

ABA Stonier Graduate School of Banking

2017 Capstone Project

***The Economics and Strategic Impact of
Interactive Teller Machines at Minnwest Bank***

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Executive Summary

Minnwest Bank is a Minnesota chartered community bank with \$1.6 billion in assets. It was formed in 1987 when the McVay family purchased seven rural banks from Norwest during the family farm crisis. It has since expanded to 25 locations in rural southern Minnesota, the Minneapolis/St. Paul metropolitan area, and Sioux Falls, South Dakota. Agricultural lending is Minnwest's core competency, historically comprising over 60 percent of the loan portfolio. Commercial credit is the fastest growing segment of the portfolio and has begun to outpace the size of the Ag portfolio. Consumer credit is only 5 percent of the loan portfolio.

Minnwest Corporation consolidated all six of its independent charters in 2014. This allowed the bank to pool its capital and have a consolidated regulatory and compliance organization. Since then, the bank has been seeking greater economies of scale through new technologies and unified processes. Minnwest has a strategic goal of growing seven percent annually by acquiring banks in slow-growth rural markets and organically growing the commercial market in metropolitan areas. However, the economics of running rural branches has become problematic. The population decline in many rural communities is reducing the demand for new services. At the same time, online banking has significantly reduced the number of transactions at the branch. Minnwest is examining ways to reduce the costs of rural branches, from changing staffing to reducing service hours.

One possibility is the deployment of Interactive Teller Machines (ITMs) at rural locations to increase staff utilization and expand services hours. ITMs combine an Automated Teller Machine (ATM) for cash management, document imaging for processing checks, and digital communications tools with interactive video sessions to perform customer transactions. The end

result is a fleet of drive-up or in-branch machines that are remotely staffed by highly trained tellers.

Thousands of ITMs have been deployed at over 300 financial institutions. They generally find success in metropolitan areas with high traffic. ITMs are frequently used in branch transformation strategies that leverage technology to reduce staffing and square footage. The fundamental question for Minnwest is whether an ITM installation can reduce the costs of running a rural branch through a reduction in labor expenses.

Unlike metropolitan locations, Minnwest’s rural branches have very low occupancy costs; there is little financial benefit to remodeling a branch simply to reduce its square footage. Moreover, Minnwest has contemplated branch closings, but the cost reduction may not compensate for the subsequent deposit run-off. A cost savings today simply becomes a customer acquisition expense in the future. Minnwest plans on running its existing rural branches and acquiring more, so finding a sustainable cost model is vital to its long term strategy.

A financial analysis was performed with an initial deployment of eight ITM machines. The total cost of ownership (TCO) is \$1,687,270 over five years, or \$42,182 per machine on an annual basis. This does not include the labor costs to staff the ITMs, or the infrastructure and management costs related to the Customer Care Center to house the remote tellers.

	Annual	5-Year Total	% of Total
One-Time Capital Expenses	\$818,690	\$818,690	49%
IT Infrastructure Costs	\$84,700	\$423,500	25%
ITM Maintenance Expenses	\$89,016	\$445,080	26%
5-Year Total Cost of Ownership		\$1,687,270	
Annual Cost		\$337,454	
Annual Cost Per ITM		\$42,182	

A multi-scenario analysis was performed against different branch deployments and staffing models. Minnwest's own compensation system was used to determine an average wage (including benefits and bonuses) for in-branch teller staff. A higher average wage was determined for tellers to staff the ITMs. The higher wage accounts for the enhanced skills required to provide a great customer experience in a remote session. The in-branch staffing models were then compared to ITM staffing models with different ITM-to-Teller ratios. For example, a high ratio of 4 ITM machines to a single ITM teller (4:1) would provide great efficiencies, but this optimistic model would not provide the same high-quality customer service experience as the 2.5:1 ratio preferred by most financial institutions.

The analysis consistently determined that ITMs would reduce labor costs, even with higher wage ITM tellers in place of lower wage in-branch staff. However, the high overhead costs of the ITMs erase these benefits. In fact, except for the most optimistic scenarios, Minnwest would lose money with an ITM deployment. ITMs do provide an efficient way of expanding branch service hours at rural locations, however, this creates a net increase in expenses to the bank regardless of the efficiencies created through ITMs. **Based upon these findings, the author cannot recommend an ITM deployment at Minnwest if cost reductions are the primary concern.**

Apart from the financial impact, the decision to deploy ITMs may rest on the non-financial factors and the bank's strategic plan. Industry studies indicate that most financial institutions deploy ITMs without performing a financial analysis, or implement them even after they fail to identify a positive return on investment. In these instances, the institution is implementing ITMs as part of a much larger strategic plan by redesigning branches, changing the branch footprint, and melding contemporary retail banking with online initiatives. While it is

difficult to determine if these strategies are creating a competitive edge, it is clear that the banks with the largest ITM fleets do gain some economies of scale. ITMs in modern, smaller branches never replace the transaction volume of the live tellers, but they do peel off enough counter transactions to reduce staffing requirements and allow bankers to focus on more complex customer interactions. The universal banker staffing model must be in place for this to work.

The customer and employee culture at Minnwest would be amenable to the introduction of ITMs. However, it would be an anathema to reject the bank's existing culture and drive ITM adoption to the exclusion of face-to-face transactions. In the words of one banker who decided to forgo in-branch ITMs, "if someone comes into the branch, they deserve to talk to a live person." As a bank that lies at the heart of many rural communities, the strong relationships fostered by Minnwest employees are a competitive advantage. Minnwest does not have the scale to be a least-cost provider of banking services, but it does strive to be the best community bank in the markets that it serves.

As such, the author concludes that an incremental ITM deployment does not sufficiently reduce branch costs and may not be a good fit for the culture at existing branches in Minnwest's traditional geographic footprint. However, Minnwest should revisit the ITM concept under three conditions. First, it wants to dramatically expand branch service hours. Second, the cost of ITMs and rural communications drop enough to change their economics. Finally, if Minnwest makes the strategic decision to open new, smaller branches to organically grow its geographic footprint. In all cases, the Customer Care Center must be established so that agents can efficiently support customers across multiple channels. This includes telephone, online, mobile, chat, email, and interactive teller machines.

Introduction & Background

Minnwest Corporation was formed in 1987 during the family farm crisis when M.D. “Pete” McVay purchased seven banks from Norwest Corporation. Over the next 25 years, Mr. McVay grew these rural Minnesota banks into at \$1.6 billion community bank with 25 locations.

Mr. McVay always had his heart in agriculture. Raised on a wheat and cattle farm in central Kansas, he graduated from Kansas State University where he studied animal husbandry and agricultural economics.¹ He joined Cargill right out of college where he worked in the Minneapolis Grain Exchange building. After a four-year tour as a U.S. Navy pilot in the Pacific during World War II, he returned to Cargill and led substantial growth in its domestic and international soybean business from 1950 to 1971.

By 1968, Mr. McVay became a group vice president and a member of Cargill’s board of directors. He was promoted to executive vice president two years later and chief operating officer in 1976. Mr. McVay was named Cargill’s president in 1977 and held the position until he reached the mandatory retirement age of 65 in 1984.²

As a board member for Norwest Corporation from 1976 to 1984, Mr. McVay saw the impact of the farm crisis on the banking industry.³ Norwest had agricultural loans of \$1.2 billion in 1981, representing seven percent of its portfolio. It had another \$1.2 billion in foreign market

¹ Hughlett, Mike. “Pete McVay broadened Cargill's horizons,” *Minneapolis Star Tribune*, March 11, 2011, <http://www.startribune.com/pete-mcvay-broadened-cargill-s-horizons/117827378/> (Accessed February 5, 2017).

² Hughlett.

³ Garrison-Sprenger, Nicole. “Billion-dollar bank goes local,” *Minneapolis/St. Paul Business Journal*, October 23, 2005, <http://www.bizjournals.com/twincities/stories/2005/10/24/story4.html> (Accessed February 5, 2017).

loans that were facing their own economic headwinds.⁴ These two issues caused Norwest's non-performing loans to increase 500 percent from 1983 to 1984. Norwest sought to shrink its agricultural loan portfolio, including eight banks in southern Minnesota and seven branches in South Dakota.⁵ While the sale would not make a substantial financial impact (1.6 percent of total assets),⁶ it did allow Norwest to evade some of the negative publicity caused by high profile family farm foreclosures and protests.⁷

Mr. McVay purchased seven of Norwest banks in January, 1987 under two separate holding companies with a combined asset base of approximately \$280 million and equity of \$8 million. Minnwest Corporation was held by Mr. McVay and his wife, Mary. Minnesota Valley was held by Mr. McVay's children.⁸ The use of separate holding companies reduced the regulatory burden with each company staying under the \$150 million asset threshold. The advantage disappeared as the banks grew, leading them to merge into Minnwest Corporation in 1995 with \$455 million in assets and \$34 million in capital.

