

CELENT



CASE STUDY

ROYAL BANK OF CANADA: NOMI

WINNER OF CELENT MODEL BANK 2018 AWARD FOR
PERSONAL FINANCIAL EXPERIENCE

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This is an authorized reprint of a
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content has not been changed.

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CASE STUDY AT A GLANCE

FINANCIAL INSTITUTION	Royal Bank of Canada
INITIATIVE	NOMI Insights and NOMI Find & Save
SYNOPSIS	RBC is the first bank in Canada and among a handful globally, to launch a mass scale artificial intelligence (AI) based digital service that offers insights about a client's financials and a fully automated savings solution that uses predictive technology to identify money in a client's cash flow that can be automatically saved. NOMI Insights™ provides personalized, timely, and relevant insights to help clients manage their day-to-day finances on the go through the RBC Mobile app. NOMI Find & Save™ helps make saving simpler for clients by using predictive technology to find amounts of money clients can spare, and automatically saving that money. NOMI uses a client's account activity to identify trends, unusual activity, and potential savings opportunities.
TIMELINES	<ul style="list-style-type: none"> • Project start: 2016 • NOMI Insights and NOMI Find & Save launched in October 2017
KEY BENEFITS	<p>Among NOMI users:</p> <ul style="list-style-type: none"> - Client engagement with RBC mobile banking app increased 20% - Average time-in-app increased 6% - More than 100 million insights read by clients in the first five months - Clients save 2x more regularly with NOMI Find & Save than they do with traditional savings products
KEY VENDORS	Personetics

CELENT PERSPECTIVE

Mobile banking utilization is approaching 50% of retail and business banking clients at many banks. Customers appreciate the convenience mobile banking offers for routine tasks, such as balance inquiries, bill payments, and cheque deposits, but engagement remains decidedly in-person. With largely undifferentiated mobile banking offerings, few banks have extended mobile banking efficacy beyond transactional convenience to meaningful digital engagement. RBC is doing so — with a large and growing number of its retail banking clients.

With the continued increase in digital interactions, banks are sitting on massive amounts of consumer data. RBC is among a comparatively few banks that have used this data to add value. Valuable lessons can be learned from RBC's experience. Namely:

- Applying AI to improve customer engagement is both art and science. Language and context are both hugely important. AI is not easy. It takes an iterative process of continual learning and improvement to do well, particularly when its use directly impacts the customer experience.
- Banks need to be themselves and remain consistent with their brand. Organizations shouldn't view AI as a way to appear hip or trendy if that is not their brand character.
- If your bank is not actively experimenting with the use of AI for improving digital engagement, you are likely two years away from a compelling client experience.

RBC is a 2018 Celent Model Bank winner in two categories, Personal Financial Experience and Employee Productivity. Both initiatives are worthy award winners in their own right and were also exceedingly well-documented Celent Model Bank nominations. Both factors played into Celent's decision to recognize RBC as a Celent Model Bank.

DETAILED DESCRIPTION

Introduction

Royal Bank of Canada (RBC) is Canada’s largest bank by market capitalization, the 5th largest in North America and the 11th largest globally by market capitalization. It is also Canada’s first bank to receive the Financial Stability Board G-SIB designation, indicating the bank’s importance to the Global economy, reflecting the size and scale of RBC’s global operations. In 2017, RBC was ranked “Highest in Customer Satisfaction among the Big Five Retail Banks” for the second year in a row by J.D. Power, and also attained the ranking of “Highest in Customer Satisfaction Among Canadian Mobile Banking Apps” in the inaugural J.D. Power Canadian Banking Mobile App Satisfaction Study.

RBC provides personal and commercial banking, wealth management services, insurance, investor services, and capital markets products and services on a global basis. It employs approximately 80,000 people who serve more than 16 million personal, business, public sector and institutional clients through offices in Canada, the US, and 36 other countries.

