

BankDirector
Strong Board. Strong Bank.

2016 Technology Survey

AUG 2016 | RESEARCH

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EXECUTIVE SUMMARY

As the banking industry struggles to innovate to meet shifting consumer expectations, 81 percent of bank chief information officers and chief technology officers responding to Bank Director's 2016 Technology Survey say that their core processor is slow to respond to innovations in the marketplace.

Banks are highly dependent on companies that provide them with core processing technology, which at its most basic contains vital customer data and processes all customer transactions, and these relationships can be intricate: Just 4 percent say that their bank uses the core provider for core processing only, with no additional services. Seventy-one percent use their core's mobile banking platform. Three-quarters rely on the core for bill pay and/or remote deposit capture.

In June and July, Bank Director conducted an online email survey of 199 board members and senior executives of U.S. banks between \$250 million and \$20 billion in assets, including CIOs, CTOs and chief executive officers. The 2016 Technology Survey is sponsored by CDW, headquartered in Vernon Hills, Illinois.

A growing number of technology providers seek to partner with and serve the industry, filling the innovation gap created by slow-to-respond core providers. Nineteen percent of bank executives and directors—including 30 percent of bank CIOs and CTOs—report that their bank has pulled back on plans to integrate a more innovative product, service or delivery channel due to the inability or unwillingness of the bank's core processor to support that activity. An additional 11 percent of total respondents—and 22 percent of technology executives—say they've pushed on with plans to innovate despite negative pushback from the core.

The survey also finds that the ability to effectively use data plagues respondents. Seventy percent indicate that their bank could better use data to serve the needs of existing customers, or identify new customers. A further 15 percent say their institution doesn't use data analytics.

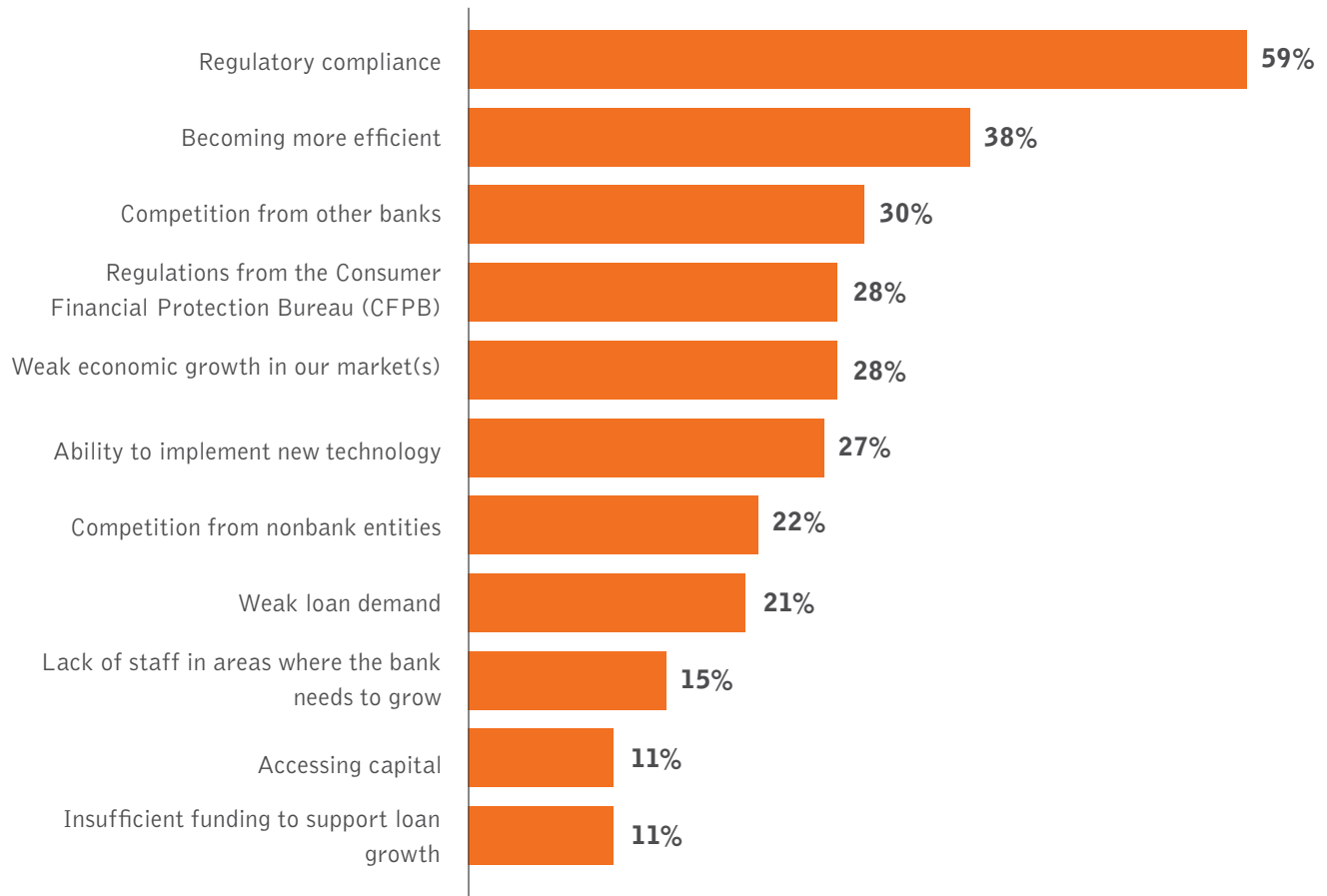
Other key findings:

- Cybersecurity still looms large: Having a strong technology infrastructure in place to protect against cyberattacks remains the top technology concern for survey participants, at 72 percent.
- Thirty-one percent of respondents have converted their bank's core technology within the past five years. Forty-two percent converted their core more than 10 years ago.
- Respondents report that their bank works with a median of five technology firms, including the core provider.
- Sixty-one percent of participants see fintech firms as both competitors and partners.
- Online marketplace lenders should be more heavily regulated, say 60 percent of respondents. Forty-one percent worry that they'll lose loans to these lenders, but 18 percent don't think these lenders have long-term viability.
- Opinions are mixed on the impact that blockchain—the underlying technology behind the digital currency bitcoin—will have on the banking industry. Twenty-four percent believe it will impact all banks. However, 57 percent don't understand blockchain enough to form an opinion, or have never heard of the technology.
- Seventy percent of respondents believe that technological innovation is a priority for their board, but less than half discuss technology at every board meeting.

TECHNOLOGY CHALLENGES

1. Related to the growth and profitability of your institution, what are your three greatest business concerns about your bank?