⁴ Wikipedia, "Norwest Corporation", https://en.wikipedia.org/wiki/Norwest_Corporation, (Accessed February 5, 2017). Information corroborated by personal interviews with T. T. McVay, current Minnwest CEO, during September 2016.

⁵ Norwest Corporation, internal memo, June 30, 1987.

⁶ Norwest Corporation, "Norwest Announces Sales of Eight Minnesota Banks, Seven South Dakota Branches", Press Release, June 30, 1987.

⁷ Nebraska State Historical Society, "Foreclosures lead to violence," *Crisis in Agriculture*. <http://www.nebraskastudies.org> (Accessed February 5, 2017).

⁸ T.T. McVay and Kita McVay, personal interviews, September, 2016.

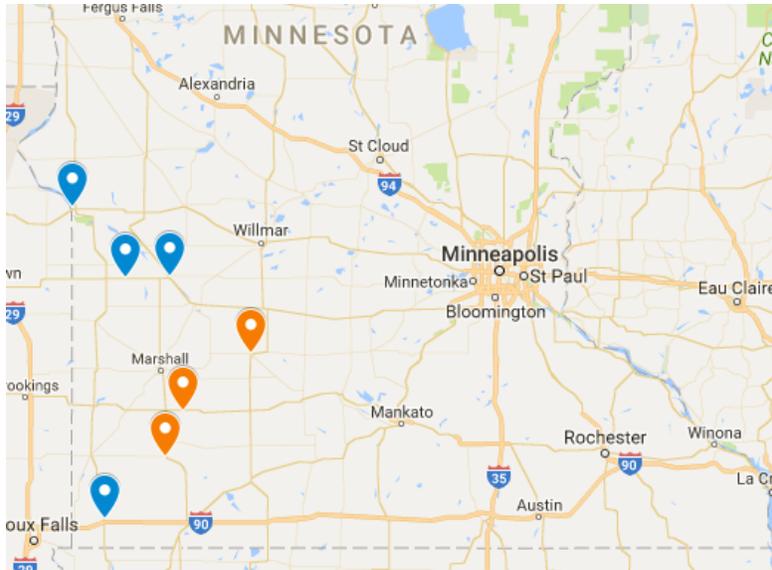


Figure 1: Original Minnwest footprint in 1987. Blue pins are Minnwest and Red pins are Minnesota Valley.

In addition to his corporate life, Mr. McVay continued to farm. He bred cattle and quarter horses on a farm in Mora, Minnesota that he purchased 1956. He also purchased a large tract of land in Western Australia in 1972, named it McMora, and developed it into one of the largest ranches in the region over the next 40 years.⁹ Mr. McVay passed away in 2011 at the age of 92 in Australia. The Mora and McMora farms continue to operate under the family business. Minnwest Corporation continues to be family owned and operated as well.

Minnwest grew through acquisitions and organic growth in rural Minnesota and had 20 locations by 2005. It tested the Minneapolis/St. Paul metro area in 1997 with a new branch in Eagan, a Minneapolis suburb. It made a stronger push into the metro market in 2006 by opening a new corporate headquarters in Minnetonka and purchasing a bank in Rochester to capitalize on

⁹ “McVay family patriarch passes away at the age of 92”, *Press Publications*, March 11, 2011, http://www.presspubs.com/article_7a690a90-0a3c-595a-911c-339a2dcb408d.html (Accessed February 5, 2017).

the growth of the Mayo Clinic. Minnwest had a strategic goal of adding two metro branches every three years.¹⁰

The financial crisis struck in 2008, forcing the bank to reassess its metro push. While the agricultural portfolio held up well, the metro portfolio was stressed by struggling home and commercial developers. Minnwest sold one of its new branches in Champlin to a competing bank. The Minnwest Metro charter held most of the problem assets, had poor CAMELS scores from the FDIC, and was operating under a consent order by April, 2010.¹¹ Regulators did not permit moving excess capital from healthy charters to Metro, so the family injected additional capital into Minnwest Corporation to meet regulatory requirements, along with a subordinated debt offering in September, 2011.¹²

Having survived the financial downturn, Minnwest combined all six of its charters into a single bank in May, 2014. While the charter merge would push Minnwest over the \$1 billion regulatory threshold, the combined capital structure enhanced the bank's safety and soundness while fostering better economies of scale. As of August, 2016, Minnwest has 25 locations, \$1.65 billion in assets, and \$181 million in equity capital. Since inception, Minnwest's average annual loan growth has been six percent and equity growth of nine percent. The strategic goals are to grow assets by seven percent per year, lower the efficiency ratio from the mid-60s to the low-to-mid 50s, and achieve an ROA/ROE that is consistent with the top quartile of peer banks.

¹⁰ Garrison-Sprenger.

¹¹ Pioneer Press. "Minnwest Bank Metro gets FDIC problem-loan directive," *Twin Cities Pioneer Press*, April 10, 2010. <http://www.twinciti.s.com/2010/04/26/regional-report-minnwest-bank-metro-gets-fdic-problem-loan-directive/> (Accessed February 5, 2017).

¹² PR Newswire. "Oak Ridge Financial Completes Offering for Minnwest Corporation," September 20, 2011. <http://www.prnewswire.com/news-releases/oak-ridge-financial-completes-offering-for-minnwest-corporation-130199533.html> (Accessed February 5, 2017).

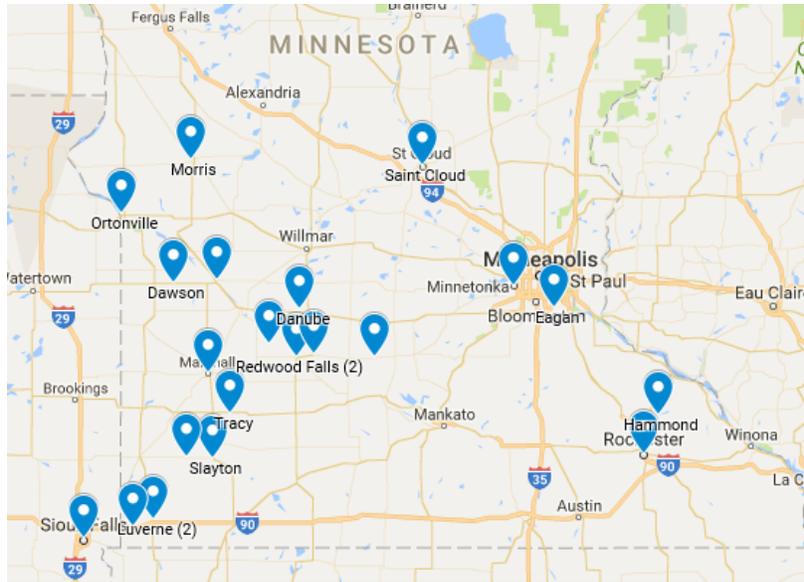


Figure 2: Minnwest's 2016 footprint of 25 locations. (Some pins represent multiple locations.)

Minnwest's mission is to serve family-owned farms and businesses. The bank's fundamental strategy is to reinvest profits for growth, acquire banks in slow-growth agricultural communities, and add *de novo* branches in centers of commerce to drive the commercial loan portfolio. Minnwest is a loan-driven bank designed to build a portfolio of Ag and commercial credits. As a result, Minnwest's non-interest income as a percentage of average assets is small compared to deposit-driven retail banks.

The agricultural market is Minnwest's core competency and has traditionally been over 70 percent of the loan portfolio. The primary target is industrial farmers in cash crops, hogs, and cattle. This includes related agricultural businesses like equipment, renderers, and farm supply. As of 2016, Minnwest is the second largest agricultural lender in the state of Minnesota.¹³ The largest lender, Bremer, is 6.5 times larger than Minnwest. Minnwest is the 33rd largest Ag lending bank in the country.