Table 1: RBC Royal Bank Snapshot

THROUGH 2017	ROYAL BANK OF CANADA
YEAR FOUNDED	1869
REVENUE	CA\$40.7 billion
ASSETS	CA\$1,213 billion (US\$935)
GEOGRAPHICAL PRESENCE	HQ: Toronto, ON 1,235 branches and 4,290 ATMs in Canada
EMPLOYEES	81,000+
OTHER KEY METRICS	Over 16 million clients in Canada, the US, and 35 other countries #1 in client satisfaction among Big Five Canadian retail banks in 2017 J.D. Power survey Ranked “Highest in Customer Satisfaction Among Canadian Mobile Banking Apps” in the inaugural J.D. Power Canadian Banking Mobile App Satisfaction Study.
RELEVANT TECHNOLOGIES AND VENDORS	Personetics

Source: Royal Bank of Canada

RBC is the first bank in Canada, and among a handful globally, to launch a new digital service based on artificial intelligence (AI) that offers insights about a client’s financials and a fully automated savings solution that uses predictive technology to identify money in a client’s cash flow that can be automatically saved. RBC is also the first to launch a fully automated AI-based savings solution. NOMI Insights provide personalized, timely and relevant insights to help clients manage their day-to-day finances on the go through the RBC Mobile app, while NOMI Find & Save helps make saving simpler for clients by using predictive technology to find amounts of money clients can spare, and automatically saving that money. NOMI uses a client’s account activity to identify trends, unusual activity, and potential savings opportunities.

Opportunity

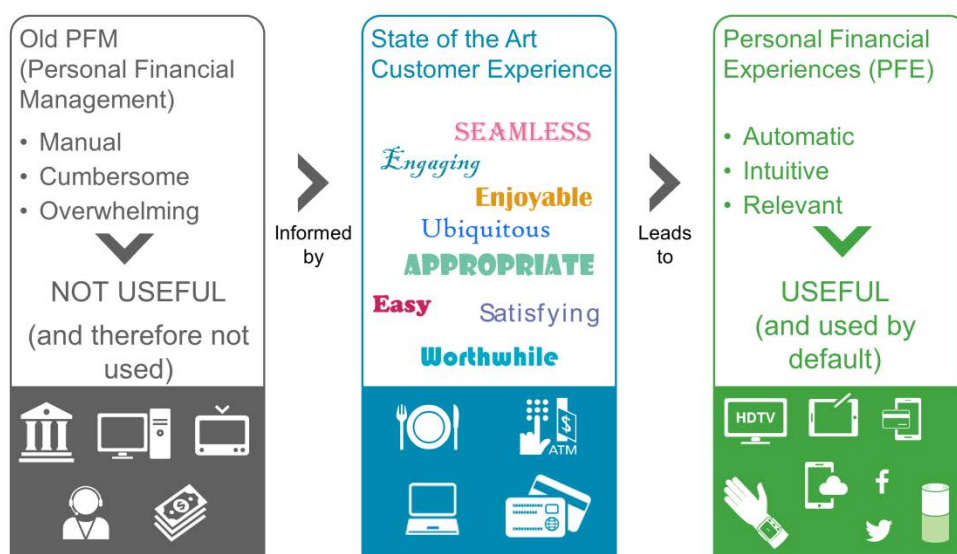
Multiple surveys published over the past several years paint a consistent picture. Consumers trust their banks with their money, but otherwise don't think very highly about their banking experience. In a February 2018 survey of US adults (n=2,358), Celent found that 86% felt their money was safe at their primary bank (65% strongly so), but just 59% felt their bank was a credible place to seek financial advice (34% strongly) and just 43% felt their bank knows them (26% strongly). The opportunity is clear: banks need to help consumers form good financial habits and build trust in their primary bank as not just a safe place to store funds, but a credible source of financial insight and tools to improve their financial wellbeing.

Personal financial management (PFM) broadly defined the industry's first attempt at doing so. Few customers utilized first generation PFM capabilities, and fewer still were impressed. It's not hard to see why. Traditional PFM is too cumbersome and inconvenient, often serving up bad news. Most consumers already have a good general understanding of their financial health. If you're broke, then chances are you know it; you don't need an app to tell you. Offering detailed views of cash flow and spending never answered the "Now what?" of financial management.

Celent believes that the goal of digitizing the banking experience will have to include financial management features. But banks need to move away from traditional hang-ups and pitfalls associated with PFM, while seamlessly embedding it into a broader transformation strategy and everyday banking experience. Celent calls this alternative vision for PFM Personal Financial Experiences (PFE). Personal Financial Experiences better reflects how banks are beginning to think about the customer journey, as well as how customers prefer to interact with their primary financial institution. PFE isn't just one touch point; it encompasses the wide variety of interactions that a consumer has with their financial institution. Today's digital banking will, in fact, become PFE. At RBC, it already has.

