



**The importance
of firm data
foundations in a
digital-first bank**

Introduction: The path to a unified view of the customer in banking

In the competitive world of banking, the recent global disruption has brought customer relationships into sharper prominence. Meanwhile, the many challenges that were already impacting the sector have not let up. FinTechs continue to erode market share. Digital engagement is as essential as it has ever been. Customers continue to become ever-more wary of customer service that seems to be less than precisely attuned with their needs.

In an uncertain world, one thing's for sure; people and businesses need help. The role of the banking sector in Australia, being the largest part of the Australian financial system, becomes far more personal than it has ever been.

Digital transformation initiatives in banking have so far failed to take hold in such a way as to completely modernise, and change customer perceptions of, the banking sector. Banks have found that workarounds and quick fixes seem to have sufficed. Such approaches have alleviated any investment requirements by sweating existing IT assets, but could well incur a greater cost in the long run.

It is time to catch up. The global disruption shifted the world online. Organisations that had a track record of investing in digital capabilities were able to respond to this shift. Those that had only partially, if at all, made firm inroads in digitising their operations need to make rapid reassessment and take rapid actions.

Laying digital foundations

At the heart of digitisation is data; how it flows, how it is managed, and how banks can derive value from it to better serve customers. Earning and validating customer trust and confidence depends on data to inform the paths to follow, and the actions to take. It is the foundation of realigned banking services in a societal framework of the 'new norm', reshaping customer needs and expectations.

Relevance to customers must be based on anticipation, based on analytics. Every contact, with every customer, through every channel, must be based on solid, reliable, unified, and real-time data.

The unified view. Data has a straight-line relationship with value. Ensuring that nothing can cause kinks and breaks in this line is a central role of any team member involved in gathering, aggregating, recreating or interpreting data. As to using the insights that data delivers, it can be assumed that this falls to a large percentage of any organisation's team.

Common data problems not so easily identified

If it looks broadly like data, and acts like data, then it is data. This much is true. That enough data is coming in fast enough from the right sources, is the least of a bank's concerns about the information it may decide to use, to better inform the future and to be more creative in its innovation endeavours. From the data veracity perspective, common problems prevail that are not always easy to identify.

- **Biases** – Decision-based on calculated values suffers statistical biases
- **Data lineage** – Sources of data lineage are inaccurate
- **Noise** – Out of context data
- **Sources** – A large number of negative social comments on brand. This could be due to bots / robotic sources
- **Falsification** – Rumours on company release of negative news
- **Uncertainty** – Ambiguous language in information relayed by government agencies
- **Out of date** – Out of date customer data or scenarios which do not align to the current Credit regulations
- **Human error** – Entry of wrong phone number or other details for segmentations

Referring again to Volume, Variety, and Velocity, resolving such issues as these can be a superhuman task. Humans need help. Ageing infrastructures, non-integrated systems, and siloed organizational set-ups that may have sufficed in the past are not going to be able to provide it.

The problem is that teams often work either in isolation, or only partially integrated with other teams. They create their own data and their function- or discipline-based interpretations of the insights derived from it, which may differ to the interpretations other teams may place on it. This is the classic and much-criticised silo structure prevalent in many banks' operations.

While role-focused specialists may bring value to extracting core insights from the data, it is a value that can be substantially expanded when the insights are shared and integrated across the entire bank, and every customer-facing and operational function.

When joined up and connected, the data tells a more complete story about the customer; providing a unified view and offering more objective alignment with bank services, and more richly informing innovation and creativity.

V is for value: The four cornerstones of data management

Before any opportunity can be addressed, the problems potentially inherent in data — the degree to which you can trust the data – need to be handled confidently and comprehensively.

The four cornerstones of data management are about how much data comes in, what type of data it is, how fast it accumulates, and how accurate or truthful it can be assumed to be.

The cornerstones are commonly known as the four 'V's of data – Volume (how much), Variety (what type), Velocity (how fast), and Veracity (how accurate). They add up to one enormous challenge. Banks have no choice other than to cope with it, master it, and turn it to their advantage. Approaches that may have worked in dealing with customers in the past, or may seem to have worked, will simply not work anymore.

- **Volume.** In 2020, the world will generate around 300 times more data than it did in 2005. This is how far removed we now are from previous ways of doing things. Data sets today are of a size that can outweigh an organisation's infrastructure, its storage capacity and its processing needs. At the same time, it can place an onerous responsibility on developers to create more novel and efficient algorithms to process the data.
- **Variety.** Data is generated in many forms, from unstructured on socialmedia, to document-based statements, contact centre audio records, internal communications, external information and on and on. Turning diverse sources of information into a consistent, unified, and consumable format to reliably feed into decisions and initiatives takes time when the only acceptable criterion for the data-to-value straight-line is real-time.