¹³ American Bankers Association, "Top 100 Farm Lenders Ranked by Volume," compiled from 3Q 2016 FDIC statistics. <http://www.aba.com/Tools/Research/Documents/Top100AgBanksbyDollarVolume.pdf>

Minnwest's second market specializes in collateral-based commercial and SBA loans in non-rural communities. This includes the Twin Cities, Rochester, and St. Cloud markets in Minnesota and the Sioux Falls, South Dakota market. Areas of specialty lending include senior living, hotels, suburban apartments, and small retail centers. The commercial portfolio has consistently grown faster than the agricultural sector in the last 15 years. The commercial portfolio is now 55 percent of assets, agriculture is 40 percent, and consumer is 5 percent.

At its core, Minnwest is a community bank with deep roots in its rural footprint. Some of its branches were established in the late 1880s. It has the largest deposit market share in 6 of the 16 counties it serves and is one of the top three banks in 10 of those 16 counties.¹⁴ Unfortunately, most of those counties have aging demographics and little to no population growth. Minnwest must find cost effective ways to gather additional core deposits to facilitate loan growth. The strategic effort to expand online channels and marketing may attract some deposits from customers outside of the existing branch footprint.

However, growing the bank at a faster rate than the overall economy will also require acquisitions, especially in the rural markets that match Minnwest's core competency of agricultural lending. The challenge is to operate a rural branch network in an economical way. The growth of online banking has created a precipitous drop in branch transactions and Minnwest has been pressed to limit services and hours to keep branches open. The purpose of this paper is to determine if Interactive Teller Machines (ITMs) can provide an opportunity to drive better economics for rural branches, while providing better service offerings for the communities Minnwest serves.

¹⁴ SNL Analytics (S&P Global Intelligence) Depository market share analysis compiled in 3Q 2016. (www.snl.com)

ITM Overview

An Interactive Teller Machine (ITM) creates the hybrid experience of using an Automated Teller Machine (ATM) and working with a live teller. Sometimes called a virtual teller, ITMs contain the machine automation for handling currency, accepting checks, scanning identification, printing receipts, and even generating cashier's checks. They also add a human element to the transaction through digital communication tools that connect with a remote, live person within the bank. Similar to using Skype on a personal computer, ITMs allow voice communication (over a speaker or a private handset), video conferencing, and chat.

For example, a contemporary ITM from NCR allows a customer to quickly scan their driver's license for identification and then insert a stack of ten checks for deposit. While the customer is having an interactive video conference with the live teller at a central contact center, the machine automatically images both sides of each check, generates a total, and presents the check images to the remote teller. The teller quickly looks for anomalies and verifies that the checks are properly endorsed. If a particular check is not correctly endorsed, the teller can instruct the machine to return that specific check to the customer. The teller provides friendly and personalized instruction on how to endorse the check before the customer inserts it back into the machine for re-imaging.



Figure 3 - A customer using an NCR ITM. Note the video conferencing equipment, the signature pad on the lower-right, and the ID scanner on the lower-left.¹⁵

The premise of ITMs is to substantially reduce the cost of running a branch. Rather than staffing a branch to cover peak volume, breaks, lunches, and vacations, banks can direct transactions to a remote group of tellers that have higher utilization and can serve multiple branches at the same time. Moreover, ITMs act as a cash recycler, currency counter, and teller deposit capture in a single device. Labor associated with cash management, balancing, and other back room operations are reduced at the branch level.

Remote tellers are specifically trained to operate the ITM machine and communicate with customers through a remote session. The screen at the teller workstation is reflected upwards into a one-way mirror. The video conferencing camera is then positioned behind the mirror so the teller is looking straight into the camera while working on their own computer. This ensures

¹⁵ NCR Corporate Website. <http://www.ncr.com/financial-services/branch-transformation/ncr-interactive-services/aptra-interactive-teller> (Accessed February 12, 2017).

that the teller's eyes are always looking straight at the customer and providing full attention while simultaneously controlling the ITM. If a customer has problems using the machine, the teller can provide a remote tour of the ITM to the customer by lighting up key components such as card slots, currency slots, and scanners. To preserve privacy, the customer can move between a speakerphone, a headset, and instant messaging.¹⁶

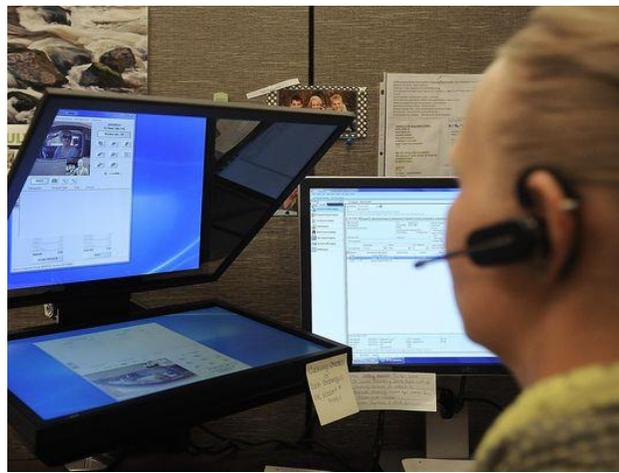


Figure 4 - A bank employee in an ITM session. The camera sits behind the upper, reflected screen.

Since the ITM manages all the currency, imaging, balancing, and receipts, the remote teller has more time to interact with the customer. The additional time can also be used for cross-selling and information sharing. Just like a live teller, customers with consistent routines will see the same remote teller at the same time of day, allowing them to build the same customer rapport as if they were physically face-to-face.¹⁷

¹⁶ The features of the ITM and the teller workstation were demonstrated to the author in a product lab provided by Case Financial, Inc. in Anoka, Minnesota in June, 2016.

¹⁷ Epstein, Victor. "Interactive bank tellers help rural banks expand service," *USA Today*, April 7, 2014. <http://www.usatoday.com/story/tech/2014/04/07/interactive-bank-tellers/7416273/> (Accessed February 12, 2017)

The ITM can also be used as a standard ATM when remote tellers are not available, or the customer simply wants to get cash without interacting with a live person. Many financial institutions initially deploy ITMs at drive-up lanes, and then later introduce them to the bank's lobby.¹⁸

Branch Transformation

Branch transaction volumes have fallen precipitously both at a national level and at Minnwest.¹⁹ Online banking, mobile banking, direct deposit, and debit cards have collectively removed much of the paper from the banking process and substantially reduced the need for customers to come into the branch on a regular basis. At the same time, customer surveys indicate that branches are important for providing advice, new products, and projecting an image of stability and community involvement.²⁰ As such, banks are struggling with the declining economics of maintaining a branch while meeting customer expectations for full service, expanded hours, and quantity of branches.

These pressures have compelled banks to reexamine the size and layout of their branches.²¹ Newly constructed micro branches are just a few hundred square feet in size and house two to three employees at any given time. A greeter meets customers and identifies their needs. They either handle the issue on the spot or transfer the customer to a universal banker who can handle most types of product sales. Traditional teller windows are being replaced by open air pods with a multi-user cash recycler, allowing bank employees to cover each other

¹⁸ Case.

¹⁹ Deen, Meredith. "Branch of the Future Resembles Branch of Today," *The Financial Brand*. March 25, 2016. <https://thefinancialbrand.com/58023/branch-of-the-future-resembles-today/> (Accessed February 12, 2017.)

²⁰ Pilcher, Jeffrey. "Banks Struggle to Close More Branches as Mobile Banking Plateaus," *The Financial Brand*, December 12, 2016. <https://thefinancialbrand.com/62752/mobile-banking-branches-strategy/> (Accessed February 12, 2017.)

²¹ Deen.

depending on demand or time of day. Some of the newer branches also contain ITMs. They augment the live teller during peak periods or even replace the live teller for common transactions so on premise bank employees can focus on sales and complex transactions.



Figure 5 - A micro branch with a central desk for a greeter, ITMs in the background, and a sit-down desk for personal bankers. Note the tablet-driven kiosk on the right.²²

John Hyche, a branch design consultant from Level5, is seeing the evolution of a hub-and-spoke branch model, where one of four branch types is deployed to support the business case of the particular market.²³

- **Cornerstone Branches** are the large, full-service offices that make a brand statement for the bank in a particular market. It is staffed by universal bankers and subject matter experts for business lines.

