

Mortgage Lender Sentiment Survey® Special Topics Report

Impact of Digital Innovation on Lender Workforce Management

First Quarter 2020





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Executive Summary

Lenders who put a great deal of effort into both the front-end and back-end digital transformation are more likely to report significant changes to their workforce and expect loan officers' and underwriters' roles to expand in the near future. These lenders also reported experiencing more business benefits; in particular, "more borrowers attracted" and a "lower workforce turnover rate."

Key Role Changes over Next 2-3 Years

Those who put in a great deal of effort are more likely to say **Loan officers' and Underwriters' roles to expand significantly** over the next 2-3 years



Recruiting Profiles Have Changed

56% of lenders who put in a great deal of effort in front- and back-end digital transformation
Versus
30% of all other lenders



Structure/Scope of Workforce Have Changed

85% of lenders who put in a great deal of effort in front- and back-end digital transformation
Versus
50% of all other lenders



Benefits Experienced

Lenders reporting putting in a great deal of effort into BOTH front- and back-end digital transformation

All Other Lenders

Difference

Reduced cycle time / Increased productivity



+23

Enhanced quality of work (e.g., reduced data errors)



+25

More borrower customers attracted



+32

Lower workforce turnover rate (e.g., with higher employee satisfaction)



+36

Reduced loan origination costs



+23

Reduced cyclical variability of staffing



+25

Lower regulatory compliance costs or risks



+17





Business Context



Business Context and Research Questions

Business Context

Digitization is rapidly changing how organizations create value and compete. In our past few studies, lenders have consistently shown a high interest in leveraging technology to improve the front-end consumer borrower experience and back-end operational efficiency.¹ Lenders have also shared their experience and challenges in rolling out digital transformation efforts² in our prior studies.

With digital transformation efforts, the responsibilities of some functional roles may evolve. For example, with a point-of-sale system, traditional back-end processors may now interact directly with borrowers during the application process. The role of underwriters may also change due to digital applications or automated data extraction. And some existing roles may be merged into other roles. The key objective of the current study is to learn how lenders believe their digitization efforts will impact their workforce management, including talent recruiting, structure of workforce, staff turnover rate, and role changes.

Research Questions

1. What level of effort have lenders dedicated to improving the front-end consumer experience and the back-end operational efficiency through digital transformation efforts over the past 2-3 years?
2. Are there differences between lenders who put in “a great deal” of digital transformation efforts into the front-end and back-end vs. others, on the following topics:
 - 1) the scope and structure of workforce, now and in the future
 - 2) recruiting profiles for new hires such as skills and prior experience
 - 3) the ability to recruit, hire, and retain talent
 - 4) types of benefits experienced such as lower turnover rate and reduced cyclical variability of staffing
 - 5) responsibility changes of various functional roles, such as loan officers, now and in the future
 - 6) whether or not it would be beneficial for the mortgage industry to outsource loan origination

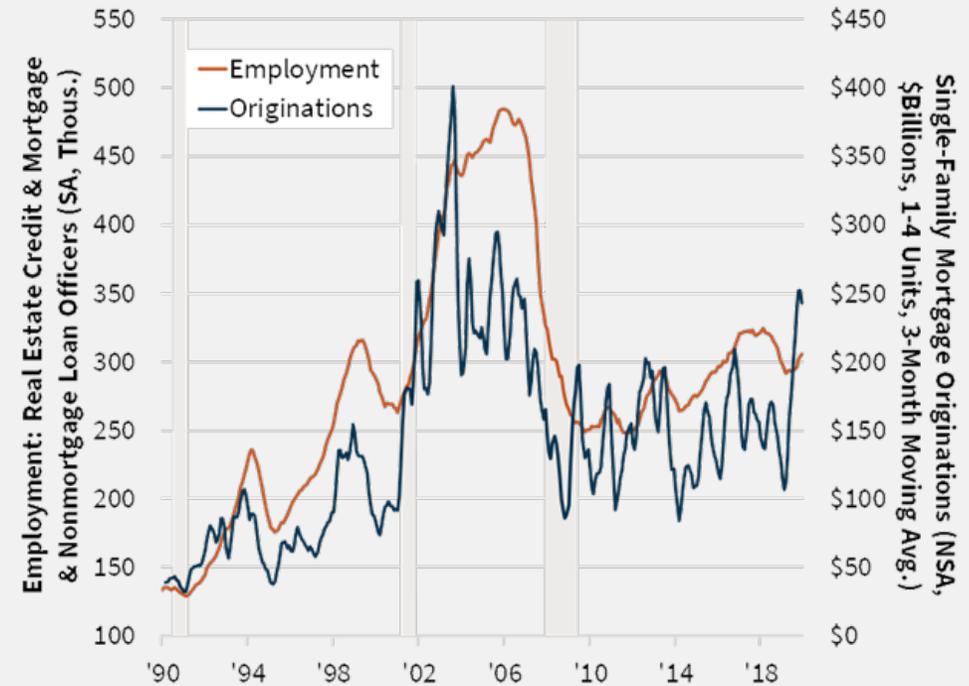
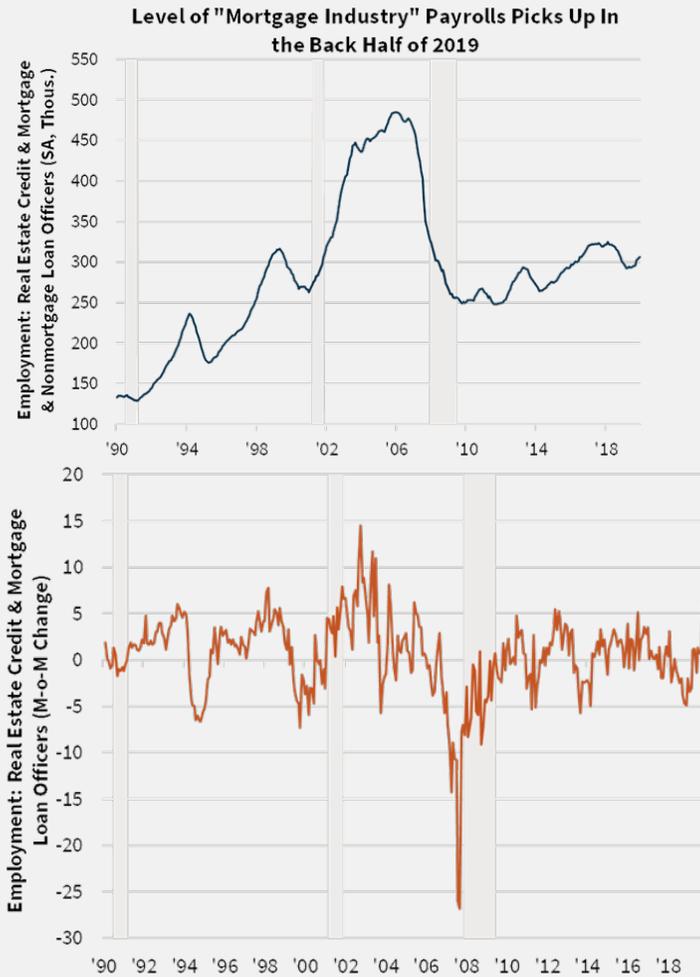
¹ Examples include: “How Are Lenders’ Business Priorities Evolving To Compete Against Industry Competition?” <https://www.fanniemae.com/resources/file/research/mlss/pdf/lender-business-priorities-mlss-q22019.pdf>
“APIs and Mortgage Lending,” <https://www.fanniemae.com/resources/file/research/mlss/pdf/apis-mortgage-lending-q12019.pdf>
“How Will Artificial Intelligence Shape Mortgage Lending?” <https://www.fanniemae.com/resources/file/research/mlss/pdf/mlss-artificial-intelligence-100418.pdf>
“How Lenders Assess Their Digital Transformation Efforts?” <https://www.fanniemae.com/resources/file/research/mlss/pdf/digital-transformation-efforts-mlss-q32019.pdf>

² Digital transformation efforts could include, but are not limited to, implementing a Point-of-Sale system to streamline borrower mortgage applications, leveraging Application Programming Interfaces (APIs) to transmit data, digitizing documents, and adopting newer technology solutions to streamline processes.



Mortgage Industry Employment Overview

The mortgage industry's more recent trough in employment occurred in June 2019, but employment rates have risen strongly since. Origination volumes tend to highly correlate with employment and lead employment by a few months.

