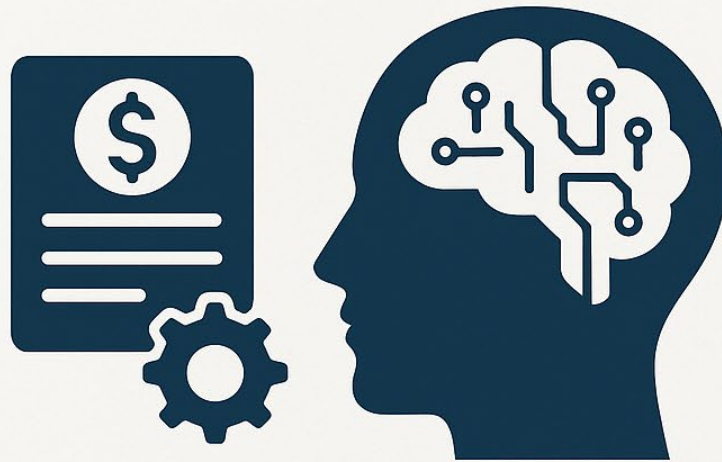


# OPERATIONAL EFFICIENCY IN LOAN PRODUCTION WITH THE USE OF ARTIFICIAL INTELLIGENCE

CAPSTONE PROJECT



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## 1.Executive Summary

The purpose of this Capstone project is to evaluate how a community bank can most effectively integrate artificial intelligence (AI) into day-to-day banking operations to improve efficiency and profitability. Specifically, the goal is to determine how Premier Bank, N.A. (“the Bank”) can use AI to reduce its efficiency ratio and increase return on assets (ROA). On a hypothetical basis, the analysis further considers the incremental loan volume the Bank could generate using its existing staffing levels, assuming no capital constraints and sufficient loan demand.

This project focuses on efficiency gains within two core areas of the Bank’s credit lifecycle: (1) the financial analysis process that supports commercial credit decisions such as financial document review, contract review, appraisal review, et cetera, and (2) the loan operations department’s review of client-supplied organizational documents needed for loan document generation. AI tools are currently being deployed to assist in the review and summarization of operating agreements, partnership agreements, and similar materials. All AI-generated outputs remain subject to human verification to ensure data integrity, maintain credit and operational risk standards, and align outcomes with the Bank’s established historical financial performance benchmarks.

The analysis demonstrates that AI adoption generates a meaningful return on investment (ROI), attributable to both the marginal cost of deploying AI tools and their ability to automate labor-intensive components of the credit process. Importantly, AI did not participate in credit decision-making; its role was confined to the summarization of underlying source documents. Contemplated here are the use cases across only two departments of a commercial bank, loan operations and loan origination. Certainly, other departments of the bank such as deposit

operations, or compliance could find similar benefits. Also considered are non-financial implications including employee sentiment, regulatory considerations, talent atrophy, and finally a recommendation to the Bank’s senior leadership.

## 2. Institutional Context

The Bank is a locally owned, OCC-regulated community bank and is headquartered in Omaha, Nebraska. The Bank was acquired from the FDIC in 2011 by its current ownership group following the failure of its predecessor institution to maintain required capital levels and the declaration of insolvency by regulatory authorities. Several members of the ownership group remain actively involved in day-to-day operations. At the time of acquisition, the Bank held approximately \$106 million in assets, which subsequently contracted to roughly \$70 million as the organization stabilized.

Over the past 14 years, the Bank has achieved significant growth. As of September 15, 2025, total assets reached \$343.15 million, with approximately \$260 million comprised of loans. The Bank employs 50 individuals and benefits from strong employee retention and deep community engagement.

Premier Bank is primarily concentrated in commercial banking, with a substantial portion of its loan portfolio consisting of commercial real estate (CRE) loans. The Bank does not actively pursue retail customers; instead, it focuses on serving middle-market commercial and industrial (C&I) borrowers and CRE clients. Consistent with its risk-averse posture, the Bank generally maintains a tight geographic footprint within eastern Nebraska—an area where 60% of the state’s population resides within 50 miles of the Omaha metropolitan area<sup>1</sup>.

Given the loan types prioritized by the Bank’s Board of Directors, most client relationships are with Omaha and Lincoln based real estate professionals engaged in residential and commercial land development, single-family home construction, established operating companies, and broader CRE investment and development. Rather than relying on an extensive branch network or traditional mass-market outreach, the Bank focuses on maintaining strong ROA, operational efficiency, and exceptional credit quality within the commercial banking sector.

On a day-to-day basis, the Bank is managed by local, “boots on the ground”, ownership. The President of the Bank, Board Chair, and Chief Financial Officer each have ownership equity in the Bank. Though day-to-day management of the Bank is handled by the President and Board Chairman, the credit approval process entails heavy involvement by the two Board Members with the largest equity positions in the Bank. In fact, loans over \$1,000,000 require Board involvement. The Board also oversees asset and liability management and funds management committees.

### 3. Financial Performance

According to the Uniform Bank Performance Report (UBPR), the Bank ranks among the most efficient institutions in its peer group. In Q2 2025, Premier Bank reported an efficiency ratio of 53.9%, outperforming the Peer Group 5 average of 62.62%<sup>ii</sup> and placing the Bank within the top quartile of peers nationwide. Notably, nearly all of the Bank’s pre-tax net income is generated from interest and investment income, with minimal reliance on non-interest income sources.

The Bank’s return on assets (ROA) also substantially exceeds peer benchmarks. While the median ROA for Nebraska-based peers hovers around 1%<sup>iii</sup>, Premier Bank achieved an ROA of 1.61% through Q2 2025. The Bank’s loan portfolio constitutes approximately 77% of total assets, reflecting the Bank’s focus on earning assets despite its relatively small market share. As of Q2 2025, earning assets to total assets was 96%. In the same period, the Bank’s Tier 1 leverage ratio was 13.74%, which ranked in the 88<sup>th</sup> percentile of its peer group<sup>iv</sup>.

Given this strong operational foundation, the Bank is now exploring the integration of AI to further enhance efficiency. Management’s strategic objective is to maintain Premier Bank as one of the most efficient institutions in its peer group. Because leadership has expressed a desire not to rely on wholesale funding, such as borrowed funds or brokered certificates of deposit, to support asset growth, the Bank faces inherent capital and liquidity constraints. Accordingly, this paper assumes no capital limitations for the purpose of evaluating AI-driven efficiency gains.

Below, in IMAGE 1, is an internally prepared summary of peer banks from the second quarter of 2025. Each of the peers identified below operate in the same geographic areas and have similar focus on being primarily commercially focused community banks.

IMAGE 1:

As of Q2 2025			
Bank Name	Premier Bank	Core Bank	Equitable Bank
Asset Size	\$ 344,086,000.00	\$1,073,367,000.00	\$ 518,510,000.00
ROA	1.61%	0.42%	0.64%
Loan to Deposit Ratio	87.21%	104.97%	97.65%
Efficiency Ratio	53.90%	85.96%	74.72%
Cost Of Funds	1.49%	2.81%	2.57%

Premier Bank is largely agnostic regarding the specific types of commercial real estate loan assets it pursues; however, the substantial majority of its CRE portfolio consists of

commercial investment properties. These assets total approximately \$85 million, representing roughly 32% of the Bank’s total loan portfolio. See IMAGE 2 for the Bank’s composition report as of Q2 2025.

IMAGE 2:

	NUMBER OF ACCOUNTS		OUTSTANDING BALANCE	
	TODAY	PREVIOUS DAY	CURRENT DAY	PREVIOUS DAY
<b>LOANS -</b>				
<b>1-4 FAMILY CONSTRUCTION</b>				
Residential Construction - Custom	23	22	12,359,943	12,169,337
Residential Construction - Model	1	1	2,182,292	2,182,292
Residential Construction - Spec	37	37	9,495,973	9,495,973
	<u>61</u>	<u>60</u>	<u>24,038,208</u>	<u>23,847,602</u>
<b>SECURED BY FARMLAND</b>				
Real Estate Farmland	7	7	1,158,092	1,158,092
	<u>7</u>	<u>7</u>	<u>1,158,092</u>	<u>1,158,092</u>
<b>1-4 FAMILY LAND DEVELOPMENT</b>				
Residential Land Development	2	2	2,697,865	2,697,865
Residential Lots	23	23	2,782,441	2,782,441
	<u>25</u>	<u>25</u>	<u>5,480,306</u>	<u>5,480,306</u>
<b>1-4 FAMILY REVOLVING &amp; TERM</b>				
HELOC	190	191	8,779,071	8,767,280
Residential Other	114	113	21,053,054	20,614,661
Re-res	268	268	6,568,071	6,574,320
Home Equity Term	0	0	0	0
	<u>572</u>	<u>572</u>	<u>36,400,195</u>	<u>35,956,260</u>
<b>MULTIFAMILY (5 OR MORE)</b>				
Multi-5 or More	13	13	10,317,323	10,317,323
	<u>13</u>	<u>13</u>	<u>10,317,323</u>	<u>10,317,323</u>
<b>NONRESIDENTIAL PROPERTIES</b>				
Commercial RE Owner Occupied	56	56	49,454,162	49,463,957
Commercial RE Investment Property	91	91	84,968,376	84,968,376
Commercial Land Develop	2	2	4,570,624	4,570,624
Commercial Lots	15	15	12,582,714	12,582,714
Commercial Construction	11	11	17,810,465	17,771,441
	<u>175</u>	<u>175</u>	<u>169,386,341</u>	<u>169,357,111</u>
<b>AGRICULTURAL PRODUCTION</b>				
Agricultural	1	1	21,943	21,943
<b>COMMERCIAL &amp; INDUSTRIAL</b>				
Commercial	85	85	17,719,224	17,655,943
<b>INDIVIDUAL'S PERSONAL EXPENSES</b>				
Consumer Other	16	16	420,355	420,355
<b>LEASES</b>				
Commercial Lease	0	0	0	0
	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>955</u>	<u>954</u>	<u>264,941,987</u>	<u>264,214,935</u>

#### 4. Market Context

Despite national headlines highlighting weakness in commercial real estate markets, Omaha and its community banks have been largely insulated from significant distress. Nonetheless, an emerging trend warrants attention: other real estate-owned (OREO) balances among Nebraska-based banks have begun to rise. OREO holdings totaled approximately \$9.04

million in Q2 2023 but increased to \$43.22 million by 2025, indicating growing pressure within certain segments of the local CRE market. See IMAGE 3 and IMAGE 4 respectively.