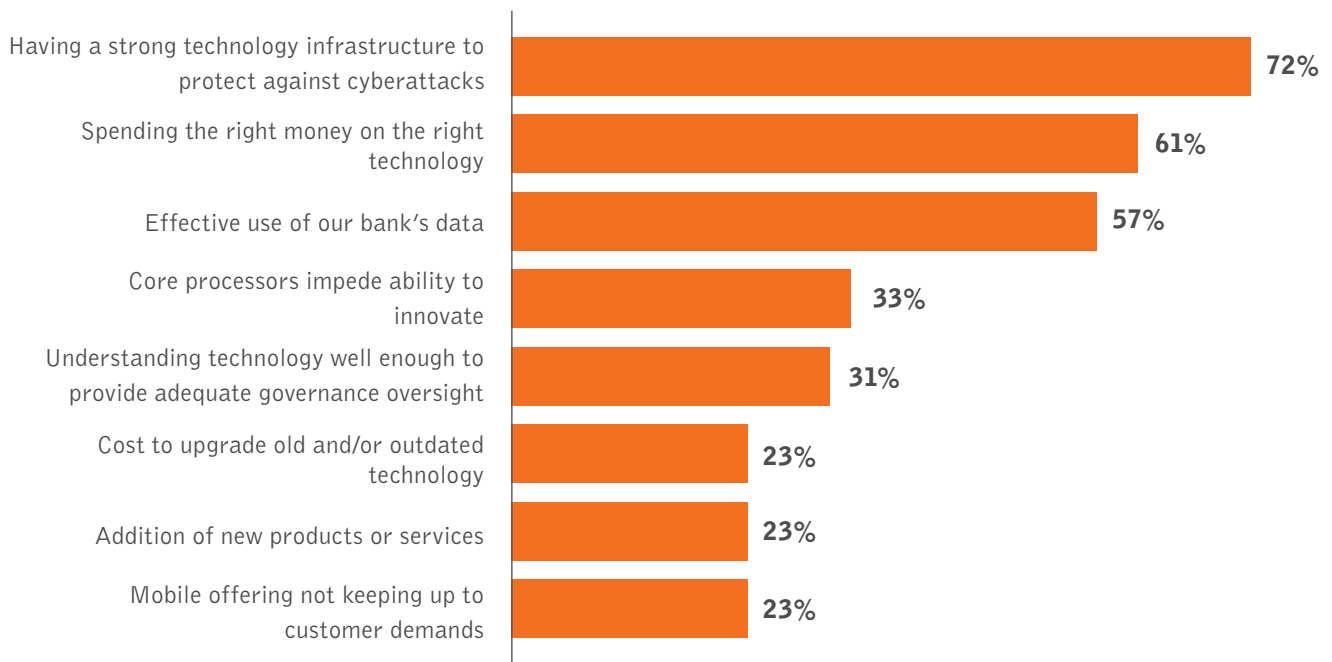
Respondents were asked to select no more than three.



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Regulatory compliance	50%	47%	69%	63%	59%
Becoming more efficient	50%	36%	41%	31%	38%
Competition from other banks	14%	24%	33%	38%	30%
Regulations from the CFPB	50%	33%	17%	23%	28%
Weak economic growth in our market(s)	21%	29%	31%	27%	28%
Ability to implement new technology	43%	24%	28%	21%	27%
Competition from nonbank entities	14%	33%	17%	21%	22%
Weak loan demand	4%	29%	19%	27%	21%
Lack of staff in areas where the bank needs to grow	25%	16%	13%	10%	15%
Accessing capital	11%	7%	11%	15%	11%
Insufficient funding to support loan growth	4%	11%	11%	15%	11%

2. What are your greatest technology concerns about your bank?

Respondents were asked to select all that apply

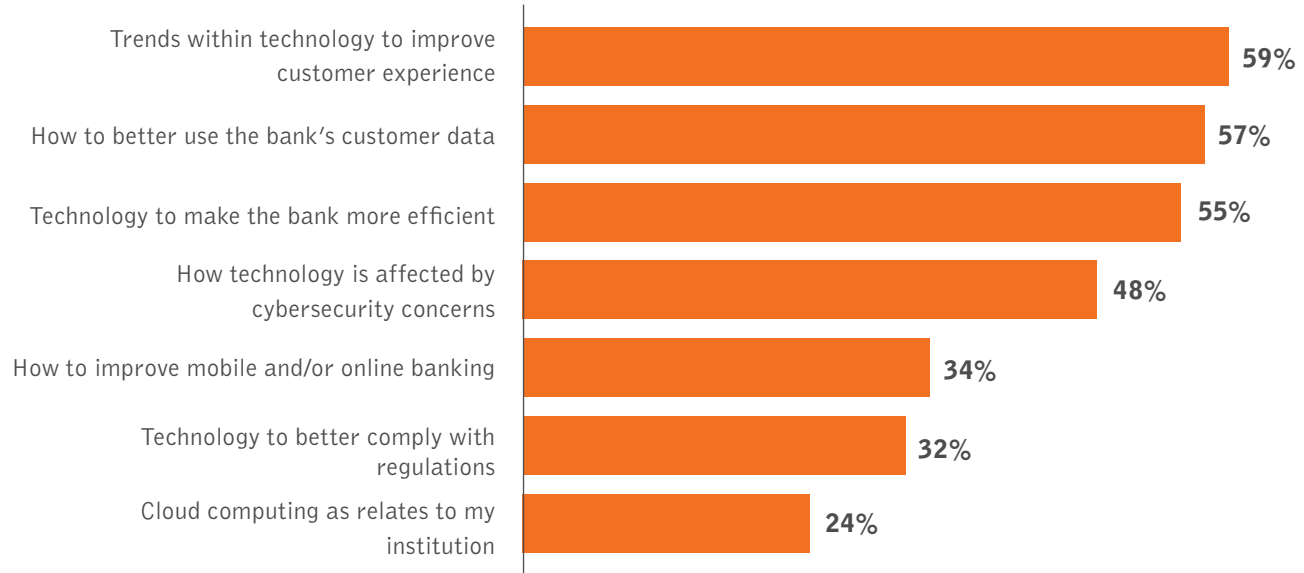


Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Having a strong technology infrastructure to protect against cyberattacks	66%	73%	74%	71%	72%
Spending the right money on the right technology	66%	58%	59%	62%	61%
Effective use of our bank's data	72%	49%	63%	48%	57%
Core processors impede ability to innovate	21%	33%	39%	33%	33%
Understanding technology well enough to provide adequate governance oversight	14%	40%	22%	40%	31%
Cost to upgrade old and/or outdated technology	24%	20%	17%	33%	23%
Addition of new products or services	21%	29%	22%	19%	23%
Mobile offering not keeping up to customer demands	28%	20%	33%	12%	23%

Title	CEO	CIO/CTO	CFO	Board	Total
Having a strong technology infrastructure to protect against cyberattacks	54%	70%	60%	84%	72%
Spending the right money on the right technology	64%	56%	65%	55%	61%
Effective use of our bank's data	56%	78%	80%	47%	57%
Core processors impede ability to innovate	54%	56%	40%	12%	33%
Understanding technology well enough to provide adequate governance oversight	28%	15%	15%	43%	31%
Cost to upgrade old and/or outdated technology	28%	15%	20%	24%	23%
Addition of new products or services	26%	19%	20%	24%	23%
Mobile offering not keeping up to customer demands	18%	19%	15%	30%	23%