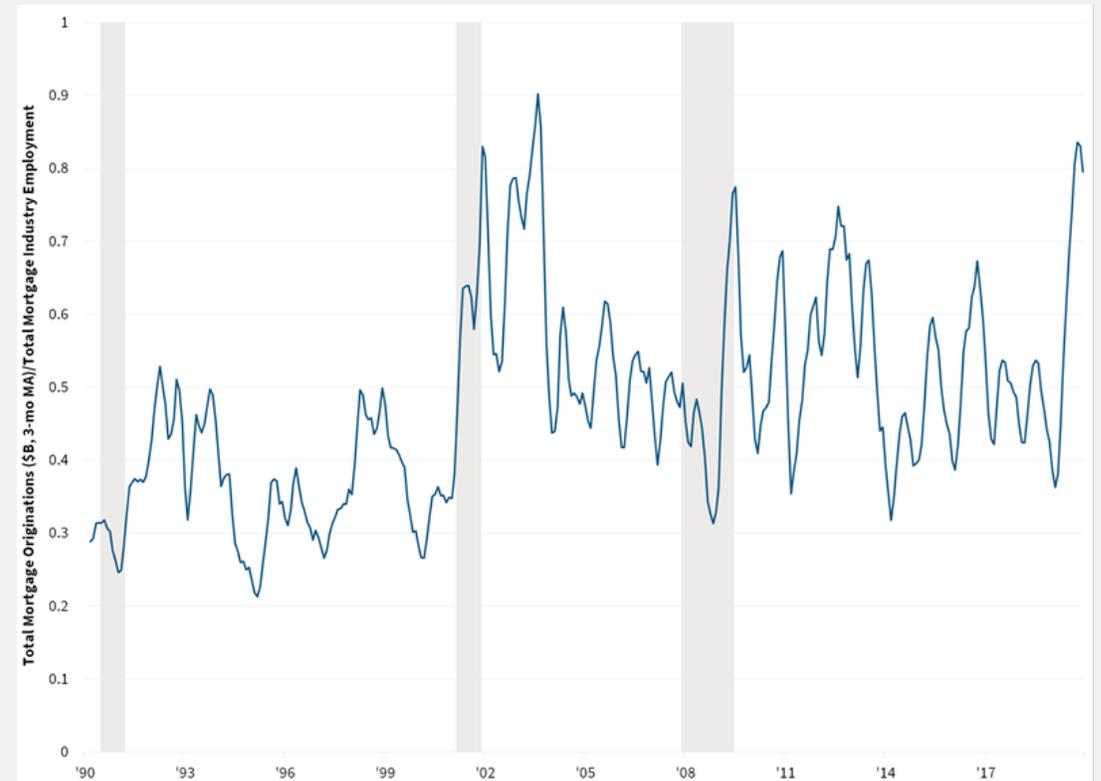
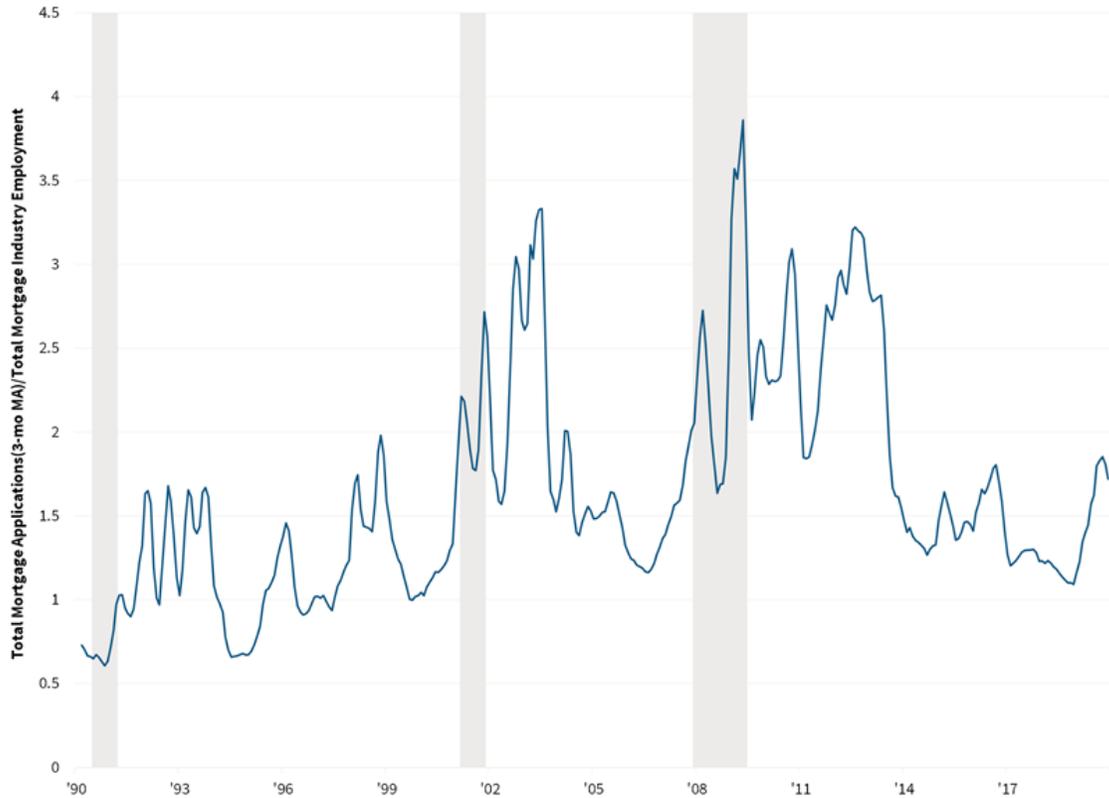


Source: Bureau of Labor Statistics, Fannie Mae analysis



Productivity

As mortgage lenders have recently increased employment, the average amount of origination volume and loan applications per employee* have declined.

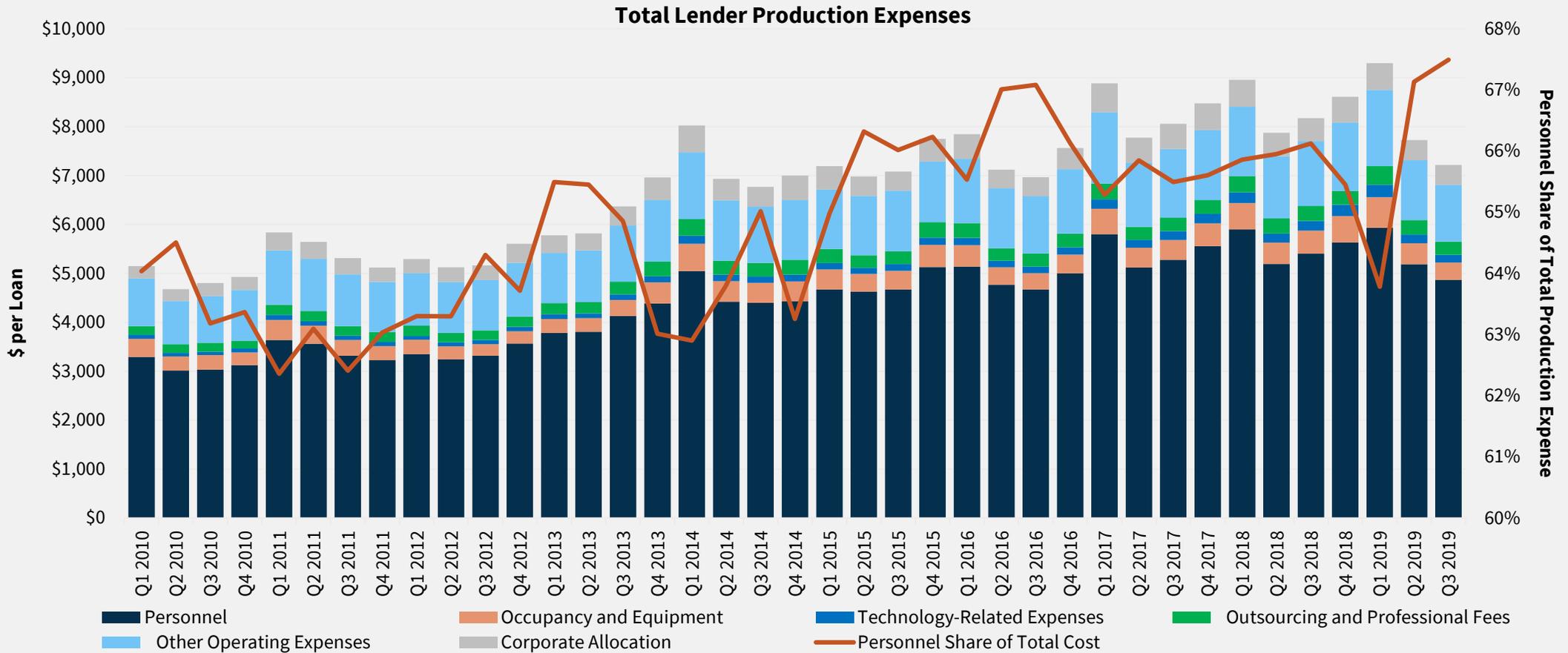


* Based on total mortgage industry employment, not specific to specific roles
Source: Mortgage Bankers Association, Bureau of Labor Statistics, Fannie Mae analysis



Loan Origination Cost

Average origination cost per loan has increased over the past decade. The majority of lender expense is for personnel, and the share of personnel cost to total expenses has also increased over time, from about 63% in 2010 to 67% in 2019. Technology-related expenses have not increased dramatically; the share of tech costs to total expenses rose from 1.7% in Q1 2010 to 2.7% in Q1 2019.

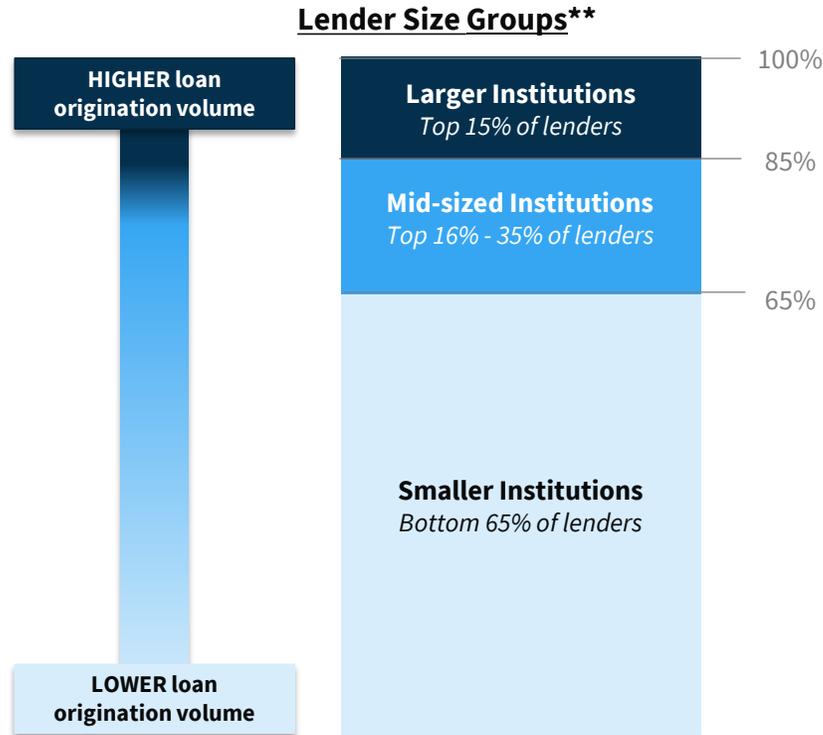


Source: Mortgage Bankers Association



Q1 2020 Respondent Sample and Groups

The current analysis is based on first quarter 2020 data collection. For Q1 2020, a total of 195 senior executives completed the survey between February 5-17, representing 183 lending institutions.*



Sample Q1 2020		Sample Size
Total Lending Institutions The "Total" data throughout this report is an average of the means of the three lender-size groups listed below.		183
Lender Size Groups	Larger Institutions Lenders in the Fannie Mae database who were in the top 15% of lending institutions based on their total 2018 loan origination volume (above \$980 million)	52
	Mid-sized Institutions Lenders in the Fannie Mae database who were in the next 20% (16%-35%) of lending institutions based on their total 2018 loan origination volume (between \$317.5 million and \$980 million)	40
	Smaller Institutions Lenders in the Fannie Mae database who were in the bottom 65% of lending institutions based on their total 2018 loan origination volume (less than \$317.5 million)	91
Institution Type***	Mortgage Banks (non-depository)	71
	Depository Institutions	73
	Credit Unions	38

* 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 weighted to represent their parent institution.