IMAGE 3 Q2 2023 NEBRASKA BANK OREO:

Rank	Company Name	City	Total Assets	Date Open	OREO	Reserve / Loans	Provision Expense	Past Due 30-89 Days	NPA's + 90 Day PDs	Net Charge Offs	NPA's / Equity + Reserves	Asset Quality Index
68	City Bank & Trust Co.	Lincoln	292,264	04/18/1910	2,000	0.73%	0.23%	1.83%	0.74%	0.26%	7.14%	2.83%
104	First National Bank Of Omaha	Omaha	29,418,695	01/01/1857	1,269	4.25%	1.87%	0.64%	0.45%	1.98%	5.76%	3.07%
141	Commercial State Bank	Wausa	215,780	12/01/1925	1,134	1.09%	0.09%	0.19%	0.73%	0.01%	7.96%	0.93%
109	United Republic Bank	Omaha	187,158	12/11/2006	964	1.39%	0.22%	0.00%	0.52%	0.21%	3.43%	0.73%
82	Community First Bank	Maywood	114,128	07/02/1938	812	3.61%	-1.10%	1.61%	1.14%	-0.01%	12.72%	2.75%
65	Firstier Bank	Kimball	898,983	07/15/1955	806	1.38%	0.11%	0.50%	1.17%	-0.01%	8.81%	1.67%
31	Columbus Bank And Trust Compa	Columbus	196,852	12/26/1934	555	1.33%	0.18%	0.49%	0.94%	0.00%	8.59%	1.43%
83	First Central Bank Mccook	Mccook	145,138	01/04/1999	450	1.92%	0.42%	3.64%	5.17%	4.39%	33.24%	13.20%
50	Dayspring Bank	Gothenburg	1,027,873	01/01/1906	214	1.69%	0.00%	1.03%	1.10%	-0.03%	7.68%	2.13%
27	Western National Bank	Chester	235,750	04/07/1917	183	1.20%	0.17%	0.01%	0.08%	0.20%	0.84%	0.29%
40	American Exchange Bank	Elmwood	70,063	07/13/1889	164	1.20%	0.00%	0.01%	1.29%	-0.02%	13.19%	1.30%
63	Exchange Bank	Kearney	1,369,885	04/09/1917	140	1.53%	0.00%	0.56%	0.32%	0.04%	3.06%	0.92%
16	Nebraska State Bank And Trust Co	Broken Bow	260,527	02/23/1917	120	0.92%	0.07%	0.09%	0.32%	0.47%	2.84%	0.88%
73	Pinnacle Bank	Lincoln	7,951,678	01/01/1880	94	1.20%	0.01%	0.15%	0.21%	0.00%	2.03%	0.36%
119	Town & Country Bank	Ravenna	199,637	01/01/1932	91	1.25%	0.00%	0.03%	0.05%	0.00%	0.40%	0.08%
36	Nebraska Bank	Dodge	435,289	01/01/1889	31	1.25%	0.14%	0.27%	1.40%	0.12%	14.93%	1.79%
20	Pathway Bank	Cairo	275,791	01/01/1910	12	1.79%	0.04%	0.61%	0.33%	0.02%	2.91%	0.96%
					9,039							

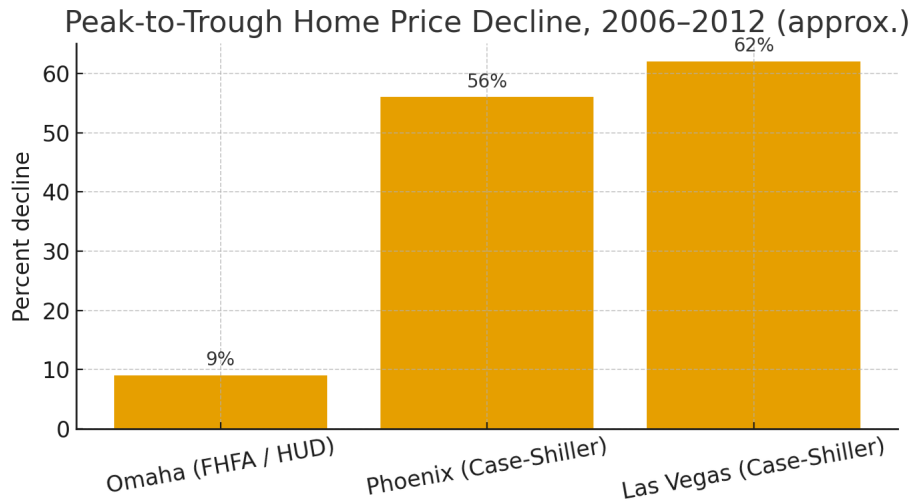
IMAGE 4 Q2 2025 NEBRASKA BANK OREO:

Rank	Company Name	City	Total Assets	Date Open	OREO	Reserve / Loans	Provision Expense	Past Due 30-89 Days	NPA's + 90 Day PDs	Net Charge Offs	NPA's / Equity + Reserves	Asset Quality Index
73	Pinnacle Bank	Lincoln	8,508,672	01/01/1880	8,904	1.14%	0.05%	0.25%	0.18%	0.01%	1.49%	0.44%
39	United Republic Bank	Elkhorn	207,822	12/11/2006	8,181	1.61%	1.25%	1.89%	6.33%	1.55%	45.14%	9.77%
103	First National Bank of Omaha	Omaha	31,561,847	01/01/1857	5,860	4.08%	1.93%	0.65%	0.59%	2.49%	6.08%	3.73%
50	Dayspring Bank	Gothenburg	1,152,626	01/01/1906	4,915	1.39%	0.53%	1.24%	1.13%	1.04%	11.34%	3.41%
65	FirsTier Bank	Kimball	1,046,879	07/15/1955	3,969	1.56%	0.23%	0.93%	3.08%	0.16%	30.87%	4.17%
74	Security First Bank	Lincoln	2,025,876	07/01/1924	3,511	1.24%	0.27%	0.37%	0.41%	0.40%	5.51%	1.18%
55	Banner Capital Bank	Harrisburg	355,420	10/10/1964	1,465	1.35%	0.12%	0.55%	1.66%	0.00%	14.44%	2.21%
99	American National Bank	Omaha	5,065,384	12/02/1964	1,251	1.09%	0.23%	0.22%	0.69%	0.39%	6.64%	1.30%
139	Horizon Bank	Waverly	495,433	02/18/1907	1,054	0.76%	0.05%	0.45%	1.20%	0.00%	7.61%	1.65%
143	Citizens State Bank	Wisner	601,567	10/19/1888	927	1.62%	0.00%	0.09%	0.30%	-0.02%	2.83%	0.39%
20	First Central Bank	Cambridge	142,333	06/15/1907	685	1.17%	0.94%	2.73%	5.67%	2.26%	49.08%	10.66%
120	Platte Valley Bank	Scottsbluff	1,136,226	07/22/1996	644	1.20%	0.28%	1.20%	0.60%	0.22%	2.95%	2.02%
30	Columbus Bank and Trust Company	Columbus	263,500	12/26/1934	555	1.25%	0.14%	0.10%	0.29%	-0.02%	2.73%	0.39%
82	First Central Bank McCook	Mccook	126,318	01/04/1999	399	1.56%	1.02%	4.18%	4.92%	2.75%	44.39%	11.85%
53	Five Points Bank	Grand Island	2,086,420	09/10/1971	318	1.46%	-0.07%	0.21%	0.03%	-0.25%	0.20%	0.24%
63	Exchange Bank	Kearney	1,531,441	04/09/1917	116	1.40%	0.04%	1.55%	0.92%	0.06%	8.98%	2.53%
35	Nebraska Bank	Dodge	468,410	01/01/1889	100	1.29%	0.21%	0.21%	0.68%	0.04%	6.38%	0.93%
116	Town & Country Bank	Ravenna	219,069	01/01/1932	91	1.21%	0.00%	0.03%	0.05%	0.00%	0.37%	0.08%
54	Home Federal Savings and Loan As	Grand Island	500,894	06/01/1935	69	1.32%	0.06%	0.19%	0.14%	0.30%	0.66%	0.63%
28	Clarkson Bank	Clarkson	73,972	05/17/1934	52	2.51%	0.00%	1.90%	0.23%	-0.01%	2.06%	2.13%
14	Custer Federal State Bank	Broken Bow	120,699	01/01/1925	50	1.00%	-0.01%	0.30%	0.13%	0.00%	0.35%	0.43%
76	West Gate Bank	Lincoln	1,353,626	09/03/1968	47	1.04%	0.01%	0.15%	0.20%	0.01%	2.26%	0.36%
58	Thayer County Bank	Hebron	84,651	07/01/1874	47	1.44%	0.12%	0.58%	0.12%	0.32%	18.29%	1.02%
19	Pathway Bank	Cairo	344,214	01/01/1910	6	1.46%	0.04%	0.37%	0.78%	0.00%	0.89%	1.15%
					43,216							

Across all Nebraska banks, total assets amounted to approximately \$116.19 billion, resulting in an OREO-to-total-assets ratio of just 0.037% as of Q2 2025 per the Nebraska Bank's call reports summarized in a commissioned by the Bank for peer review analysis. Premier Bank maintains a notably conservative lending culture, a posture that has served it well amid the challenges some peers are facing in the current commercial real estate cycle. Historically, this disciplined approach has helped the Bank avoid the rising OREO trend observed statewide. As of Q2 2025, Premier Bank reported only 0.05% of its loan assets as 30–89 days past due and held no OREO<sup>v</sup>. The 30–89-day delinquencies reflect loans made to Habitat for Humanity, an entity focused on building homes in marginalized communities and is considered a community reinvestment by the Bank. The agreement between the Bank and Habitat is subject to a repurchase agreement in place for loans delinquent for more than 120 days supporting previous assertions regarding credit quality.