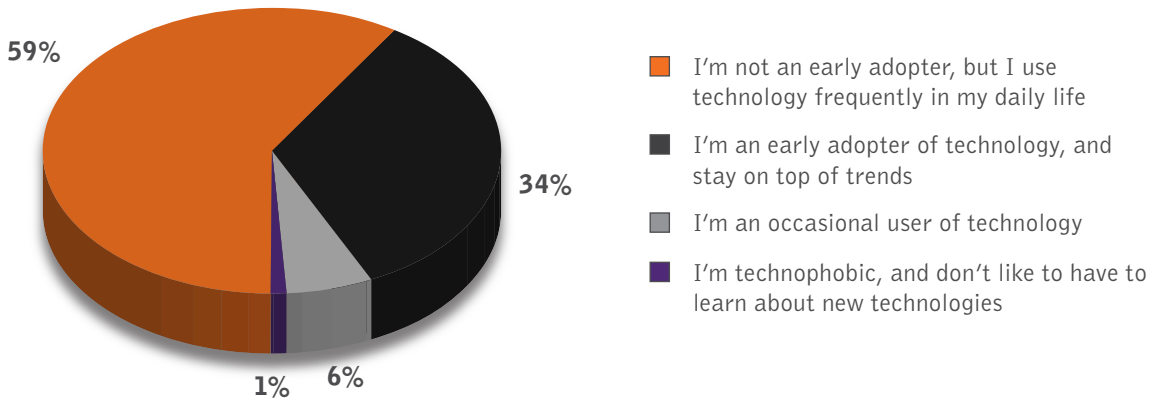
3. Which aspects of technology related to your bank do you wish you better understood?

Respondents were asked to select all that apply.



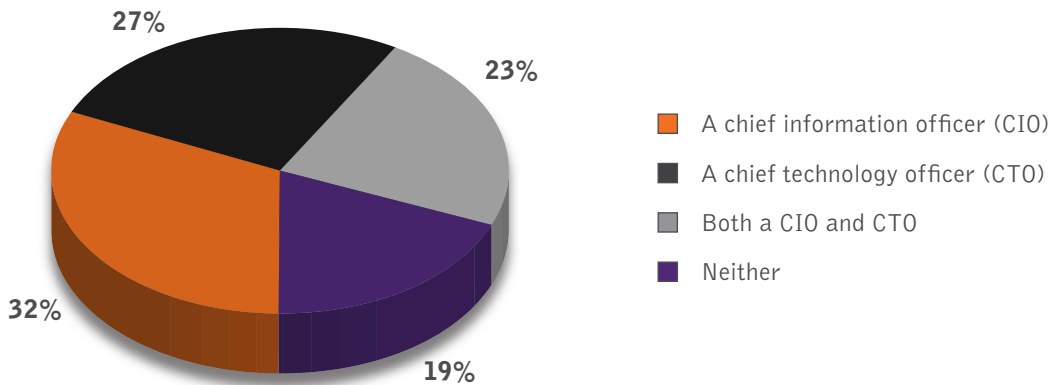
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Trends within technology to improve customer experience	63%	58%	61%	54%	59%
How to better use the bank's customer data	73%	49%	69%	44%	57%
Technology to make the bank more efficient	47%	53%	56%	60%	55%
How technology is affected by cybersecurity concerns	40%	56%	41%	54%	48%
How to improve mobile and/or online banking	33%	36%	33%	35%	34%
Technology to better comply with regulations	30%	27%	31%	38%	32%
Cloud computing as relates to my institution	23%	20%	30%	21%	24%

4. Which statement best describes your use of technology in your personal life?



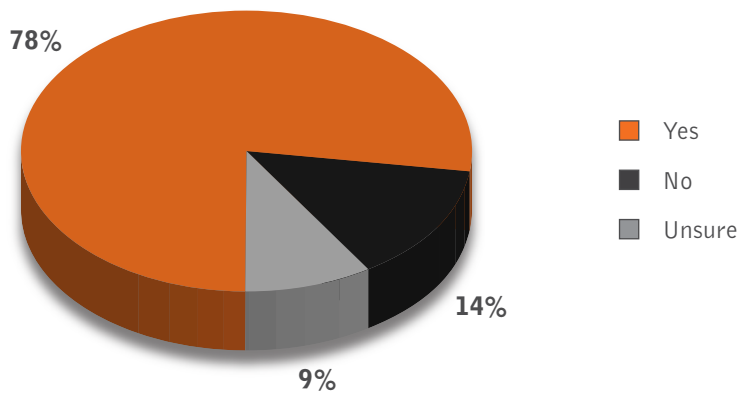
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
I'm not an early adopter, but I use technology frequently in my daily life	57%	64%	63%	52%	59%
I'm an early adopter of technology, and stay on top of trends	36%	33%	35%	31%	34%
I'm an occasional user of technology	7%	-	2%	15%	6%
I'm technophobic, and don't like to have to learn about new technologies	-	2%	-	2%	1%

5. Does your bank employ...?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500 M	Total
A chief information officer (CIO)	30%	34%	27%	36%	32%
A chief technology officer (CTO)	20%	23%	31%	30%	27%
Both a CIO and CTO	40%	39%	17%	4%	23%
Neither	10%	5%	25%	30%	19%

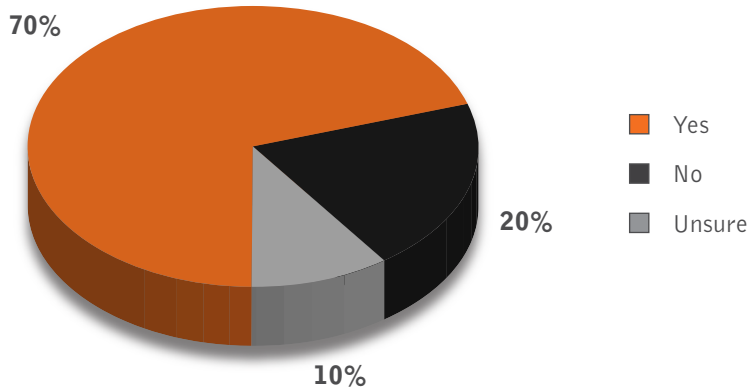
6. Does your bank’s culture encourage technological innovation at the bank?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Yes	87%	86%	69%	74%	78%
No	7%	11%	15%	18%	14%
Unsure	7%	2%	15%	8%	9%

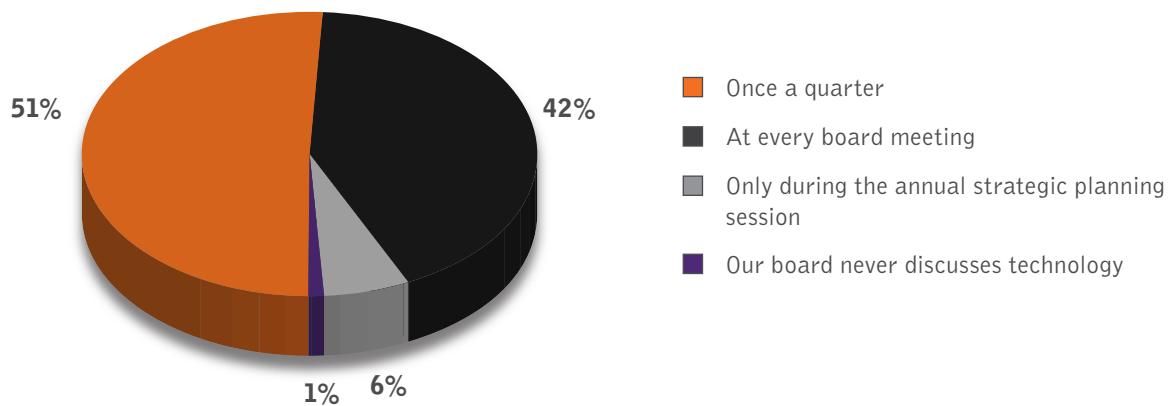
TECHNOLOGY GOVERNANCE

7. Do you believe that technological innovation is a priority for your board?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Yes	73%	77%	60%	72%	70%
No	23%	18%	26%	14%	20%
Unsure	3%	5%	13%	14%	10%