Figure 1 shows how PFM is being shaped by banks' evolving and maturing view on providing better user experiences across every bank/customer touch point. When banks move to the end state of PFE, customers will no longer have to choose to manage their financial lives (or by not choosing, default to unmanaged ad hoc); instead, financial management will happen in the background, facilitated and orchestrated by the bank, as part of the overall relationship.

Figure 1: The Metamorphosis of PFM into PFE



Source: Celent

RBC's NOMI (pronounced "know me") perfectly embodies PFE.

RBC wanted to help clients easily manage their money and make savings effortless. Consumers often don't have a simple view of how and where they spend. Traditionally, those who wanted to better manage their money had to manually track their behavior, setting up spreadsheets and budgets, spending more time than most can spare. RBC sought to find a simple solution for its clients, including those who just don't have the time to routinely assess their own financial behavior to help them feel in control of their finances. Perhaps most importantly, these capabilities had to be tightly integrated into the RBC Mobile app.

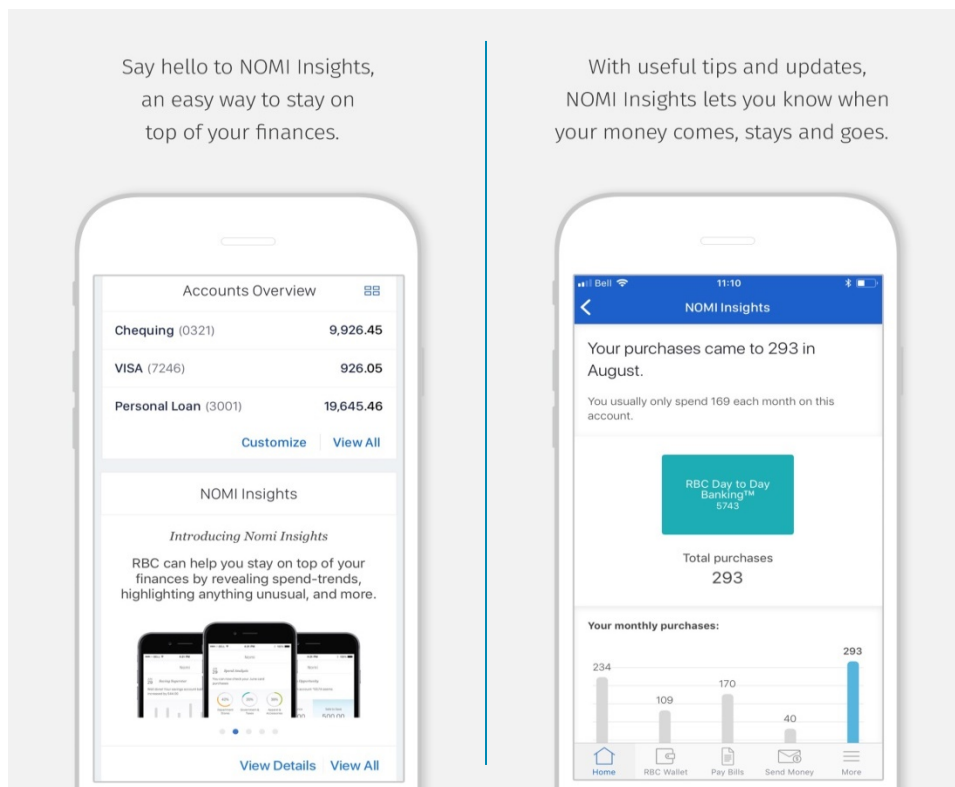
Solution

NOMI consists of two, closely related products, NOMI Insights and NOMI Find & Save. Both are integrated in RBC's mobile banking app, making them instantly available to the entire RBC digital banking user base.

NOMI Insights

Before a bank starts providing its clients financial advice, it should first establish a baseline level of digital engagement that demonstrates value and encourages clients to come back for more. A bank can do this by offering snippets of personalized information and insights that help clients feel in control of their day-to-day finances. A bank could, for example, tell clients about meaningful events in their accounts, highlight unusual activity that might require action, inform them of changes in their spending patterns, and point out services that would simplify their banking. By doing this consistently, customers get into the habit of using the bank's digital platform and grow to trust the information provided as accurate and useful. Once trust is established, the bank is well-positioned to offer financial advice. Doing this well is both art and science. New users are greeted with a brief "what's new" tutorial in the app that introduces NOMI Insights (Figure 2) and are in complete control of their experience from that point forward.

