



Fannie Mae™

Mortgage Lender Sentiment Survey®

Mortgage Technology Innovation

Q2 2016 Topic Analysis – Published July 26, 2016

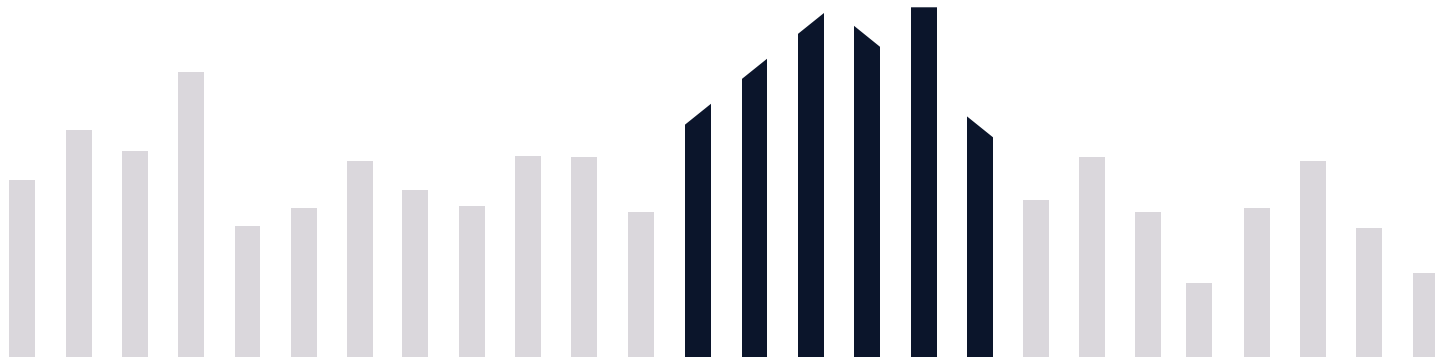




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Lenders look to technology to improve consumer experience and address regulatory compliance. However, their reaction toward an Uber-like industry disruptor is mixed.

Innovation in the Mortgage Industry

- The majority of lenders “somewhat” agree that the mortgage industry is innovating to drive operational efficiency.
- Overall, lenders are split on whether the industry would benefit from a “disruptor” like Uber.
- Many lenders want to see technological innovation in the form of advancements in digitization, automation, and streamlining systems to improve efficiency.

Technology Solution Providers

- A majority of lenders (95 percent) say that they are dependent in some measure on technology solution providers (TSPs).
- Of those relying on TSPs, lenders estimate that 84 percent of their mortgage business on average is enabled by TSPs, and 44 percent expect to depend more on TSPs over the next 12 months.

Investment Priorities to Drive Operational Efficiency

- Across the whole mortgage lending cycle (from origination, loan delivery, secondary marketing to servicing), lenders see loan origination and general regulatory compliance as their top investment areas to drive operational efficiency.
- Increasing automation and improving the consumer borrower experience are the primary goals for investments in those areas.



Business Context and Research Questions

Business Context

Operational efficiency has consistently been cited by lenders as the most important strategy to address decreased profit margin outlook or to achieve increased profit margin.¹ Additionally, the Truth in Lending Act/Real Estate Settlement Procedures Act Integrated Disclosure (TRID) rule, which took effect on October 3, 2015, has prompted lenders to upgrade their origination systems, streamline workflow and synchronize processes.

Fannie Mae's Economic & Strategic Research Group (ESR) surveyed senior mortgage executives in May through its quarterly Mortgage Lender Sentiment Survey[®] to examine lenders' experiences with mortgage technologies in driving their firm's operational efficiency and their views about the innovation of the mortgage industry.

Research Questions

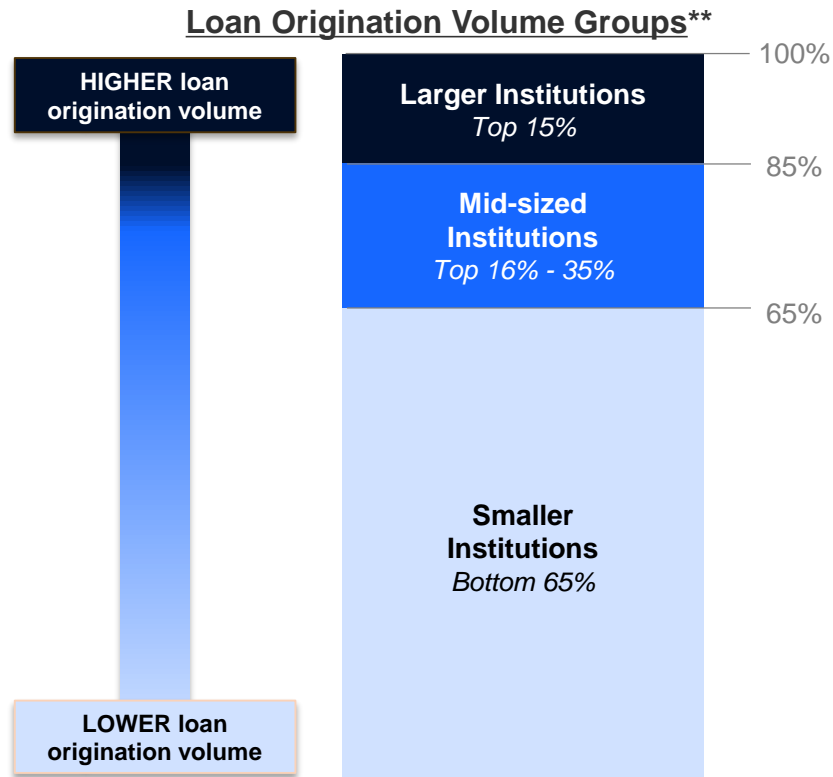
1. What technological innovations would lenders like to see in the industry to drive greater operational efficiency? What are their pain points they would like to see addressed via innovation in technology?
2. How innovative is the mortgage industry according to lenders? And, to what extent do lenders believe that the mortgage industry would benefit from an industry "disruptor" like Uber?
3. How dependent are lenders on technology solution providers (TSP) today?

1. Please see "What Influences Lenders' Profit Margin Outlook? -- A Time-Series Look" published in March 2016, at <http://www.fanniemae.com/resources/file/research/mlss/pdf/mlss-030316-topicanalysis.pdf>
2. For details about TRID, please check the CFPB's website at http://files.consumerfinance.gov/f/201508_cfpb_tila-respa-integrated-disclosure-rule.pdf



Q2 2016 Respondent Sample and Groups

For Q2 2016, a total of 191 senior executives completed the survey from May 4 -16, representing 169 lending institutions.*



Sample Q2 2016		Sample Size
Total Lending Institutions The "Total" data throughout this report is an average of the means of the three loan origination volume groups listed below.		169
Loan Origination Volume Groups	Larger Institutions Fannie Mae's customers whose 2015 total industry loan origination volume was in the top 15% (above \$631 million)	57
	Mid-sized Institutions Fannie Mae's customers whose 2015 total industry loan origination volume was in the next 20% (16%-35%) (between \$176 million to \$631 million)	54
	Smaller Institutions Fannie Mae's customers whose 2015 total industry loan origination volume was in the bottom 65% (less than \$176 million)	58
Institution Type***	Mortgage Banks (non-depository)	65
	Depository Institutions	63
	Credit Unions	34

* The results of the Mortgage Lender Sentiment Survey are reported at the lending institutional parent-company level. If more than one individual from the same institution completes the survey, their responses are averaged to represent their parent institution.

** The 2015 total loan volume per lender used here includes the best available annual origination information from Fannie Mae, Freddie Mac, and Marketrac.

*** Lenders that are not classified into mortgage banks or depository institutions or credit unions are mostly housing finance agencies.



Technology Innovation in the Mortgage Industry to Drive Operational Efficiency

- The majority of lenders “somewhat” agree that the mortgage industry is innovating to drive operational efficiency.
- Overall, lenders are split on whether the industry would benefit from a “disruptor” like Uber.
- When asked to provide ideas of technological innovations, lenders cite the need for digitization and automation.

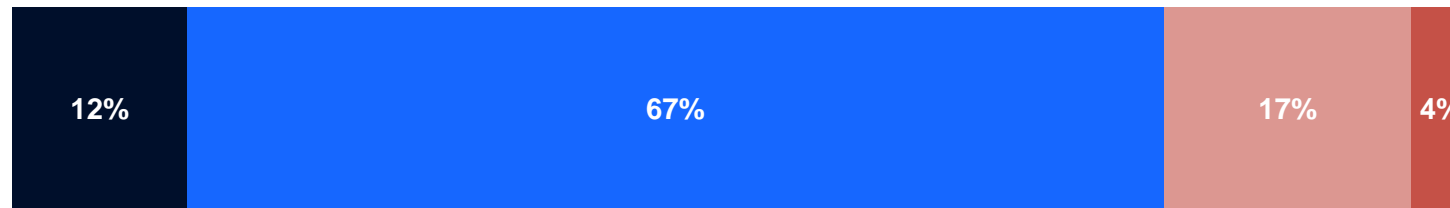


Innovation in the Mortgage Industry to Drive Operational Efficiency

Almost four in five lenders in the mortgage industry agree or somewhat agree that the industry is innovating to drive operational efficiency. Lenders see initiatives being taken to bring automation and other advances into the industry, but some think not enough has been done, with regulation adding complexity to an already complicated process.