** The 2018 total loan volume per lender used here includes the best available annual origination information from Fannie Mae, Freddie Mac, and Marketrac. Lenders in the Fannie Mae database are sorted by their firm's total 2018 loan origination volume and then assigned into the size groups, with the top 15% of lenders being the "larger" group, the next 20% of lenders being the "mid-sized" group and the rest being the "small" group.

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





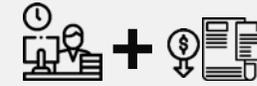
Research Findings



Analysis Groups by Level of Digital Transformation Efforts

To examine the impact of lenders' digital transformation efforts on workforce management issues, this study examines the differences between lenders who reported investing "a great deal of effort" in both the front-end consumer borrower experience and the back-end operational efficiency, versus all other lenders.

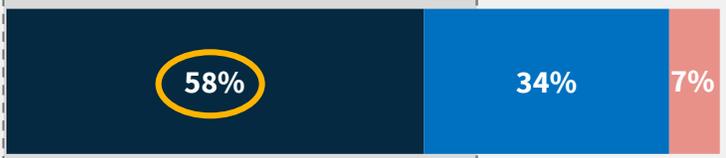
Level of Digital Transformation Efforts Dedicated by Firm to Improve Consumer Experience and Back-End Operational Efficiency



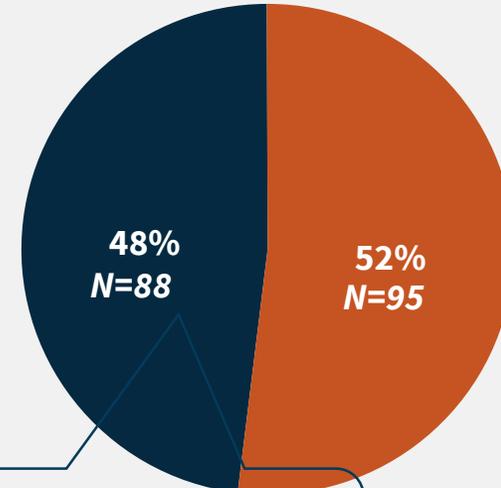
Improving the front-end consumer borrower experience
N = 178 (among firms which interact directly with borrowers/consumers)



Improving the back-end operational efficiency
N = 183 (among total)



48% of firms put "A great deal of effort" into **BOTH** front-end consumer borrower experience and back-end operational efficiency



52% are "all other lenders"

Mortgage Banks and Credit Unions are significantly more likely than Depository Institutions to put "A great deal of effort" into both front-end and back-end improvements (see page 32)

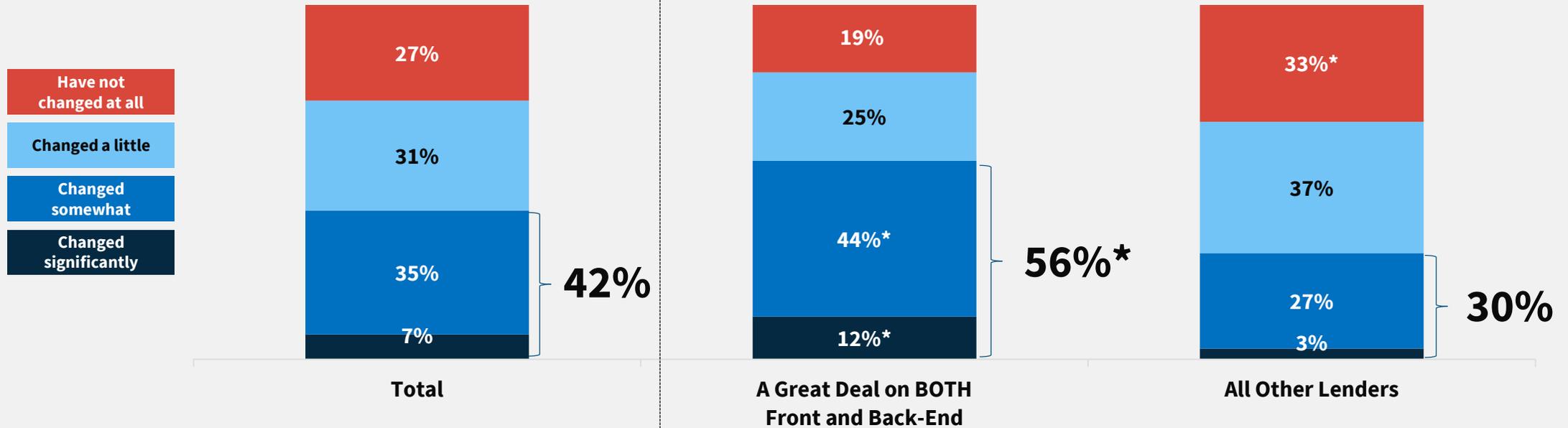
Q: Digitization is rapidly changing how organizations create value and compete. Digital transformation efforts could include, but are not limited to, implementing a Point-of-Sale system to streamline borrower mortgage applications, leveraging Application Programming Interfaces (APIs) to transmit data, digitizing documents, and adopting newer technology solutions to streamline processes. Please indicate the level of effort your mortgage business has dedicated to improving the consumer experience and achieving back-end operational efficiency through digital transformation efforts over the past 2-3 years.



Impact of Digital Transformation Efforts on Recruiting Profiles

Lenders who put in a great amount of efforts into digital transformation on both the front-end and back-end are more likely to say their recruitment profiles have at least somewhat changed.

How have your digital transformation efforts for loan origination changed your mortgage business' recruiting profiles for new hires such as skills and prior experience?



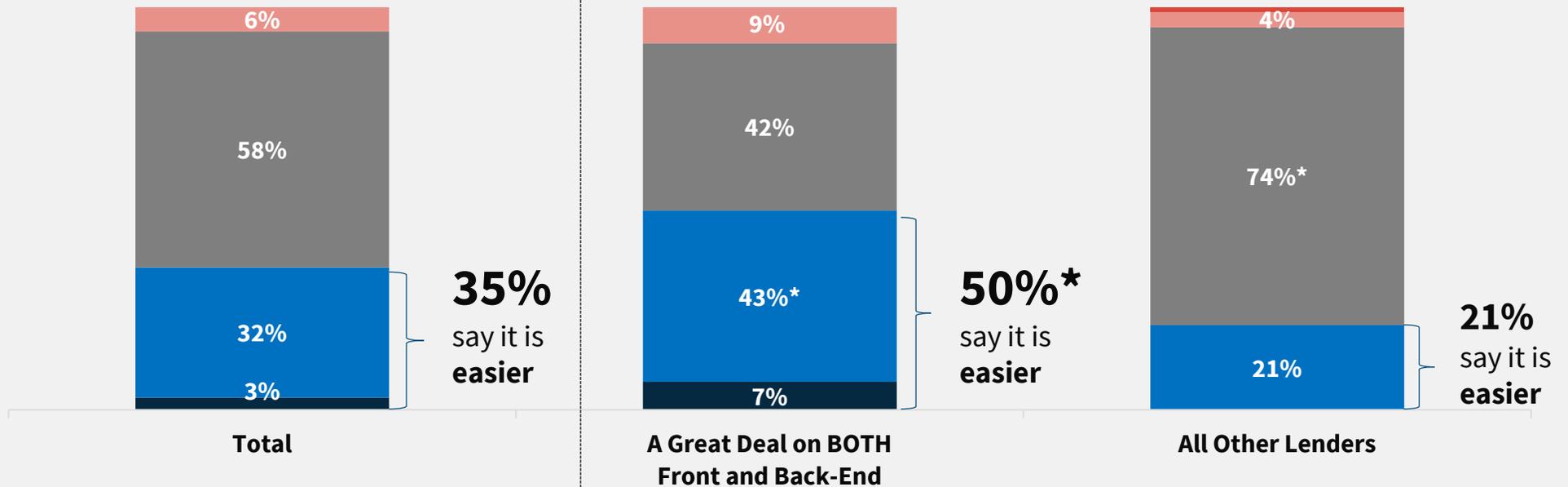
* Denote a % is significantly higher between lenders who put a great deal of digital transformation efforts on both front and back-end, compared to all other lenders in the sample, at the 95% confidence level



Impact of Digital Transformation Efforts on Talent Recruit

Lenders who put in a great amount of efforts into digital transformation on both the front-end and back-end say it has made it significantly easier — not harder — to recruit, hire, and retain talent.

How have your digital transformation efforts for loan origination impacted your mortgage business' ability to recruit, hire, and retain talent? Have they made it...?



* Denote a % is significantly higher between lenders who put a great deal of digital transformation efforts on both front and back-end, compared to all other lenders in the sample, at the 95% confidence level



Impact of Digital Transformation Efforts on Scope/Structure of the Workforce

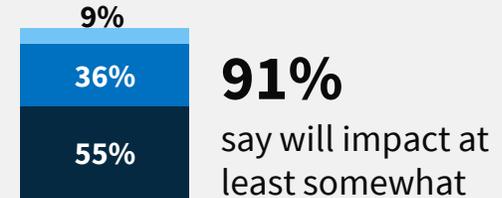
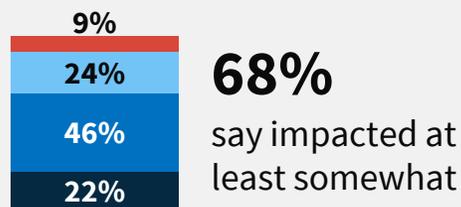
The majority of lenders say digital transformation efforts have impacted the scope and structure of their workforces in the past 2-3 years, and increased impact is expected over the next 2-3 years. Those who put a great deal of effort into front-end and back-end digital transformation are more likely to say they have seen significant changes — and expect more changes to come.

Over the past 2-3 years, how have your digital transformation efforts for loan origination impacted the scope and structure of your workforce?