Historically, Omaha has weathered major economic downturns with less severity than many larger metropolitan markets such as Las Vegas, Phoenix, and Los Angeles. During the COVID-19 shock in April 2020, for example, Las Vegas recorded the highest unemployment rate among large metros at 33.5%, while Nebraska posted one of the lowest at 8.3%, a spike that proved relatively short-lived<sup>vi</sup>. Similarly, during the Great Recession of 2009–2010, Omaha experienced annual job losses of approximately 1.3%, compared with a national decline of 2.5%, meaning the local labor market contraction was roughly half the national average<sup>vii</sup>. This resilience is further reflected in housing market dynamics. From peak to trough in the late 2000s, home prices in Las Vegas declined by roughly 62%, and Arizona markets experienced declines of approximately 56% from their 2006 peaks<sup>viii</sup>. Omaha followed the same cyclical pattern but with far less severity, experiencing approximately a 9% decline<sup>ix</sup>. See IMAGE 5.

IMAGE 5:



## 5. AI Strategy and Implementation Framework

As noted, management prioritizes strong efficiency ratios and ROA. This project evaluates the impact of AI on two core functions: Credit Analysis and Loan Operations. Based on informal peer polling, Premier Bank appears to be the only community bank in its competitive set pursuing AI integration at this level.

To assess AI's effect on operational efficiency, this exercise uses a multilayered approach, employee polling, and workflow analysis across both departments. The methodology quantifies direct time savings from AI-assisted document review and evaluates downstream impacts on loan volume, incremental cost of additional loan production, and overall productivity. It also enables comparison between AI-enabled and traditional processes within the Bank's existing structure.

The central premise is that measurable impacts on ROI, ROA, and efficiency can be achieved through labor savings and increased loan production in both loan operations and credit analysis.

In loan operations, Microsoft Copilot supports legal document review by analyzing organizational documents such as operating agreements and partnership agreements. All AI-generated output remains subject to mandatory human quality assurance review to ensure accuracy and mitigate operational and credit risk.

Within loan production, efficiency gains are driven by AI-assisted underwriting tasks, including summarizing commercial leases, completing appraisal reviews, spreading financial statements, generating rent rolls, reconciling borrower-prepared rent rolls to executed leases, and identifying longitudinal financial trends in income producing real estate and operating companies. By automating these time-intensive processes, AI expands analytical capacity without increasing the incremental cost of additional or enhanced credit review.

5.1 Loan Operations

IMAGE 6 below reflects the total number of loans and deposit accounts opened at the Bank between December 1, 2024, and November 1, 2025, that required review or analysis of corporate organizational documentation. These figures correspond specifically with employees whose production is formally tracked through internal performance reports. The impacts are understated to the Bank because this does not account for all accounts opened. The period was selected because it aligns with the Bank’s annual benchmarking cycle for production-focused employees.

IMAGE 6:

Account Officer	JB	BM	CM	TC	TJ	Totals
Corporate Borrowers 12/1/2024-11/1/2025 (Source Internal New Business Reports)	24	10	6	41	3	84
Corporate Depositors 12/1/2024-11/1/2025 (Source Internal New Business Reports)	88	31	38	11	1	169
						253

Reviewing organizational documentation is a time-intensive process for both loan operations staff and corporate services personnel responsible for deposit account opening. During the 12-month period referenced above, a total of 253 sets of organizational documents required review before loan bookings or deposit account openings could be completed.

IMAGE 7:

Entity	SWER	STCH	RSLN	KNGH	BRP	GL15	BMAF	SWCAP	1234	910W	Average
Number of Pages in Operating Agreement	57	29	22	11	10	11	17	53	27	12	25

To analyze the time burden associated with reviewing organizational documents, a random sample of ten operating agreements was pulled from the Bank’s core system, with entity names obscured to preserve customer confidentiality. IMAGE 7 presents a sampling of operating agreements to establish a benchmark of required reading.

A 2019 meta-study by Marc Brysbaert of Ghent University, which synthesized 190 studies comprising 18,573 participants. Brysbaert concluded that the average reading speed for college-educated English speakers is approximately 238–260 words per minute when reading non-fiction texts, a category that clearly includes operating agreements and other relevant documents<sup>x</sup>. Dense legal documents typically contain 400–500 words per page; this analysis conservatively assumes 400, reflecting formatting and spacing in operating agreements and the like. Under this assumption, a 25-page document contains approximately 10,000 words, requiring about 40 minutes to review at an average reading speed of 250 words per minute.

From December 1, 2024, through November 1, 2025, Premier Bank staff reviewed 253 operating agreements. At 40 minutes per document, this equates to 10,120 minutes, or 168.7 hours, of staff time.

In collaboration with the Bank’s Chief Financial Officer, the fully loaded hourly cost of a Loan Operations employee including wages, overhead, 401(k) match, and payroll taxes was calculated at \$43.17 per hour.

At this rate, total labor cost attributable to operating agreement review during the 11-month period exceeds \$7,200 (see IMAGE 8), establishing a baseline for evaluating AI-driven efficiency gains solely in this department.

IMAGE 8:


Business Unit	"All In Cost Per Hour"	Total Hours Used	Time Value Of Document Review
Loan Operations	\$ 43.17	168.67	\$ 7,281.48

The time savings achieved through AI-assisted document review are substantial. To further emphasize this, a 57-page operating agreement was selected for analysis. Using Microsoft Copilot the complete review, including page-number citations and the AI generation of a checklist for subsequent human verification, was completed in under one minute. This represents a dramatic reduction compared with the traditional, manual, review process. The prompt delivered to Copilot, along with the resulting output, is included below. As Copilot is within the Bank’s Microsoft 365 tenant, confidentiality of sensitive documents and information is maintained. See IMAGE 9.

IMAGE 9:

Fun...

tell me who owns the llc, who can sign in order to borrow, what needs to happen in order to enter into a loan contract per the operating agreement, provide me relevant "know your customer" information in order to remain compliant with banking regulation and create a spreadsheet where i can verify what you indicate is correct complete with page numbers for easy human review

 Copilot

You asked for a comprehensive review of the [REDACTED] Fund, LLC operating agreement to answer:

1. Who owns the LLC?
2. Who can sign in order to borrow?
3. What needs to happen to enter into a loan contract per the operating agreement?
4. Relevant "know your customer" (KYC) information for banking compliance.
5. A spreadsheet to verify these answers, with page numbers for human review.

Below, I'll summarize each point with direct citations to the agreement, then outline the spreadsheet

### 1. Who Owns the LLC?

- **Ownership Structure:** [REDACTED] Fund, LLC is a manager-managed, multi-member Delaware LLC. Ownership is divided into Class A and Class B Members.
- **Class A Member:** [REDACTED] Managers, LLC (Nebraska LLC) [cite\turn1search1\_page\_38].
- **Class B Members:** Listed in Exhibit A (on file with the company; not included in the PDF) [cite\turn1search1\_page\_47].

---

### 2. Who Can Sign in Order to Borrow?

- **Authority to Borrow:** The Manager [REDACTED] (Managers, LLC) has exclusive authority to manage, operate, and bind the company, including borrowing and guaranteeing loans [cite\turn1search1\_page\_16\_17].
- **Relevant Section:** Article 7.1(c) – "The Manager shall have the right, at its option, to cause the Company to: (a) guarantee loans or other extensions of credit...; and (b) borrow money from any Person..." [cite\turn1search1\_page\_17].
- **Execution:** The Manager signs on behalf of the LLC for borrowing and related contracts.

### 3. What Needs to Happen to Enter Into a Loan Contract?

- **Process & Authority:**
  - The Manager has sole authority to enter into contracts, including loan agreements, on behalf of the LLC
  - No member vote is required unless otherwise specified in the agreement.
  - The Manager may require Class B Members to provide information/documentation as reasonably and customarily required for borrowing (confirmation of capital commitments, etc.)

### 4. Relevant “Know Your Customer” (KYC) Information for Banking Compliance

- **KYC Requirements:**
  - **Members’ Information:** Names and addresses of all members are maintained in Exhibit A (on file with the company)

### 4. Relevant “Know Your Customer” (KYC) Information for Banking Compliance

- **KYC Requirements:**
  - **Members’ Information:** Names and addresses of all members are maintained in Exhibit A (on file with the company)
  - **Entity Status:** The LLC is a legal entity, separate from its members
  - **Authority:** Only the Manager can act on behalf of the LLC
  - **Anti-Money Laundering:** The Manager may require withdrawal of a member if continued participation would violate anti-money laundering laws or regulations
  - **Tax Compliance:** Members must provide information, certifications, and forms as requested by the Manager for tax and regulatory compliance (including FATCA, IRS, etc.)

### 5. Spreadsheet Structure for Verification

## 5. Spreadsheet for Verification

You can download the spreadsheet here:

[LLC Operating Agreement Summary Spreadsheet](#)

Spreadsheet Columns:

- Item/Question
- Answer
- Operating Agreement Section
- Page Number
- Verification Notes

### Summary Table (for quick reference)

Item/Question	Answer	Agreement Section	Page Number
Who owns the LLC?	Class A: [REDACTED] Managers, LLC; Class B: See Exhibit A	Art. 2.1, 18.22, 18.23	3, 38, 47
Who can sign to borrow?	The Manager [REDACTED] Managers, LLC)	Art. 7.1, 7.1(c)	16-17
What needs to happen to enter loan contract?	Manager acts; may require member info	Art. 7.1, 7.1(c)	16-18
KYC: Member info	Names/addresses in Exhibit A	Art. 2.1, Exhibit A	47
KYC: Entity status	LLC is separate legal entity	Art. 1.11	3

 Copilot ⓘ

Here's a transparent breakdown of how long this task took:

- **Reviewing and extracting relevant sections from the operating agreement:** This process is nearly instantaneous for me, as I can scan and process the entire document in seconds.
- **Synthesizing and summarizing the answers:** Also completed within seconds.
- **Creating and exporting the spreadsheet:** The spreadsheet was generated automatically in real time, typically within a few seconds.