To what extent do you agree or disagree with the following statement?
“The mortgage industry as a whole is innovating to drive the industry’s operational efficiency.”

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree



[If agree industry is innovating] Why do you say the mortgage industry as a whole is innovating to drive the industry’s operational efficiency? N=74

“There is a growing interest and support in a **fully digital mortgage experience**, including closing and funding.” – Smaller Institution

“I believe the industry is moving to **simplifying a complex process** for the consumer’s benefit. **Innovation** as opposed to over regulation.” – Larger Institution

“I think advances are being made, but there needs to be a **bigger push in the technology area** - apps for devices, acceptance of e-signature and e-recordings.” – Smaller Institution

“Costs are skyrocketing due to **increased regulatory burden**, and the only solution is increased automation. The challenge is the pace of regulatory change makes it extremely difficult to effectively implement the needed technology.” – Larger Institution

[If does not agree industry is innovating] Why do you say the mortgage industry as a whole is not innovating to drive the industry’s operational efficiency? N=74

“Really no big innovation in the overall process. Some things around the edges but still mainly a **paper and process intensive industry**.” – Larger Institution

“I think the system has made it **too complicated for the average person** to even understand the mortgage process. This was even before all the changes. The new changes made it worse. Plus the process takes too long.” – Smaller Institution

“There are **too many regulatory road blocks** to common sense business process improvements.” – Mid-sized Institution

“Lots of **confusion** about **TRID requirements** and what is acceptable. Difficult to set up processes if you don’t know what the rules are....” – Larger Institution



Top Desired Technological Innovations

When asked to provide ideas of technological innovations, lenders cite the need for digitization and automation. Many suggestions point toward a strong interest in a fully digitalized mortgage process. Standardization, streamlining systems, and incorporating regulatory compliance are also at the top of lenders' minds to increase efficiency.

Thinking about the mortgage industry, what are some technological innovations you would like to see in the industry to increase flexibility or reduce redundancy? Please share up to three ideas with us, and please be as specific as possible.



Common innovations mentioned:

- Advancement around verification of information (borrower data/appraisals/etc.) through automation and digitization
- E-closings/E-signings/E-note technology
- Reducing paper in reporting
- Standardization of platforms
- Regulation-related innovation

"Automated pre-approval process." – Mid-sized Institution
"Easy verification of customer info." – Larger Institution

"E-Closings." – Larger Institution
"More of a push and acceptance in states for allowing e-signature." – Smaller Institution

"Paperless closings." – Larger Institution
"Reduce paper in the system." – Mid-sized Institution

"Standardized platforms." – Mid-sized Institution
"Simplicity in reporting." – Smaller Institution

"Build compliance into the workflow." – Larger Institution
"TRID Review management automation." – Larger Institution

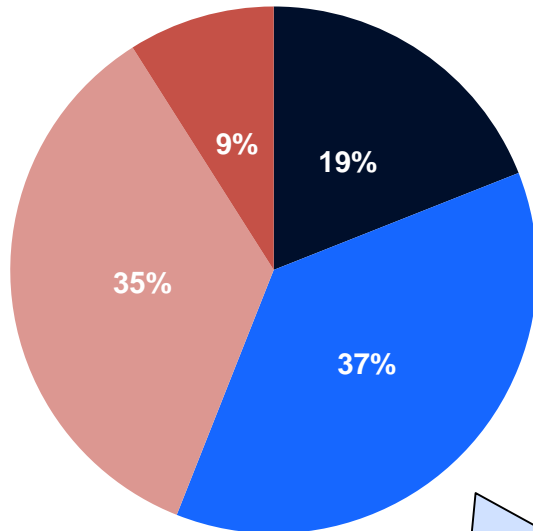


Disruptor for the Mortgage Industry

Overall, lenders are split on whether the industry would benefit from a “disruptor” like Uber. Those who agree that it would benefit bring up Quicken Loans’ Rocket Mortgage as an example, while others think that disruptors can help move the industry towards online and digital platforms.

Uber is often considered as a “disruptor” to the taxi business. To what extent do you agree that the mortgage industry would benefit from a “disruptor” like Uber?

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree



74% of lenders who disagree that the industry is innovating agree that the industry needs a disruptor



[If agree industry would benefit from disruptors] How or where would you like to see “disruptors” in the mortgage industry? N=74

“Quicken’s **Rocket Mortgage** is the perfect example. We may not be there yet but with innovators like Quicken we will be.” – Larger Institution



“The “disruptors” would need to be in the form of **document validation system** that matches up with the AUS so the appraisal information can be checked for completion, comps analyzed, value determined and then do a similar process for income and assets. They need to **cut the human element** out of the basic items and focus more on compliance, title and closing.” – Larger Institution

“**Borrower experience**. We have to be like **Amazon**. More **automation in the ordering and QC of appraisals**. A desktop app for borrowers that would allow us to access bank statements, VOEs, etc. Then they aren’t giving up their credentials.” – Larger Institution

“Much more innovation in the **sharing of information** as well as linking parties interested together via technology solutions.” – Larger Institution

“In the **customer experience** from point of inquiry to closing - **apps and electronic-digital capabilities**.” – Mid-sized Institution





Dependency on Technology Solution Providers (TSPs)

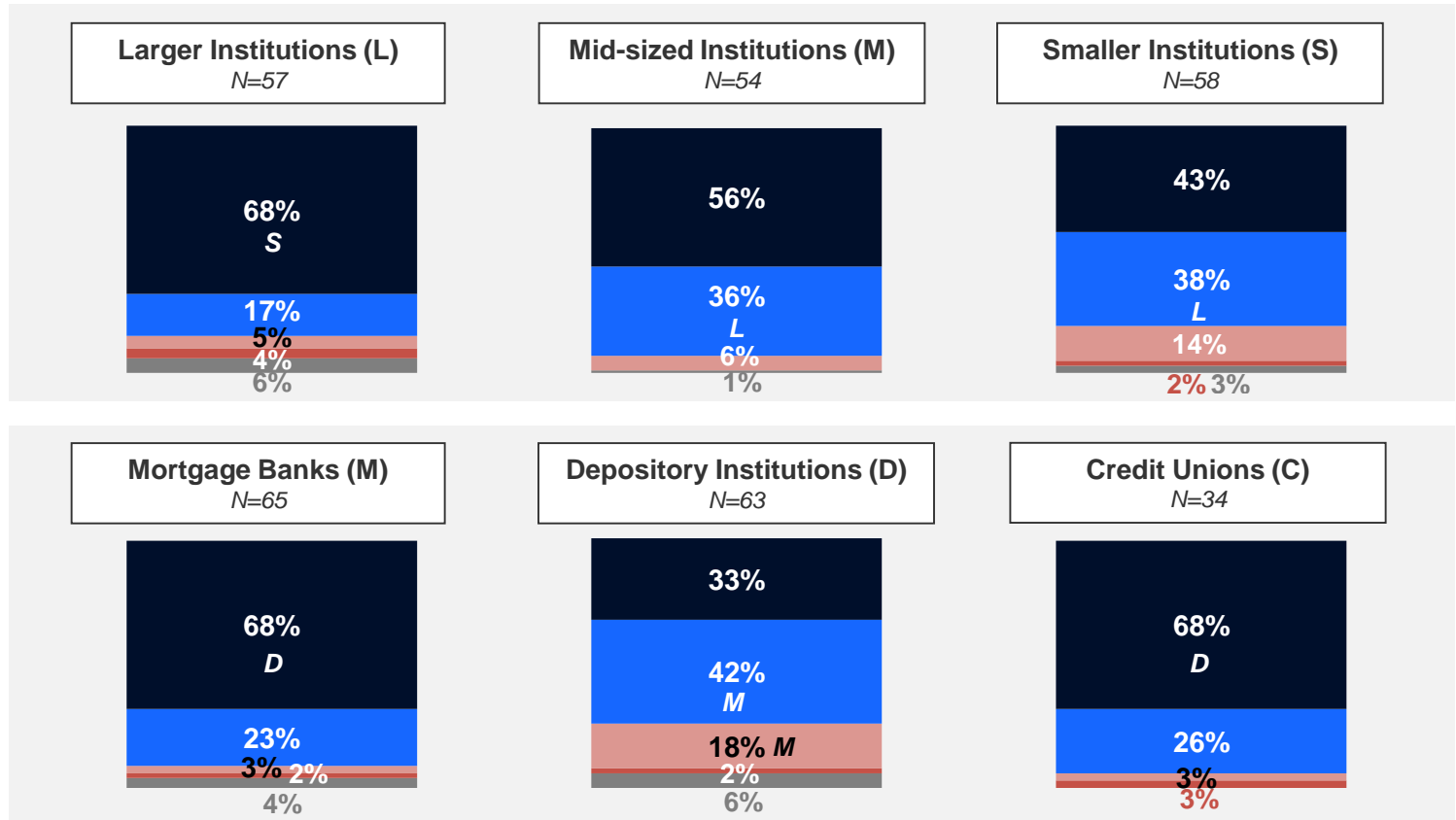
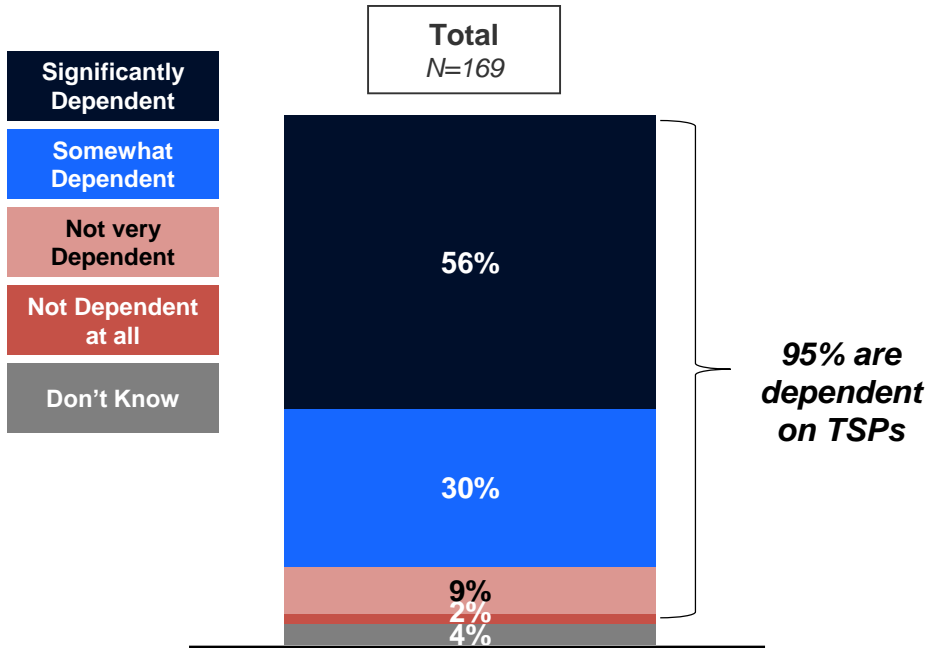
- The majority of lenders surveyed (95 percent) are dependent in some measure on technology solution providers (TSPs).
 - Larger lenders are more likely than mid-sized and smaller lenders to rely on TSPs.
 - Mortgage banks and credit unions are more likely than depository institutions to rely on TSPs.
- Of those who rely on TSPs, lenders estimate that 84 percent of their mortgage business, on average, is enabled by TSPs and 44 percent expect to depend more on TSPs over the next 12 months.