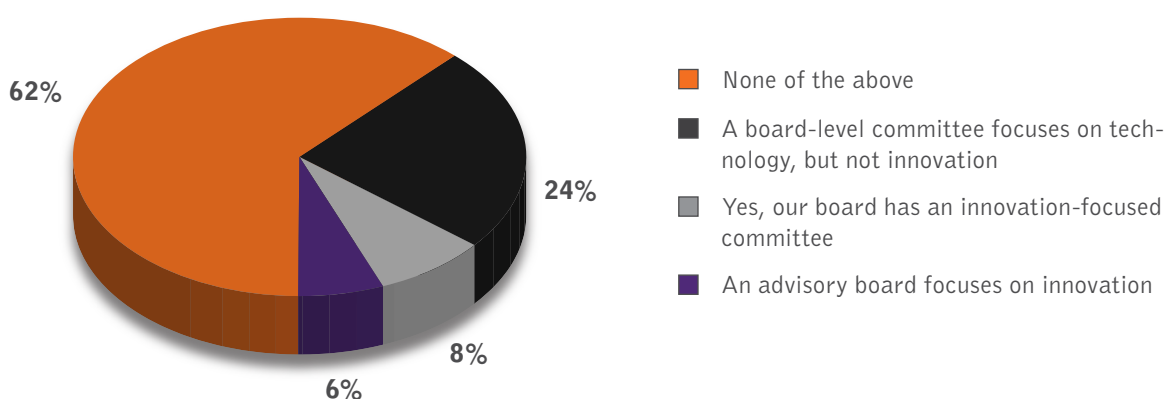
8. How frequently does your board discuss technology?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Once a quarter	47%	41%	58%	54%	51%
At every board meeting	43%	50%	34%	42%	42%
Only during the annual strategic planning session	7%	9%	6%	4%	6%
Our board never discusses technology	3%	-	2%	-	1%

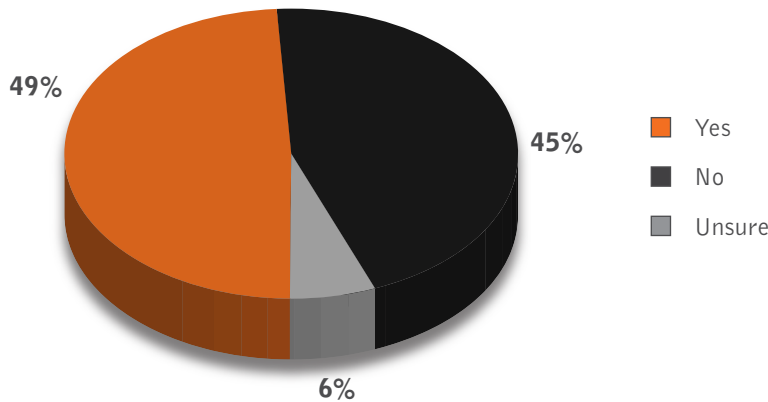
Does your bank employ a CIO or CTO?	CIO	CTO	Both CIO & CTO	Neither	Total
Once a quarter	57%	57%	35%	52%	51%
At every board meeting	39%	38%	60%	27%	42%
Only during the annual strategic planning session	4%	4%	-	21%	6%
Our board never discusses technology	-	-	5%	-	1%

9. Does the board have a committee focused exclusively on innovation?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
None of the above	53%	59%	66%	64%	62%
A board-level committee focuses on technology, but not innovation	23%	27%	19%	26%	24%
Yes, our board has an innovation-focused committee	10%	14%	8%	4%	8%
An advisory board focuses on innovation	13%	-	8%	6%	6%

10. Does the board have at least one director with a background and/or expertise in technology?



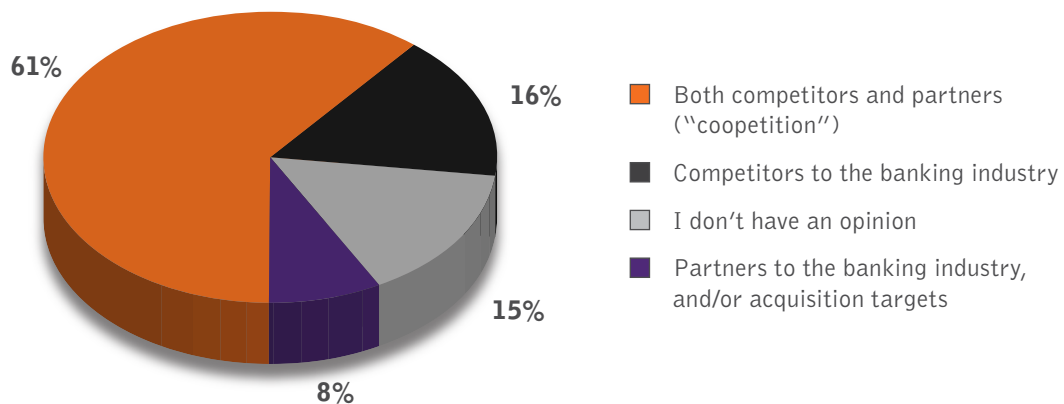
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Yes	47%	52%	43%	54%	49%
No	47%	36%	53%	44%	45%
Unsure	7%	11%	4%	2%	6%

11. How many directors on your board have a background or expertise in technology? 2

Median value reported. Question was only asked of respondents who indicated that their board has at least one director with a background/expertise in technology.

FINTECH & BANKING

12. Based on my position at the bank, I see fintech firms as...



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Both competitors and partners ("coopetition")	72%	52%	69%	55%	61%
Competitors to the banking industry	7%	21%	12%	20%	16%
I don't have an opinion	10%	17%	14%	16%	15%
Partners to the banking industry, and/or acquisition targets	10%	10%	6%	8%	8%

Title	CEO	CIO/CTO	CFO	Board	Total
Both competitors and partners ("coopetition")	61%	81%	80%	53%	61%
Competitors to the banking industry	26%	7%	5%	17%	16%
I don't have an opinion	8%	-	10%	21%	15%
Partners to the banking industry, and/or acquisition targets	5%	11%	5%	9%	8%

13. In which areas does your bank currently work with financial technology firms?

Respondents were asked to choose 'collaboration' if the relationship is a joint venture or partnership, or 'vendor' if the firm is selling a service or application to the bank. 'Neither' indicates that the bank doesn't work with a partner or vendor in that area.