**Total elapsed time:**

- From the moment you submitted your request to the delivery of the spreadsheet and summary, the entire process took less than one minute.

If you need a timestamped log or want to know how long a human would typically spend on this task, I can estimate that a manual review and spreadsheet creation would likely take 1–2 hours for a person familiar with legal documents. For me, it's nearly instantaneous due to my processing capabilities.

Previously established reading norms, 250 words per minute and approximately 400 words per page, indicate that a 57-page operating agreement would require roughly 90 minutes

for a complete manual review. In contrast, AI-assisted analysis reduces this task to less than five minutes, including the time required for a human reviewer to validate the AI-generated checklist.

Thus, more than an hour of staff time is saved on a single document. It is important to note that operating agreements frequently involve complex ownership structures. Many entities are organized through multiple “nested entities,” whereby an LLC or other business structure is owned by another entity, which may itself be owned by an additional entity, and so on. The operating agreement selected for this demonstration reflected exactly this type of nested ownership. AI proved highly capable of identifying these more complex corporate structures and presenting them in a more digestible format, significantly reducing the cognitive load and time required for manual interpretation.

This means that one loan originated from the 84 identified previously may have one to five operating agreements, or more, enhancing the efficiencies gained by multiples as there is no incremental time increase for AI to review multiple documents simultaneously. An example of the organizational structure review with “nested entities” is below. Copilot mapped out an organizational flow chart based on dropping operating agreements into the text window. This flow chart can easily assist a loan operations staff to have an alternative means to understand the relationships between multiple, nested entities in seconds, not hours. Names have been changed to preserve confidentiality, see IMAGE 10.

IMAGE 10:

**Ownership Tree for complex entity ownership**

- 1.) Create an ownership tree using the following information
- 2.) The parent company is XYZ company
- 3.) XYZ Company is owned 100% by ABC Company
- 4.) ABC Company is 65% owned by Dude Bro Co and 35% by John Doe
- 5.) Dude Bro Co is owned 60% by Jeff Bro, and 40% by More Bro Co
- 6.) More Bro Co is owned 50% by Lou Bro and 50% by the Lou Bro Irrevocable Trust
- 7.) Have XYZ Company be at the top of the ownership tree with ABC Company directly below and the next two ownerships splitting left and right and subsequent owners flowing downward. Calculate each bottom line owners ownership of XYZ company and include next to their names.



## 5.2 Loan Origination

Loan originations at Premier Bank require disciplined underwriting practices consistent with the Bank's conservative risk posture and regulatory obligations. The origination process begins when a relationship manager identifies a loan request and gathers the necessary financial documentation from the prospective borrower. These materials are then provided to the credit analysis team, which "spreads" the financial statements and produces a summarized, standardized presentation of the borrower's financial condition in credit-memo format. This document serves as the foundation for the relationship manager's review, enabling them to evaluate the borrower's financial position, raise clarifying questions, and assess creditworthiness. The relationship manager and credit analyst jointly finalize the credit memo by presenting a formal recommendation for approval or denial.

During the same period analyzed above, the Bank originated 84 loans. While not all components of the underwriting and approval process are amenable to AI-driven efficiency gains, several key tasks are. This Capstone therefore concentrates on functions where AI can create measurable value. These include summarizing rent rolls, condensing appraisal reports, reviewing and summarizing operating agreements and commercial leases, summarizing purchase contracts, creating a checklist of key dates embedded in purchase contracts, and summarizing life insurance policies, etc. Each of these activities is time-intensive, highly repetitive, and essential to producing a complete credit memorandum, making them well-suited for an AI-assisted workflow enhancement.

These tasks were identified by the author of this Capstone, who has been actively incorporating AI into the underwriting workflow at the behest of this Capstone project, documenting time savings for each task. Although no two rent rolls or appraisal reports require

precisely the same amount of review time, average durations were assigned to each step to create a reasonable baseline for analysis. As previously noted, the vast majority of the Bank’s assets consist of commercial loans, most of which are secured by commercial real estate, each of which requires underwriting scrutiny. Accordingly, the hypothetical time-savings model developed in this paper is constructed with these loan types in mind.

The loan request analyzed reflects a typical Premier Bank transaction: the acquisition of a commercial real estate asset. In this case, a 50-unit multifamily property is under contract. Core underwriting tasks include reviewing the purchase agreement, preparing a key-dates checklist, summarizing the rent roll, analyzing guarantor financials, reviewing historical operating performance, and summarizing the appraisal. While additional steps are required to complete the credit process and close the loan, this analysis focuses solely on these functions to quantify time savings and evaluate the impact of AI integration.

IMAGE 11:

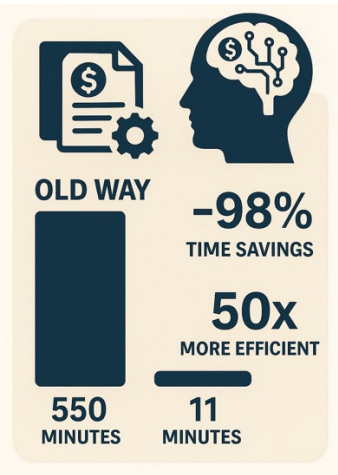
Task	Amount of Time For Human To Complete (Minutes)	Amount of Time For AI To Complete (Minutes)
Review Purchase Agreement	10	1
Create Key Dates Checklist From Purchase Agreement	15	1
Review and Summarize Rent Roll	20	1
Review 11 Page Leases (50)	445	5
Review Guarantors Financials (2)	10	1
Review Historical Financials From MFH Asset	15	1
Review Appraisal Report and Summarize	35	1
Total Time Utilized	550	11

The amount of time shown in the IMAGE 11 above that each requires takes relied on self-reporting from the analyst and a relationship manager. Certainly, small sample size is a limitation of the data set for the paper. That acknowledged, it took approximately 550 minutes (9.2 hours) for a human to complete the task described compared to approximately 11 minutes for the AI to review and complete the same tasks. The approximately 11 minutes does not

include time allocated for human oversight/review of AI generated outputs, but nonetheless the time savings are substantial.

Based on this scenario, a human utilizing AI as a support tool is 50 times more efficient in the completion of this kind of task. See IMAGE 12 for an illustrative analysis of the human alone versus the human and AI assisted approach.

IMAGE 12:



The initial example reflects a more time-intensive scenario, requiring review of approximately 50 individual leases and reconciliation to the rent roll. While not standard Bank practice, full lease review can serve as a meaningful risk mitigation tool—one that AI enables with minimal incremental human time increases.

A second, more moderate scenario involves a five-tenant retail strip center, reducing the review scope to five leases. For consistency, no adjustment is made to AI processing time despite roughly 500 fewer pages of lease material, isolating the efficiency gains attributable to AI.

IMAGE 13 summarizes task-level timing for this scenario. No additional adjustment was made for commercial lease complexity, although such documents are typically longer and more complex.

IMAGE 13:

Task	Amount of Time For Human To Complete (Minutes)	Amount of Time For AI To Complete (Minutes)
Review Purchase Agreement	10	1
Create Key Dates Checklist From Purchase Agreement	15	1
Review and Summarize Rent Roll	20	1
Review 11 Page Leases (5)	44.5	5
Review Guarantors Financials (2)	10	1
Review Historical Financials From Retail Asset	15	1
Review Appraisal Report and Summarize	35	1
Total Time Utilized	149.5	11

Even so, a human with AI was able to speed up this process from approximately 150 minutes to approximately 11 minutes. While less dramatic than a 50 times efficiency increase, a 13.6 times efficiency increase is still noteworthy as 139 minutes were saved on the analysis. See IMAGE 14 for an illustrative analysis.

IMAGE 14:



6. Financial Impact to the Bank

ROI in this project is evaluated by estimating the net labor savings generated through AI adoption. Specifically, the analysis compares (1) the time and associated labor expense required to complete key underwriting and operations tasks using traditional methods with (2) the reduced labor required when those tasks are performed with AI assistance, inclusive of the time staff spend interacting with AI outputs and verifying accuracy. The cost of AI licensing is then incorporated to determine the overall return on investment. The \$300 annual cost for each Copilot license is frontloaded on just the first review and is not a recurring cost. As a result, the 602% ROI reflects significant enterprise value to the Bank as it pertains to loan operations. See Table 06A for the modeled 602% calculation.

IMAGE 15:

<b>Manual Human Process</b>	
Operating Agreements Reviewed	253
Average Pages Per Operating Agreement	25
Total Pages Reviewed	6,325
Words Per Page	400
Total Words Read	2,530,000
Words Read Per Minute	250
Total Minutes Consumed	10,120
Total Hours Consumed	169
Price Per Hour	\$ 43
Time Value of Operating Agreement Review	\$ 7,281

<b>AI Assisted Human Process</b>	
Operating Agreements Reviewed	253
Time Needed For Human to Certify AI Checklist Per Operating Agreement	5
Total Minutes Needed To Review Operating Agreements	1,265
Total Hours Needed To Review Operating Agreements	21
Price Per Hour	43
Time Value of Operating Agreement Review	910
Annual Cost of CoPilot License	300
Total Cost	1,210

<b>ROI</b>	
Total Dollars Saved For Same Output (Return)	7,281
Total Cost for AI Assisted Human Process (Investment)	1,210
Total Return On Investment	602%

To illustrate the potential organizational impact of AI-assisted review, let us consider the same 253 operating agreements previously analyzed. Hypothetically, loan operations staff spent a total of 10,120 minutes (or approximately 168.67 hours) reviewing these documents manually given the previously established 250-word per minute reading speed. If we reallocate this same amount of time to an AI-assisted process, where each review takes approximately five minutes with human verification, staff would have the capacity to review roughly 2,024 operating agreements within the same timeframe.