Dependency on Technology Solution Providers

The majority of firms surveyed are dependent in some measure on technology solution providers (TSPs), and more than half are significantly dependent. Almost seven in ten larger institutions, mortgage banks, and credit unions say they are significantly dependent on TSPs.

How dependent is your firm on TSPs (technology solution providers) today?

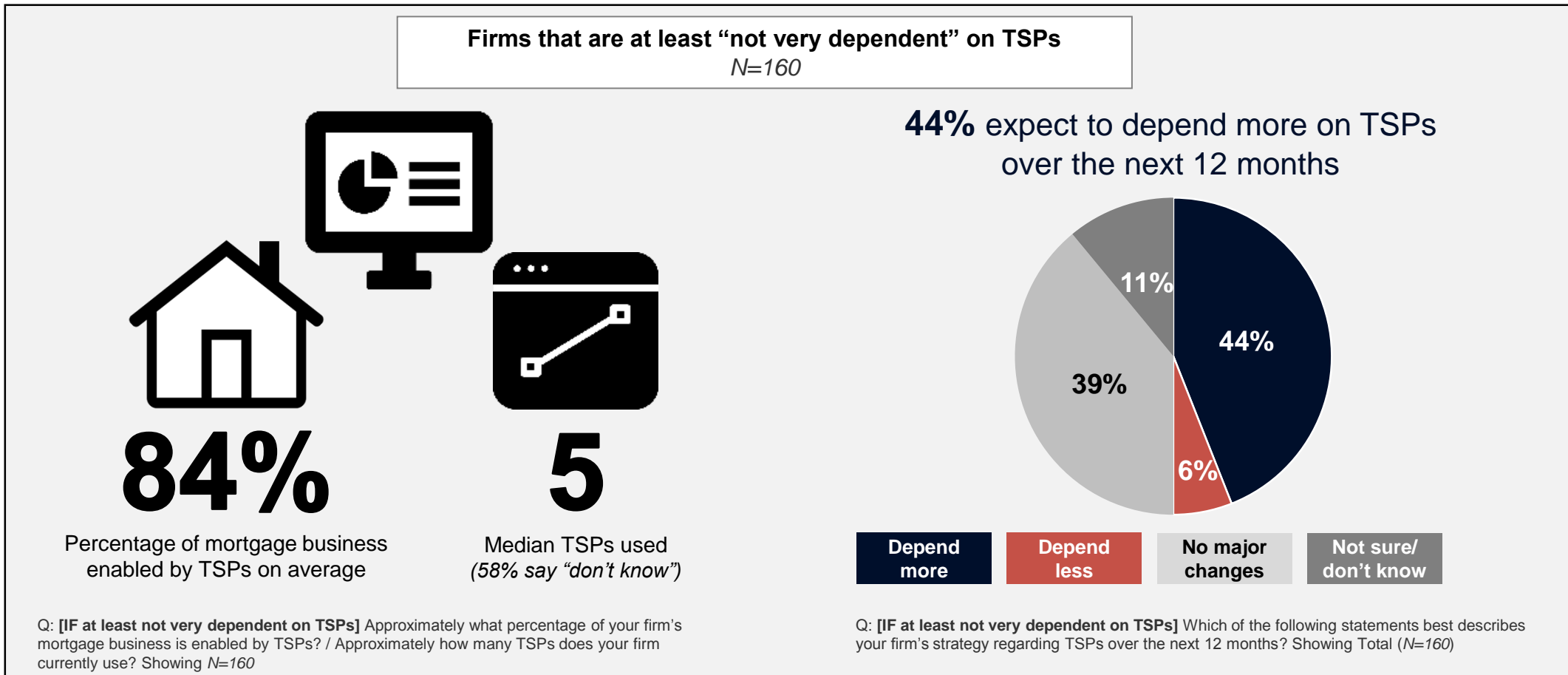


L/M/S - Denote a % is significantly higher than the annual loan origination volume group that the letter represents at the 95% confidence level
M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level



Dependency on Technology Solution Providers

Lenders who rely on TSPs say 84 percent of their business is enabled by TSPs, and the median lender employs five different firms. More lenders expect to increase rather than decrease their TSP dependence over the 12 months by a 7:1 margin.





Investment Priorities to Drive Operational Efficiency

- Across the whole mortgage lending cycle (from origination, loan delivery, secondary marketing to servicing), lenders see loan origination and general regulatory compliance as their top investment areas to drive operational efficiency.
 - Other areas of secondary importance include loan processing (verifying information and documentation), responding to customer/borrower inquiries, receiving payments from borrowers, and underwriting (analyzing whether the lending risk is acceptable).
- Increasing automation and improving the consumer borrower experience are the primary goals for investments in these areas.



Top Investment Priorities to Drive Operational Efficiency

Across the whole mortgage lending cycle (from origination, loan delivery, secondary marketing to servicing), lenders see loan origination and general regulatory compliance as their top investment areas to drive operational efficiency.

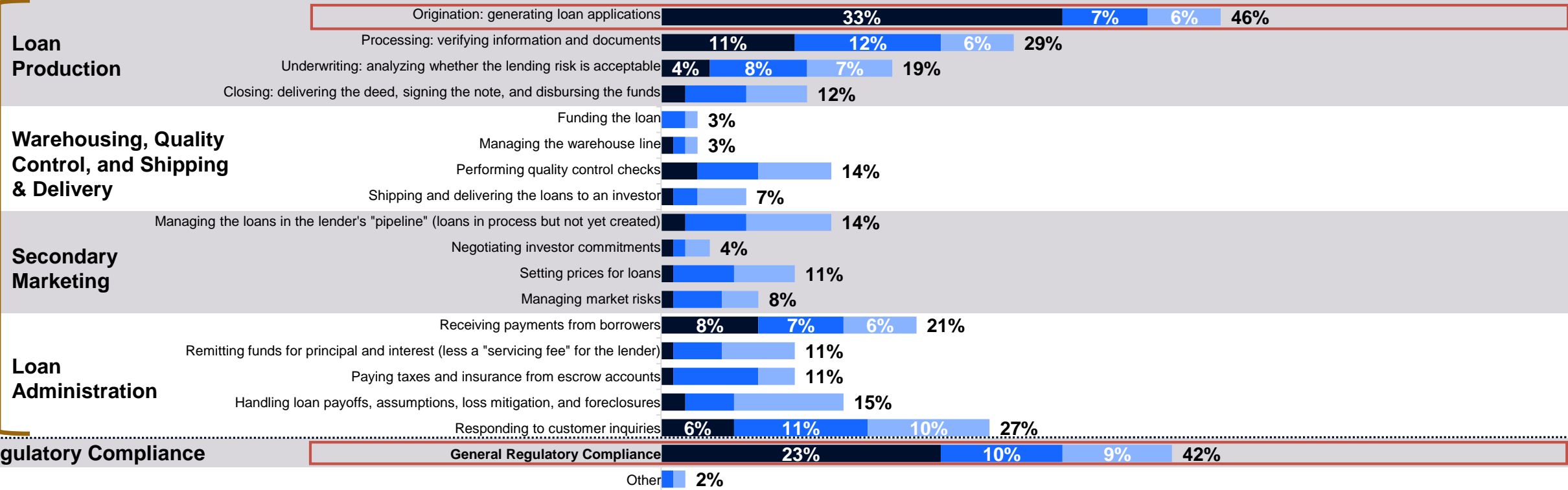
Listed below are several key functional areas based on the mortgage lending cycle. Imagine that today you have limited funding or resources to invest to drive your firm's operational efficiency. Which of the following business processes would you prefer to invest in? Please rank up to three top areas of investment priority.
Showing Total (N=169)