LENDING					
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Vendor	31%	51%	40%	40%	41%
Neither	46%	27%	42%	40%	39%
Collaboration	19%	14%	15%	10%	14%
Unsure	4%	8%	4%	10%	7%

PAYMENTS					
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Vendor	46%	62%	62%	45%	55%
Neither	35%	19%	19%	38%	27%
Collaboration	15%	8%	10%	7%	10%
Unsure	4%	11%	8%	10%	8%

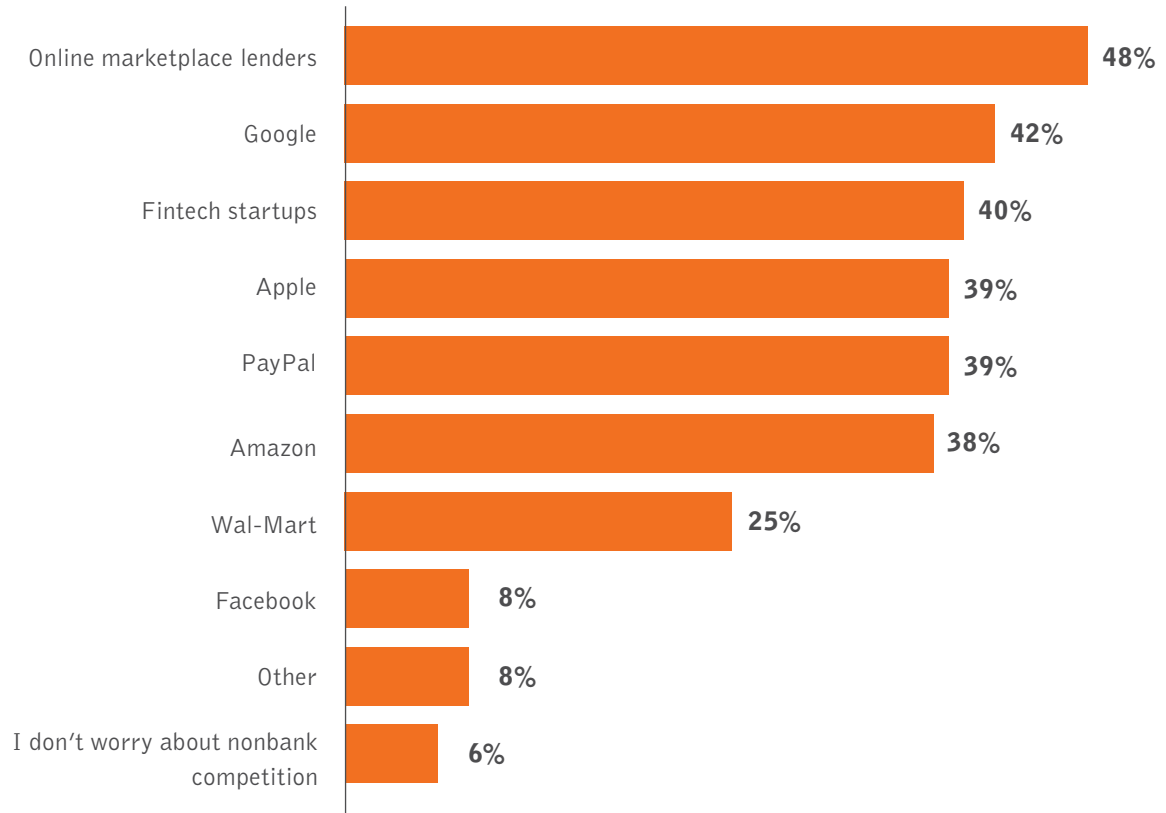
PEER-TO-PEER (P2P) PAYMENTS					
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Neither	42%	30%	42%	55%	42%
Vendor	42%	46%	42%	24%	38%
Unsure	8%	14%	12%	12%	12%
Collaboration	8%	11%	4%	10%	8%

WEALTH MANAGEMENT					
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Neither	46%	49%	48%	60%	51%
Vendor	27%	41%	27%	19%	28%
Collaboration	19%	8%	15%	14%	14%
Unsure	8%	3%	10%	7%	7%

PERSONAL FINANCIAL MANAGEMENT (PFM)					
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Neither	58%	43%	52%	57%	52%
Vendor	31%	41%	31%	19%	30%
Unsure	4%	8%	12%	12%	10%
Collaboration	8%	8%	4%	12%	8%

14. Which of the following nonbank competitors do you worry about most?

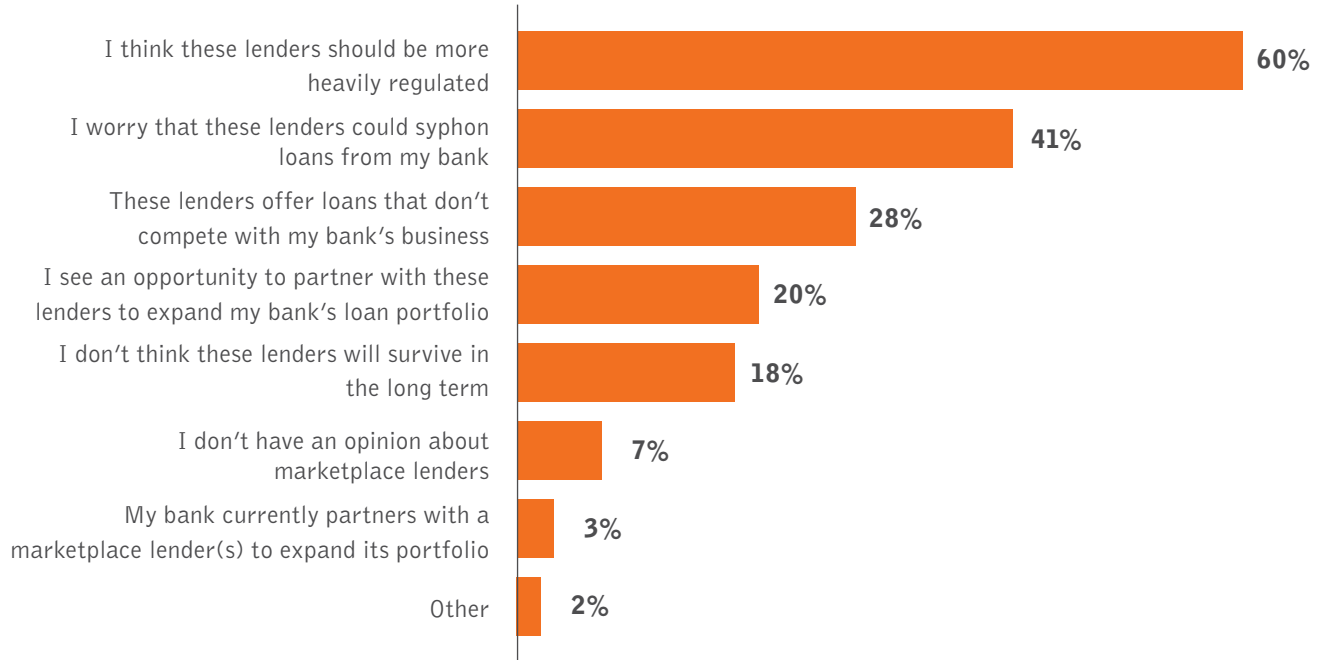
Respondents were asked to select all that apply.