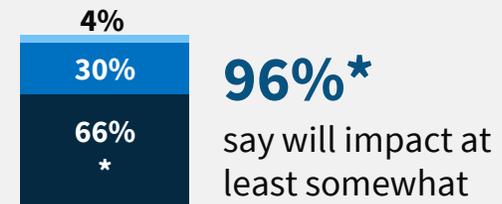
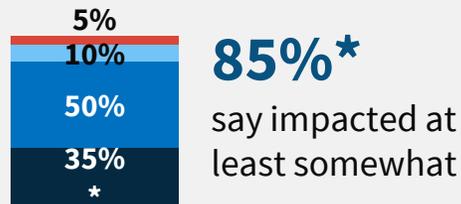
Now, let's focus on the future. In 2-3 years, how do you think your digital transformation efforts for loan origination will impact the scope and structure of your workforce?

Significantly Somewhat A little No impact

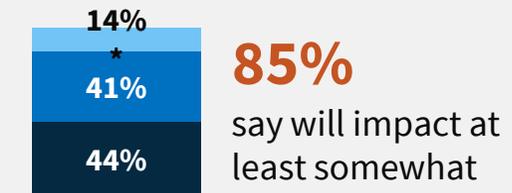
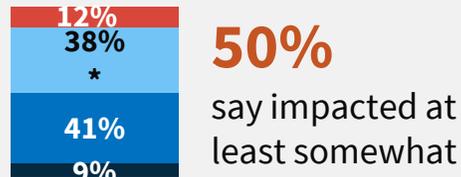
Total (All Lenders)
N=183



A Great Deal of Digital Transformation Efforts on BOTH Front and Back-End
N=88



All Other Lenders
N=95



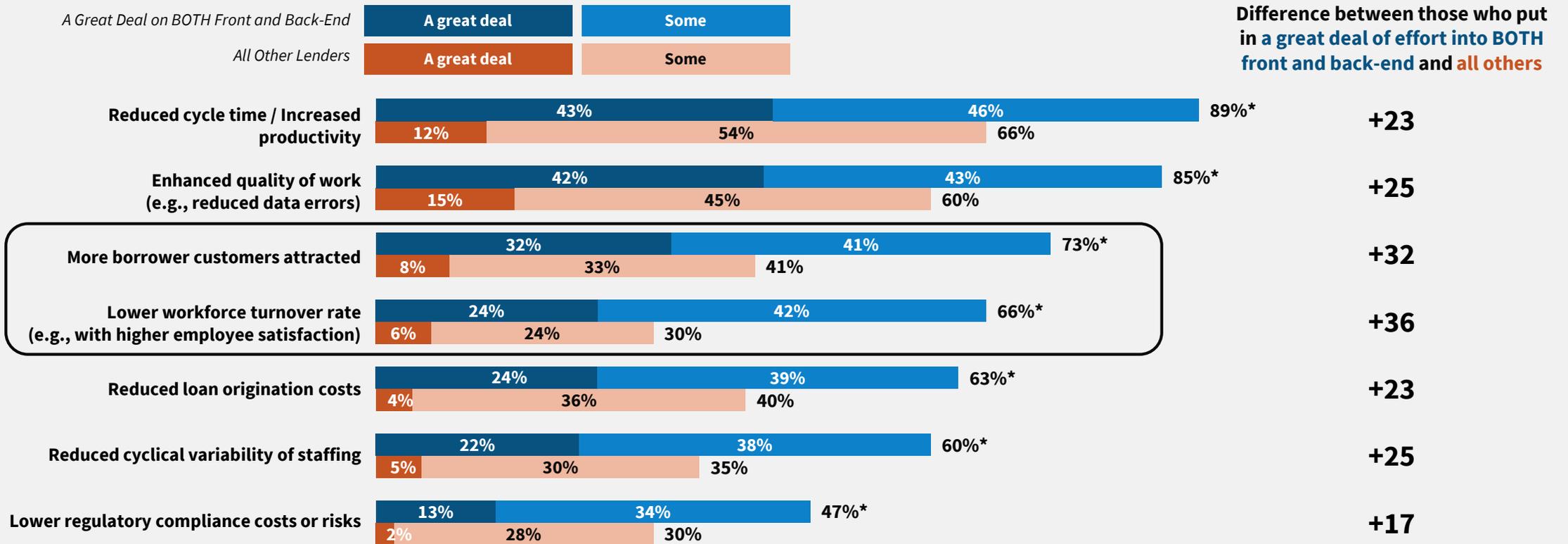
* Denote a % is significantly higher between lenders who put a great deal of digital transformation efforts on both front and back-end, compared to all other lenders in the sample, at the 95% confidence level



Impact of Digital Transformation Efforts on Benefits Experienced

Those who put a great deal of effort into both the front-end and back-end are seeing significantly more benefits than those who did not – especially when it comes to lower workforce turnover rate and more borrowers attracted. Reduced cycle time (increased productivity) and enhanced quality of work are the most pronounced benefits lenders have experienced.

How Much has your Firm has Experienced Benefits of Digital Transformation?



Q: Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit? "A great deal," "some," "a little" or "not at all"?

* Denote a % is significantly higher between lenders who put a great deal of digital transformation efforts on both front and back-end, compared to all other lenders in the sample, at the 95% confidence level

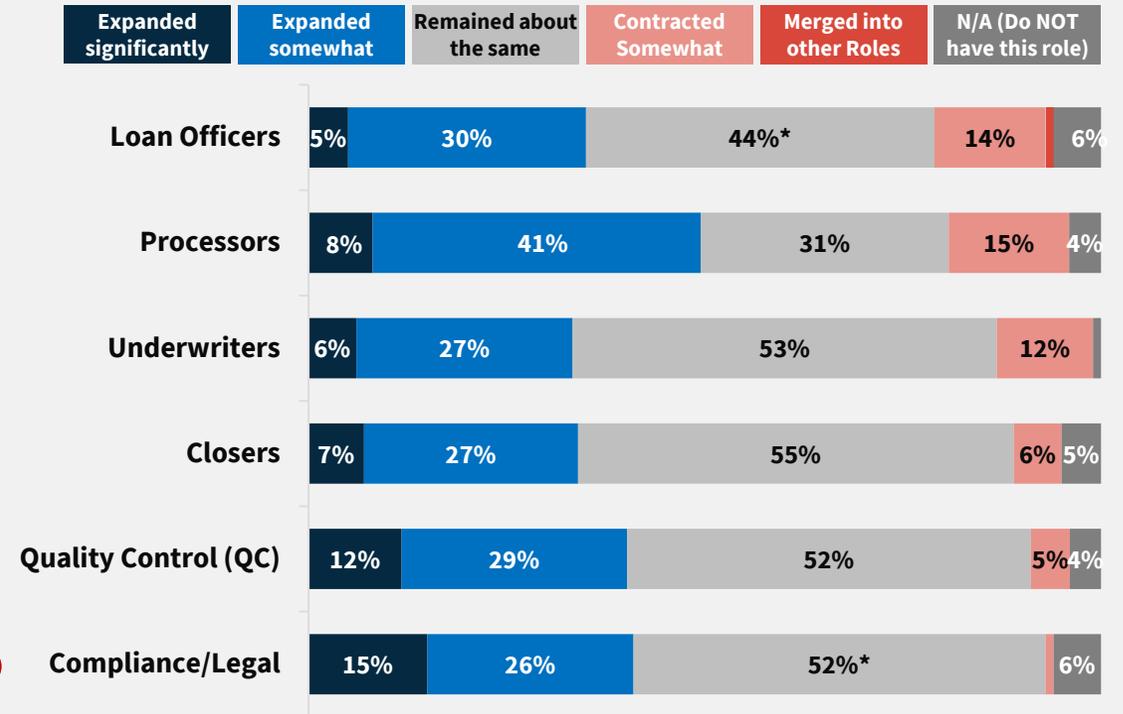
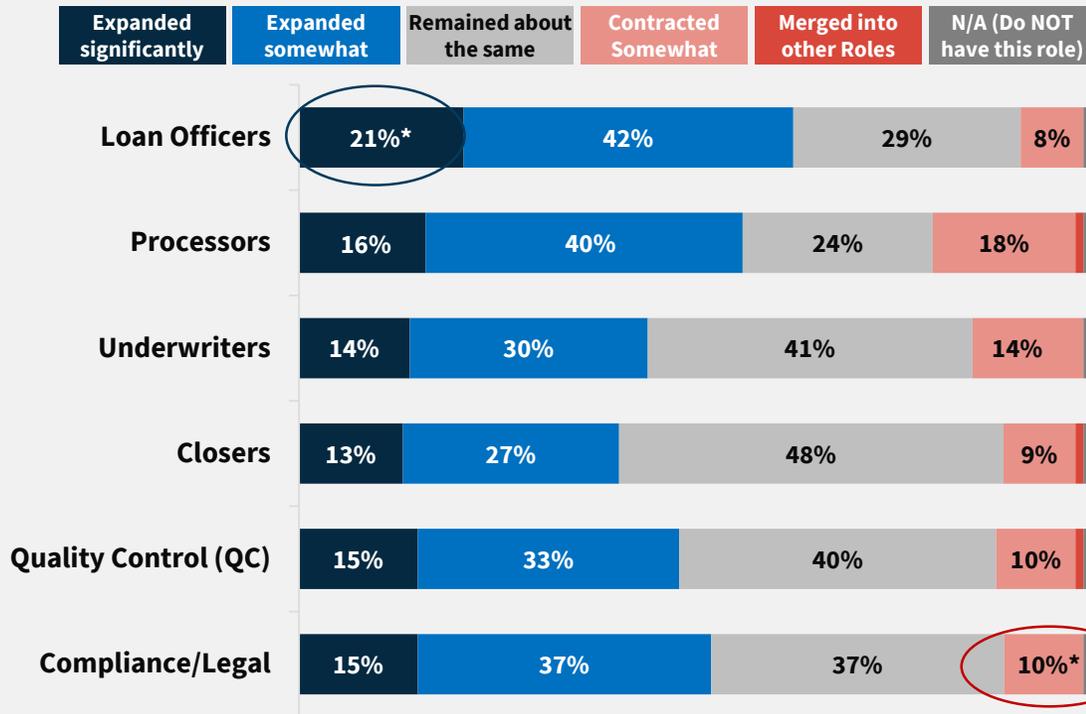


Impact of Digital Transformation Efforts on Key Functional Roles Over Past 2-3 Years

Lenders putting a great deal of effort into both ends of digital transformation indicate that the responsibilities of many key roles are expanding, while those who are not are more likely to say that roles and responsibilities have stayed the same. In particular, it's more likely among lenders who put in more effort to say the role of loan officers has expanded significantly, while the role of compliance/legal has contracted.