3rd Priority

2nd Priority

Top Priority

Mortgage Lending Cycle





Investment Priority Area: Loan Origination

Many lenders hope that investments in loan origination would help them overcome current technological hurdles and bring on additional capabilities, as well as address concerns with loan quality and volume. One in two lenders who would prioritize loan origination say their ultimate goal would be to improve the consumer borrower experience.

46% consider Loan Origination (generating loan applications) an investment priority...

N=78

Key Themes of Pain Points to Address

- Current technology challenges and underutilization of systems
- Enhance overall technological capabilities
 - Online applications
 - Mobile capabilities
 - Automation
- Quality and volume of leads
- Competition
- Personnel-related challenges
- General increased efficiency and simplicity

Selected Verbatim

“Poor technology.” – Mid-sized Institution

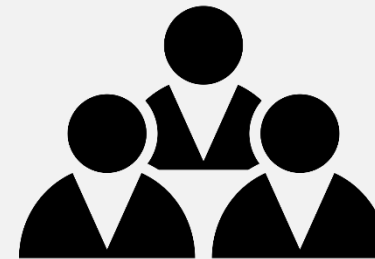
“Automation and internet applications.” – Larger Institution

“Turning leads into applications via our POS system.” – Smaller Institution

“Make the process faster and easier.” – Mid-sized institution

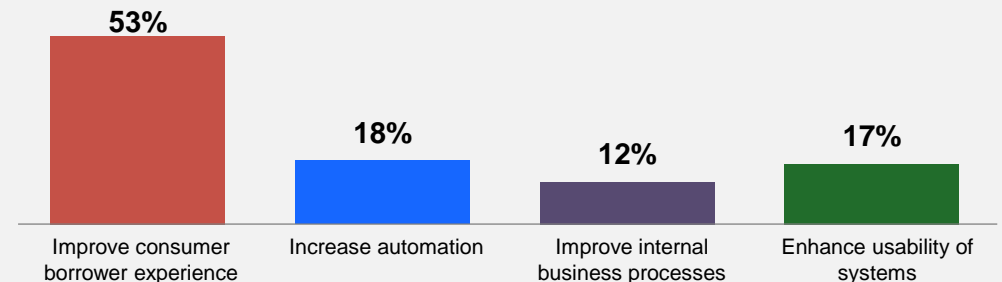
Q: And thinking of these investment priorities, what are some specific pain points your firm currently experiences that you hope these investments may be able to address? Please include up to two pain points per investment priority and be as specific as possible.

Primary Goal of Investment



53%

say improving the **consumer borrower experience** is the primary goal of investment



Q: Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.



Investment Priority Area: General Regulatory Compliance

Lenders prioritize investing in general regulatory compliance to address pain points related to staying up to date with regulation changes and interpretation. Two-fifths of lenders say the primary goal to invest in this area is to increase automation.

42% consider General Regulatory Compliance an investment priority...

N=72

Key Themes of Pain Points to Address

- TRID
- CFPB and HMDA changes
- Keeping up with regulatory changes
- Understanding changes

Selected Verbatim

“Complying with the current TRID guidelines.” – Smaller Institution

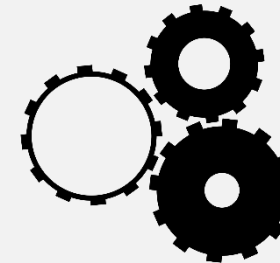
“Keeping pace with frequency and complexity of changes.” – Mid-sized Institution

“Lack of consistency among investors regarding regulatory interpretation.” – Mid-sized Institution

“New HMDA requirements.” – Larger Institution

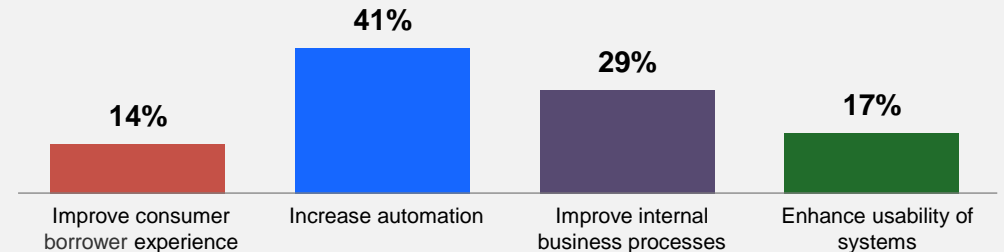
Q: And thinking of these investment priorities, what are some specific pain points your firm currently experiences that you hope these investments may be able to address? Please include up to two pain points per investment priority and be as specific as possible.

Primary Goal of Investment



41%

say **increasing automation** is the primary goal of investment



Q: Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.



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Research Objectives

- Previously, there was no broad-based industry survey to track lenders' expectations for the mortgage industry.
- The *Mortgage Lender Sentiment Survey*[®], which debuted in March 2014, is a quarterly online survey among senior executives in the mortgage industry, designed to:

Track insights and provide benchmarks into current and future mortgage lending activities and practices.

Quarterly Regular Questions

- Consumer Mortgage Demand
- Credit Standards
- Mortgage Execution
- Mortgage Servicing Rights (MSR) Execution
- Profit Margin Outlook
- 30-Year Fixed Mortgage Interest Rate

Featured Specific-Topic Analyses

- Lenders' Experiences with TRID
- A Time-Series Look at the Factors Driving Lenders' Profit Margin Outlook
- Lenders' Mobile Strategies

- A quarterly 10-15 minute online survey of senior executives, such as CEOs and CFOs, of Fannie Mae's lending institution customers.
- The results are reported at the lending institution parent-company level. If more than one individual from the same institution completes the survey, their responses are averaged to represent their parent company.



Mortgage Lender Sentiment Survey[®]

Survey Methodology

- A quarterly, 10-15 minute online survey among senior executives, such as CEOs and CFOs, of Fannie Mae's lending institution partners.
- To ensure that the survey results represent the behavior and output of organizations rather than individuals, the Fannie Mae Mortgage Lender Sentiment Survey is structured and conducted as an establishment survey.
- Each respondent is asked 40-75 questions.

Sample Design

- Each quarter, a random selection of approximately 3,000 senior executives among Fannie Mae's approved lenders are invited to participate in the study.

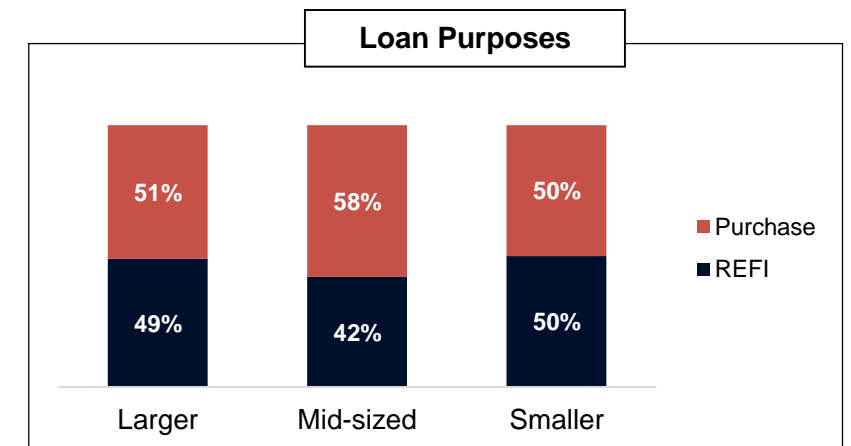
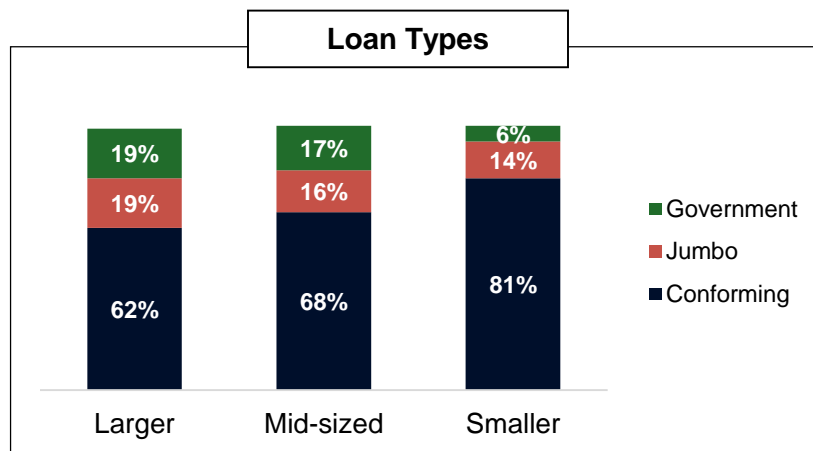
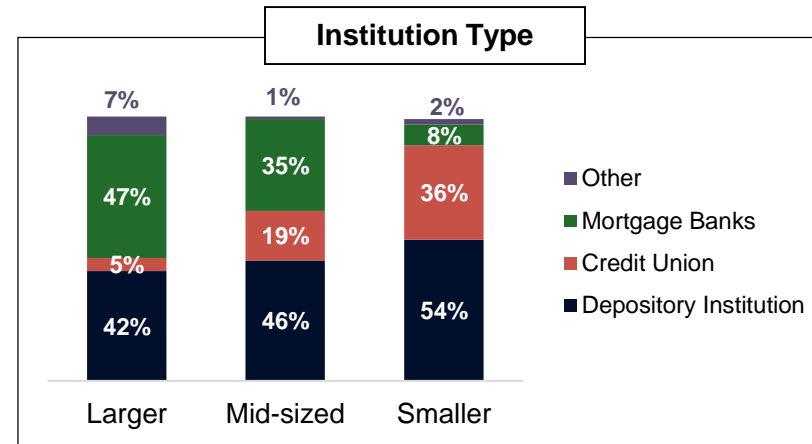
Data Weighting