²² Pilcher, Jeffrey. "Retail Banking Branch Design Showcase – Fall 2016," *The Financial Brand*, September 26, 2016. <https://thefinancialbrand.com/61331/bank-branch-design-showcase-fall-2016/> (Accessed February 12, 2017.)

²³ Hyche, John. "Future bank branches will work in a hub-and-spoke relationship," *Community Bank Insight*. June 19, 2015. <https://www.cbinsight.com/future-bank-branches-will-work-in-a-hub-and-spoke-relationship.html> (Accessed February 12, 2017.)

- **Community Branches** are smaller, but offer most of the same services as cornerstone branches. They are showcases of automation and digital bank technology. Subject matter experts can meet at the bank by appointment or video conference.
- **Micro Branches** are largely automated, have few staff, and are located in storefronts or leased spaces. They are transaction-focused, but offer some staff for sales and complex transactions.
- **Self-Service Branches** are fully automated, have no employees, are heavily branded, and usually rely on ITM deployment. They are good for providing extended service hours in “outpost” areas of the branch footprint.

In this model, the use of ITMs is inversely proportional to the physical size of the branch. ITMs are a key component of making smaller branches viable and similarly allowing the bank to deploy different types of branches in a surgical manner to fit a specific purpose. Therefore, ITMs should not be generically deployed to all branches, but strategically deployed based upon an overarching long-term plan for the bank’s branch footprint.

ITMs at Minnwest Bank

Minnwest management has contemplated the use of ITMs for several years, but, until this paper, an in-depth analysis has not been completed. The traditional ITM deployment scenario targets high-volume urban locations where the ITM can assist during peak periods and allow customers an alternative to waiting in line. This allows branch management to schedule a consistent number of staff throughout the day and avoid the high labor cost to accommodate peak volume. This is not the primary issue at most Minnwest locations. Instead, the bank is trying to rationalize small branches in small communities.

The decline of counter transactions has created overstaffing at branches, but a large number of tellers still persist to support peaks, vacations, and lunches. Some rural branches also suffer from a lack of new sales in communities with declining populations. As a partial response, Minnwest plans to combine multiple roles together into a single universal banker role.

For the smallest branches, Minnwest's response has been a gradual reduction of service hours and product offerings until customers push back. This is especially true for Beaver Creek, Lake Wilson, and Morton. They are only open a few hours a day and only provide depository transactions. Minnwest has discussed closing some of these branches, but there is deep concern over deposit run off, loss of market presence, and potential Community Reinvestment Act (CRA) restrictions since these are the only banks in the community.

The primary goal for implementing ITMs at Minnwest is to improve the economics of operating rural branches and simultaneously improving the service hours and offerings for customers. As the Chief Operating Officer, I would be responsible for vendor selection, contract negotiation, project management, implementation, and post-implementation maintenance. I would work with the head of retail banking to fully equip, staff, and train a support center to house the remote tellers, which require its own infrastructure, office space, and technology tools.

In addition, an ITM rollout needs to be part of the larger strategic plan for the bank, which includes geographic expansion and the branch footprint. Minnwest currently does not have dedicated staff for this role, so I would need to step into this role in an ad hoc basis to ensure we act within our strategic goals. I am currently the leader of the bank's Technology Steering Committee and can funnel most of these discussions through this group. It contains

twelve members across every element of the bank and executive leadership, including the CEO, CFO, COO, CCO, CIO, CSO, and CRMO.

Strategic Implications

ITMs could impact three areas of Minnwest's strategy. In order of importance, the first is bank efficiency. ITMs could provide a quicker path to the benchmark goals of having an ROA, ROE, and an efficiency ratio within the top 25 percent of peer banks. This scenario assumes that ITMs would be deployed to existing branch locations and would have an accretive impact to bank earnings through lower labor costs and improved deposit gathering.

The second impact area, acquisition, would be viable only if the first area of bank efficiency was validated. In this scenario, ITMs could be deployed to newly acquired banks and branches as part of the branch conversion.

The third impact area, branch out, would allow the bank to expand its geographic footprint into new communities. Since Minnwest also has an online banking initiative to acquire out-of-market customers, branching out with ITMs may only make economic sense in communities within our market area to leverage network effects. ITMs could be deployed in self-service or micro branches. Again, with the exception of handling currency, online platforms are starting to provide the same capabilities as ITMs and Minnwest may need to decide whether to concentrate its spending efforts on ITMs or online banking.

ITM's won't have a fundamental impact on the bank's core competencies in agricultural and commercial lending. As such, it has limited value in business development other than having a wider market presence to bolster the brand and community involvement. However, the bank is fundamentally "loaned out" and core deposit growth is a requirement for both fueling

loan growth and staying within guidelines for wholesale funding. It should be evaluated in the context of competing channels for deposit growth, including online activities and full-scale branches. This could be effective if the model supports putting in ITMs in small communities that had no other depository institution within a reasonable proximity.

Finally, Minnwest needs to determine if ITMs are a long-term strategic solution, or a transition step to another objective. For example, Minnwest could surgically place ITMs in a few locations to reduce costs for branches and maintain existing service hours. This transition step would avoid any large capital investments to remodel the branch. Conversely, the bank could decide that ITMs are the long term solution for branches in specific markets. In this case, the branch would be designed around the ITM.

Implementation

An ITM Implementation at Minnwest is predicated on two items: a facility to house the remote teller team, and the necessary infrastructure to support ITM communications.

Minnwest does not have a central call center or a customer service center. Since the bank traditionally only met with customers in face-to-face interactions, customer support hours ended when the branch closed. Moreover, phone support was distributed across the multiple charters – customers called their local branch. This has proven problematic in recent years. First, the quality of customer service has been inconsistent and erratic. Second, customers are demanding after-hours support, especially when they have questions regarding online banking.

Minnwest is currently building a pilot for a Customer Care Center (CCC) that will initially provide general customer support and help with online banking issues. This group may be geographically distributed at first, but the long-term goal is to have a centralized location to

foster a strong culture of training and customer support. The group will slowly expand to support customers for online account opening, online loan applications, email, chat, social media, and potentially video conferencing. This group would be the remote tellers in an ITM deployment.

The CCC pilot is scheduled for Q1 2017 with the initial launch of the CCC in Q3 or Q4. It would take until late 2018 for the CCC team to mature enough to support the existing support needs, new online channels, and be ready to support ITMs. This effort would be a collaboration of retail banking, operations, and IT.

In addition, Minnwest will be performing a deep analysis of its branch communications in 2017, which includes increased bandwidth, redundant connections to handle service interruptions, and load balancing requests between Minnwest's two data centers. This effort is being managed by the IT department. Since many Minnwest locations are in rural locations, it can be expensive and time consuming to build out and implement new circuits. Like the call center, it will be late 2017 before most branches would have the infrastructure to support ITMs.

Finally, an ITM deployment requires capital for the machines and modifications to the bank's construction. 2017 capital budgets are defined, along with branch improvement plans. As such, the bank could support the initial deployment of a few ITMs during late 2018, but the bulk of the machines would be implemented in 2019, or as dictated by scheduled branch remodels and acquisitions.

Financial Impact

This section provides a financial analysis of the impact of ITMs at Minnwest. The impact is primarily on the initial expense and ongoing support, offset by expense reductions in labor and occupancy costs.

As described in the previous section, vendors claim that ITMs are great tools for cross-selling products. This financial analysis will ignore these claims under the pretense that cross-selling efforts will occur regardless of an ITM solution. For example, Minnwest is already implementing marketing campaigns on ATMs and cross-selling tools at the teller window. Furthermore, identifying a causal, quantitative relationship between new ITMs and sales is inherently problematic and will be ignored.

It is also difficult to quantify the impact that ITMs would have on gathering and retaining deposits. As described earlier, this is a key strategic goal for Minnwest, but the impact of ITMs would largely follow assumptions based upon anecdotal input from other institutions.

There is a potential opportunity to keep or gather additional deposits based upon extended service hours. For example, a branch ITM could offer banking services up to 10 pm Monday through Saturday, a service window that far exceeds competitors in Minnwest's rural markets. The greater availability may induce some depositors to move their money to Minnwest from the competition. This could generate sales and feed into other banking products as well. This scenario will be discussed in the next section, but will not have a major impact in this analysis.