Changes in Key Roles' Responsibilities Over Past 2-3 Years Due to Digital Transformation Efforts, Among Those Who Put in a Great Deal of Effort into BOTH Front and Back-End (N=88)

Changes in Key Roles' Responsibilities Over Past 2-3 Years Due to Digital Transformation Efforts, Among All Other Lenders (N=95)



Q: With digital transformation efforts, the responsibilities of some functional roles may evolve. For example, with a Point-of-Sale system, traditional back-end processors may now interact directly with borrowers during the application process. The role of underwriters may also change due to digital applications or automated data extraction. And, some existing roles may be merged into other roles. Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

* Denote a % is significantly higher between lenders who put a great deal of digital transformation efforts on both front and back-end, compared to all other lenders in the sample, at the 95% confidence level

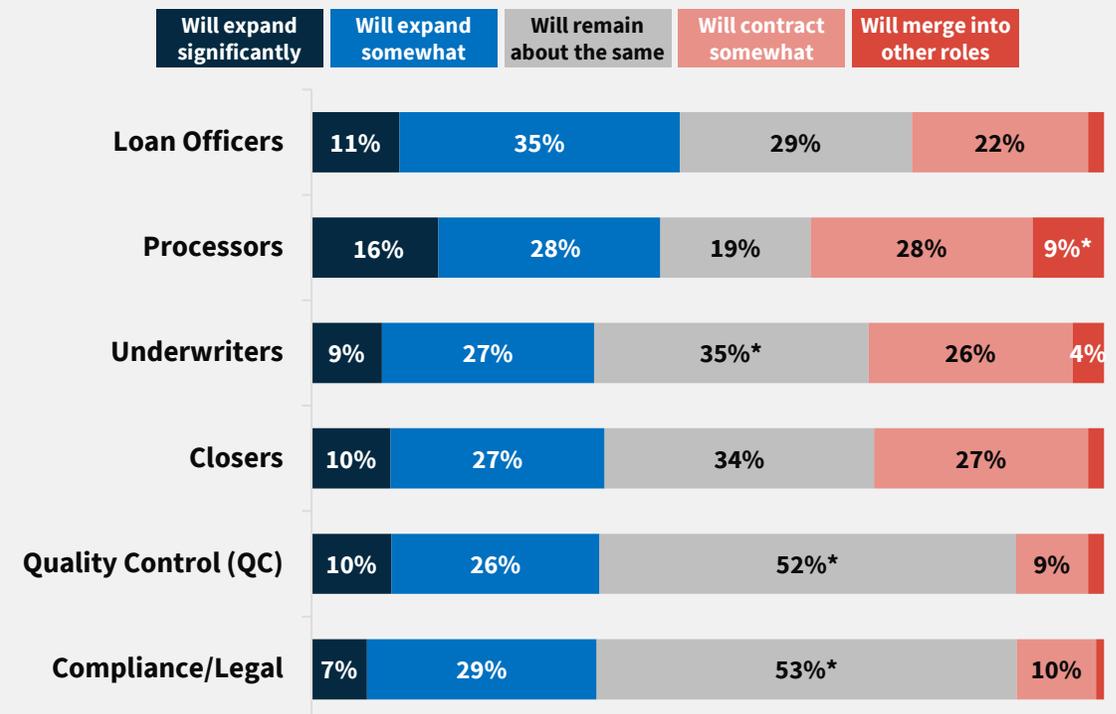
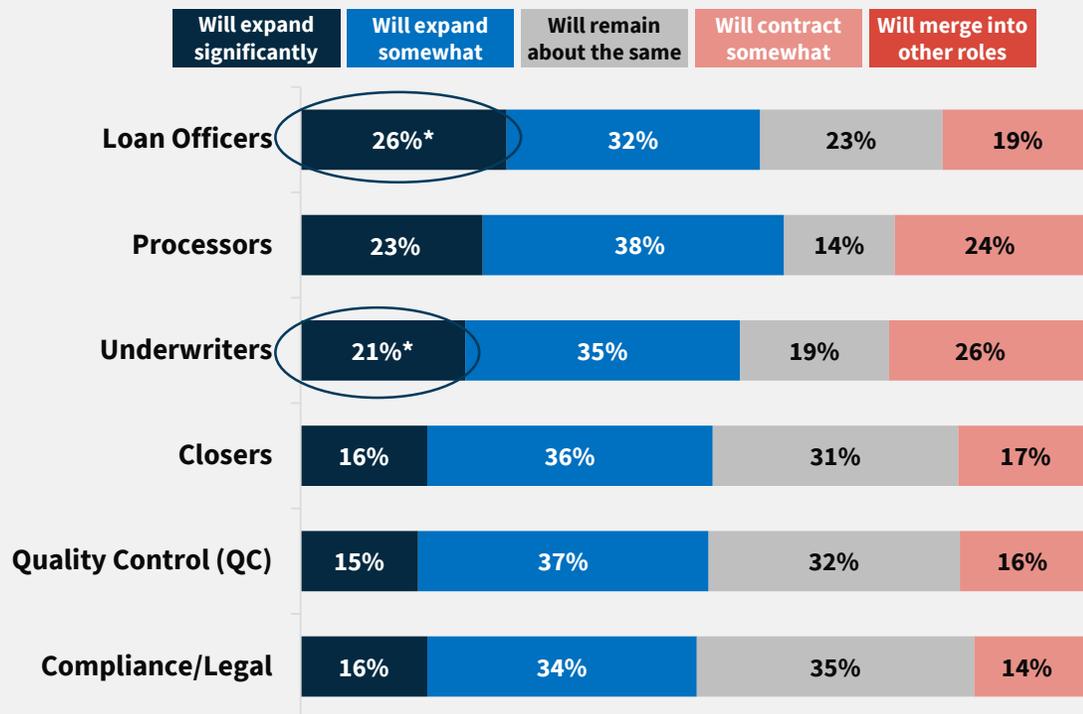


Expected Impact of Digital Transformation Efforts on Key Functional Roles For Next 2-3 Years

Over the next 2-3 years, lenders who are putting a great deal of effort into digital transformation are more likely to say the responsibilities of all key roles will change. In particular, lenders who are putting in a great deal of effort are significantly more likely to expect the roles of loan officers and underwriters to expand significantly.

Expected Changes in Key Roles' Responsibilities Over Next 2-3 Years Due to Digital Transformation Efforts, Among Those Who Put in a Great Deal of Effort into BOTH Front and Back-End (N=88)

Expected Changes in Key Roles' Responsibilities Over Next 2-3 Years Due to Digital Transformation Efforts, Among All Other Lenders (N=95)



Q: Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?

* Denote a % is significantly higher between lenders who put a great deal of digital transformation efforts on both front and back-end, compared to all other lenders in the sample, at the 95% confidence level



Changes in Key Roles' Responsibilities Due to Digital Transformation Efforts

Those who have put a great deal of effort into digital transformation efforts expect employees to have more knowledge and a more holistic view of their tasks, leading to expanded roles. On the other hand, the technological advancements and increased digitization have realized efficiencies across processes, leading to contraction of some roles.

Changes in Key Roles Due to Digital Transformation Efforts

Among those who put a great deal of effort into BOTH front and back-end

Blue color: why expand

Red color: why contract

Processors

"It has become easier for processors to use technology to process loan[s] **and it is faster, there are less human mistakes being made.**"

-Larger institution, role has **expanded somewhat** over past 2-3 years, **will expand significantly** over next 2-3 years

"We have **shifted the initial review** direct from loan officer to the underwriter. Processing picks up after underwriting and facilitates through closing. We expect these roles to be further enhanced and refined lessening the burden for a processor but increasing the burden for underwriting." -Smaller institution, role has **contracted somewhat** over past 2-3 years, **will contract somewhat** over next 2-3 years

Loan Officers

"Loan officers will need to adopt and integrate **digital tools** into their customer sourcing and origination practices." - Larger institution, role has **expanded somewhat** over past 2-3 years, **will expand significantly** over next 2-3 years

"**Better customer experience in the digital channel** has increased the number of borrowers who don't need to interact with a loan officer. Those loans go straight to processing/underwriting bypassing the traditional LO." -Smaller institution, role has **contracted somewhat** over past 2-3 years, **will contract somewhat** over next 2-3 years

Compliance/Legal

"Because the customer may be dealing with a **digital platform**, I expect that the **compliance monitoring** for disclosures and Fair Lending to intensify." -Smaller institution, role has remained about the same over past 2-3 years, **will expand somewhat** over next 2-3 years

"**Better technology** for compliance oversight **narrows the scope of work** for compliance/legal." -Mid-sized institution, role has **contracted somewhat** over past 2-3 years, **will contract somewhat** over next 2-3 years

Quality Control (QC)

"We moved to a new mortgage LOS (Ellie Mae Encompass) system. This enhanced system will allow us **many more benefits and features** in compliance, origination, processing and closing." -Smaller institution, role has **expanded somewhat** over past 2-3 years, **will expand significantly** over next 2-3 years

"With **higher quality data** coming in, i.e. source data, there is **less to QC.**" -Mid-sized institution, role has **contracted somewhat** over past 2-3 years, **will contract somewhat** over next 2-3 years

Underwriters

"Underwriters will **validate data** and look at the entire credit/collateral profile of a loan vs. computations of ratio / deviations etc." - Larger institution, role has remained about the same over past 2-3 years, **will expand somewhat** over next 2-3 years

"**Day 1 Certainty** has and is reducing the time underwriters spend approving files." -Larger institution, role has **contracted somewhat** over past 2-3 years, **will contract somewhat** over next 2-3 years

Closers

"For our firm we have had processors be the closers and we will now be **separating the duties.**" -Smaller institution, role has **expanded somewhat** over past 2-3 years, **will expand somewhat** over next 2-3 years

"Automating some functions, digital closings." -Larger institution, role has remained about the same over past 2-3 years, **will contract somewhat** over next 2-3 years