- The results of the Mortgage Lender Sentiment Survey are reported at the institutional parent-company level. If more than one individual from the same parent institution completes the survey, their responses are averaged to represent their parent institution.



Lending Institution Characteristics

Fannie Mae's customers invited to participate in the Mortgage Lender Sentiment Survey represent a broad base of different lending institutions that conducted business with Fannie Mae in 2015. Institutions were divided into three groups based on their 2015 total industry loan volume – Larger (top 15%), Mid-sized (top 16%-35%), and Smaller (bottom 65%). The data below further describe the compositions and loan characteristics of the three groups of institutions.





2016 Q2 Cross-Subgroup Sample Sizes

	Total	Larger Lenders	Mid-Sized Lenders	Smaller Lenders
Total	169	57	54	58
Mortgage Banks (non-depository)	65	31	28	6
Depository Institutions	63	21	17	25
Credit Unions	34	0	7	27



How to Read Significance Testing

On slides where significant differences between three groups are shown:

- Each group is assigned a letter (L/M/S, M/D/C)
- If a group has a significantly higher % than another group at the 95% confidence level, a letter will be shown next to the % for that metric. The letter denotes which group the % is significantly higher than.

Example:

Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency. **Processing: verifying information and documents**

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)
N=	48	18	17	13
Improve/streamline internal business processes	27%	12%	49% <i>L</i>	15%
Improve/streamline consumer borrower experience	27%	42%	15%	23%
Increase automation (reduce manual processes)	39%	38%	25%	62% <i>M</i>
Enhance usability of systems	7%	8%	12%	0%

49% is significantly higher than 12% (larger institutions)

62% is significantly higher than 25% (mid-sized institutions)



Calculation of the “Total”

The “Total” data presented in this report is an average of the means of the three loan origination volume groups (see an illustrated example below). Please note that percentages are based on the number of financial institutions that gave responses other than “Not Applicable.” Percentages may add to under or over 100% due to rounding.

Example:

Listed below are several key functional areas based on the mortgage lending cycle. Imagine that today you have limited funding or resources to invest to drive your firm’s operational efficiency. Which of the following business processes would you prefer to invest in? Please rank up to three top areas of investment priority.
Showing % ranked Top, 2nd, and 3rd priority

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)
N=	169	57	54	58
LOAN PRODUCTION				
Origination: generating loan applications	46%	47%	45%	47%
Processing: verifying information and documents	29%	32%	32%	23%
Underwriting: analyzing whether the lending risk is acceptable	19%	22%	23%	10%
Closing: delivering the deed, signing the note, and disbursing the funds	12%	16%	15%	8%

“Total” of 29% is
 $(32\% + 32\% + 23\%) / 3$



Appendix

Investment Priorities for Operational Efficiency

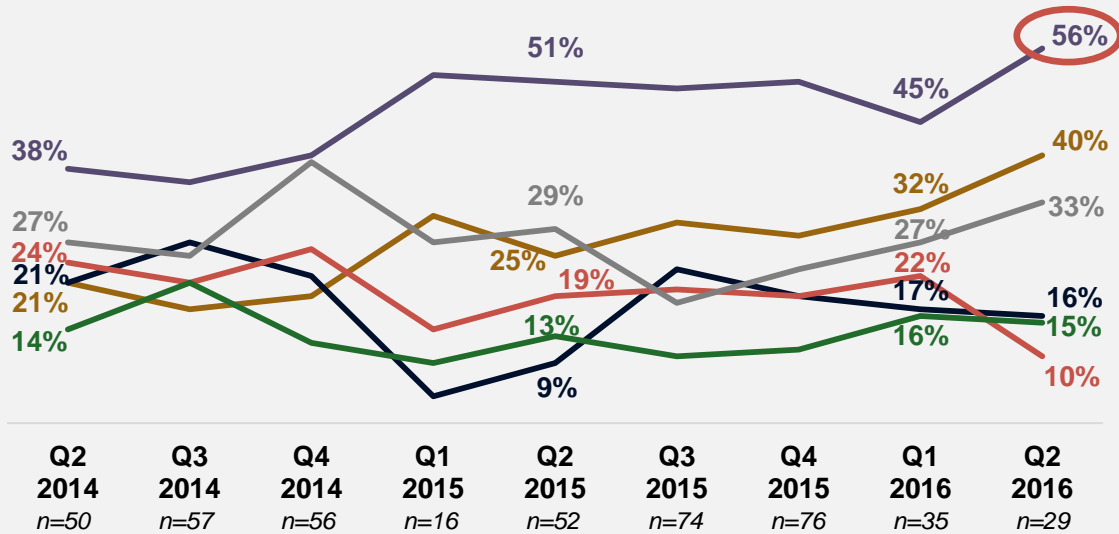


Operational Efficiency as Key for Profit Margin Growth

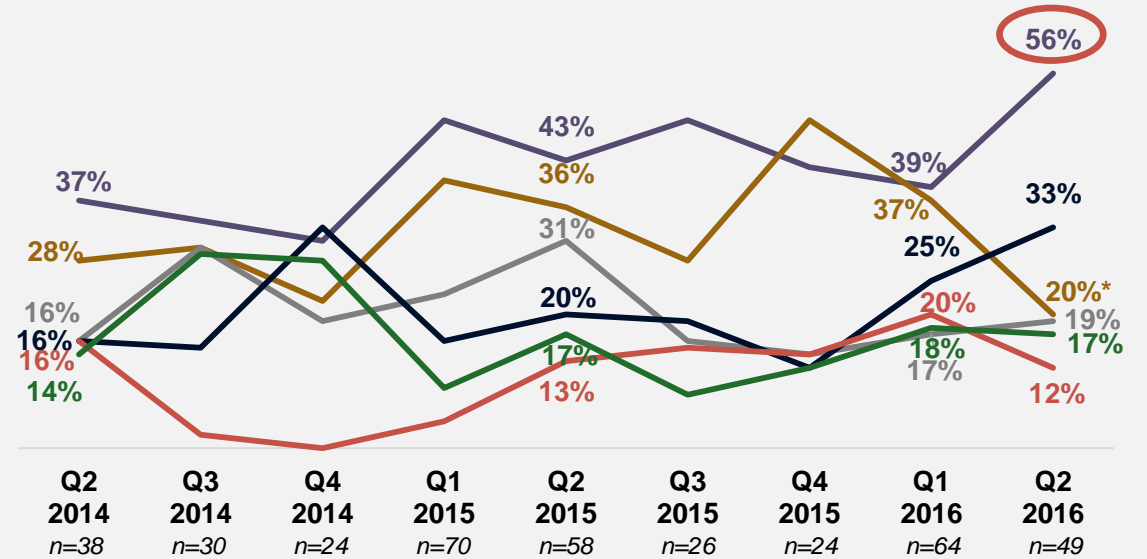
Operational efficiency has consistently been cited by lenders as the most important strategy to improve their profit margin outlook.



Top Strategies to be Used to Address Decreased Profit Margin Outlook
(Note: sample size is small)



Top Strategies to be Used to Achieve Increased Profit Margin Outlook
(Note: sample size is small)



Q: What primary strategies, if any, is your firm planning to use to address your decreased profit margin? Please select the two most important strategies and rank them in order of importance. (Showing % rank 1 + 2)

Q: What primary strategies, if any, is your firm planning to use to achieve your increased profit margin? Please select the two most important strategies and rank them in order of importance. (Showing % rank 1 + 2)

* Denotes a statistically significant change compared with Q1 2016 (previous quarter)

^ Denotes a statistically significant change compared with Q2 2015 (same quarter of last year)



Investment Priority Area: Loan Processing (Verifying Info and Documents)

Lenders say they would like to increase automation in their loan-processing practices to improve on speed and accuracy in documentation and the consumer borrower experience.