Vendor Selection

Two vendors were examined for this analysis. Interactive teller systems from Diebold were examined at the Fiserv Forum conference in April, 2016. These systems included an integrated screen and scanning surface that allowed customers to lay out multiple checks at the same time on a flat surface. The customer would then flip the checks over to scan the other side. The surface also allowed for non-teller transactions, such as loan applications. Unfortunately, all of these systems were prototypes. None had entered production and pricing was not available.

The integrated solution from NCR is used for the basis of this analysis. NCR has been in the interactive teller space for almost a decade and has placed thousands of ITMs at over 300 financial institutions. NCR also owns Digital Insight (DI), the online banking platform that Minnwest is considering. Links between the NCR and DI platforms allow customers to pre-stage transactions in online banking and then quickly complete the transaction at the teller machine. A common example is a customer waving their phone in front of an ATM to dispense cash using NFC technology.

A future release of DI online banking will provide video conferencing through the mobile banking application to provide customer support. As such, the infrastructure created for ITMs could also support interactive sessions in mobile banking. The same care center agents could support both channels. To bolster this cross-over experience, Digital Insight is offering service credits for NCR ITMs; signing a DI contract will provide over \$50,000 in credits that can offset the cost of ITM hardware. These credits are not included in this analysis since Minnwest is not currently in a position to sign a new online banking contract.

However, these cross-over scenarios are important to consider. If, for example, ITMs are simply an interim step in the ultimate demise of small branches, the bank can re-purpose its non-branch infrastructure investments to support a better online banking experience.

Implementation Size and Economies of Scale

The size of the ITM implementation has an important impact on expenses, economies of scale, and potential payback. Based upon discussions with vendors and other financial institutions, the minimum viable deployment size is five ITMs. The suggested ideal size for an initial deployment is eight ITMs. This provides enough scale to cover infrastructure expenses, a staff of two to three agents, and a suggested payback period of approximately 3.5 years.

Once a bank reaches 20 ITMs, it has enough scale to justify integration with the bank's core. Integration allows the automated flow of information from the ITM software into the bank's teller management system to speed up transactions and reduce errors. Without this integration, the remote teller runs the ITM software alongside the bank's existing teller software on the same screen. This requires the double-entry of ITM transactions into the teller software, requiring end-of-day balancing and time for error correction and auditing.

Additional ITMs will require additional servers to provide scalability and disaster recovery. This analysis is based on three servers to support eight ITMs. A very large ITM deployment (over 100) would use up to seven servers.²⁴

Cost Drivers

ITM expenses fall into four major categories:

²⁴ NCR. "Interactive Teller System Requirements, Revision 8.4," February 3, 2016.

One-Time Capital Expenditures: This includes the cost for the call center equipment, ITM machines, and any related construction costs. Construction costs may be small (i.e. swapping out an in-wall ATM for a larger in-wall ITM), or quite substantial (i.e. building a custom outdoor enclosure for drive-ups or a cantilevered ITM teller pod inside the branch). The list price of just the ITM machine will range from \$69,000 to \$106,000 depending upon features (coin handling, cashier check printing, etc.), location (indoor vs. outdoor), and orientation (through-the-wall, stand-alone, or cantilevered). Implementation, training, and consulting fees incurred up to the point of going into production will be capitalized.

On-Going Maintenance Expenses: Includes annual ITM maintenance fees, software maintenance fees, consulting fees, and training. Expenses are incurred per ITM and per agent.

IT Infrastructure Expenses: IT costs include the servers and storage to run the whole solution, along with the data circuits required to implement the video and transaction communications between the ITMs and the call center. Minnwest uses two different data centers with a virtualized server infrastructure (VMware). As such, this analysis will not include the purchase of physical servers, operating system licenses, or dedicated storage. An estimate for incremental expenses on the existing compute and storage capacity is included.

Additional servers will also increase the load on security systems, backup requirements, auditing, administration, and high-availability. The solution contains some redundancy to handle the failure of individual servers, but significant outage scenarios need to be integrated in the bank's Business Continuity Plan. The bank will need to decide whether ITMs are considered mission critical for disaster recovery purposes. Since these are customer-facing solutions and a dependency for branch operations, the author assumes that resiliency will be a high priority. As

such, capacity for ITM servers in one data center needs to be duplicated in the secondary data center to allow a roll-over during a site failure. Contingency plans for remote workers are also required to handle an outage at the Customer Care Center and when agents are not able to establish an ITM connection. These scenarios are included in the financial analysis estimates.

It is estimated that each ITM requires 800 kbps of sustained, synchronous data bandwidth to have a quality connection to the agent. This includes video, voice, and the data needs to drive the transactional software. These synchronous connections also require the same download and upload speeds to maintain video quality, meaning that lower-cost DSL and cable connections are not sufficient because upload speeds are normally a fraction of download speeds. Since many locations will use two ITMs (one in lobby and one in the drive up), this implies the equivalent of a 1.544 Mbps T1 connection. It is unwise to assume that the branches can absorb this volume with existing data connectivity, especially since some branches are only running a 3 Mbps connection to support all branch activity (including voice). The ITM bandwidth needs at the branch need to be matched at the Customer Care Center.

An estimated bandwidth expense is included for each branch in the analysis. For some branches, the cost will be small; the bank can increase the bandwidth on an existing connection without incurring additional circuit or equipment expenses. However, the cost can be significant in ultra-rural markets. For these locations, the cost of the data pipe alone may eliminate the economic benefit of deploying an ITM.

Operating Expenses: These costs are primarily the labor costs of the remote tellers. The assumption is that ITM tellers would be hosted out of the Customer Care Center so occupancy

costs would be negligible. The number of remote tellers would be small (three to five) and they would be cross-trained to support other customer support tasks when the ITMs are idle.

Capacity planning scenarios indicate that a single agent can support two to three ITMs at once. For the purpose of this analysis, an agent will support two ITMs during peak periods (i.e. lunch) and three ITMs during non-peak hours (afternoons). For ITMs supporting extended service hours (past 6 pm on weekdays), a ratio of four to one could be used. No Minnwest branch currently operates past 6 pm on weekdays and noon on Saturdays.

Utilities expenses are negligible and will be ignored. It is assumed that an ITM will replace an existing ATM and utility costs are roughly equivalent. Included in the ITM purchase is the ability to “dual rail” the ITMs – they can be used as an ITM during service hours and flip over to ATM mode after hours. Moreover, non-customers and customers withdrawing cash can elect to run the whole transaction in ATM mode, even if a remote agent were available.

Case Financial, an ITM vendor, recommends that ITMs be installed in pairs to allow redundancy for machine downtime. The mechanical innards of ITMs are similar to ATMs and have a similar service uptime. While the service record is generally quite good, there is risk of an entire branch being out of service if the sole ITM is down. Because of the low transaction volume and large expense of the ITMs, this recommendation is ignored in the analysis. It should be considered if the ITM is installed in a high volume branch with limited service redundancy.

Breakdown of Non-Operating Expenses

The following four tables break down the non-operating costs of implementing an ITM solution with eight machines at seven different locations. The locations used in this analysis have been identified as problematic in previous efficiency studies by external consultants.