By way of context, during this period, a loan officer (referred to here as “JB”) originated 33 loans totaling \$34,684,749, averaging \$1,051,053 per loan over the previously described benchmarking period. Under a hypothetical scenario with no capital or liquidity constraints and sufficient loan demand, the increased review capacity would allow the Bank to process operating agreements associated with up to \$1,329,582,045 in loans using the same staff resources. This represents a theoretical 3,733% increase in loan volume.

IMAGE 16:

Total Time Allocated For Review	6,325
Time Needed For Human to Certify AI Checklist Per Operating Agreement	5
Number of Operating Agreements Able To Be Reviewed Inside Time Allocation	1,265
Average Loan Booked During Period 12/1/2024 - 11/1/2025 for Officer JB	\$ 1,051,053.00
Loan Volume Capacity With Same Average Loan Size/Unlimited Capital/ Same Loan Staff	\$ 1,329,582,045.00
Interest Spread of 2.75%	\$ 36,563,506.24
Actual Loan Volume YTD for Officer JB	\$ 34,684,749.00
Interest Spread of 2.75%	\$ 953,830.60
Delta Between Actual and Hypothetical Scenarios	\$ 35,609,675.64
Loan Volume	3733%

Certainly, loan document preparation and the loan officer’s capacity to generate credit memoranda would constrain overall production; however, overemphasizing those bottlenecks obscures the efficiency gains achievable through AI in this scenario. In periods when market demand is strong but capital constraints limit balance-sheet growth, the value of AI is not “deploying more capital,” but increasing underwriting and review capacity allowing the Bank to respond faster prioritizing higher-quality opportunities and maintain credit discipline even when growth is capped.

Having established the dramatic increase in document review capacity through AI integration, it is essential to consider the broader financial implications, particularly within the realm of credit analysis. Enhanced efficiency not only reduces the time and labor costs associated with routine document reviews but also reallocates valuable human resources toward more complex and judgment-intensive aspects of the credit process. This shift can improve the quality and speed of credit decisions, potentially leading to enhanced loan portfolio performance and improved risk assessment for times when capital is selective.

## 7. Non-Financial Impact to the Bank

This Capstone makes clear the efficiency gains across two departments, loan operations and credit administration, as well as ROI improvements. However, what has not yet been considered is the non-financial impacts which may be equally consequential. Some of the non-financial impacts include organizational culture and employee sentiment, regulatory opinion, and talent atrophy.

## 7.1 Regulatory Considerations

Premier Bank's primary regulator is the Office of Comptroller of Currency, and as such their regulatory opinion is relevant. Artificial intelligence is a permitted technology to be used in banking just as any other technology, like the internet, Microsoft Word, or Microsoft Excel. Credit decisioning and direct customer to artificial intelligence are not considered in this Capstone. That said, the regulator places the burden on risk management on the financial institution that wishes to utilize AI<sup>xi</sup>. Ultimately, any employee user of AI is the custodian of confidential customer information. Should the use of artificial intelligence be deployed across the institution, the Bank should strongly consider regulatory compliance training when confidential customer information is involved in addition to existing compliance training.

In March 2025, Premier Bank adopted a Board-approved AI Policy establishing a governance framework aligned with its risk appetite, regulatory obligations, and applicable law. The policy applies to all employees and contractors and restricts AI use to internal, back-office, and operational functions. It prohibits external-facing or higher-risk uses, including credit decisions, account opening, personnel matters, and customer communications, and forbids the use of public AI platforms for confidential information.

AI oversight is centralized through Board and IT Committee review, with required risk assessments prior to deployment. The policy also sets standards for data confidentiality, acceptable use, data quality and ownership, and testing for accuracy and bias. Together, these controls embed AI governance within the Bank's broader enterprise risk management framework.

Integration of AI into day-to-day banking operations represents a significant shift in how financial institutions can process incoming information, support and enhance decision making and interact with existing bank-based data. While efficiency gains are demonstrable, deployment introduces cyber and confidential information risks that are different from traditional information technology systems. The risks arise from large language models (LLM's) as well as from the adherence to risk-based policies implemented by any financial institution.

Public LLMs operate outside the Bank's tenant, creating data leakage risk and limited visibility into third-party data retention practices. As a result, their use introduces new confidentiality risks for banks. In contrast, enterprise-integrated tools like Copilot align with Microsoft 365 permissions and data loss prevention controls, reducing third-party exposure and keeping sensitive information within management-defined boundaries.

From a non-financial perspective, one of the most significant risks associated with adoption of AI is the potential for regulatory violations, which could ultimately result in supervisory criticism or enforcement action. While AI represents a new technological tool, the underlying risk is not new; the careless use of paper records, internet resources, or email systems can lead to similar regulatory consequences. As with any tool, responsible use of AI depends on clear ownership of risk, strong governance, and continued adherence to regulatory guidance.

## 7.2 Employee Sentiment

Beyond regulatory considerations and financial impact, employee sentiment is an equally critical factor warranting attention. Even when technology demonstrably improves efficiency, its ultimate success depends on whether employees are willing to adopt and use it consistently in their day-to-day work. Without genuine employee buy-in, even well-suited technologies are

unlikely to be meaningfully integrated into routine operations and may instead remain underutilized.

This challenge of garnering genuine employee “buy-in” is highlighted in a recent article on AI adoption hesitancy by Scott A. Snyder, Senior Fellow at Wharton, published in *Wharton Business Journal*<sup>xii</sup>. Snyder argues that the most significant barrier to meaningful AI adoption across organizations is not technological capability, but human behavior. He observes only a small fraction of employees, approximately five percent, are currently using AI in ways that materially impacts their work. The majority of employees’ sentiment remains skeptical, primarily due to fear job displacement, or the perception of little personal benefit from adoption. As a result, AI use often stalls at a superficial level rather than achieving deep operational integration.

Snyder frames the issue from the employee’s perspective, posing a fundamental question, “Why would I do more work for the same pay?” He contends that overcoming this resistance requires a deliberate redesign of incentives across three levels of the organization. At the leadership level, compensation and performance objectives should be directly linked to AI readiness, adoption, and measurable business impact. At the team level, shared goals and incentive structures should reward collaboration and AI-driven improvements. At the individual level, employees should be encouraged to experiment responsibly with AI, document productivity gains, and convert time savings into opportunities for learning and innovation. A rewards based system or constructive approach for AI adoption is more successful than a punitive approach.

Snyder’s article outlines several concrete mechanisms to support this approach, including AI innovation awards, team-based bonuses tied to AI impact, and individual gain-sharing models that allow employees to reinvest efficiency gains into professional development. It further

emphasizes embedding AI-related objectives into existing compensation, promotion, and role-design frameworks, while phasing in performance metrics gradually to mitigate fear and resistance. Collectively, these measures underscore that sustainable AI adoption is as much an organizational and cultural challenge as it is a technological challenge.

For the purposes of this Capstone, three employees with different ownership in parts of the credit process at the Bank summarized their sentiments regarding AI integration. One member of the loan operations team, a member of the credit analyst team, and a junior lender who was formally an analyst.

#### 7.2.1 Loan Operations Employee

The loan operations participant's perspective closely mirrors the broader pattern identified by Snyder, falling within roughly 95% of employees who remain hesitant to fully embrace AI<sup>xiii</sup>. The participant's concerns centered primarily on job security and the practical realities of adopting a new tool in an already demanding role. From the author's perspective, these fears are not well aligned with where the technology currently stands, particularly given its limited ability to replace judgment-driven work. Still, hesitation remains despite training and demonstrations. Rather than rejecting the technology outright, the participant's comments suggest that time pressure and the upfront effort required to learn and structure AI use are significant barriers. The participant explains, *"I think it's a good tool / time saver once you learn how to use it. At the moment...I don't plan to use it much because I have a lot going on and don't really have much time to build prompts etc. I do use it for corporate docs right now though. It's just with something more complex like doc review/balancing, I would want to spend some time making correct prompts, documenting it so I can use them in the future...and I just don't have time to do that right now."* This response seems to highlight how uncertainty and workload

constraints can reinforce anxiety about AI, even when the employee generally sees its potential value. The response also underscores the importance of leadership and management to allow for employee adoption of AI while balancing current workloads.

### 7.2.2 Credit Analysis Employee

The credit analyst's experience stands in sharp contrast. The participant falls into the small group, roughly 5%, that Snyder identifies as using AI in ways meaningfully impactful on daily work. After several months of hands-on use, the participant's perspective is noticeably more confident and pragmatic. The participant states, *"After approximately 5 ½ months of Copilot usage (8/1/2025 – 1/16/2026), I've drawn the conclusion that CoPilot is a very useful augmentation to my productivity and is a worthwhile investment. While it did not perform well enough to justify consistent usage for financial analysis or other complex mathematical tasks, it did prove itself very useful for summarizing/explaining lengthy, complex documents, that would otherwise have taken me hours to read and decipher. Examples of this include appraisals, leases, purchase contracts, etc. As an analyst, much of the information I need to complete the underwriting of a deal is contained in these lengthy documents, and being able to pull the exact information needed in an efficient manner has speed up my underwriting efficiency significantly.*

*In addition to extracting specific information from lengthy documents, I also used Copilot to get an understanding of complex legislation and statutes in roughly 1/3rd of the time it would have taken me normally. Understanding certain legislation and government statutes which are pertinent to banking is an essential part of my job as an analyst, and CoPilot allows me to gain a deep knowledge of it very quickly.*

*In conclusion, CoPilot has been an essential tool for me to use as an analyst. It has increased my underwriting efficiency by a significant margin, by eliminating time-consuming tasks like combing through lengthy, complex legal documents.”*

What stands out is not just the productivity gains, but the clarity with which the participant describes what AI can and cannot do. That familiarity appears to reduce fear and replacing it with a sense of control.