29% consider Processing (verifying information and documents) an investment priority...

N=48

Key Themes of Pain Points to Address

- Automation
- Speed and efficiency
- Improving accuracy in documentation
- Streamlining processing as a whole
- Working with borrower

Selected Verbatim

“Slow turn time, not properly automated.” – Smaller Institution

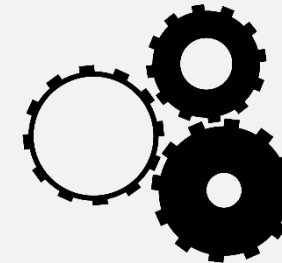
“Looking to speed up process.” – Larger Institution

“Reduce human mistakes.” – Mid-sized Institution

“Streamlining processing.” – Mid-sized Institution

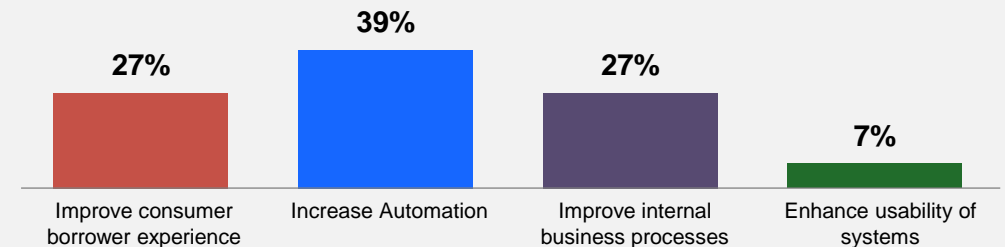
Q: And thinking of these investment priorities, what are some specific pain points your firm currently experiences that you hope these investments may be able to address? Please include up to two pain points per investment priority and be as specific as possible.

Primary Goal of Investment



39%

say **increasing automation** is the primary goal of investment



Q: Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.



Investment Priority Area: Responding to Customer Inquiries

Most lenders want to invest in their customer inquiries processes to improve the consumer borrower experience by addressing challenges with large call volume, timeliness of response, and borrower communication.

27% consider Responding to Customer Inquiries an investment priority...

N=47

Key Themes of Pain Points to Address

- Improving customer service and borrower education
- Timeliness in responding
- Volume of inquiries

Selected Verbatim

“Getting consumers to understand policies.” – Mid-sized Institution

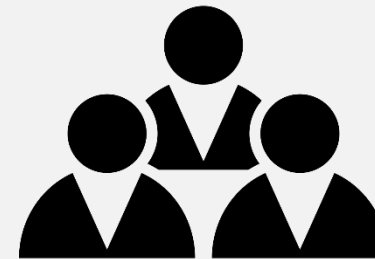
“Providing good customer service.” – Smaller Institution

“Sales staff availability to answer calls.” – Mid-sized Institution

“Align resources to meet member demand with accurate and timely communication.” – Mid-sized Institution

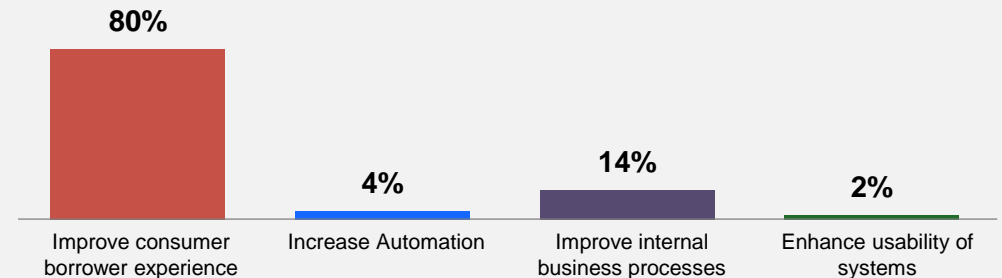
Q: And thinking of these investment priorities, what are some specific pain points your firm currently experiences that you hope these investments may be able to address? Please include up to two pain points per investment priority and be as specific as possible.

Primary Goal of Investment



80%

say improving the **consumer borrower experience** is the primary goal of investment



Q: Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.



Investment Priority Area: Receiving Payments from Borrowers

Through investing in borrower payment logistics, lenders expect to reduce borrower confusion and delinquencies and upgrade their electronic payment and reporting systems.

21% consider Receiving Payments from Borrowers an investment priority...
N=36

Key Themes of Pain Points to Address

- Borrower confusion and delinquencies
- Upgrading payment and reporting systems
 - Reducing paper payments
- Time

Selected Verbatim

“Keeping delinquencies down.” – Smaller Institution

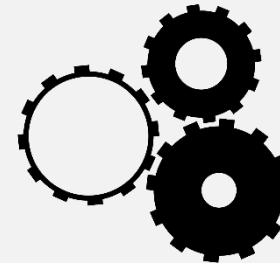
“We do not have an online payment option at this time.” – Mid-sized Institution

“Upgrade system, better reporting, integration with other systems.” – Larger Institution

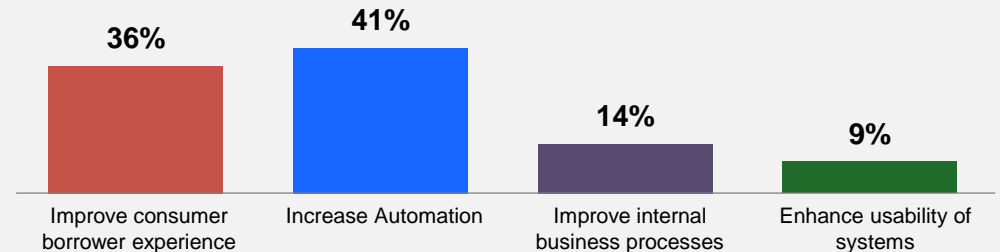
“Time it takes to make contact.” – Smaller Institution

Q: And thinking of these investment priorities, what are some specific pain points your firm currently experiences that you hope these investments may be able to address? Please include up to two pain points per investment priority and be as specific as possible.

Primary Goal of Investment



41%
say **increasing automation** is the primary goal of investment



Q: Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.



Investment Priority Area: Underwriting (Analyzing if the Lending Risk is Acceptable)

Lenders who wanted to invest in the underwriting process hope to address pain points related to internal business processes, such as underwriter consistency and efficiency. Lenders also hope to increase automation, which may help with accuracy and compliance issues.

19% consider Underwriting (Analyzing if the Lending Risk is Acceptable) an investment priority...
N=31

Key Themes of Pain Points to Address

- Personnel related issues:
 - Training and retaining staff
 - Underwriter consistency and efficiency
- Increase automation
- Accuracy and balancing risk
- Compliance and regulation

Selected Verbatim

“More files per day per underwriter” – Larger Institution

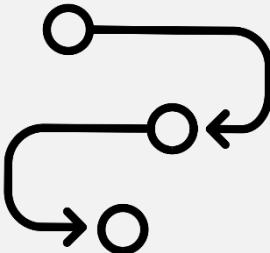
“Automated tax return analysis.” – Larger Institution

“If the input is incorrect this can cause the risk to be elevated without knowing it at that point.” – Mid-sized Institution

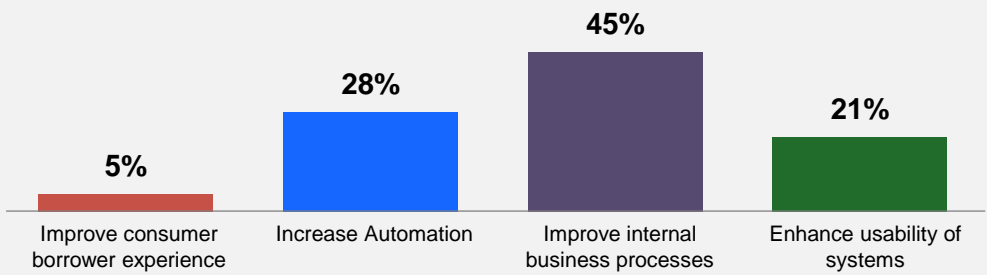
“Closing timing with TRID complication.” – Mid-sized Institution

Q: And thinking of these investment priorities, what are some specific pain points your firm currently experiences that you hope these investments may be able to address? Please include up to two pain points per investment priority and be as specific as possible.

Primary Goal of Investment



45%
say **improving internal business practices** is the primary goal of investment



Q: Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm’s operational efficiency.



Top Investment Priorities

Listed below are several key functional areas based on the mortgage lending cycle. Imagine that today you have limited funding or resources to invest to drive your firm's operational efficiency. Which of the following business processes would you prefer to invest in? Please rank up to three top areas of investment priority.