Figure 2: NOMI Insights Presents Relevant and Timely Insights to Clients



Source: RBC

NOMI Insights are seamlessly integrated into RBC's mobile banking app and are available to all digital banking users with no configuration or setup required. Insights are triggered upon invocation, to ensure they are accurate to the moment and account for the most recent customer activity. Over time, NOMI learns from individual customer interactions to better personalize and prioritize insights for each customer. It also supports the ability to capture explicit user feedback it utilizes as part of the learning algorithm

NOMI Insights is based on Engage, a pre-built AI application from Personetics. Engage transforms user-specific data streams into real-time, predictive, and actionable insights and advice personalized for each user. Engage comes with a rich library of pre-built insights that include banking-specific triggers and workflows, with new insights added on an ongoing basis. RBC designed and tested multiple user scenarios using the Engage library.

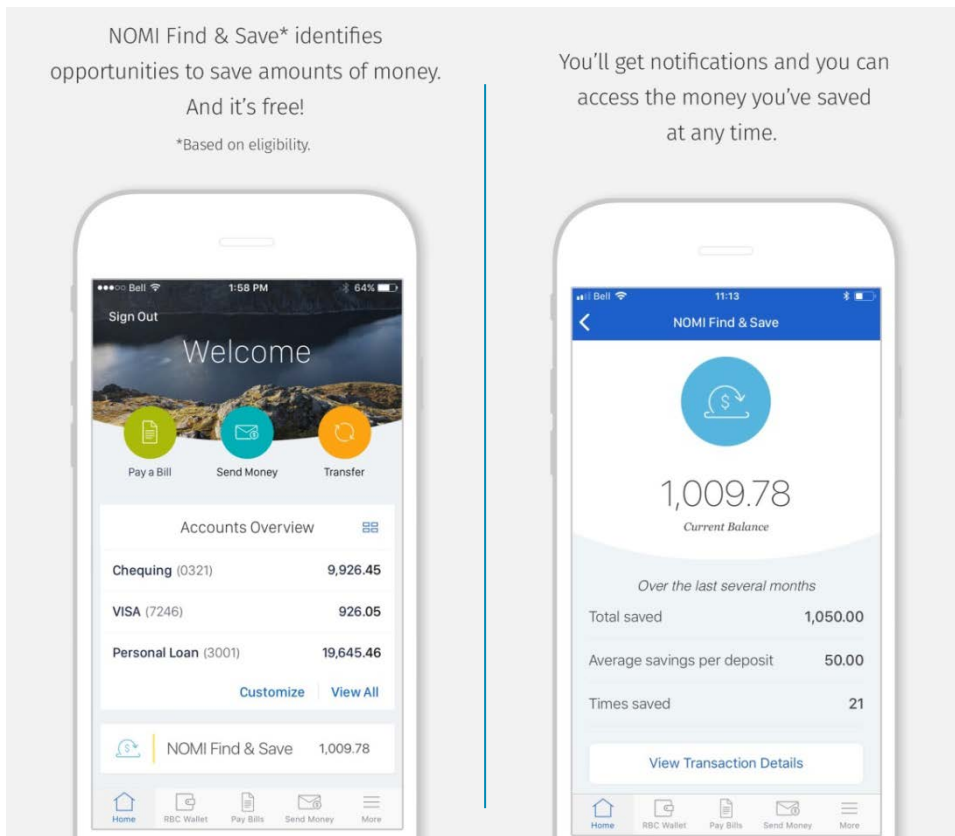
NOMI Find & Save

Savings accounts are clearly not a new idea. The problem is that many consumers don't use them productively. For the minority of consumers with disciplined budgeting, spending, and savings habits, traditional savings accounts work marvelously. The rest of humanity needs more. Minimally, they need suggestions for when and how much to save, and plenty of encouragement along the way. Consumers would be even better served by personalized and automated tools that transfer available funds to savings in the background — removing friction altogether. Absent this, most consumers simply aren't saving enough after meeting their day-to-day financial obligations to accumulate an emergency fund, leaving them vulnerable. According to Statistics Canada, the Canadian household savings rate in 2017 was barely 4% — down from roughly 12% ten years ago. Canadians aren't alone. The US household savings rate over the same period was just 3.2%.