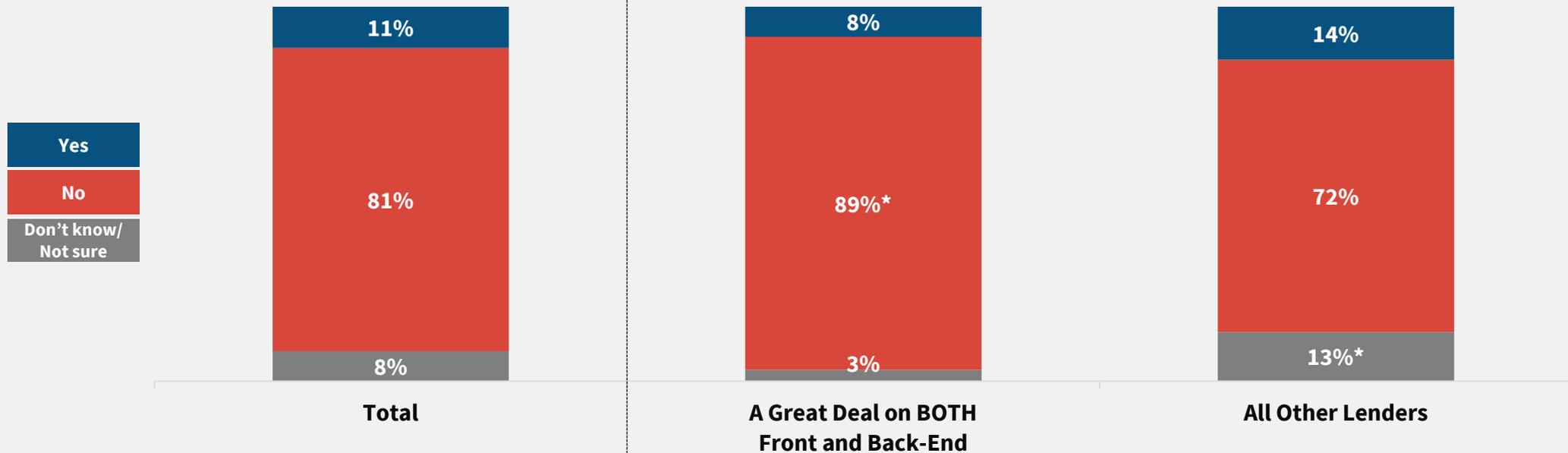
Q: For the role of [xxx], you mentioned that that role has [xxx] over the past 2-3 years and you expect that role [xxx] over the next 2-3 years due to digital transformation efforts. Could you share some details? For example, what changes have you seen over the past 2-3 years or what changes are you foreseeing for this role? (Optional)



Mortgage Industry and Outsourcing Loan Origination

Lenders overwhelmingly believe it would NOT be beneficial for the mortgage industry to outsource loan origination.

To improve efficiency and save costs, some industries have outsourced things like manufacturing and operation. In your view, would it be beneficial for the mortgage industry to outsource loan origination?



* Denote a % is significantly higher between lenders who put a great deal of digital transformation efforts on both front and back-end, compared to all other lenders in the sample, at the 95% confidence level





Appendix



Benefits of Digital Transformation Efforts (based on total sample)

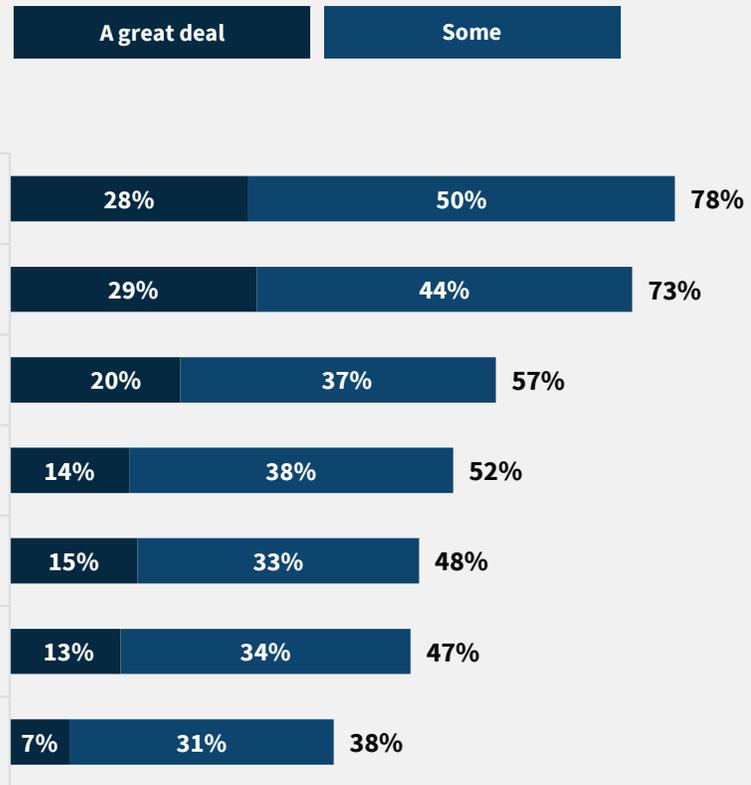
Reduced cycle time (increased productivity) and enhanced quality of work are the most pronounced benefits lenders have experienced. Benefits of reduced costs and reduced cyclical variability of staffing in comparison are less likely to be experienced.

How Much has your Firm has Experienced Benefits of Digital Transformation?

N = 179 (among firms which put at least some effort into digital transformation), Ranked by Most Experienced



Depository banks are less likely to have experienced the benefits of digital transformation than mortgage banks and credit unions (on average 20 percentage points lower than mortgage banks, 16 percentage points lower than credit unions across the potential benefits for experiencing at least some)



78% say digital transformation has **reduced cycle time** and **increased productivity**



73% say digital transformation has **enhanced quality of work**

Q: Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?

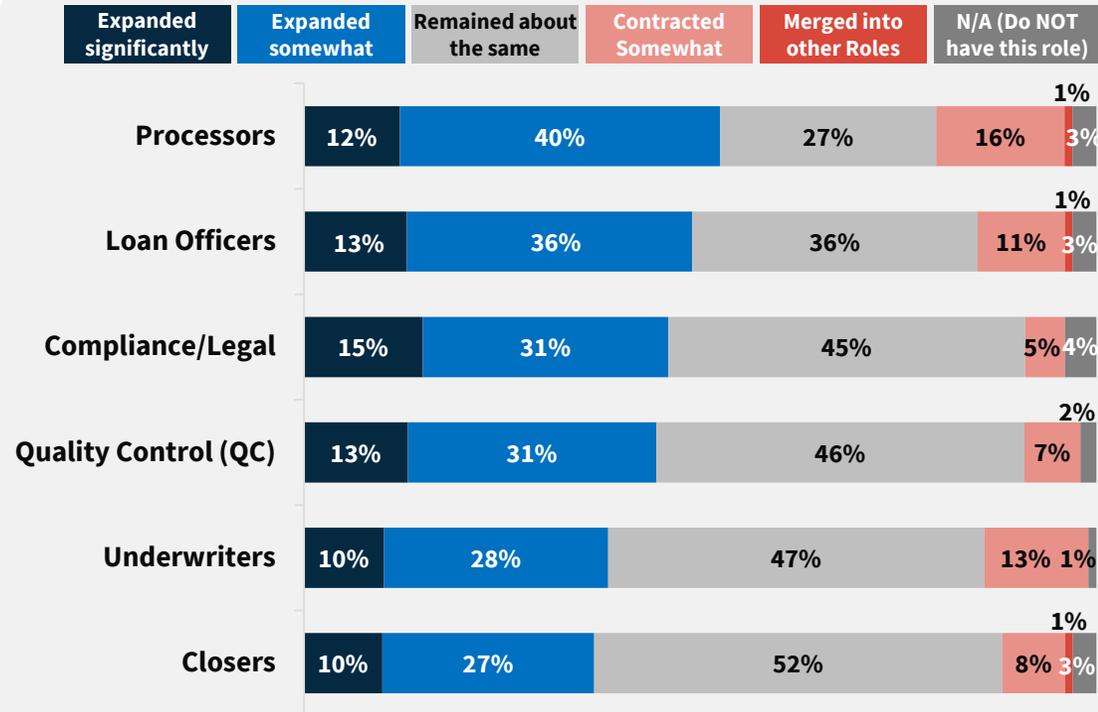


Impact on Key Functional Roles, Now and Future (based on total sample)

Over the next 2-3 years, in general, more lenders feel digital transformation efforts will lead to greater expansion as well as contraction of roles.

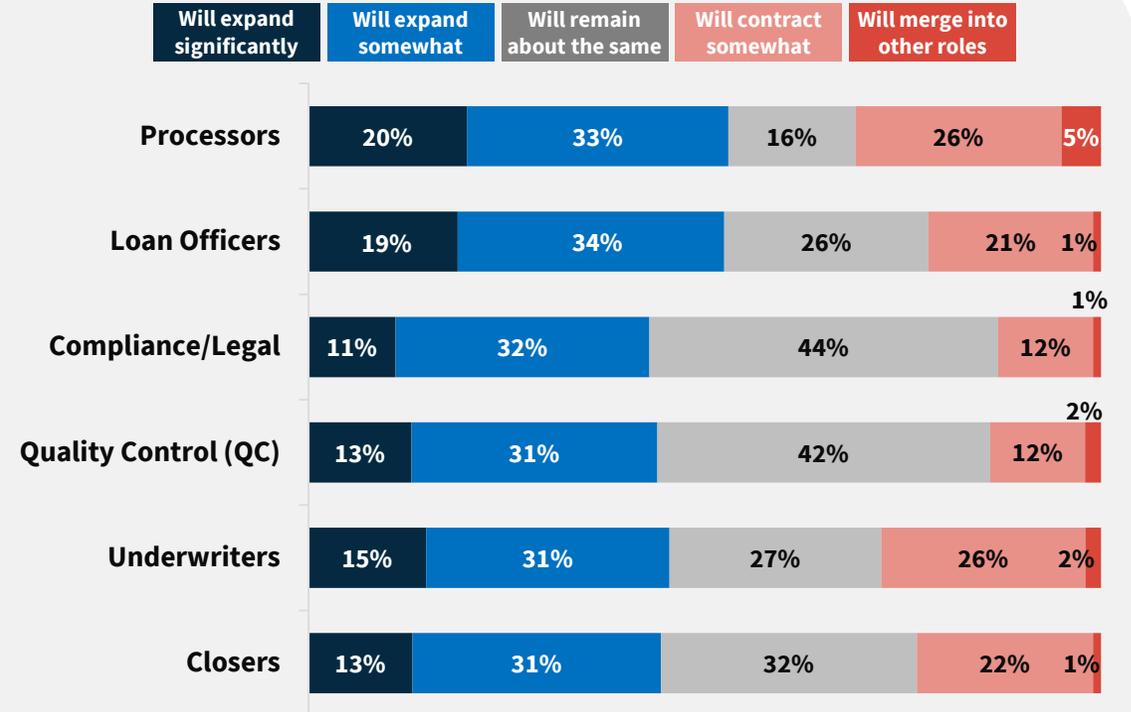
Changes in Key Roles' Responsibilities Over Past 2-3 Years Due to Digital Transformation Efforts

N = 183



Expected Changes in Key Roles' Responsibilities Over Next 2-3 Years Due to Digital Transformation Efforts

N = 178 (asked for all roles that a firm has and isn't merged into other roles)



Q: With digital transformation efforts, the responsibilities of some functional roles may evolve. For example, with a Point-of-Sale system, traditional back-end processors may now interact directly with borrowers during the application process. The role of underwriters may also change due to digital applications or automated data extraction. And, some existing roles may be merged into other roles. Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

Q: Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?