Showing % ranked Top, 2nd, and 3rd priority

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	169	57	54	58	65	63	34
LOAN PRODUCTION							
Origination: generating loan applications	46%	47%	45%	47%	45%	42%	53%
Processing: verifying information and documents	29%	32%	32%	23%	31%	19%	33%
Underwriting: analyzing whether the lending risk is acceptable	19%	22%	23%	10%	21%	22%	9%
Closing: delivering the deed, signing the note, and disbursing the funds	12%	16%	15%	8%	14%	11%	15%
WAREHOUSING, QUALITY CONTROL, and SHIPPING & DELIVERY							
Funding the loan	3%	0%	0%	7%	0%	3%	6%
Managing the warehouse line	3%	6%	1%	0%	6%	0%	0%
Performing quality control checks	14%	16%	18%	10%	15%	19%	9%
Shipping and delivering the loans to an investor	7%	8%	8%	3%	7%	5%	6%

*L/M/S - Denote a % is significantly higher than the annual loan origination volume group that the letter represents at the 95% confidence level
M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level*



Top Investment Priorities (Cont.)

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	169	57	54	58	65	63	34
SECONDARY MARKETING							
Managing the loans in the lender's "pipeline" (loans in process but not yet created)	14%	13%	14%	13%	11%	16%	12%
Negotiating investor commitments	4%	5%	5%	0%	6%	3%	0%
Setting prices for loans	11%	8%	12%	10%	15%	5%	12%
Managing market risks	8%	10%	8%	6%	7%	10%	6%
LOAN ADMINISTRATION							
Receiving payments from borrowers	21%	22%	15%	28%	25%	17%	27%
Remitting funds for principal and interest (less a "servicing fee" for the lender)	11%	9%	6%	17%	5%	17%	12%
Paying taxes and insurance from escrow accounts	11%	6%	10%	13%	8%	10%	15%
Handling loan payoffs, assumptions, loss mitigation, and foreclosures	15%	19%	9%	20%	17%	18%	12%
Responding to customer inquiries	27%	23%	25%	35%	28%	31%	21%
General Regulatory Compliance	42%	39%	46%	42%	39%	43%	44%
Other	2%	1%	4%	0%	0%	2%	3%

L/M/S - Denote a % is significantly higher than the annual loan origination volume group that the letter represents at the 95% confidence level
M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level



Primary Goal of Investment Priorities

Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
ORIGINATION: GENERATING LOAN APPLICATIONS							
<i>n=</i>	78	26	24	27	29	26	18
Improve/streamline internal business processes	12%	13%	16%	7%	13%	13%	11%
Improve/streamline consumer borrower experience	53%	53%	48%	59%	50%	49%	61%
Increase automation (reduce manual processes)	18%	15%	21%	19%	17%	19%	22%
Enhance usability of systems	17%	19%	16%	15%	20%	19%	6%
PROCESSING: VERIFYING INFORMATION AND DOCUMENTS							
<i>n=</i>	48	18	17	13	20	12	11
Improve/streamline internal business processes	27%	12%	49%	15%	28%	10%	36%
Improve/streamline consumer borrower experience	27%	42%	15% <i>L</i>	23%	20%	25%	36%
Increase automation (reduce manual processes)	39%	38%	25%	62%	47%	52%	27%
Enhance usability of systems	7%	8%	12%	0% <i>M</i>	5%	12%	0%
UNDERWRITING: ANALYZING WHETHER THE LENDING RISK IS ACCEPTABLE							
<i>n=</i>	31	12	12	6	14	14	3
Improve/streamline internal business processes	45%	40%	56%	33%	50%	50%	0%
Improve/streamline consumer borrower experience	5%	0%	4%	17%	0%	4%	33%
Increase automation (reduce manual processes)	28%	32%	15%	50%	28%	29%	33%
Enhance usability of systems	21%	28%	25%	0%	22%	18%	33%

L/M/S - Denote a % is significantly higher than the annual loan origination volume group that the letter represents at the 95% confidence level
M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level



Primary Goal of Investment Priorities (Cont.)

Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
CLOSING: DELIVERING THE DEED, SIGNING THE NOTE, AND DISBURSING THE FUNDS							
<i>n=</i>	21	8	8	5	9	6	5
Improve/streamline internal business processes	25%	29%	11%	40%	26%	15%	40%
Improve/streamline consumer borrower experience	35%	41%	38%	20%	40%	31%	20%
Increase automation (reduce manual processes)	31%	24%	45%	20%	23%	38%	40%
Enhance usability of systems	9%	6%	6%	20%	11%	15%	0%
FUNDING THE LOAN							
<i>n=</i>	4	0	0	4	0	2	2
Improve/streamline internal business processes	50%	0%	0%	50%	0%	0%	100%
Improve/streamline consumer borrower experience	0%	0%	0%	0%	0%	0%	0%
Increase automation (reduce manual processes)	0%	0%	0%	0%	0%	0%	0%
Enhance usability of systems	50%	0%	0%	50%	0%	100%	0%
MANAGING THE WAREHOUSE LINE							
<i>n=</i>	4	3	1	0	4	0	0
Improve/streamline internal business processes	28%	33%	0%	0%	29%	0%	0%
Improve/streamline consumer borrower experience	28%	33%	0%	0%	29%	0%	0%
Increase automation (reduce manual processes)	28%	33%	0%	0%	29%	0%	0%
Enhance usability of systems	15%	0%	100%	0%	14%	0%	0%

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Primary Goal of Investment Priorities (Cont.)

Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
PERFORMING QUALITY CONTROL CHECKS							
<i>n=</i>	24	9	10	6	10	12	3
Improve/streamline internal business processes	45%	56%	32%	50%	26%	62%	33%
Improve/streamline consumer borrower experience	0%	0%	0%	0%	0%	0%	0%
Increase automation (reduce manual processes)	51%	33%	68%	50%	63%	38%	67%
Enhance usability of systems	4%	11%	0%	0%	11%	0%	0%
SHIPPING AND DELIVERING THE LOANS TO AN INVESTOR							
<i>n=</i>	10	4	4	2	5	3	2
Improve/streamline internal business processes	29%	22%	50%	0%	40%	33%	0%
Improve/streamline consumer borrower experience	5%	11%	0%	0%	10%	0%	0%
Increase automation (reduce manual processes)	62%	56%	50%	100%	40%	67%	100%
Enhance usability of systems	5%	11%	0%	0%	10%	0%	0%
MANAGING THE LOANS IN THE LENDER'S "PIPELINE" (LOANS IN PROCESS BUT NOT YET CREATED)							
<i>n=</i>	22	7	8	8	7	10	4
Improve/streamline internal business processes	40%	50%	33%	38%	64%	45%	0%
Improve/streamline consumer borrower experience	26%	14%	13%	50%	14%	20%	75%
Increase automation (reduce manual processes)	11%	7%	27%	0%	7%	10%	25%
Enhance usability of systems	22%	29%	27%	12%	14%	25%	0%

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M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level



Primary Goal of Investment Priorities (Cont.)

Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
NEGOTIATING INVESTOR COMMITMENTS							
<i>n=</i>	5	2	2	0	4	2	0
Improve/streamline internal business processes	49%	80%	20%	0%	71%	0%	0%
Improve/streamline consumer borrower experience	21%	0%	40%	0%	29%	0%	0%
Increase automation (reduce manual processes)	10%	20%	0%	0%	0%	33%	0%
Enhance usability of systems	21%	0%	40%	0%	0%	67%	0%
SETTING PRICES FOR LOANS							
<i>n=</i>	18	5	6	6	9	4	4
Improve/streamline internal business processes	15%	10%	31%	0%	28%	0%	0%
Improve/streamline consumer borrower experience	11%	0%	0%	33%	0%	29%	25%
Increase automation (reduce manual processes)	51%	50%	54%	50%	39%	71%	50%
Enhance usability of systems	23%	40%	15%	17%	33%	0%	25%
MANAGING MARKET RISKS							
<i>n=</i>	14	6	4	4	5	6	2
Improve/streamline internal business processes	42%	27%	31%	75%	59%	15%	100%
Improve/streamline consumer borrower experience	0%	0%	0%	0%	0%	0%	0% ^D
Increase automation (reduce manual processes)	11%	9%	0%	25%	21%	8%	0%
Enhance usability of systems	48%	64%	69%	0%	21%	77%	0%

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Primary Goal of Investment Priorities (Cont.)

Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
RECEIVING PAYMENTS FROM BORROWERS							
<i>n=</i>	36	12	8	16	16	11	9
Improve/streamline internal business processes	14%	24%	0%	12%	21%	14%	0%
Improve/streamline consumer borrower experience	36%	33%	50%	31%	18%	47%	56%
Increase automation (reduce manual processes)	41%	33%	50%	44%	55%	37%	22%
Enhance usability of systems	9%	10%	0%	12%	6%	2%	22%
REMITTING FUNDS FOR PRINCIPAL AND INTEREST (LESS A "SERVICING FEE" FOR THE LENDER)							
<i>n=</i>	18	5	3	10	3	10	4
Improve/streamline internal business processes	42%	30%	33%	50%	17%	40%	50%
Improve/streamline consumer borrower experience	20%	30%	33%	10%	50%	20%	0%
Increase automation (reduce manual processes)	22%	40%	0%	20%	33%	20%	25%
Enhance usability of systems	17%	0%	33%	20%	0%	20%	25%
PAYING TAXES AND INSURANCE FROM ESCROW ACCOUNTS							
<i>n=</i>	17	3	6	8	5	7	5
Improve/streamline internal business processes	21%	0%	9%	38%	10%	30%	20%
Improve/streamline consumer borrower experience	20%	8%	55%	0%	30%	11%	20%
Increase automation (reduce manual processes)	48%	62%	36%	50%	60%	44%	40%
Enhance usability of systems	12%	31%	0%	12%	0%	15%	20%

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M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level



Primary Goal of Investment Priorities (Cont.)

Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
HANDLING LOAN PAYOFFS, ASSUMPTIONS, LOSS MITIGATION, AND FORECLOSURES							
<i>n=</i>	26	10	5	11	11	11	4
Improve/streamline internal business processes	34%	34%	10%	45%	50%	22%	25%
Improve/streamline consumer borrower experience	25%	24%	40%	18%	27%	22%	25%
Increase automation (reduce manual processes)	21%	29%	10%	18%	5%	44% ^M	0%
Enhance usability of systems	20%	12%	40%	18%	18%	11%	50%
RESPONDING TO CUSTOMER INQUIRIES							
<i>n=</i>	47	14	14	20	18	20	7
Improve/streamline internal business processes	14%	19%	22%	5%	19%	10%	0%
Improve/streamline consumer borrower experience	80%	74%	78%	85%	75%	80%	100%
Increase automation (reduce manual processes)	4%	7%	0%	5%	6%	5%	0%
Enhance usability of systems	2%	0%	0%	5%	0%	5%	0%
GENERAL REGULATORY COMPLIANCE							
<i>n=</i>	72	23	25	24	25	27	15
Improve/streamline internal business processes	29%	40%	30%	17%	36%	31%	20%
Improve/streamline consumer borrower experience	14%	4%	16%	21%	6%	28%	7%
Increase automation (reduce manual processes)	41%	45%	32%	46%	36%	32% ^M	47%
Enhance usability of systems	17%	11%	22%	17%	22%	9%	27%

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Appendix

Innovation and Technology in the Industry



Innovation Driving Operational Efficiency

To what extent do you agree or disagree with the following statement?
“The mortgage industry as a whole is innovating to drive the industry’s operational efficiency.”

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	169	57	54	58	65	63	34
Strongly agree	12%	13%	15%	9%	15%	10%	9%
Somewhat agree	67%	65%	68%	67%	64%	65%	74%
Somewhat disagree	17%	18%	15%	19%	21%	17%	15%
Strongly disagree	4%	4%	2%	5%	0%	7%	3%

*L/M/S - Denote a % is significantly higher than the annual loan origination volume group that the letter represents at the 95% confidence level
M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level*



“Disruptors” in the Mortgage Industry

Uber is often considered as a “disruptor” to the taxi business. To what extent do you agree that the mortgage industry would benefit from a “disruptor” like Uber?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	169	57	54	58	65	63	34
Strongly agree	19%	29% ^S	14%	14%	21%	22%	6%
Somewhat agree	37%	40%	35%	36%	35%	34%	53%
Somewhat disagree	35%	25%	41%	38%	35%	32%	35%
Strongly disagree	9%	6%	10%	12%	10%	12%	6%

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M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level*



Dependence on Technology Solutions Providers

How dependent is your firm on TSPs (technology solution providers) today?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	169	57	54	58	65	63	34
Significantly dependent on TSPs	56%	68% ^S	56%	43%	68% ^D	33%	68% ^D
Somewhat dependent on TSPs	30%	17%	36% ^L	38% ^L	23%	42% ^M	26%
Not very dependent on TSPs	9%	5%	6%	14%	3%	18% ^M	3%
Not at all dependent on TSPs	2%	4%	0%	2%	2%	2%	3%
Not sure / Don't know / Not applicable	4%	6%	1%	3%	4%	6%	0%

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Use of Technology Solutions Providers

[IF AT LEAST SOMEWHAT DEPENDENT ON TSPs] Approximately what percentage of your firm's mortgage business is enabled by TSPs?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	160	52	54	55	62	58	33
Mean	84.11	86.95	83.16	81.88	88.32 ^D	71	89.55 ^D
Median	100	100	100	90	100	80	100
Standard deviation	23.96	19.34	27.45	25.29	18.12	34.96	16.47

[IF AT LEAST SOMEWHAT DEPENDENT ON TSPs] Approximately how many TSPs does your firm currently use?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	64	21	21	22	26	16	19
Mean	5.37	6.76 ^S	6 ^S	3.36	6.6 ^C	4.91	4.21
Median	5	5.26	5	3	6	4.75	4
Standard deviation	3.7	4.72	3.2	1.92	3.99	3.77	3.15

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TSP Dependency Over the Next 12 Months

[IF AT LEAST SOMEWHAT DEPENDENT ON TSPs] Which of the following statements best describes your firm's strategy regarding TSPs over the next 12 months?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	160	52	54	55	62	58	33
We are going to depend more on TSPs	44%	44%	50%	38%	48%	31%	55% ^D
We are going to depend less on TSPs	6%	14% ^S	4%	0%	11%	2%	0%
No major changes	39%	34%	34%	49%	38%	41%	45%
Not sure / Don't know / Not applicable	11%	8%	12%	13%	2%	26% ^{M,D}	0%

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Question Text

Q23a/b. What primary strategies, if any, is your firm planning to use to address your decreased profit margin? Please select the two most important strategies and rank them in order of importance.

- Loan officer staffing adjustments
- Back-office staffing adjustments
- Operational efficiency (i.e. technology) investments
- New or re-allocation of origination channels (i.e. retail or online or third-party channels)
- New or re-allocation of mortgage product offerings
- Underwriting standard changes
- New borrower segments
- Business acquisition/merger/divestment
- Marketing outreach expansion/contraction
- Price adjustments
- MSR (Mortgage Servicing Rights) sales
- Investor outlet expansion/contraction
- Other

Q25a/b. What primary strategies, if any, is your firm planning to use to achieve your increased profit margin? Please select the two most important strategies and rank them in order of importance.

- Loan officer staffing adjustments
- Back-office staffing adjustments
- Operational efficiency (i.e. technology) investments
- New or reallocation of origination channels (i.e. retail or online or third-party channels)
- New or reallocation of mortgage product offerings
- Underwriting standard changes
- New borrower segments
- Business acquisition/merger/divestment
- Marketing outreach expansion/contraction
- Price adjustments
- MSR (Mortgage Servicing Rights) sales
- Investor outlet expansion/contraction
- Other

qR135a/b/c. Listed below are several key functional areas based on the mortgage lending cycle. Imagine that today you have limited funding or resources to invest to drive your firm's operational efficiency. Which of the following business processes would you prefer to invest in? Please rank up to three top areas of investment priority.

- Origination: generating loan applications
- Processing: verifying information and documents
- Underwriting: analyzing whether the lending risk is acceptable
- Closing: delivering the deed, signing the note, and disbursing the funds
- Funding the loan
- Managing the warehouse line
- Performing quality control checks
- Shipping and delivering the loans to an investor
- Managing the loans in the lender's "pipeline" (loans in process but not yet created)
- Negotiating investor commitments
- Setting prices for loans
- Managing market risks
- Receiving payments from borrowers
- Remitting funds for principal and interest (less a "servicing fee" for the lender)
- Paying taxes and insurance from escrow accounts
- Handling loan payoffs, assumptions, loss mitigation, and foreclosures
- Responding to customer inquiries
- General Regulatory Compliance
- Other



Question Text Cont.

qR136a/b/c. And thinking of these investment priorities, what are some specific pain points your firm currently experiences that you hope these investments may be able to address? Please include up to two pain points per investment priority and be as specific as possible.

qR137a/b/c. Listed below are four possible goals a firm could have for its investments on processes. For each of the investment priorities you identified earlier, please indicate the primary goal of your proposed investment in driving your firm's operational efficiency.

- Improve/streamline internal business processes
- Improve/streamline consumer borrower experience
- Increase automation (reduce manual processes)
- Enhance usability of systems

qR138. Thinking about the mortgage industry, what are some technological innovations you would like to see in the industry to increase flexibility or reduce redundancy? Please share up to three ideas with us, and please be as specific as possible. (Optional)

qR139. To what extent do you agree or disagree with the following statement? **“The mortgage industry as a whole is innovating to drive the industry's operational efficiency.”**

qR140a. Why do you say the mortgage industry as a whole is innovating to drive the industry's operational efficiency? (Optional)

qR140b. Why do you say the mortgage industry as a whole is not innovating to drive the industry's operational efficiency? (Optional)

qR141. Uber is often considered as a “disruptor” to the taxi business. To what extent do you agree that the mortgage industry would benefit from a “disruptor” like Uber?

qR142. How or where would you like to see “disruptors” in the mortgage industry? (Optional)

qR143. How dependent is your firm on TSPs (technology solution providers) today?

qR144. Approximately what percentage of your firm's mortgage business is enabled by TSPs?

qR145. Approximately how many TSPs does your firm currently use?

qR146. Which of the following statements best describes your firm's strategy regarding TSPs over the next 12 months?



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