Paper, American Institute for Chartered Property Casualty Underwriters/Insurance Institute of America, p. 1

The Challenge of Predictive Analytics (The Requirements)

Predictive analytics empowers credit unions to gain valuable insights into areas like, new product opportunities, new markets via risk based pricing and completely re-defined credit scoring models. Unfortunately, predictive insights are not easily obtainable. Predictive analytics require deep analysis of transactional data which is extremely difficult for credit unions with many disparate data sources. In a recent whitepaper from Filene Research Institute, author Philipp Kallerhoff states:

"A prerequisite for developing these (predictive) and other models is **a well-maintained database with as much transactional detail as possible.** The credit unions that can capture transaction types and locations will come out ahead, because transaction origin correlates highly with credit scores and helps to predict future financial products."

The Opportunity for Credit Unions

While predictive analytics is difficult to obtain, it is not farfetched for credit unions. Unlike new competitors in the financial services industries (e.g. Apple Pay, Lending Clubs, ect.), credit unions sit on an astronomical amount of transactional data. Credit unions, through their years of building brand loyalty, have racked up countless transactions from their members. Unfortunately credit unions have not been able to build well-maintained databases with as much transactional data as possible, until now.

As an industry, credit unions have developed incredible vehicles called Credit Union Service Organizations (CUSOs). CUSOs enable the credit union industry to leverage their inherit collaboratively to access technologies, such as Big Data/Analytics, that are typically out of their financial means. Without credit union collaboration, achieving a well-maintained data warehouse with as much transactional data as possible would be difficult to achieve. As a result, predictive analytics would be out of reach. Fortunately, the future of analytics is here. Many credit unions are beginning to realize the importance of Big Data/Analytics and are starting to embrace collaboration as the key to keeping the industry alive.

Internet of Things: Retail Banking (Bank of Things)

By Austin Wentzlaff

The Internet of Things (IoT) has gained a considerable amount of hype as the "Next Big Thing" to change the world as we know it. Applications of IoT are thought by some to be limited only by the human imagination. From simply

controlling your home (e.g. - lights, thermostat, etc.) with a smartphone, to life saving medical and healthcare systems, IoT is pervasive and growing rapidly.

The financial services industry has recently started experiencing the IoT disruption in the form of mobile banking. While mobile banking is seen as an incredible advancement in financial services, it may only be the tip of the iceberg for the Bank (or Credit Union) of Things.

In recently published whitepaper, The Bank of Things: How the Internet of Things will Transform Financial Services, Author Ian Webster of Accenture discusses what he refers to as 'Customer 3.0.' Much like I discussed in one of my pervious articles, **Why Attracting Millennials Requires Big Data/Analytics**, Webster's 'Customer 3.0' is "hyper-connected, highly informed, very demanding and spoilt for choice. They expect to be engaged as individuals, and on their terms — when, where and how they want." This new information expectation is requiring banks/credit unions to think of innovative ways to transform their data into valuable assets that provide a better customer experience.

Examples of IoT in Financial Services

'Customer 3.0' is being conditioned to expect much more information in all areas of their lives with retail banking being no exception. IoT is still in its adolescence in the financial services industries but there are several practical example of IoT in banking that do not seem far-fetched, consider the following example:

Loans are a major source of revenue for financial institutions but with interest rates at historical lows, differentiating one loan from another is difficult. So how do you ensure someone uses your financial institution for their next loan? By being the first image a customer sees when deciding to make their next big purchase. With advanced geo-tracking using beacons (IoT technology), financial institutions can send out the most accurate and timely marketing alerts.

Imagine walking onto a car dealership and receiving an alert from your mobile banking app that automatically tells you how much financing you've been approved for. Even better, the auto loan application can be completed using your smartphone and contain prepopulated data stored from previous transactions (e.g. current address). Imagine an app offering you a deal if you purchase the exact car you're looking at. With beacon technology you can send offers such as, "Save $1,000 on that new 2015 Chevy Impala if you use Sample Federal Credit Union financing." This may seem like a "too good to be true" scenario, but with IoT (beacons) and Big Data, this is something retail banking institutions could start doing today.

Living in Harmony: Internet of Things (IoT) and Big Data & Analytics

IoT presents a tremendous opportunity for financial services, but it also presents a serious challenge. In addition to the countless new applications for internet connected banking, IoT is also expected to generate a plethora of data. This data is coming from a variety of new sources, at high-velocity and in increased volumes (also known as Big Data).

"...Internet of things-related technology and services revenue is forecasted to grow from US$4.8 trillion in 2012 to US$8.9 trillion by 2020. The future is coming fast — and to capitalize on these opportunities, today's banks need to invest in developing the ecosystems and capabilities that will drive tomorrow's Bank of Things." -Ian Webster, Accenture

Time is of the Essence

Without the proper technology to store, process, and analyze the data generated from Internet of things-related banking, retail banking institutions will not be able to serve 'Customer 3.0' in the way they desire. Failure to address the needs of 'Customer 3.0' will challenge the future viability of most banks and credit unions. The financial services industry is at a cross roads and needs to think about how to reinvent itself before it's too late. There are several companies that have noticed this tremendous opportunity and have started investing in similar technology. A few of these companies worth mentioning are Apple (Apple Pay), PayPal, and Lending Club (backed by investment from Google).

As we enter the era of IoT and the ensuing massive data explosion, how will your institution react? Will it sit on the sidelines and wait for the innovators of the industry or will it get ahead of the curve, start investing in Big Data/Analytics, and be one of those innovators?

About OnApproach

Building Relationships With Data

Company History

OnApproach began in 2005 as a data consulting company. In six years, OnApproach completed over 50 major projects for Fortune 500 companies, such as Toro and Land)' Lakes. In 2009, OnApproach completed an extensive reporting and analytics project for a credit unions and realized the significant need for a stardard enterprise data integration solution.

OnApproach became a Credit Union Service Organization (CUSO) in 2014 and received a patent for the M360 Enterprise analytic data model in 2015. To further its commitment to credit union analytics, OnApproach annually co-hosts the Analytics and Financial Innovation (AXFI) Conference with Best Innovation Group to provide a forum for credit union analytics and collaboration.

OnApproach Today

OnApproach is a CUSO that offers ALL credit unions an innovative and patented technology solution that allows them to take full advantage of the power of Big Data & Analytics. Through OnApproach's collaborative industry platform, credit unions have access to insights they never had before, enabling them to use information to build stronger relations with members.

OnApproach is the creator of the CU Analytics Ecosystem, a network of credit unions interconnected through a common data integration platform (leveraging the CUFX standards) that is powered by OnApproach M360 data integration middleware. The CU Analytics Ecosystem is a collaborative environment that enables communities of users, data scientists, and application developers focused on innovation, driven by analytics.

Take Action With Your Data

Your credit union's data is a highly valuable asset, but only if you are utilizing it to provide actionable information. If you are ready to take advantage of your data to improve member satisfaction and prepare for the future of financial services, contact us today to learn how we can help.

Learn More About Integrating and Optimizing Your Data

made with Beacon