Objectives of Mortgage Lender Sentiment Survey®

The Mortgage Lender Sentiment Survey® (MLSS), which debuted in March 2014, is a quarterly online survey among senior executives in the mortgage industry. The survey is unique because it is used not only to track lenders' current impressions of the mortgage industry, but also their insights into the future.

Tracks insights and provides benchmarks into current and future mortgage lending activities and practices.

Quarterly Regular Questions

- **Consumer Mortgage Demand**
- **Credit Standards**
- **Profit Margin Outlook**

Featured Specific Topic Analyses

- **Digital Transformation Efforts**
- **Business Priorities and Industry Competition**
- **APIs and Mortgage Lending**
- **Housing Supply and Affordability**
- **Artificial Intelligence for Mortgage Lending**
- **Cost Cutting as a Top Business Priority**

The MLSS is 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.



Methodology of Mortgage Lender Sentiment Survey[®]

Survey Methodology

- A quarterly, 10- to 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.

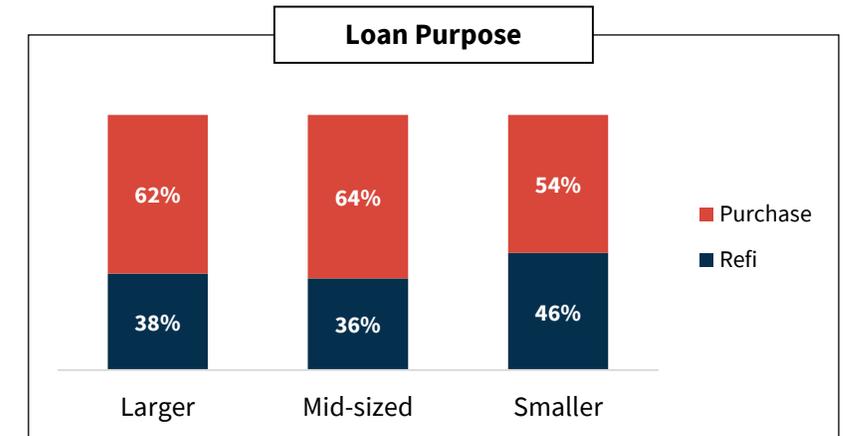
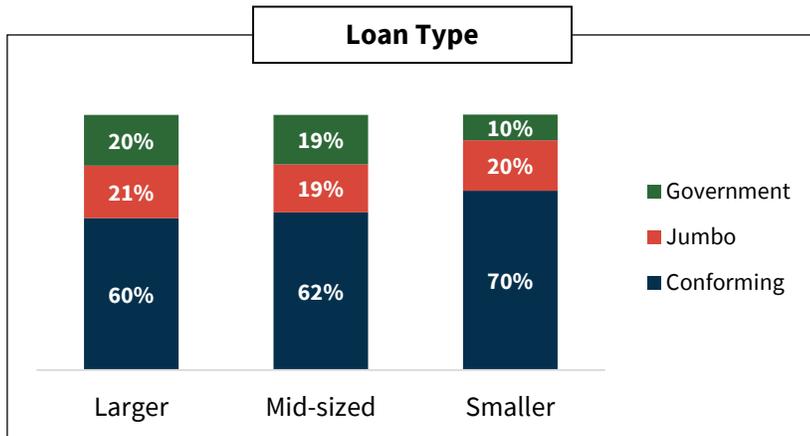
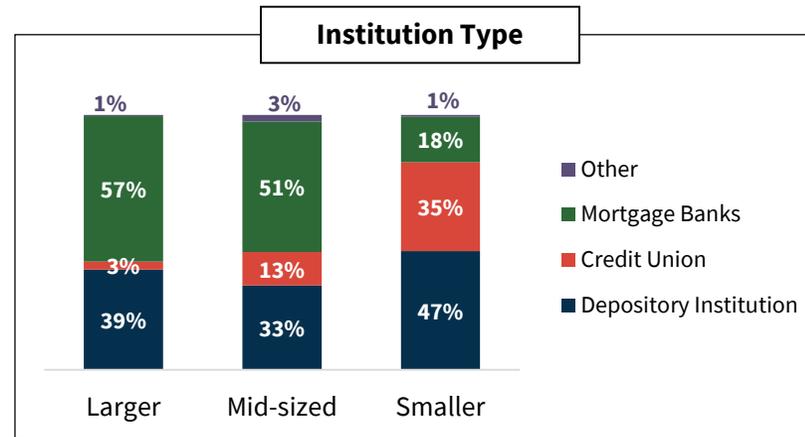
Data Weighting

- 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 2018. Institutions were divided into three groups based on their 2018 total industry loan volume – Larger (top 15%), Mid-sized (top 16%-35%), and Smaller (bottom 65%). The data below further describe the composition and loan characteristics of the three groups of institutions.



Note: Government loans include FHA loans, VA loans and other non-conventional loans from Marketrac.



Q1 2020 Cross-Subgroup Sample Sizes

	Total	Larger Lenders	Mid-Sized Lenders	Smaller Lenders
Total	183	52	40	91
Mortgage Banks (non-depository)	71	33	20	18
Depository Institutions	73	17	14	42
Credit Unions	38	2	6	30



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 some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Reduced loan origination costs

	Total	LOAN VOLUME			INSTITUTION TYPE		
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	179	51	38	90	70	70	38
A great deal	14%	16%	18%	8%	20% ^D	4%	13%
Some	38%	31%	43%	39%	41%	32%	42%
A little	26%	29%	26%	23%	21%	30%	26%
Not at all	22%	24%	12%	30% ^M	17%	34% ^M	18%

30% is significantly higher than 12%
 (mid-sized institutions)

20% is significantly higher than 4%
 (depository 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 below may add not sum to 100% due to rounding.

Example:

To improve efficiency and save costs, some industries have outsourced things like manufacturing and operation. In your view, would it be beneficial for the mortgage industry to outsource loan origination?

	Total	LOAN VOLUME		
		Larger (L)	Mid-sized (M)	Smaller (S)
N=	133	52	40	91
Yes	11%	8%	18%	7%
No	81%	84%	78%	80%
Don't know	8%	8%	5%	13%

“Total” of 11% is
 $(8\% + 18\% + 7\%) / 3$



Consumer Interaction

Does your firm directly interact with borrowers/consumers on mortgage inquiry, loan application, or underwriting?

	Total	LOAN VOLUME			INSTITUTION TYPE		
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	183	52	40	91	71	73	38
Yes	97%	98%	95%	98%	99%	96%	100%
No	3%	2%	5%	2%	1%	4%	0%

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



Improving the front-end consumer borrower experience

Please indicate the level of effort your mortgage business has dedicated to improving the consumer experience and achieving back-end operational efficiency through digital transformation efforts over the past 2-3 years.
Among those who directly interact with borrower/consumers on mortgage inquiry, loan application, or underwriting.

	Total	LOAN VOLUME			INSTITUTION TYPE		
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	178	51	38	89	70	70	38
A great deal of effort	68%	71%	66%	67%	77% ^D	51%	82% ^D
Some effort	29%	28%	26%	31%	21%	44% ^{M,C}	18%
Not much effort	3%	1%	8%	1%	1%	5%	0%
No effort at all	0%	0%	0%	0%	0%	0%	0%

*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*



Improving the back-end operational efficiency

Share of Efforts Toward Improving the Back-end Operational Efficiency Among All Lenders

Combination of **Q**: Please indicate the level of effort your mortgage business has dedicated to improving the consumer experience and achieving back-end operational efficiency through digital transformation efforts over the past 2-3 years. *Improving the back-end operational efficiency* + **Q**: Please indicate the level of effort your mortgage business has dedicated to improving the back-end operational efficiency through digital transformation efforts over the past 2-3 years.

	Total	LOAN VOLUME			INSTITUTION TYPE		
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	183	52	40	91	71	73	38
A great deal of effort	58%	58%	66%	51%	71% ^D	40%	58%
Some effort	34%	34%	26%	42%	24%	49% ^M	37%
Not much effort	7%	8%	8%	7%	4%	11%	5%
No effort at all	0%	0%	0%	0%	0%	0%	0%

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



Institutions investing “a great deal of effort” in improving both the front-end consumer borrower experience and back-end operational efficiency

Combination of **Q**: Please indicate the level of effort your mortgage business has dedicated to improving the consumer experience and achieving back-end operational efficiency through digital transformation efforts over the past 2-3 years. *Improving the back-end operational efficiency* + **Q**: Please indicate the level of effort your mortgage business has dedicated to improving the back-end operational efficiency through digital transformation efforts over the past 2-3 years.