Creating a winning data strategy

Here is an outline of the optimum data governance model, more fully explored in 'Defining a data strategy: An essential component of your digital transformation journey'

- **Compliance and standards:** Data standards, procedures and compliance criteria that the organisation must adhere to for regulatory reasons, and those they voluntarily wish to adopt.
- **Change management:** Methods and standards by which change across the data strategy scope is introduced, evaluated, confirmed and conformed into the iterative evolution and communication of the data strategy iterations. This includes crowdsourcing contribution of edits, ideas and related communications from all levels of the organisation. Change management also defines how deviations and exceptions to the strategy standards are identified, documented and handled.
- **Workflow guidance:** Procedures and methods for defining and managing the data and solution life cycles, including operational and support-control handoffs.
- **Organisational structures:** Guidance on how human resources and interactions should be defined, maintained and scaled within the scope of data-related activities. This also includes proper skill set definitions for all such resources.

- **Velocity.** As an example, some of the world's largest stock exchanges – including the Australian Stock Exchange (ASX) – generates up to one terabyte of data per session. This data needs to be passed along the value chain at the right pace, for the right need, without losses and errors.
- **Veracity.** The magnitude of data, particularly as it triggers human intervention along its trajectory, impacts the confidence a bank can have in it. Doubts may arise from infrastructure issues such as errors in generation, transfer, or reading from ageing systems designed for a different time and a different pace. Doubts may also arise around the possibility of human error, or worse; manipulation or falsification.

“Knowing is good, but knowing everything is better”.¹

For banks to fully realize the value of their data, it is critical to take an 'analytical' approach to analytics. That means following a pragmatic process to leveraging the benefits of data analytics, and to ensuring that robust information is fed into the analytics solution, to guarantee that robust information will come out of it. When done well, with trusted data, analytics will tell you things about your customers and your business that you didn't already know.

The first stage in this process is to get the data in good shape to be analysed. [SEE PANEL: 'Common data problems not so easily identified']. For example, it would be a waste of time and investment to deploy the essential solutions for making sense of the data, if the data you were working on were to be fraught with, or even have any incidence of, the most common data problems arising from how you (or your systems) may have treated data in the past. Also for prime consideration is the over-riding need to ensure compliant data governance and meet regulators' requirements and consumers' rights to data privacy.

Three practices combine to ensure robustness and veracity of the data:

- Machine learning
- Change detection
- Formal methods

Machine learning: Machine learning (ML) refers to processes or algorithms that improve automatically through experience. They partition or classify the data to improve the effectiveness of the algorithm. ML proceeds unsupervised when data is not clearly labelled; making its own sense of the data presented. Clustering is a common feature of ML, whereby data that is not entirely true is grouped into true and false buckets, based on the features of the data. Both supervised learning methods, such as neural networks, and unsupervised learning methods, such as k-means clustering, help address data veracity issues.

Change detection: Change detection identifies false information by using change and noise detection techniques. Given that not all changes result from an abnormality, change detection looks for any changes that differ from the previous value by a certain threshold. Once identified, the changes need to be analysed

¹ From 'The Circle' by David Eggers.



more deeply for more accurate results. A number of change detection techniques such as Kalman Filter, cumulative sum control chart, and sequential probability ratio test can be used to analyse the changes in more reliable ways. Kalman Filter includes a feedback loop to improve the estimation, in addition to other improvements in arriving at the estimate.

Formal methods: These are mathematical techniques for the design and verification of software and hardware systems. Data about the data and its properties are stored to aid in reasoning and verification. Verification, reasoning, or proving the truth become a matter of strategic application of axioms and rules, transforming the information to entail truth or lack of it. Data, when represented using logic constructs, helps the veracity problem by transforming it into a logical reasoning problem.

The springboard to creativity

Once this first stage has been implemented, with the goal of assuring data veracity, true transformation can begin. This is when a bank can harness data analytics in a way it may never have done before. It is when a bank can make up for time lost back in its old legacy system days when, as many banks will have experienced, distances were allowed to creep in between a bank and its customers. Now those gaps can be closed.