### 7.2.3 Lender Employee

The lender participant, who previously worked as an analyst, also falls into the 5% category and speaks directly to the job-security concerns raised from the loan operations employee. His comments reinforce a similar theme seen in credit analyst’s perspective: Once AI is used regularly, it feels less threatening and more like a standard tool of the trade. The participant notes, *“The positive with AI will come from an enhanced time efficiency when completing very ‘clerical’ tasks. In my opinion this would be automating reporting processing, some level of data entry, as well as spot checking spelling, grammar and sentence structure. The idea of AI taking someone job to me is interesting. While in the past automation has had an effect at a certain scale, what I think it really will do at this point is be another skill that an individual will need to have in their repertoire. Similar to how individuals who are not proficient with basic computer functions today can be seen as not as reliable or efficient, the same will come into play with usage of AI at some point.”*

Rather than viewing AI as a replacement, the participant frames it as a skill, one that will likely become expected over time similar to personal computers.

The participant also raised a concern that had not previously been considered in this analysis: the environmental and ethical implications of AI. The participant explains, *“The things*

*that I personally do not like when it comes to AI are in regard to specific applications of generative AI, environmental impacts, and the lost opportunity cost associated with data centers....”* This introduces an important nuance since resistance to AI is not always rooted in fear of job loss. In some cases, it reflects broader concerns about sustainability, ethics, and long-term societal tradeoffs.

Employee perception of AI is driven by experience: those who use it view it as a tool, while those who avoid it tend to overestimate its capabilities and feel more threatened. As a result, successful AI adoption seems to depend less on the technology itself and more on employee engagement, familiarity, and organizational context.

### 7.3 Talent Atrophy

Long-standing research on automation, not just AI, has consistently raised concerns about skill or talent atrophy when cognitive tasks are delegated to automated systems<sup>xiv</sup>. When automation takes over routine analytical work, individuals often shift from actively performing tasks to supervising them. Over time, this can reduce situational awareness and increase the risk of overreliance, making it harder for users to recognize when human intervention is needed. Skills seemed to be retained when the participants were actively engaged in monitoring cockpit automation in the aviation industry, think autopilot.

Data seems to suggest that caution should be exercised when less experienced staff rely on automation, as they may lack the subject matter expertise needed to recognize errors or subtle omissions in automated outputs. More experienced users, however, can use automation effectively to improve efficiency, provided the results are reviewed and verified via humans through proper means of quality assurance as highlighted in the use case scenario previously

discussed about legal document review (checklists). This layered review process helps preserve professional judgment, maintain foundational skills, and guard against unchecked automation bias.

It is the recommendation of this Capstone that newer and less seasoned employees develop the ability manually process risk sensitive tasks, including financial analysis, manually. Further, if AI is integrated into day-to-day banking operations, a skill retention policy should be attended to. For example, this could be a quick test of ratio analysis for analysts completed annually similar to required compliance training.

For example, a newer credit analyst using Copilot to prepare financial spreads for a multifamily acquisition may accept an abnormally high current ratio without question and pass the analysis to a senior lender. A more experienced lender is likely to challenge the classification of current assets and liabilities and return to the source documents to validate the calculations. In this scenario, the newer analyst may not yet understand that most real estate entities typically exhibit current ratios below 1.0x, highlighting the importance of experience-based oversight.

## 8. Conclusion and Next Steps

According to publicly available Census data, AI adoption will continue across industries<sup>xv</sup>. Nearly one in three financial and insurance firms report AI adoption, the fourth most out of any industry<sup>xvi</sup>. A recent Wall Street Journal poll found that 85% of Chief Executive Officers polled indicated that they bullish on the “broad economic impact of artificial intelligence”<sup>xvii</sup>. IMAGE 17 illustrates a profile of AI adoption by industry sector. The Business Trends and Outlook Survey (BTOS) published by the US Census Bureau points towards some industry agnosticism as to the integration of AI.

IMAGE 17

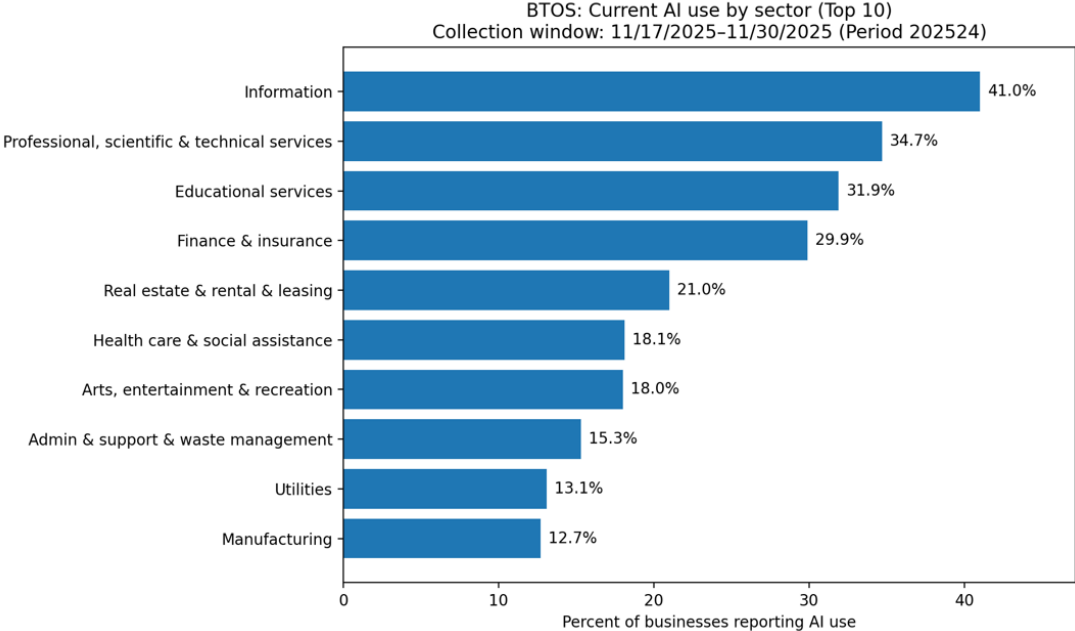
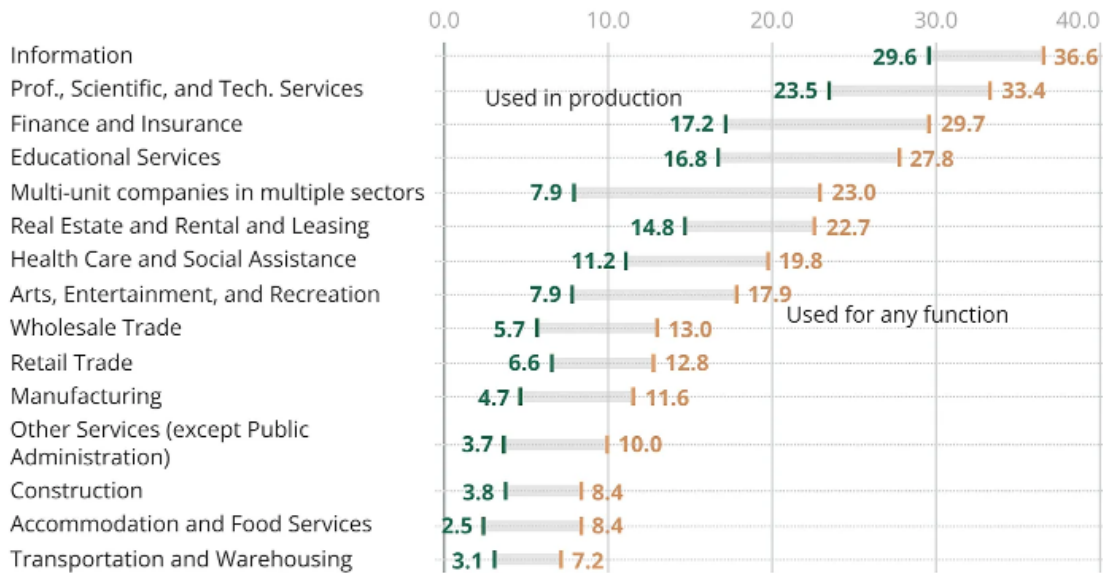


IMAGE 18, which is also sourced from BTOS data from late 2025, differentiates the way that AI is being used across industries. Interestingly, AI utilization for work production lags behind all use function<sup>xviii</sup>. This seems to support the previous analysis by Snyder.

### Figure 1. Business AI use in any task is higher but still low in many sectors

Comparing percent using "in production" vs "any business function"



Green points shows the percent of businesses in each sector that report using AI in the last two weeks "in producing goods or services", averaged across two bi-weeks covering 8/25/2025 to 9/21/2025. Orange points shows the percent of businesses in each sector that report using AI in the last two weeks "in any of its business functions", averaged across two bi-weeks covering 11/3/2025 to 11/30/2025. We drop sectors with more than 80% of observations across their time series suppressed for disclosure avoidance.

Source: Business Trends and Outlook Survey



Over the past 40 years, the U.S. commercial banking industry has experienced pronounced consolidation, with the number of commercial banks declining by 72% percent from its mid-1980’s peak<sup>xix</sup>. This persistent trendline points to fewer, larger institutions rather than cyclical contractions. This long-term consolidation provides important context for evaluating operational efficiency, scale economies, and the adoption of technologies such as artificial intelligence intended to offset rising compliance and operating costs. Continued pressure on net

interest margin and other efficiencies strike the author as the cause of this trend. AI may provide relief.

Consolidation in this industry is often influenced by the high personnel costs associated with staffing and compliance. AI should be considered for use on an enterprise-wide scale across business units in banking so that smaller teams can “punch above their weight” and decrease efficiency ratios, a stated goal of the ownership of Premier Bank.

While AI is not a panacea that can singlehandedly take over the full depth and breadth of a seasoned banking professional’s duties, it does provide meaningful efficiency gains in a narrow subset of tasks that have been identified in this Captstone. These include legal statute research, legal and organizational document review, appraisal review, lease and contract review, etc. These are tasks that each employee involved with loan production completes hundreds of times per year. Automating the document review allows the human “farm out” manual analysis and focus on performing quality assurance on the output generated by the AI and resulting in significant gains in efficiency.