Table 1 – ITM Equipment & Installation

Location	Type	ITM	Construction	Install	
Montevideo	Interior Walk-Up	\$69,750	\$8,000	\$8,140	\$85,890
Montevideo	TTW Drive-Up	\$77,400	\$10,000	\$8,140	\$95,540
Morris	TTW Interior	\$75,600	\$3,000	\$8,140	\$86,740
Morton	Interior Walk-Up	\$69,750	\$3,000	\$8,140	\$80,890
Lake Wilson	Interior Walk-Up	\$69,750	\$3,000	\$8,140	\$80,890
Beaver Creek	TTW Drive-Up	\$77,400	\$5,000	\$8,140	\$90,540
Minnetonka	Stand-Alone Drive-Up	\$79,560	\$3,000	\$8,140	\$90,700
Redwood East	Stand-Alone Drive-Up	\$79,560	\$3,000	\$8,140	\$90,700
Call Center	Workstations for 3 agents				\$8,850
Total for machines and installation					\$701,890

Table 2 - One-Time Set-Up Expenses

Requirements Gathering	\$11,000
Project Management, Training, and Implementation	\$40,000
ATM Rail & Branding	\$13,000
NCR Server Software	\$49,800
Adobe Media Server	\$3,000
Total ITM Set-up and project implementation costs	\$116,800

Table 3 - Ongoing Annual Expenses

IT Infrastructure Costs		
Est. cost for 4 virtual servers		\$12,000
Duplicate capacity for DR and offsite backups		\$10,000
SQL Server Licenses		\$1,500
Monte, Minnetonka	\$400/mo ea.	\$9,600
Redwood East	\$500/mo	\$6,000
BC, Morris, LW, Morton	\$950/mo ea.	\$45,600
Annual IT Infrastructure Costs		\$84,700
Annual ITM Maintenance Expenses		
NCR Server Maintenance		\$4,600
Per ITM Software and Mgmt. Maintenance	\$10,552	\$84,416
Total Annual ITM Maintenance Expenses		\$89,016
Total Annual IT & ITM Expenses		\$173,716

The next table consolidates all of the non-operating costs and projects a five-year total cost of ownership (TCO) value. TCO is useful for identifying the all-in average annual cost of ITMs. TCO does not consider cash flows or net present value to determine if the project meets a hurdle rate for cost of capital. However, it is useful for identifying the total cost of the project and identifying a payback period. The analysis so far suggests that the average ITM needs to create \$42,182 in annual savings to break even.

Table 4 - Total 5-Year Non-Operating Expenses

	Annual	5-Year Total	% of Total
One-Time Capital Expenses	\$818,690	\$818,690	49%
IT Infrastructure Costs	\$84,700	\$423,500	25%
ITM Maintenance Expenses	\$89,016	\$445,080	26%
5-Year Total Cost of Ownership		\$1,687,270	
Annual Cost		\$337,454	
Annual Cost Per ITM		\$42,182	

Labor Assumptions

Minnwest determines employee compensation using a midpoint system, whereby salary studies of competitors and market rates identify a recommended wage for each position (the midpoint). The midpoint also defines the lower bound (20 percent below midpoint) and the upper bound (20 percent above midpoint) in compensation for each position.

In addition, there can be two midpoints for the same position based upon location. The midpoints for metro area locations (e.g. Twin Cities, Sioux Falls, and St. Cloud) run 10 to 22 percent higher than the same position for an outstate or rural location. The premium increases with the skill required in the position. For example, a Teller I position has an 11 percent premium, while a Teller III position has a 17 percent premium.

Midpoints are adjusted annually. The merit increase system combines the annual review score with a person's midpoint position. Higher increases are given for persons below the midpoint, and lower increases are given to those above. The end result is that wages normalize to the midpoint over time and are a good proxy for an average wage.

ITMs will generally replace Teller and Personal Banker I & II positions within the branch. The Customer Care Center will likely be located in a metro area and require the skills and experience of Personal Banker levels II or III. Best practices suggest that ITM tellers should be of high-caliber and able to overcome the disadvantage of the remote experience with excellent communication skills. As such, lower-cost branch labor will be replaced by higher-cost Care Center staff. The wage differential should be offset by the ability for a Care Center agent to support multiple ITMs. Table 5 shows the 2016 wages in the midpoint system. The last two columns include an annual incentive bonus (average is 12 percent of base with 60 percent average payout) and a 25 percent wage premium to support benefits and taxes.

Table 5 - Minnwest 2016 Midpoints

Position	Metro	Non-Metro	All-Location Avg.	Avg. + Bonus	Fully Burdened
Teller III	\$20.50	\$17.45	\$18.98	\$20.34	\$25.43
Teller II	\$16.25	\$14.30	\$15.28	\$16.37	\$20.47
Teller I	\$13.45	\$12.15	\$12.80	\$13.72	\$17.15
Average for Tellers	\$16.73	\$14.63	\$15.68	\$16.81	\$21.02
Personal Banker III	\$22.30	\$20.30	\$21.30	\$22.83	\$28.54
Personal Banker II	\$21.10	\$17.35	\$19.23	\$20.61	\$25.76
Personal Banker I	\$18.00	\$14.75	\$16.38	\$17.55	\$21.94
Average for PBs I & II	\$19.55	\$16.05	\$17.80	\$19.08	\$23.85
Avg. - Tellers, PBs I & II					\$22.43
Weighted Avg. - Tellers, PBs					\$22.00
Avg. for Metro PBs II & III	\$21.70			\$23.26	\$29.08

Minnwest will be moving to a universal banker model which combines the teller position with many personal banker activities. ITMs would take many of the simple transactions, reduce the need for tellers, and keep the complex tasks commonly associated with a Personal Banker III. Therefore, the blended rate for the branch positions offset by ITMs would be \$22.43. Since there are more tellers than personal bankers (73 to 39), the weighted average wage is \$22.00. The blended wage rate for remote ITM tellers is estimated at \$29.08.

Branch Analysis

The primary goal of this analysis is to see if ITMs can effectively be used in low-volume, rural branches. A few different scenarios are presented here to determine the benefit. First, three of bank’s lowest volume branches are compared; they have limited service hours each week and low transaction amounts. The following table identifies the estimated number of labor hours based upon current staffing, along with the associated labor expenses. The hours per week are higher than the service hours because Minnwest pays some employees to travel between branches during the day. Annual hours contains some bank holiday adjustments.

Location	Hours	Hours/Week	Annual Hours	Annual Labor	Trans/Day
Beaver Creek	M-F, 9-Noon	20	990	\$20,809.80	12.24
Morton	M,W,F, 9a-1p	13.5	682	\$14,335.64	18.67
Lake Wilson	M-F, 8:30a-3p; Sa, 8:30a-Noon	31	1587	\$33,358.74	41.77
Total		64.5	3259	\$68,504.18	72.68

The next table compares the teller hours at the physical location to the hours of an ITM teller with different ITM-to-teller ratios. Based upon straight transaction volume, a single ITM teller could handle all the locations (3:1 ratio). However, hourly statistics reveal peak periods

across all branches within the first hour of opening. To avoid excessive queuing, a lower ratio is recommended. A 2:1 ratio is commonly used as an industry norm.

ITM Teller Ratio	ITM Teller Hours	ITM Teller \$	Savings	Avg Annual ITM TCO	Net Benefit
2 ITMs per Teller	1629.5	\$47,385.86	\$21,118.32	\$126,545	-\$105,426.93
2.5 ITMs per Teller	1303.6	\$37,908.69	\$30,595.49	\$126,545	-\$95,949.76
3 ITMs per Teller	1086.3	\$31,590.57	\$36,913.61	\$126,545	-\$89,631.64

While there is a labor saving regardless of the ratio, the savings disappear once the annual TCO for the machines is added. (Three ITMs at \$42,182 each have a combined annual TCO of \$126,545). Even with removing all of the staff from the branches and using a single, centralized teller, the labor costs never exceed the cost of the ITMs themselves and the bank takes a net loss.

In another scenario, Minnwest is thinking of adding a branch at its existing finance office in Morris. Transaction volumes are considered to be low, especially if this branch only has an ITM and no employee presence for transactions. For parity, service hours for Morris will be similar to Beaver Creek.

Location	Hours	Hours/Week	Annual Hours	Annual Labor	Trans/Day
Beaver Creek	M-F, 9-Noon	20	990	\$20,809.80	12.24
Morton	M,W,F, 9a-1p	13.5	682	\$14,335.64	18.67
Lake Wilson	M-F, 8:30a-3p; Sa, 8:30a-Noon	31	1587	\$33,358.74	41.77
Morris	M-F, 9-Noon	20	990	\$20,809.80	20
Total		84.5	4249	\$89,313.98	92.68

The table below again shows that there is a labor savings for all ratios, but even an unrealistic 4:1 ratio creates a net loss for the bank because of the high annual burden of the ITM machines.

ITM Teller Ratio	ITM Teller Hours	ITM Teller \$	Savings	Avg. Annual ITM TCO	Net Benefit
2 ITMs per Teller	2124.5	\$61,780.46	\$6,723.72	\$168,727	-\$162,003.28
2.5 ITMs per Teller	1699.6	\$49,424.37	\$19,079.81	\$168,727	-\$149,647.19
3 ITMs per Teller	1416.3	\$41,186.97	\$27,317.21	\$168,727	-\$141,409.79
4 ITMs per Teller	1062.3	\$30,890.23	\$37,613.95	\$168,727	-\$131,113.05

The final scenario assumes that each of the four branches is fully staffed for 45 service hours per week. Daily transaction volumes will likely increase because of greater convenience and potentially more customers, but the average hourly transaction count will drop substantially when spread across the larger number of service hours. In this scenario, we need an additional part-time employee to cover lunches, breaks, etc., so the total annual labor hours increase substantially.