Based on Personetics' ACT, an AI-powered, automated money management program, NOMI Find & Save is a highly personalized, self-adjusting automated savings account codesigned and created with RBC to help each customer effortlessly save. NOMI Find & Save makes saving simple and effortless by using predictive analytics to find pockets of money in a client's cash flow to automatically move into savings. With no effort or planning, they've saved money they didn't know they could. NOMI Find & Save never sets aside more savings than a client can afford, and clients can receive a push notification alerting them every time money is saved to help balance savings and day to day banking.

Like NOMI Insights, NOMI Find & Save is available to every RBC digital banking user and can be activated (or not) at each client's discretion within the RBC Mobile app (Figure 3).

Figure 3: NOMI Find & Save



Source: RBC

By continually analyzing the a client's finances, the service identifies opportunities to make progress towards savings goals — automatically executing transfers on behalf of RBC's clients — learning and optimizing these actions over time. In so doing, NOMI Find & Save creates its own virtuous circle (Figure 4).

Figure 4: NOMI Find & Save Creates a Virtuous Circle

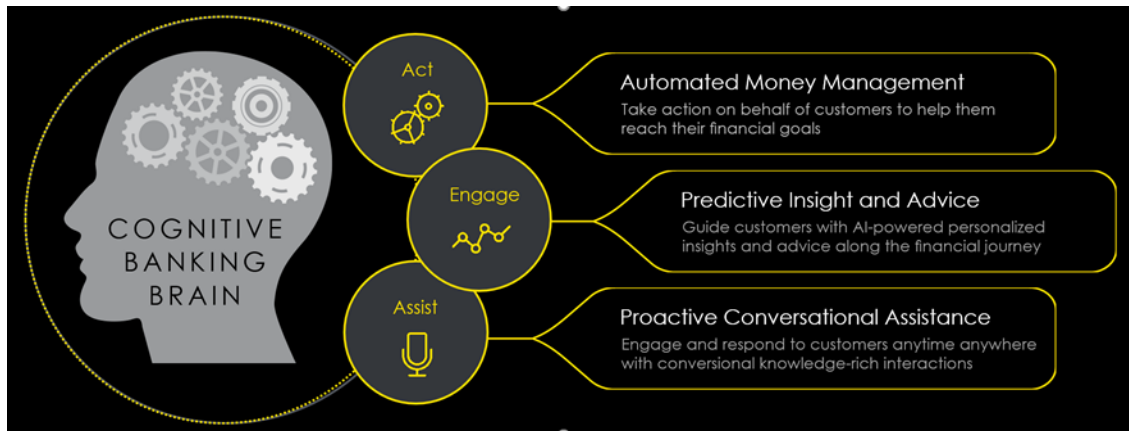


Source: RBC and Personetics

Making NOMI Happen

Bringing NOMI to life was a collective achievement between RBC and Personetics - the result of a collaborative partnership. RBC challenged the boundaries of what Personetics could do with their solution, and Personetics challenged the way RBC operates. With the establishment of the Digital Money Management product group within RBC's Digital team, RBC was committed to working hand-in-hand with Personetics, and motivated at the prospect of delivering valuable capabilities to help clients manage their money. Personetics brought a trio of applications and best-practice guidance (Figure 5), and RBC brought a passion for improving client financial wellbeing alongside deep experience with creating a compelling mobile user experience. Said simply, RBC wanted to do right by its clients.

Figure 5: Personetics Contributed a Trio of Content-Rich Applications



Source: Personetics

Note: RBC is not currently using Assist shown above

A core project group of approximately 20 people collaborated with numerous constituents across multiple IT groups, six business lines and Quality Engineering, along with Personetics, to deliver this initiative.

Formal project start was in mid 2016 following a successful proof-of-concept. Once the platform was installed on premise and baseline transactional data collected, RBC focused on creating a key set of insights known to be valuable. Specifically:

- Purchase analysis and a monthly review of spending by category. In most cases, categories are self-evident and are created and organized without client interaction — a far cry from first generation PFM tools. Insights targeted categories seeing the greatest change over past month.
- Real-time cash flow analysis, including ATM withdrawals.
- Just-in-time moments of truth, alerting clients of transactions that may merit scrutiny. For example, membership renewals, higher than usual recurring transactions (e.g., home insurance) or duplicate charges.
- Travel insights. NOMI was configured to provide a travel recap based on all transactions during a trip based on geolocation information of individual charges.