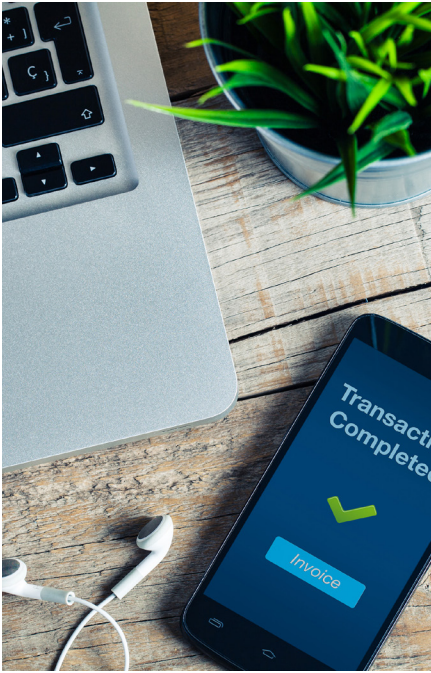
Artificial Intelligence in banking

Across the entire operations of a bank, Artificial Intelligence (AI) can speed up processes, enhance anti-fraud measures, and improve efficiencies in the back-office. AI is effectively at the culmination of data analytics techniques:

Analytics enables you to record and playback information. One step along takes you to considerations around advanced analytics where algorithms are brought into play to search for hidden patterns in the data. This allows the clustering of customers based on which banking services they use. The next stage is the application of ML, which as previously covered improves algorithms through experience. The approach enables you to predict banking services that a customer will use.

AI is when a machine performs a task that humans find interesting and useful however difficult to do. Your system is artificially intelligent if, for example, machine-learning algorithms infer a customer's need and recommend a solution. This is where those overwhelming tasks we have described as superhuman, are taken care of automatically, at speeds and with the corresponding accuracy that humans could simply not achieve.

AI is often built from machine-learning algorithms, which owe their effectiveness to training data. The more high-quality data available for training, the smarter the machine will be. The amount of data available for training intelligent machines has exploded. For banks used to traditional sources of customer information like transaction history, income and age, the importance of this new data may not be obvious. But using this data to get to know customers is key to creating value.



AI can help banks:

- **Be more trustworthy.** AI can detect anomalies in streams of financial data and make it easier to comply with anti-fraud regulations. By getting better at spotting fraud, banks increase compliance and strengthen their customers' trust.
- **Be more efficient.** AI can forecast demand and narrow operational choices to options that will optimize tasks such as staffing and branch location planning. Banks become more efficient by eliminating wasteful practices from consideration.
- **Be more understanding.** AI can learn to hyper-customise customer interactions. It can improve risk calculation based on personal behaviour. It can infer a customer's need and recommend the next best offer. A bank's system "learns" to understand the customers and offer exactly what they need.
- **Be more helpful.** AI lets banks provide personalised services in real-time. Customers showing interest in high-end purchases online may be candidates for services such as pre-approved internet banking offers, with loan deposits available within seconds of completing the transaction. When a bank responds quickly, customers stay happy.
- **Apply AI as a differentiator.** AI can mean competitive advantage. Banks should find areas of the business to make as smart as possible as quickly as possible. They can identify the data stories (such as detecting fraud) that might make a difference. Then banks can test their ideas using utilities and small experiments, learning and adjusting along the way

Ecosystems in banking

As banks become more sophisticated, or more digital, in how they handle their data, two major areas of strategic benefit arise. Firstly, by being fully immersed in the digital world, they can develop joint initiatives with partners outside the banking world to bring greater and more complete value, or lifestyle relevance, to their customers. Secondly, partners will seek to work with banks to complete their own fully-rounded propositions.

These partnerships are ecosystems bringing mutual benefits to the participants. These benefits come about primarily because each participant is seen to have added value for the customer. As a customer-facing strategy, therefore, the ecosystem bringing bank and non-bank players together holds considerable commercial allure. It is similarly attractive to the customer, delivering a single integrated experience across interconnected services.

An example would be where a bank partners with a mobile operator to provide a mobile banking app, which might then offer customers the ability to monitor their utility bills or control their own budgets. This is made possible through the use of trusted data and the courage to share that data in a secure manner — and the outcome is that the bank is able to be where the customer is, at the time the customer needs them.

As tech giants make inroads into banking's core areas of business, the lesson is clear: Lifestyle relevance drives customer connections. Ecosystems in banking open the way for innovation in services and constitute a logical next step in the evolution of the modern bank: From silos within, transformed into multiple connections beyond.

Final thoughts: Data strategy vision

Banks can no longer assume that systems and infrastructures that were long in place, before digitisation had permeated society and all areas of business in the way it has today, will come even close to fulfilling the customer's expectation.

Now, in a world of new norms, the need is even more pressing to deliver more relevant services, in more relevant ways, across channels, and by exercising greater understanding of what customers need.

Clear visibility of data is essential. Solid foundations through machine learning, change detection techniques and technologies, and formal methods are essential building blocks in setting up data in a robust and usable way.

A bank's ability to see the complete picture, in the sharp focus that AI brings, will inform and drive decisions accurately and with confidence. Banks can then move into the future with the capability to respond to customer's habits in real-time, to predict their needs, and to spin up new offerings. As data unlocks creativity for banks, it will empower initiatives that will increase customer trust, and increase profitability per customer. A sound, digital data strategy will build loyalty among customers, and minimise attrition.

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