Location	Hours	Hours / Week	Annual Hours	Annual Labor
Beaver Creek	8 weekday; 5 weekend	45	3390	\$71,257.80
Morton	8 weekday; 5 weekend	45	3390	\$71,257.80
Lake Wilson	8 weekday; 5 weekend	45	3390	\$71,257.80
Morris	8 weekday; 5 weekend	45	3390	\$71,257.80
Total		180	13,560	\$285,031.20

ITM Teller Ratio	ITM Teller Hours	ITM Teller \$	Savings	Avg. Annual ITM TCO	Net Benefit
2 ITMs per Teller	4440.0	\$129,115.20	\$155,916.00	\$168,727	-\$12,811.00
2.5 ITMs per Teller	3552.0	\$103,292.16	\$181,739.04	\$168,727	\$13,012.04
3 ITMs per Teller	2960.0	\$86,076.80	\$198,954.40	\$168,727	\$30,227.40
4 ITMs per Teller	2220.0	\$64,557.60	\$220,473.60	\$168,727	\$51,746.60

With a 2.5:1 ratio, we finally begin to hit a break even for the bank whereas we replace six FTEs (full-time equivalents) with approximately two ITM teller FTEs for an ROI of 4.8 percent. With the unrealistic ratio of 4:1, the bank gains \$51,746 in new benefits across four

branches with an ROI of 22.2 percent. However, the total cost to the bank increases because the fully-staffed model incurs an additional \$195,717 in labor expenses over the current staffing model.

For the final scenario, we see that replacing the current partial-staffing branch model with a fully-staffed ITM model creates a substantial loss to the bank

ITM Teller Ratio	ITM Teller Hours	ITM Teller \$	Savings	Avg Annual ITM TCO	Net Benefit
2 ITMs per Teller	4440.0	\$129,115.20	-\$39,801.22	\$168,727	-\$208,528.22
2.5 ITMs per Teller	3552.0	\$103,292.16	-\$13,978.18	\$168,727	-\$182,705.18
3 ITMs per Teller	2960.0	\$86,076.80	\$3,237.18	\$168,727	-\$165,489.82
4 ITMs per Teller	2220.0	\$64,557.60	\$24,756.38	\$168,727	-\$143,970.62

In summary, not a single scenario creates a net benefit to the current expenses of the bank. ITMs would provide marginal benefit if the bank wanted to provide extended service hours with a high density ITM-to-Teller ratio, but again, there is still a net increase in labor expenses to the bank.

Alternate Assumptions

These scenarios use list prices for the ITMs and the associated expenses. One vendor identified that the ITM hardware is typically discounted at 15 to 20 percent from list prices. Discounts are typically not available for implementation fees, construction, or software licenses. Recalculating the expenses using a 15 percent hardware discount reduces the expenses in Table 1 to \$612,075, or an \$89,816 savings. Subsequently, the 5-year annualized cost of an ITM drops from \$42,182 (Table 4) to \$39,936. While the reduction is helpful, the \$2,246 annual savings does little to improve the ROI in any of the scenarios presented in this section.

On the other hand, some costs in the analysis are likely understated. For example, construction costs for in-lobby ITMs would likely be higher if the bank wanted to use the ITMs during extended service hours. This is because additional rolling gates, door lock changes, camera changes, etc. would be required to separate the ITM from the main lobby to allow after-hours access.

Many financial institutions report heavy branch labor costs when ITMs are initially deployed; a “greeter” is often used to direct customers to the new machines and provide an introductory lesson. Others report that ITMs can’t provide a complete labor replacement for branch staff because some customers crave a physical staff presence even if employees are only available for a short time window. Either scenario would eliminate a substantial portion of the predicted labor savings.

Finally, this analysis ignores labor for internal staff training, marketing collateral, and the basic opportunity costs of bank staff not working on other value added projects. Taken together, these additional costs remove any benefit of a vendor discount. As such, ITMs cannot be recommended primarily on financial merits. The next section will explore some non-financial measures that may impact Minnwest’s decision to implement ITMs.

Non-Financial Impact

Cornerstone Advisors published a November, 2016 study that examined ITM implementation at eleven financial institutions.²⁵ Many of the institutions did not perform an ROI analysis and built their business cases on non-financial factors. Others initially estimated a poor ROI, but nonetheless proceeded with the implementation. Ironically, while most of the institutions did not predict a positive ROI, productivity improvement was the primary driver for implementing ITMs.

The most commonly cited secondary driver was an improvement in the organization's sales culture. This included cross-selling opportunities at the ITM and the belief that in-branch employees would focus on selling activities while the ITMs peeled off routine transactions. There is some correlation between branches with ITMs and higher sales achievements; however, Cornerstone concluded that the cross-selling benefit of ITMs did not materialize for most financial institutions. Instead, the sales lift was attributed to a renewed managerial focus on creating a sales culture. In other words, ITMs contributed to the execution of an overall strategy, but simply installing ITMs in an incremental effort did not fundamentally change sales volumes.

These organizations implemented ITMs in the face of two paradoxes. First, they sought ITMs to boost productivity, though positive ROIs were rarely identified during the discovery process. Second, there was a common belief that they would increase sales, though this theory was not consistently proven at other institutions. One institution estimated a positive ROI only when cross-selling was included. Despite these conflicts, the organizations deployed an average of 16 ITMs: 2 at the smallest institution, 73 at the largest.

²⁵ Cornerstone Advisors. "The Quest for Video Teller ROI." Report published November, 2016. Available for purchase at <https://www.crnstone.com/corner-store/quest-video-teller-roi/>

The small deployments likely did not meet their productivity goals. The organization with only 2 ITMs had to staff the machines with 2.5 FTEs. At the other end, the three financial institutions with the highest ITM density averaged 0.78 FTEs per ITM and ran 61 percent of all institutional transactions through ITMs. ITMs at the remaining eight financial institutions only processed a combined average of 7.1 percent of all institutional transactions.

The Cornerstone study failed to answer some key questions, such as the number of institutions that ended up with a positive ROI, or considered the investment to be worthwhile. While the study did report the average cost of an ITM transaction (with the largest deployments having the lowest per item costs), there is no comparison to the costs of live teller transactions and whether the organizations saw the productivity gains they sought.

What is clear, however, is that the ITM deployments with the largest machine count had the biggest financial impact. Moreover, these institutions relied on ITMs as part of their overall strategy of branch design and customer service. In other words, they focused first on the non-financial impact of ITMs and integrated them into their organizational strategy. The financial benefits of ITMs subsequently materialized through an effective implementation of this strategy.

The Cornerstone study provides some key insights, but it has issues related to a small sample size and a self-selection bias. A larger issue may be survival bias. The study does not highlight institutions that made ITMs a key element of their strategy, but the strategy failed because of poor execution or customer push back. For example, the author of this paper interviewed an institution that was planning an ITM implementation as a competitive response,

but pulled back after the competitor's customers rejected the new self-service branches and the competitor was forced to partially staff the branches.²⁶

In summary, strategy is the most important decision regarding ITM deployment and the non-financial issues of customer and employee acceptance will ultimately determine their success.

Customer Impact

Customer acceptance of ITMs is a key concern for Minnwest managers. The bank has prided itself on high levels of customer service through high-touch interactions, which fits the rural culture of the communities that Minnwest serves. This has created a bias of expecting customers to physically come into the bank. Similarly, many customers expect a high level of interaction and perceive their banking relationships to be an extension of social and community relationships.

The Cornerstone study claims that the “fears of consumer backlash” are unfounded and many of the concerns over customer attrition have not materialized. There was also no perceived drop in customer satisfaction. Most of these institutions implemented a hybrid solution whereby customers could make the choice of using a live teller or an ITM. That choice may have reduced resistance at the expense of ITM transaction volume. (Cornerstone reports that live teller transactions continue to be higher than ITM transactions per FTE.) Minnwest may find this to be the case as well, but it must closely measure customer reaction and adapt to customer needs. Measuring customer reaction may take multiple forms:

²⁶ Rodeheaver, Philip L. Market Area President, First United Bank & Trust, Oakland, MD. Personal interview held by phone on October 24, 2016.