While RBC's Digital Money Management Group quickly coalesced around the types of insights clients would appreciate, there was ongoing debate around how to deliver them. This is where language and nuance matter. Money often evokes emotion, sometimes negatively so. Evoking emotional triggers was to be avoided. Seemingly trivial wording changes can mean the difference between a valuable and encouraging insight and an annoyance. This requires striking the "right tone." Doing so often requires a balance between being credible and being positively

embraced. This was achieved by ensuring a non-judgmental tone was maintained throughout the content, bringing awareness to clients and letting them come to their own conclusions about how and whether to action any given insight.

To navigate through these difficult waters, RBC conducted numerous A/B testing with a group of employees before expanding to a pilot test with clients. Five-hundred clients were offered a unique version of the RBC Mobile app which they would use for several months. A testing application exposed new functionality to a random selection and percentage of customers. RBC measured all aspects of customer interaction with the new app. Not only did this give RBC a quick and accurate view of customer utilization, it also helped ensure the technology stack could accommodate an unknown amount of interaction. Over time, RBC increased NOMI access to the remainder of its digital banking population. During this period, client demand grew out of peer networks and social media, without active promotion by the bank.

In parallel with A/B testing, RBC conducted thorough and ongoing usability testing — something it routinely does as part of its RBC Mobileapp development. The comparatively extensive research conducted over a period of six months generated nearly 200 pages of input which RBC then carefully implemented. This resulted in tweaking of content, placement, workflow, and language in parallel with overall requirements gathering and user experience design.

Both NOMI Insights and NOMI Find & Save were launched concurrently because they offer reinforcing value propositions. Usability testing confirmed the wisdom of this move, as 100% of NOMI Find & Save users interact with NOMI Insights. NOMI's formal launch involved a campaign targeting both clients and nonclients. This included social media, profiling within branches, mass market TV ads (including the Olympics), and print advertising.

Results and Lessons Learned

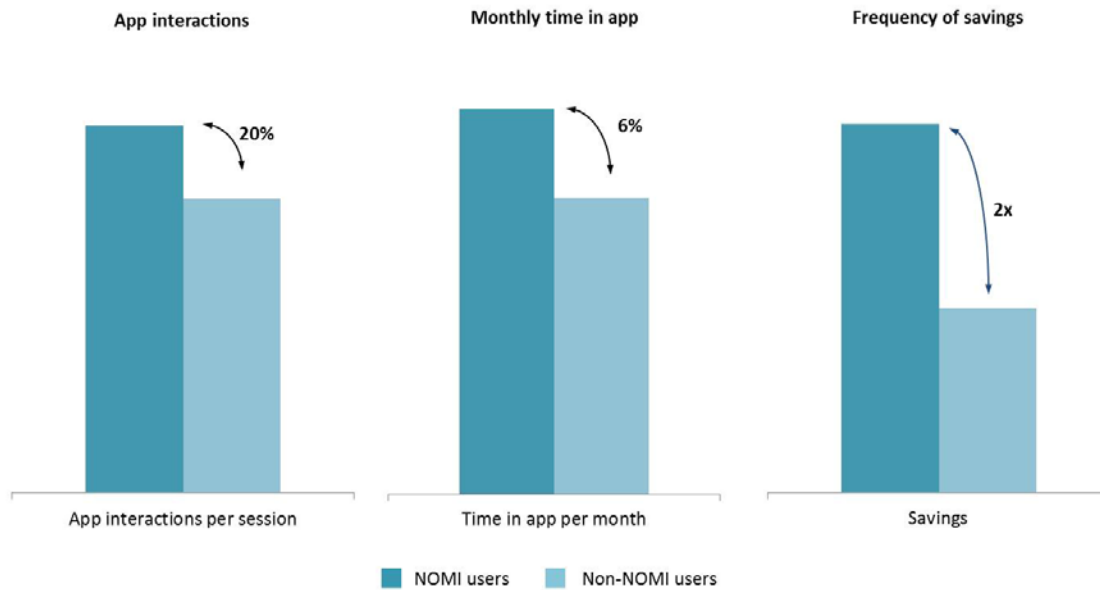
Prior to the launch, RBC had analytics on many aspects of digital utilization. Said simply, RBC knows how its clients interact digitally, so it had an established baseline. Evaluating NOMI's impact was measured in three basic ways:

1. **Drop-off rate:** This refers to the percentage of clients who interact with NOMI initially and subsequently stopped. Drop-off is a direct indication that something is amiss, because NOMI is interactive by design.
2. **Digital engagement:** RBC measures the extent to which NOMI users interact with the RBC Mobileapp compared to a control group. Both the number of interactions per session and time in app are tracked.
3. **Client feedback:** To measure client feedback, RBC conducts ongoing active listening using app ratings, client feedback through its assisted channels, social media listening, and subjective data.