The use of AI as it pertains to generating meaningful conclusions should be restricted to individuals that have substantial experience as they will need to be able to identify errors made by the technology. That said, would you want your seasoned professional “to start off on 1<sup>st</sup> base or on third”? AI allows seasoned, more experienced professionals to amplify their impact by focusing on value added work.

AI has been implemented for the entire duration of writing this paper. No, AI didn’t write it, but it expedited the tasks of researching and obtaining supporting documentation to string together complex ideas. The author largely concurs with the employee participant’s findings. AI

in its current form seems to be a complimentary tool to expedite repetitive, time-consuming, clerical, and data related tasks historically performed by seasoned, expensive professionals.

Much of AI's enterprise value extends beyond underwriting efficiency. As reflected in IMAGE 07, AI use across industries more often occurs in "any function" than strictly "in production." For a community bank, that distinction matters.

The Bank already possesses substantial internal data on its customers—loan anniversaries, maturity dates, rate resets, deposit patterns, and overall relationship depth. While such data must remain within the bounds of privacy and fiduciary responsibility, it can be used to strengthen service rather than monetize information. Though internal uses of the technology could be used to monetize information.

AI could support soft-touch engagement by prompting relationship managers about key dates, generating draft outreach for birthdays or business anniversaries, flagging unusual balance activity, or identifying clients approaching renewal events. Each communication would remain banker-led, but more timely and consistent.

In a small community bank constrained by staffing and capital, this type of AI application does not expand the balance sheet; it improves attentiveness. The value is not automation for its own sake, but disciplined relationship reinforcement at scale.

Overall, it is clear that AI utilization can contribute meaningfully when implemented across various divisions within a community bank. While AI or any other emerging technology is unlikely to fully replace the complexities of human thinking, experience, or professional judgement, AI will be an important tool similar to when the personal computer was adopted.

It was initially anticipated that Copilot would generate meaningful underwriting efficiencies, particularly in financial statement analysis and the spreading of corporate and personal tax returns. While the exercise demonstrated some efficiency gains in that domain, they did not materialize in the manner originally expected. Copilot proved ineffective for detailed financial spreading and given that it is the only AI tool within the Bank's tenant environment, combined with strict confidentiality requirements, it was not ultimately utilized for that purpose, as reflected in the credit analyst's testimony.

That acknowledged, the technology did provide real and measurable efficiencies aligned with a bank focused on operational efficiency and credit discipline. The most meaningful gains emerged in dense document review and quality assurance workflows, particularly when the AI generated structured checklists with page references for human validation.

As a thought experiment and conclusion of this Capstone, we will now see how Premier Bank can achieve asset growth without additional staffing. Liquidity for this endeavor can be obtained by utilizing credit facilities at the Federal Reserve as well as the Federal Home Loan Bank of Topeka. In total, Premier Bank could readily access approximately \$186,000,000 in secured and unsecured financing through these existing facilities.

While the two examples illustrated additional theoretical production capacity of approximately \$1,329,582,045 in new loan originations, this is not realistic based on the Bank's operations and the market forces to which it is subjected. A more realistic example would be to utilize the \$186,000,000 of untapped borrowing capacity. Assuming a 5-year bullet from the Federal Home Loan Bank at an annual interest rate of 3.80%, and an average loan rate of 6.50%, the 2.70% margin would deliver an additional \$5,020,000 in pre-tax net income to Premier Bank. This effectively doubles normalized pre-tax net income numbers, resulting in a .38% lift to ROA,

which would be projected to be at 1.99%. Assuming no incremental cost increases associated with additional staffing to deploy the \$186,000,000 of borrowed funds Premier Bank's efficiency ratio would decrease from approximately 55% to 25.4%. Using the UBPR Peer Group Average Distribution Report for banks with assets between \$300 million and \$1 billion as of December 31, 2025, an efficiency ratio of 55% would rank near the 30th percentile, indicating performance stronger than roughly 70% of comparable institutions. In contrast, an efficiency ratio of 25.4% would fall beyond the top one percentile of peer distribution, representing exceptionally strong operating efficiency relative to all peers.

A match funding approach should be considered whereby borrowing windows are synchronized with deployment windows making it easier for management to manage capital ratios, but it is concluded that the earning's lift will be noticeable if effectively deployed by management and adopted by staff.

While Bank-wide implementation was outside the scope of this Capstone, the demonstrated efficiency gains support broader, programmatic adoption across departments. For example, operating agreements tied to new loan relationships are often reviewed independently by both loan operations and deposit operations—an inherently duplicative process that AI could significantly streamline.

Employee diary logs identified additional use cases beyond the scope of this exercise, reinforcing that the benefits observed here are likely understated.

Accordingly, the next step is to evaluate a structured, cross-department AI implementation strategy focused on eliminating redundant workflows, improving efficiency, and scaling productivity gains across the Bank.

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<sup>i</sup> <https://www.unomaha.edu/strategic-planning/metropolitan-university.php?utm>

<sup>ii</sup> <https://cdr.ffiec.gov/Public/Reports/UbprReport.html?rptid=283&idrssid=860259&rptCycleIds=147,142,145,140,135>

Company Name	City	Total Assets	Return on Assets
Nebraska State Bank	Oshkosh	68,066	3.50%
American Interstate Bank	Elkhorn	140,120	3.33%
Scribner Bank	Scribner	86,094	2.67%
Horizon Bank	Waverly	495,433	2.61%
The First National Bank of Gordon	Gordon	374,926	2.54%
Heritage Bank	Wood River	589,422	2.52%
Chambers State Bank	Chambers	86,911	2.24%
South Central State Bank	Campbell	190,707	2.22%
American Exchange Bank	Elmwood	66,228	2.13%
BankFirst	Norfolk	1,154,801	1.84%
First National Bank in Ord	Ord	156,902	1.68%
Farmers and Merchants State Bank	Bloomfield	213,173	1.68%
Bank of Elgin	Elgin	79,159	1.65%
Town & Country Bank	Ravenna	219,069	1.63%
First State Bank	Loomis	216,472	1.63%
Heartland Bank	Geneva	919,453	1.62%
Premier Bank National Association	Omaha	344,086	1.61%
York State Bank	York	186,511	1.61%
Henderson State Bank	Henderson	548,726	1.61%
Minden Exchange Bank & Trust	Minden	192,001	1.60%
First Bank of Nebraska	Wahoo	460,607	1.58%
Washington County Bank	Blair	615,402	1.55%
Boelus State Bank	Boelus	23,361	1.55%
Bank of Dixon County	Ponca	128,379	1.54%
Banner Capital Bank	Harrisburg	355,420	1.53%
Homestead Bank	Cozad	512,609	1.51%
Siouxland Bank	South Sioux City	84,132	1.51%
Nebraska State Bank and Trust Company	Broken Bow	275,346	1.50%
Exchange Bank	Kearney	1,531,441	1.50%
Flatwater Bank	Gothenburg	321,128	1.49%
RVR Bank	Fremont	551,383	1.44%
F&M Bank	West Point	338,853	1.43%
First Westroads Bank, Inc.	Omaha	384,604	1.42%
First National Bank of Omaha	Omaha	31,561,847	1.42%
Bank of Prague	Prague	43,160	1.39%
Riverstone Bank	Eagle	542,373	1.39%
Adams County Bank	Kenesaw	237,214	1.38%
Cattle Bank and Trust	Seward	412,406	1.36%
Dundee Bank	Omaha	787,416	1.36%
Five Points Bank	Grand Island	2,086,420	1.36%
West Plains Bank	Ainsworth	130,993	1.35%
Commercial State Bank	Wausa	241,048	1.35%
Union Bank and Trust Company	Lincoln	8,800,747	1.34%
iii First Northeast Bank of Nebraska	Lyons	487,396	1.34%
Cedar Security Bank	Fordyce	60,279	1.33%
The Potter State Bank of Potter	Potter	47,654	1.31%
Waypoint Bank	Cozad	380,300	1.29%
Security National Bank of Omaha	Omaha	1,814,786	1.26%
Nebraska State Bank	Bristow	24,095	1.26%
Brunswick State Bank	Brunswick	171,479	1.25%
Clarkson Bank	Clarkson	73,972	1.24%
The Bank of Steinauer	Steinauer	22,791	1.22%
Sandhills State Bank	North Platte	360,755	1.22%
First State Bank	Randolph	76,953	1.22%
Commercial State Bank	Republican City	76,748	1.22%
Western Nebraska Bank	Curtis	183,247	1.21%
Countryside Bank	Unadilla	115,930	1.19%
Ceresco Bank	Ceresco	74,404	1.19%
Platte Valley Bank	Scottsbluff	1,136,226	1.17%
Farmers and Merchants Bank	Milligan	187,845	1.17%
JONES BANK	Seward	425,685	1.16%
Citizens State Bank	Carleton	32,837	1.15%
Bank of Hartington	Hartington	137,785	1.15%
Cedar Rapids State Bank	Cedar Rapids	171,645	1.14%
Pinnacle Bank	Lincoln	8,508,672	1.13%
Pathway Bank	Cairo	344,214	1.12%
Hershey Bank	Hershey	119,554	1.11%
First State Bank	Farnam	185,542	1.11%
Elkhorn Valley Bank & Trust	Norfolk	1,372,988	1.10%
CHARTER WEST BANK	West Point	509,255	1.09%
Adams Bank & Trust	Ogallala	1,314,271	1.08%
First State Bank Nebraska	Lincoln	1,100,361	1.07%
Security Bank	Laurel	318,388	1.04%
Genoa Community Bank	Genoa	71,005	1.04%
Median		220,833	1.04%
Platte Valley Bank	North Bend	103,034	1.04%
Columbus Bank and Trust Company	Columbus	263,500	1.04%
First Nebraska Bank	Valley	358,463	1.02%
Frontier Bank	Omaha	1,408,272	1.01%
State Bank of Table Rock	Table Rock	146,336	1.00%
Citizens State Bank	Wisner	601,567	1.00%
Madison County Bank	Madison	608,907	1.00%
Access Bank	Omaha	905,001	0.99%
West Gate Bank	Lincoln	1,353,626	0.98%
FirsTier Bank	Kimball	1,046,879	0.98%
F&M Bank	Falls City	147,326	0.97%
Western National Bank	Chester	245,266	0.96%
American National Bank	Omaha	5,065,384	0.96%
Farmers and Merchants Bank	Milford	972,518	0.96%
Thayer County Bank	Hebron	84,651	0.95%
Auburn State Bank	Auburn	259,446	0.95%