- **Net New Accounts:** Compare the net additions for savings and DDA accounts to the historical average for the branch, or to other branches without ITM deployments. A statistically significant drop (especially a negative value) would indicate customer frustration and movement to competing institutions.
- **Net Deposit Balances:** Similar to Net New Accounts, this measure identifies customer attrition. A run-off of large balances with a small number of account closings could indicate disappointment with high-value customers that desire a high-touch relationship.
- **Percentage of ITM Traffic:** This measures the percentage of branch transactions performed by the ITM as opposed to in-branch teller transactions. The project team should identify an estimated value before deployment and then measure actual results. A small percentage would indicate under-utilization of ITMs and customer avoidance. Deeper investigation would be required to discern if customers are not being properly introduced to the new platform or if a poor experience is dissuading customer adoption.
- **Barlow Survey Results:** Minnwest places a high value on a semi-annual customer service survey that is managed by a third-party organization called Barlow. Bonus incentives for all employees are based upon survey results and customer feedback is used to respond to customer needs. For example, negative feedback regarding the Minnwest website, the online banking experience, and the uptime of online services has spurred multiple capital projects to improve the customer experience. The survey separates consumer and business responses. It also maps responses to the region and branch level. Numerical ratings are used to

compare one survey period to another and measure Minnwest against competitors. Open-ended comments are reviewed verbatim by bank management and action items are identified to improve the customer experience.

While traffic and account information may be the most responsive measures upon initial ITM deployment, the Barlow Survey would be the more valuable longitudinal metric. Minnwest is the only bank in some of its markets; dissatisfied customers cannot easily move and their unhappiness would not be apparent in account tallies or balances. The survey would capture the voice of the customer and determine whether long-term customer satisfaction trends can be attributed, positively or negatively, to the presence of ITMs at branches.

Since Minnwest considers excellent customer service to be a primary competitive strength, customer service improvements attributed to ITMs are important non-financial factors that will lead to increased profitability. The longevity of high-balance accounts allows Minnwest to minimize its cost of funds and maintain a reasonable net interest margin.

Multiple tactics can be used to counter customer resistance. Aggressive customer awareness campaigns months before the actual deployment can reduce the surprise factor and allow customers to ask questions and warm up to the idea. This includes marketing collateral, in-branch campaigns, messaging on the bank website, and through online banking. Short video messages on the website can describe the “why” behind ITMs, explain new services, and provide short demos on how they work.

Another step is placing the machines in demo mode a few weeks before going into production. This would allow customers to get acclimated to the machines with simulated

transactions and currency rather than their own accounts. This is also good practice for ITM tellers and allows the infrastructure team to validate the user experience.

As mentioned earlier, an in-branch ITM greeter introduces a customer to the machine, guides them through their initial transaction, and gauges customer feedback. This is consistently reported by other financial institutions as the most important way to counter resistance. Customers introduced through this method frequently bypass the teller line and go straight to ITMs in future transactions. The downside to this method is the added labor and the impracticality of implementing greeters at the drive-up.

Privacy concerns are frequently raised by customers and can be a cause of ITM avoidance. This can be countered with glare screens, privacy screens, vestibules, and ITM placement. These considerations may increase the cost of the solution.

Finally, a consistent coverage schedule for ITM tellers helps customers see a consistent face for routine transactions. This tactic tries to establish a similar customer rapport with ITM tellers as live tellers. Smaller FIs identify this as a key way to maintain the perception of a community bank and is especially effective in the drive-up.

Employee Impact

Employee Acceptance is another issue to monitor. Minnwest is implementing numerous technical upgrades that are being absorbed successfully into the culture. As such, employee rejection of the platform itself should not be an issue as long as employees receive adequate training and the experience is good enough to avoid negative customer feedback. Moreover, the decline of branch transactions is an open discussion at the bank and changes in branch staffing are already underway. As mentioned earlier, this led to the planned universal banker position.

Finally, the desire to provide additional customer support after normal bank hours would be welcomed by staff.

A negative employee response would ensue if Minnwest chose to bypass the hybrid ITM model and replace all the branch tellers with ITMs. This would be a direct threat to a culture that values job security and runs counter to the Minnwest culture that espouses a high-touch customer experience. ITMs may be able to replace teller positions through attrition, but a substantial reduction in the workforce would generate substantial employee pushback. The new Customer Care Center may be an opportunity for talented, high-aspirational employees, but these new opportunities are not likely to offset a perception of job losses in smaller, rural communities. On the contrary, some branch managers have expressed interest in ITMs as a means of finding adequate, qualified staff in rural markets and wringing out some of the personnel costs that have detracted from sales goals.

Like the Barlow Survey, Minnwest performs a company-wide, anonymous employee survey by a third-party organization. Results are compiled, trends in employee sentiment are discussed, and new initiatives are frequently launched as a response. Apart from the immediate employee feedback at the branch level, survey feedback may identify organization-wide employee concerns, such as whether the deployment of additional ITMs would be perceived as a threat to culture or job security.

Tone at the top and consistent messaging are important ways to reduce employee resistance. Minnwest is currently undergoing large efficiency initiatives and employees have already seen a number of large changes to their jobs without a company-wide layoff. Workforce reductions are occurring naturally through attrition, whereas 14 percent of Minnwest staff will be

at retirement age within five years and 34 percent will be at retirement age in ten years.

Efficiency gains, attrition, and growth will allow Minnwest to achieve its strategic goal of improving its efficiency ratio from the mid-60s to the low-to-mid 50s.

The message to staff regarding ITMs needs to be consistent with previous communications: the goal of these new technologies is to enhance customer service options and not involuntarily reduce the existing workforce.

Strategic Impact

In the end, ITMs will probably be accepted by employees, but gain a mixed response from customers. Customers who are resistant to ITMs will continue to go to the teller line and only a portion of branch transactions are likely to migrate. As such, it would be difficult to gain the efficiencies and economies of scale to justify ITMs.

The situation may change if Minnwest skipped an incremental ITM deployment and embraced ITMs as part of a complete strategic overhaul of its branch strategy. This may include the smaller community and micro branches identified earlier. Based upon anecdotal evidence and the Minnwest customer culture, self-service branches will be met with some resistance. Finally, Minnwest has an incredibly low occupancy expense (0.18 percent of assets for 2016) and there is no strategic imperative to overhaul branches and reduce square footage. Acquired branches are likely to be in rural footprints with a similar occupancy expenses, so there will be little desire to incur the capital expenses of a branch overhaul that would justify the introduction of ITMs.

The remaining two strategic scenarios for ITMs are: an organic expansion of the current geographical footprint with newer and smaller branches, and a substantial increase in the service

hours of branches. As exhibited in the previous section, both strategies would benefit customers, but they would create a notable increase in the cost of running the bank.

Conclusion

An ITM deployment at Minnwest Bank is not recommended at this time. ROI projections only work under the most optimistic circumstances and Minnwest would not gain enough labor savings to offset the financial and opportunity costs. Moreover, it is unlikely that ITMs would provide a better customer experience. At best, the ITM teller will be more qualified and better trained than the live teller, only to be counteracted by the distractions of a video conference transaction.

One participant in the Cornerstone study opined on why their financial institution only deployed ITMs in the drive-through lanes, stating “if someone comes into the branch, they deserve to talk to a live person.” This perspective is similar to the Minnwest culture. Instead of investing in ITMs, it is recommended that Minnwest expends the energy in the universal banker concept and explore cash recyclers at the branch to gain efficiencies. Capital expenditures should concentrate on an optimal online experience that continues to gain feature parity with the branch. However, a customer that makes the effort to go into the branch should benefit from an in-person interaction.

Minnwest should revisit the ITM concept under three conditions. First, it wants to dramatically expand the service hours at branches. Second, the price of ITMs and rural communications drop enough to change the economics. Finally, if Minnwest makes a strategic decision to open new, smaller branches to organically grow its geographic footprint. In all cases, the Customer Care Center must be established so that agents can efficiently support customers across multiple channels. This includes telephone, online, mobile, chat, email, and interactive teller machines.

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