Client longevity with NOMI suggests RBC's lengthy experimentation paid off. Since launch, the drop-off rate has been astonishingly low — well below 1%!

Digital engagement among NOMI users also suggests RBC is scoring with its clients. Average monthly app interaction among NOMI users is 20% higher than the control group. Monthly time in app among NOMI users is 6% longer than the control group. Additionally, NOMI Find & Save users save 2x more regularly than the control group did using traditional savings products — clear evidence of its efficacy (Figure 6).

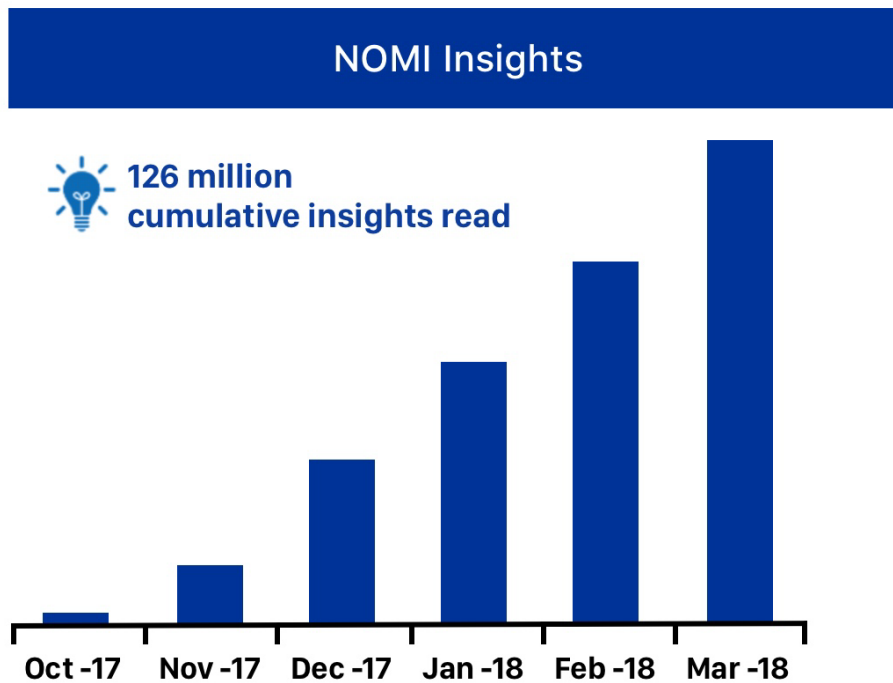
Figure 6: NOMI's Trio of Favorable Metrics



Source: RBC

NOMI offers interaction mechanisms that have little to do with money movement, per se. NOMI users began doing things that nonusers didn't. This translates into more sustainable client engagement. Since launch in fall 2017, RBC clients have read more than 126 million NOMI insights – clear evidence of strong client acceptance (Figure 7).

Figure 7: Cumulative NOMI Insights Read – Evidence of Client Acceptance



Source: RBC

While demonstrable evidence of increased digital engagement is gratifying, there's nothing quite like client feedback, which has been overwhelmingly positive and ongoing.

Lessons Learned

Valuable lessons can be learned from RBC's experience. Namely:

- Applying AI to improve customer engagement is both art and science. Language and context are both hugely important. AI is not easy. Done well, it takes significant experimentation and clear success criteria.
- Banks need to be themselves and remain consistent with their brand. Organizations shouldn't view AI as a way to appear hip or trendy if that is not their brand character. AI should be leveraged as a way to fulfill more meaningfully on your existing brand promise.
- If your bank is not actively experimenting with the use of AI for improving digital engagement, you are likely two years away from a compelling client experience.
- Initiatives like NOMI require a new way of working — one characterized by intense internal and external collaboration, rigorous experimentation, and continual improvement. The RBC team embraced this new way of working to deliver meaningful value to its client base.

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