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Online marketplace lenders	39%	52%	51%	46%	48%
Google	39%	39%	39%	51%	42%
Fintech startups	48%	45%	39%	32%	40%
Apple	43%	29%	39%	46%	39%
PayPal	30%	45%	49%	30%	39%
Amazon	39%	29%	41%	41%	38%
Wal-Mart	26%	26%	29%	19%	25%
Facebook	4%	-	15%	11%	8%
Other	-	3%	12%	11%	8%
I don't worry about nonbank competition	9%	-	10%	5%	6%

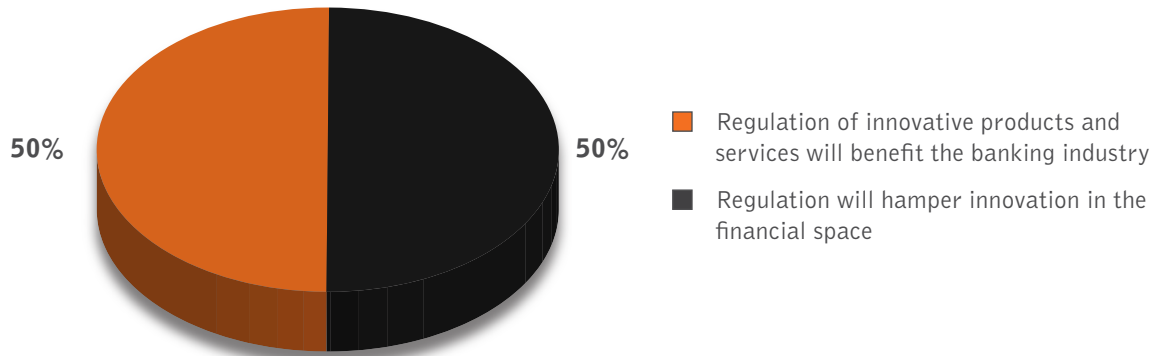
15. How do you feel about competition from online marketplace lenders, like Lending Club, Kabbage or Prosper?

Respondents were asked to select all that apply.



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
I think these lenders should be more heavily regulated	45%	69%	65%	57%	60%
I worry that these lenders could syphon loans from my bank	34%	52%	37%	39%	41%
These lenders offer loans that don't compete with my bank's business	38%	19%	33%	27%	28%
I see an opportunity to partner with these lenders to expand my bank's loan portfolio	21%	17%	22%	18%	20%
I don't think these lenders will survive in the long term	21%	29%	14%	12%	18%
I don't have an opinion about marketplace lenders	7%	5%	10%	6%	7%
My bank currently partners with a marketplace lender(s) to expand its portfolio	3%	2%	2%	4%	3%
Other	3%	2%	4%	-	2%

16. Regulators, including the Comptroller of the Currency (OCC), have indicated that they’re taking a closer look at innovation in the financial industry. Which statement most closely aligns with your opinion?



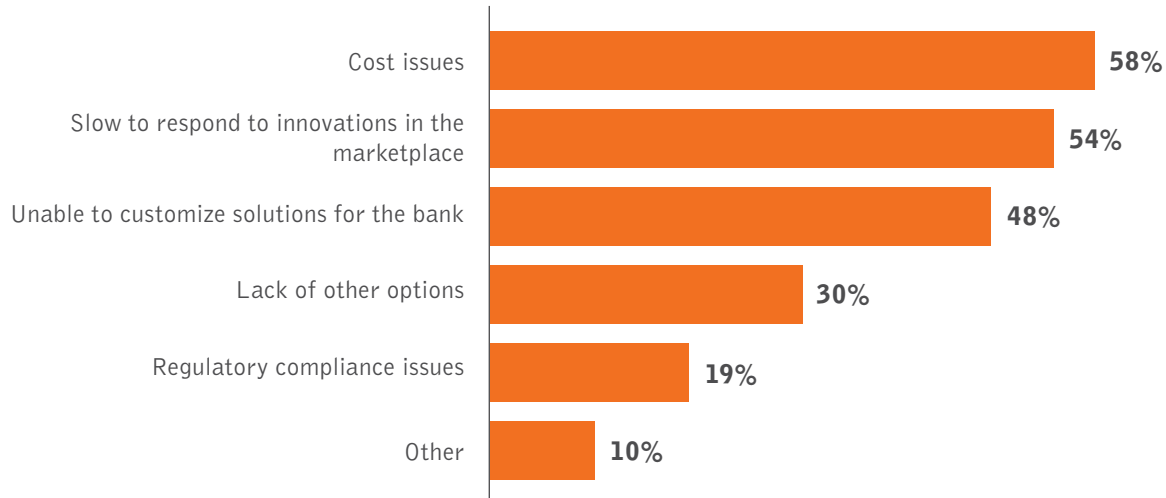
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Regulation of innovative products and services will benefit the banking industry	56%	52%	42%	53%	50%
Regulation will hamper innovation in the financial space	44%	48%	58%	47%	50%

Title	CEO	CIO/CTO	CFO	Board	Total
Regulation of innovative products and services will benefit the banking industry	57%	37%	45%	58%	50%
Regulation will hamper innovation in the financial space	43%	63%	55%	42%	50%

CORE PROCESSOR

17. What are the most challenging aspects of your relationship with your core processor?

Respondents were asked to select all that apply.



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Cost issues	46%	46%	67%	64%	58%
Slow to respond to innovations in the marketplace	61%	54%	63%	43%	54%
Unable to customize solutions for the bank	43%	41%	52%	53%	48%
Lack of other options	25%	32%	35%	28%	30%
Regulatory compliance issues	14%	22%	17%	21%	19%
Other	11%	16%	7%	9%	10%