First Bank and Trust of Fullerton	Fullerton	106,307	0.94%	Enterprise Bank	Omaha	534,683	0.76%
Nebraska Bank	Dodge	468,410	0.93%	Arbor Bank	Nebraska City	629,360	0.75%
Farmers and Merchants Bank of Ashland	Ashland	137,700	0.92%	State Nebraska Bank & Trust	Wayne	252,637	0.75%
Home Federal Savings and Loan Association	Grand Island	500,894	0.90%	Bruning Bank	Bruning	649,316	0.73%
Cornerstone Bank	York	2,790,733	0.89%	Citizens Bank & Trust Company	Saint Paul	236,178	0.72%
Great Plains State Bank	Petersburg	373,959	0.88%	Adams State Bank	Adams	69,642	0.71%
Cornhusker Bank	Lincoln	1,030,262	0.86%	Stanton State Bank	Stanton	60,912	0.70%
First Bank and Trust Company	Minden	95,345	0.85%	First Bank of Bancroft	Bancroft	29,555	0.70%
First Community Bank	Beemer	283,027	0.82%	State Bank of Scotia	Scotia	62,932	0.70%
Security First Bank	Lincoln	2,025,876	0.82%	Dayspring Bank	Gothenburg	1,152,626	0.69%
Nebraska State Bank	Lynch	20,063	0.81%	Bank of Clarks	Clarks	58,095	0.68%
Butte State Bank	Butte	56,476	0.81%	Equitable Bank	Grand Island	518,510	0.64%
First Bank of Utica	Utica	77,363	0.80%	City Bank & Trust Co.	Lincoln	323,709	0.64%
MNB BANK	Mccook	597,036	0.80%	First Tri County Bank	Swanton	72,243	0.63%
Midwest Bank	Pierce	1,210,025	0.80%	First State Bank	Hordville	49,125	0.62%
Bank of Mead	Mead	37,082	0.79%	The Tri-County Bank	Stuart	222,596	0.61%
Generations Bank	Exeter	54,556	0.78%	Bank of the Valley	Bellwood	546,420	0.60%
Nebraska Bank of Commerce	Lincoln	205,697	0.76%	Five Points Bank of Hastings	Hastings	518,451	0.59%
Enterprise Bank	Omaha	534,683	0.76%	Wahoo State Bank	Wahoo	117,210	0.57%
Arbor Bank	Nebraska City	629,360	0.75%	Custer Federal State Bank	Broken Bow	120,699	0.57%
State Nebraska Bank & Trust	Wayne	252,637	0.75%	Battle Creek State Bank	Battle Creek	41,550	0.55%
Bruning Bank	Bruning	649,316	0.73%	I3 Bank	Bennington	204,755	0.54%
Citizens Bank & Trust Company	Saint Paul	236,178	0.72%	Bank of Lindsay	Lindsay	91,071	0.53%
Adams State Bank	Adams	69,642	0.71%	Commercial Bank	Nelson	58,035	0.52%
Stanton State Bank	Stanton	60,912	0.70%	The Culbertson Bank	Culbertson	11,875	0.51%
First Bank of Bancroft	Bancroft	29,555	0.70%	Corn Growers State Bank	Murdock	36,521	0.45%
State Bank of Scotia	Scotia	62,932	0.70%	Core Bank	Omaha	1,073,367	0.42%
Dayspring Bank	Gothenburg	1,152,626	0.69%	Foundation One Bank	Waterloo	180,678	0.37%
Bank of Clarks	Clarks	58,095	0.68%	The Tri-County Bank	Stuart	222,596	0.61%
Equitable Bank	Grand Island	518,510	0.64%	Bank of the Valley	Bellwood	546,420	0.60%
City Bank & Trust Co.	Lincoln	323,709	0.64%	Five Points Bank of Hastings	Hastings	518,451	0.59%
First Tri County Bank	Swanton	72,243	0.63%	Wahoo State Bank	Wahoo	117,210	0.57%
First State Bank	Hordville	49,125	0.62%	Custer Federal State Bank	Broken Bow	120,699	0.57%
The Tri-County Bank	Stuart	222,596	0.61%	Battle Creek State Bank	Battle Creek	41,550	0.55%
Bank of the Valley	Bellwood	546,420	0.60%	I3 Bank	Bennington	204,755	0.54%
Five Points Bank of Hastings	Hastings	518,451	0.59%	Bank of Lindsay	Lindsay	91,071	0.53%
Wahoo State Bank	Wahoo	117,210	0.57%	Commercial Bank	Nelson	58,035	0.52%
Custer Federal State Bank	Broken Bow	120,699	0.57%	The Culbertson Bank	Culbertson	11,875	0.51%
Battle Creek State Bank	Battle Creek	41,550	0.55%	Corn Growers State Bank	Murdock	36,521	0.45%
I3 Bank	Bennington	204,755	0.54%	Core Bank	Omaha	1,073,367	0.42%
Bank of Lindsay	Lindsay	91,071	0.53%	Foundation One Bank	Waterloo	180,678	0.37%
Commercial Bank	Nelson	58,035	0.52%	Nebraskaland Bank	North Platte	948,287	0.35%
The Culbertson Bank	Culbertson	11,875	0.51%	Sidney Federal Savings and Loan Association	Sidney	42,596	0.33%
Corn Growers State Bank	Murdock	36,521	0.45%	Community State Bank	Colon	43,145	0.29%
Core Bank	Omaha	1,073,367	0.42%	The First National Bank of Johnst	Johnson	92,390	0.22%
Foundation One Bank	Waterloo	180,678	0.37%	Tecumseh Federal Bank	Tecumseh	53,457	0.14%
Nebraskaland Bank	North Platte	948,287	0.35%	First Central Bank	Cambridge	142,333	0.00%
Sidney Federal Savings and Loan Association	Sidney	42,596	0.33%	Lincoln FSB of Nebraska	Lincoln	372,345	-0.13%
				Legends West Bank	Lewallen	105,587	-0.16%
				First Central Bank McCook	Mccook	126,318	-0.22%
				United Republic Bank	Elkhorn	207,822	-1.37%
						Average ROA	1.09%

<sup>iv</sup> <https://cdr.ffiec.gov/Public/Reports/UbprReportPrint.html>

<sup>v</sup> <https://cdr.ffiec.gov/Public/Reports/UbprReport.html?rptid=283&idrssd=860259&rptCycleIds=147,142,145,140,135>

<sup>vi</sup> [https://www.bls.gov/news.release/archives/metro\\_06032020.pdf](https://www.bls.gov/news.release/archives/metro_06032020.pdf)

<sup>vii</sup> <https://www.huduser.gov/portal/publications/pdf/OmahaNE-CouncilBluffsIA-CHMA-19.pdf>

<sup>viii</sup> <https://www.cmegroup.com/trading/real-estate/files/SP-CSI-2009-Year-in-Review.pdf>

<sup>ix</sup> <https://govdocs.nebraska.gov/epubs/U7200/B008-2012.pdf>

<sup>x</sup> <https://gwern.net/doc/psychology/linguistics/2019-brybaert.pdf?utm>

<sup>xi</sup> <https://occ.gov/news-issuances/speeches/2025/pub-speech-2025-38.pdf>

<sup>xii</sup> [https://knowledge.wharton.upenn.edu/article/how-can-companies-incentivize-ai-adoption/?utm\\_campaign=KatW\\_Weekly2026&utm\\_medium=email&utm\\_source=kw\\_campaign\\_monitor&utm\\_term=1-14-2026&utm\\_content=How\\_Can\\_Companies\\_Incentivize\\_AI\\_Adoption](https://knowledge.wharton.upenn.edu/article/how-can-companies-incentivize-ai-adoption/?utm_campaign=KatW_Weekly2026&utm_medium=email&utm_source=kw_campaign_monitor&utm_term=1-14-2026&utm_content=How_Can_Companies_Incentivize_AI_Adoption)

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<sup>xiii</sup> [https://knowledge.wharton.upenn.edu/article/how-can-companies-incentivize-ai-adoption/?utm\\_campaign=KatW\\_Weekly2026&utm\\_medium=email&utm\\_source=kw\\_campaign\\_monitor&utm\\_term=1-14-2026&utm\\_content=How\\_Can\\_Companies\\_Incentivize\\_AI\\_Adoption](https://knowledge.wharton.upenn.edu/article/how-can-companies-incentivize-ai-adoption/?utm_campaign=KatW_Weekly2026&utm_medium=email&utm_source=kw_campaign_monitor&utm_term=1-14-2026&utm_content=How_Can_Companies_Incentivize_AI_Adoption)

<sup>xiv</sup> <https://pubmed.ncbi.nlm.nih.gov/25509828/>

<sup>xv</sup> <https://www.census.gov/hfp/btos/data>

<sup>xvi</sup> [https://www.census.gov/hfp/btos/data?utm\\_source](https://www.census.gov/hfp/btos/data?utm_source)

<sup>xvii</sup> <https://www.wsj.com/articles/ceos-are-all-in-on-ai-f3882564>

<sup>xviii</sup> [https://agglomerations.substack.com/p/how-many-businesses-are-using-ai?utm\\_source=](https://agglomerations.substack.com/p/how-many-businesses-are-using-ai?utm_source=)

<sup>xix</sup> <https://farmdocdaily.illinois.edu/2024/09/an-explanation-of-the-changes-in-the-number-of-commercial-banks-and-branches-across-the-us.html?utm>