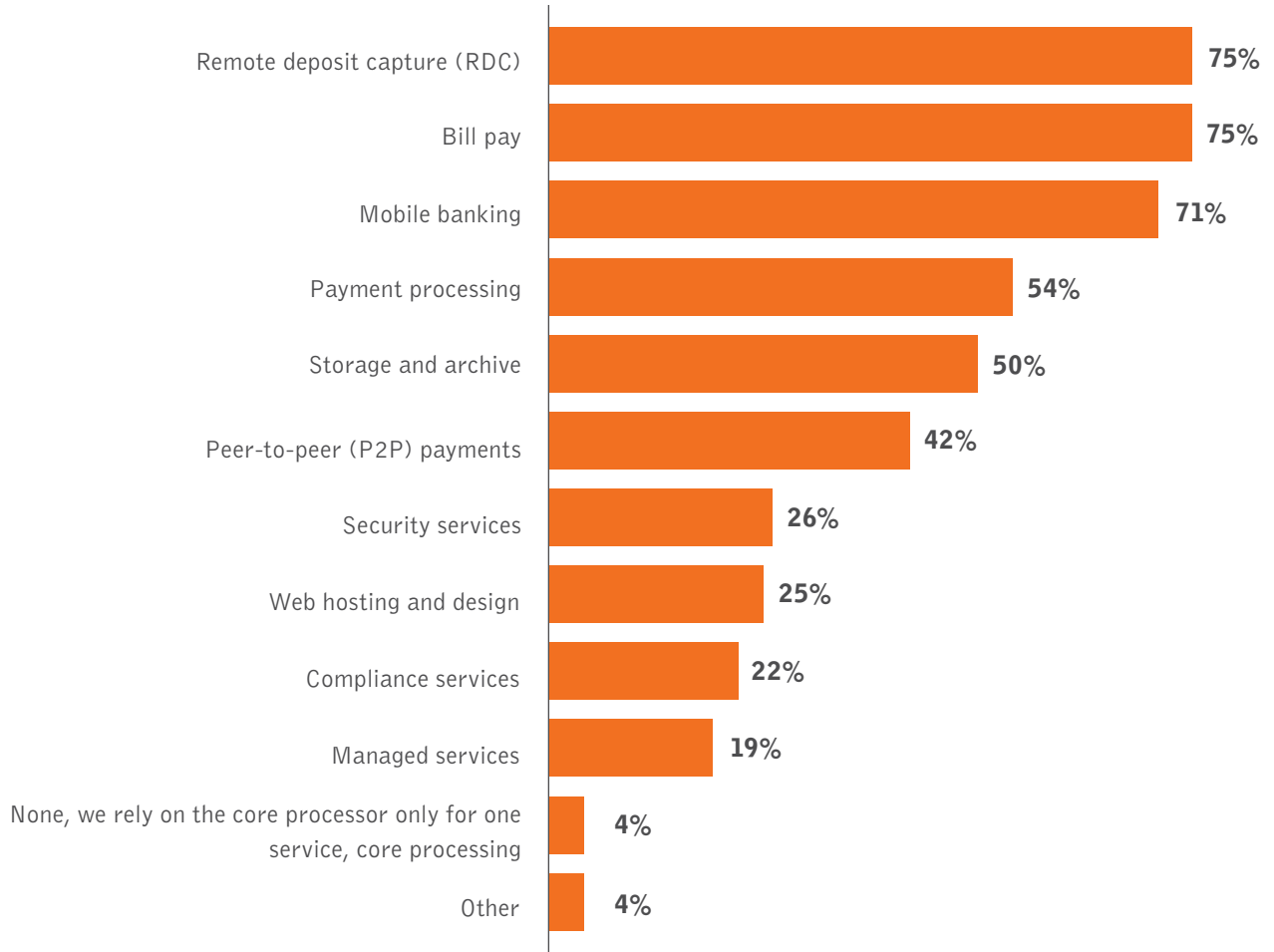
Title	CEO	CIO/CTO	CFO	Board	Total
Cost issues	73%	48%	85%	42%	58%
Slow to respond to innovations in the marketplace	62%	81%	65%	35%	54%
Unable to customize solutions for the bank	54%	52%	55%	42%	48%
Lack of other options	35%	52%	25%	22%	30%
Regulatory compliance issues	24%	15%	10%	22%	19%
Other	8%	7%	5%	16%	10%

18. Including your bank’s core processor, how many technology firms currently work with your institution? 5

Median value reported.

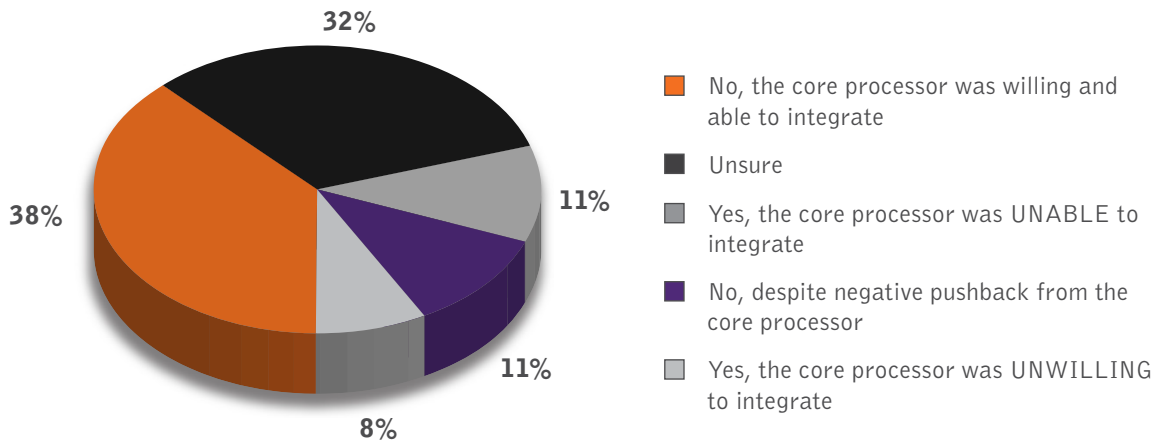
19. In addition to core processing, which services does your core processor provide to your bank?

Respondents were asked to select all that apply.



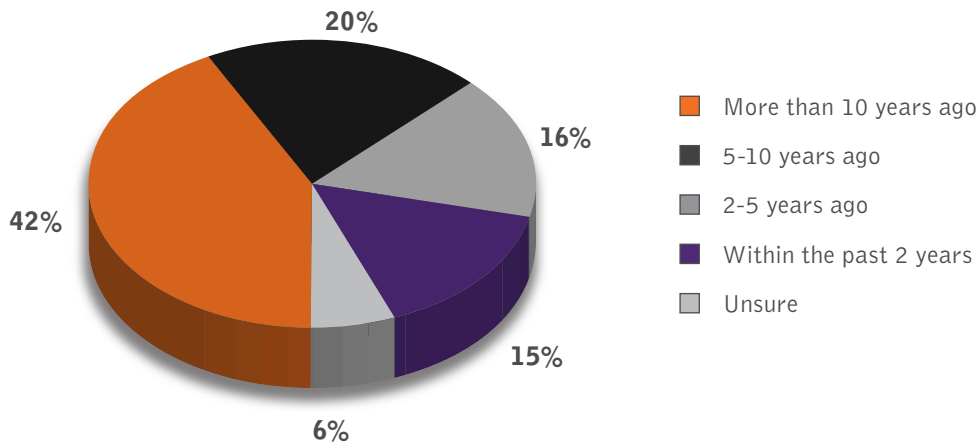
Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
Remote deposit capture (RDC)	63%	75%	84%	73%	75%
Bill pay	74%	69%	82%	73%	75%
Mobile banking	56%	69%	80%	71%	71%
Payment processing	44%	53%	57%	56%	54%
Storage and archive	44%	47%	55%	50%	50%
Peer-to-peer (P2P) payments	52%	42%	49%	31%	42%
Security services	22%	31%	27%	23%	26%
Web hosting and design	15%	39%	27%	19%	25%
Compliance services	22%	33%	24%	12%	22%
Managed services	19%	6%	22%	25%	19%
None, we rely on the core processor only for one service, core processing	15%	-	2%	4%	4%
Other	4%	3%	4%	4%	4%

20. Has your bank pulled back on plans to integrate a more innovative product, service or delivery channel due to the inability or unwillingness of your bank's core processor?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
No, the core processor was willing and able to integrate	44%	29%	38%	40%	38%
Unsure	30%	42%	28%	30%	32%
Yes, the core processor was UNABLE to integrate	7%	5%	15%	15%	11%
No, despite negative pushback from the core processor	15%	16%	6%	11%	11%
Yes, the core processor was UNWILLING to integrate	4%	8%	13%	4%	8%

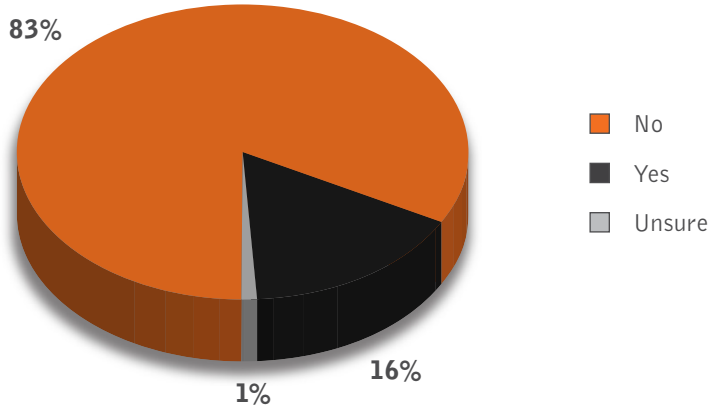
21. When did you most recently convert your bank's core technology?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
More than 10 years ago	54%	32%	45%	40%	42%
5-10 years ago	14%	32%	14%	21%	20%
2-5 years ago	21%	16%	10%	19%	16%
Within the past 2 years	11%	11%	27%	11%	15%
Unsure	-	11%	4%	9%	6%

22. Was your most recent core conversion due to an acquisition or merger?

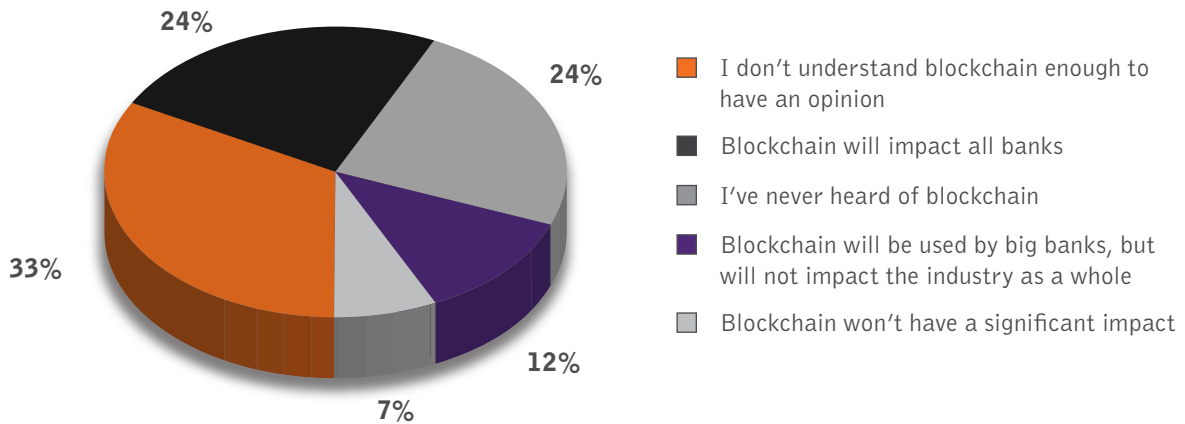
Question was only asked of respondents who indicated that the bank converted its core technology within the past 10 years.



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
No	77%	77%	96%	78%	83%
Yes	23%	18%	4%	22%	16%
Unsure	-	5%	-	-	1%

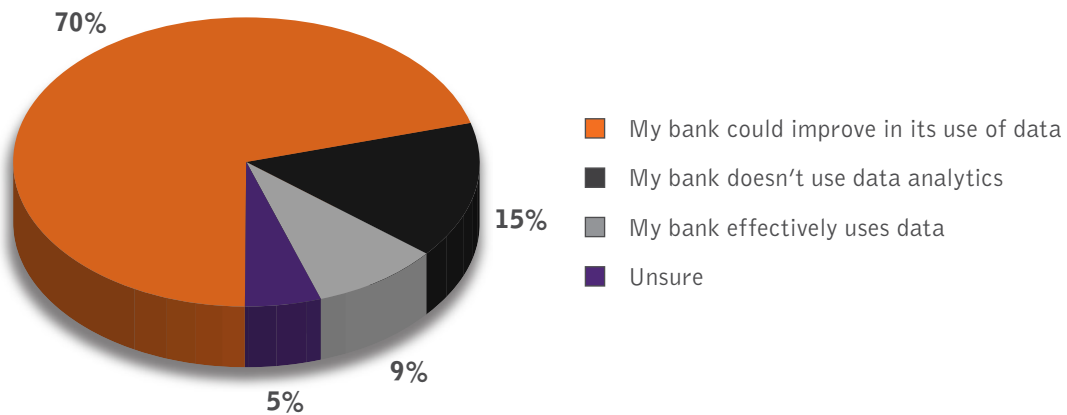
BLOCKCHAIN & DATA

23. How do you believe blockchain technology will impact the banking industry within the next five years?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
I don't understand blockchain enough to have an opinion	26%	32%	29%	42%	33%
Blockchain will impact all banks	22%	32%	31%	12%	24%
I've never heard of blockchain	19%	30%	18%	29%	24%
Blockchain will be used by big banks, but will not impact the industry as a whole	22%	3%	12%	12%	12%
Blockchain won't have a significant impact	11%	3%	10%	4%	7%

24. How effectively does your bank use data to serve the needs of your existing customers, or identify new customers?



Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
My bank could improve in its use of data	85%	68%	65%	69%	70%
My bank doesn't use data analytics	7%	13%	20%	17%	15%
My bank effectively uses data	7%	13%	8%	8%	9%
Unsure	-	5%	6%	6%	5%

25. Why do you believe your bank doesn't make effective use of data?

Respondents were asked to select all that apply. Question only asked of respondents who indicated that their bank's use of data could be improved or that the bank doesn't use data analytics.

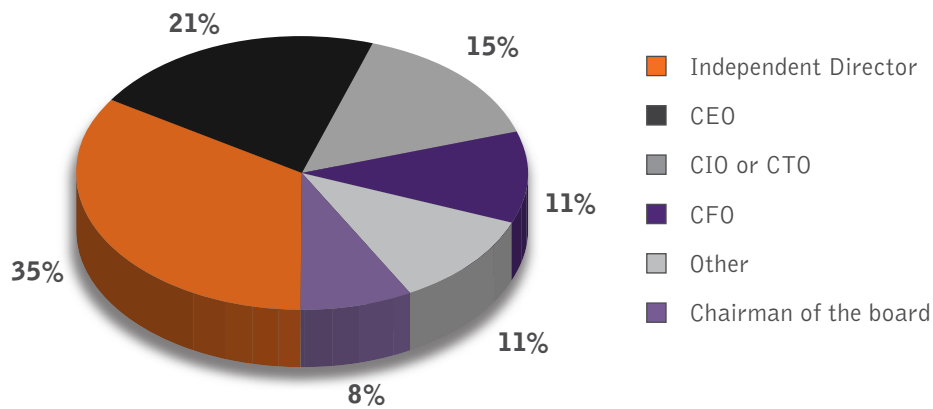


Bank Asset Size	>\$5B	\$1B - \$5B	\$500M - \$1B	<\$500M	Total
We don't have the right technology in place	60%	52%	57%	60%	57%
We don't have the right people in place	56%	45%	74%	50%	57%
It isn't a priority for the board and/or management	28%	55%	19%	40%	35%

ABOUT THE SURVEY

Bank Director’s 2016 Technology Survey, sponsored by CDW, surveyed 199 board members, chief executive officers, chief technology officers, chief information officers and other senior executives of U.S. banks to examine technology trends within the banking industry. The online survey was conducted in June and July 2016. Forty-two percent of respondents represent banks with more than \$1 billion in assets. Independent directors and chairmen account for 43 percent of responses, while CIOs and CTOs account for 15 percent.

Title Breakdown



Size of Bank