Among all lenders, showing share who invested “A Great Deal of Effort” In Improving BOTH Front-End Consumer Borrower Experience and Back-end Operation Efficiency vs. all other lenders

	Total	LOAN VOLUME			INSTITUTION TYPE		
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	183	52	40	91	71	73	38
A great deal of effort on BOTH front-end borrower experience and back-end operational efficiency	48%	51%	54%	45%	67% ^D	29%	53% ^D
All other lenders	52%	49%	46%	55%	33%	71% ^{M,C}	47%

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



Integrating the front-end and back-end systems to move information bi-directionally

Please indicate the level of effort your mortgage business has dedicated to improving the consumer experience and achieving back-end operational efficiency through digital transformation efforts over the past 2-3 years.
Among those who directly interact with borrower/consumers on mortgage inquiry, loan application, or underwriting.

	Total	LOAN VOLUME			INSTITUTION TYPE		
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	178	51	38	89	70	70	38
A great deal of effort	48%	46%	54%	44%	61% ^D	31%	51% ^D
Some effort	37%	40%	30%	39%	34%	43%	34%
Not much effort	14%	13%	13%	15%	5%	24% ^M	13%
No effort at all	1%	0%	3%	2%	0%	3%	1%

*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*



Outsourcing Loan Origination

To improve efficiency and save costs, some industries have outsourced things like manufacturing and operation. In your view, would it be beneficial for the mortgage industry to outsource loan origination?

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Yes	11%	8%	18%	7%	14%	10%	3%	9%	15%	11%	12%	8%	14%
No	81%	84%	78%	80%	75%	80%	92% ^M	85%*	72%	84%	75%	89%*	72%
Don't know	8%	8%	5%	13%	11%	10%	5%	6%	13%	5%	13%	3%	13%*

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Reduced cycle time / Increased productivity

Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Among firms which put at least some effort into digital transformation

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	179	51	38	90	70	70	38	121	58	103	76	88	91
A great deal	28%	22%	37%	25%	33% ^D	17%	34% ^D	37%*	9%	41%*	9%	43%*	12%
Some	50%	52%	51%	47%	53%	45%	50%	47%	56%	49%	52%	46%	54%
A little	19%	20%	12%	23%	15%	28%	16%	14%	29%*	10%	31%*	9%	28%*
Not at all	3%	6%	0%	4%	0%	10% ^M	0%	2%	6%	1%	8%*	1%	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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Lower regulatory compliance costs or risks

Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Among firms which put at least some effort into digital transformation

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	179	51	38	90	70	70	38	121	58	103	76	88	91
A great deal	7%	4%	8%	10%	10%	4%	11%	10%	1%	11%*	2%	13%*	2%
Some	31%	33%	29%	31%	40% ^C	28%	21%	32%	29%	34%	27%	34%	28%
A little	31%	28%	32%	32%	25%	29%	42%	32%	27%	33%	27%	31%	30%
Not at all	31%	35%	32%	27%	24%	39%	26%	25%	44%*	22%	44%*	23%	40%*

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Reduced loan origination costs

Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Among firms which put at least some effort into digital transformation

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	179	51	38	90	70	70	38	121	58	103	76	88	91
A great deal	14%	16%	18%	8%	20% ^D	4%	13%	19%*	4%	22%*	3%	24%*	4%
Some	38%	31%	43%	39%	41%	32%	42%	40%	33%	42%	31%	39%	36%
A little	26%	29%	26%	23%	21%	30%	26%	26%	28%	21%	34%	23%	30%
Not at all	22%	24%	12%	30% ^M	17%	34% ^M	18%	16%	35%*	15%	33%*	14%	30%*

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

** Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts*



Reduced cyclical variability of staffing

Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Among firms which put at least some effort into digital transformation

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	179	51	38	90	70	70	38	121	58	103	76	88	91
A great deal	13%	12%	18%	10%	16%	8%	14%	17%	6%	21%*	2%	22%*	5%
Some	34%	37%	41%	25%	40%	26%	26%	34%	34%	39%	27%	38%	30%
A little	31%	33%	29%	29%	31%	31%	25%	27%	37%	25%	39%*	24%	37%
Not at all	22%	18%	12%	36% ^{L,M}	13%	34% ^M	34% ^M	22%	22%	16%	32%*	16%	28%

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

** Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts*



Lower workforce turnover rate (e.g., with higher employee satisfaction)

Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Among firms which put at least some effort into digital transformation

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	179	51	38	90	70	70	38	121	58	103	76	88	91
A great deal	15%	15%	21%	9%	15%	11%	14%	19%	7%	22%*	5%	24%*	6%
Some	33%	32%	37%	31%	41% ^D	21%	37%	38%*	23%	42%*	21%	42%*	24%
A little	27%	26%	25%	30%	23%	36%	22%	21%	39%*	23%	33%	20%	35%*
Not at all	25%	27%	17%	29%	22%	31%	26%	22%	31%	13%	41%*	14%	35%*

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



More borrower customers attracted

Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Among firms which put at least some effort into digital transformation

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	179	51	38	90	70	70	38	121	58	103	76	88	91
A great deal	20%	16%	26%	19%	21%	13%	29% ^D	27%*	6%	28%*	8%	32%*	8%
Some	37%	27%	43%	40%	40%	34%	37%	39%	32%	42%	29%	41%	33%
A little	33%	47% ^{M,S}	21%	30%	32%	38%	26%	28%	44%*	23%	47%*	24%	42%*
Not at all	10%	10%	9%	11%	6%	15%	8%	6%	18%*	7%	15%	3%	18%*

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Enhanced quality of work (e.g., reduced data errors)

Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?
Among firms which put at least some effort into digital transformation

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	179	51	38	90	70	70	38	121	58	103	76	88	91
A great deal	29%	20%	37%	29%	30%	24%	34%	35%*	15%	40%*	11%	42%*	15%
Some	44%	41%	42%	48%	45%	39%	53%	44%	43%	43%	44%	43%	45%
A little	23%	34% ^S	18%	18%	25% ^C	30% ^C	5%	18%	36%*	16%	35%*	15%	33%*
Not at all	4%	5%	3%	6%	0%	8% ^D	8%	3%	7%	1%	10%*	1%	8%

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

** Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts*



Past 2-3 Years: impact of digital transformation on scope/structure of workflow

Over the past 2-3 years, how have your digital transformation efforts for loan origination impacted the scope and structure of your workforce?

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Significantly	22%	18%	25%	22%	28%	18%	17%	28%*	9%	32%*	7%	35%*	9%
Somewhat	46%	48%	49%	40%	43%	38%	59% ^D	49%	40%	49%	41%	50%	41%
A little	24%	26%	19%	27%	23%	31%	16%	16%	40%*	11%	42%*	10%	38%*
No impact	9%	8%	8%	11%	6%	14%	8%	7%	12%	7%	11%	5%	12%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Next 2-3 Years: impact of digital transformation on scope/structure of workflow

Now, let's focus on the future. In 2-3 years, how do you think your digital transformation efforts for loan origination will impact the scope and structure of your workforce?

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Significantly	55%	60% ^S	61%	43%	62% ^D	42%	54%	62%*	42%	66%*	39%	66%*	44%
Somewhat	36%	32%	34%	41%	32%	40%	38%	32%	43%	30%	44%*	30%	41%
A little	9%	8%	5%	15%	6%	18%	8%	6%	15%	4%	16%*	4%	14%*
No impact	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Impact of digital transformation efforts on ability to recruit, hire, and retain talent

How have your digital transformation efforts for loan origination impacted your mortgage business' ability to recruit, hire, and retain talent? Have they made it...?

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Significantly harder	0%	0%	0%	1%	0%	1%	0%	0%	1%	0%	1%	0%	1%
Somewhat harder	6%	4%	8%	8%	7%	4%	11%	7%	6%	9%	2%	9%	4%
Not much different	58%	52%	55%	67%	42%	75% ^M	67% ^M	51%	71%*	44%	79%*	42%	74%*
Somewhat easier	32%	40% ^S	32%	23%	44% ^{D,C}	20%	22%	37%*	22%	41%*	19%	43%*	21%
Significantly easier	3%	4%	5%	1%	7%	0%	0%	5%	0%	6%	0%	7%*	0%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Impact of digital transformation efforts on recruiting profiles for new hires

How have your digital transformation efforts for loan origination changed your mortgage business' recruiting profiles for new hires such as skills and prior experience?

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Changed significantly	7%	11%	8%	4%	9%	5%	5%	9%	4%	10%	3%	12%*	3%
Changed somewhat	35%	35%	39%	32%	33%	34%	36%	40%	26%	44%*	22%	44%*	27%
Changed a little	31%	38%	26%	28%	36%	24%	33%	29%	34%	26%	38%	25%	37%
Have not changed at all	27%	16%	28%	36% ^L	22%	36%	26%	21%	36%*	19%	37%*	19%	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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Past 2-3 Years: Loan Officers

Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Expanded significantly	13%	10%	15%	14%	13%	9%	20%	19%*	0%	17%*	6%	21%*	5%
Expanded somewhat	36%	33%	42%	33%	39%	33%	33%	38%	32%	41%	30%	42%	30%
Remained about the same	36%	44%	28%	38%	34%	41%	37%	32%	44%	31%	44%	29%	44%*
Contracted somewhat	11%	9%	12%	11%	10%	13%	8%	9%	15%	8%	14%	8%	14%
Merged into other roles	1%	2%	0%	0%	1%	0%	0%	1%	0%	0%	2%	0%	1%
N/A (Do NOT have this role)	3%	3%	2%	4%	2%	4%	3%	0%	9%*	3%	4%	1%	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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Past 2-3 Years: Processors

Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Expanded significantly	12%	9%	12%	16%	11%	9%	25% ^D	15%	8%	16%	7%	16%	8%
Expanded somewhat	40%	36%	40%	45%	37%	43%	47%	38%	44%	41%	40%	40%	41%
Remained about the same	27%	34%	20%	28%	25%	34%	22%	27%	28%	22%	35%	24%	31%
Contracted somewhat	16%	15%	25% ^S	9%	23% ^C	11%	5%	18%	13%	18%	15%	18%	15%
Merged into other roles	1%	3%	0%	0%	2%	0%	0%	1%	0%	1%	1%	1%	0%
N/A (Do NOT have this role)	3%	3%	2%	2%	2%	3%	0%	0%	6%	3%	2%	1%	4%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Past 2-3 Years: Underwriters

Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Expanded significantly	10%	8%	12%	10%	8%	11%	12%	11%	8%	15%*	4%	14%	6%
Expanded somewhat	28%	20%	35%	30%	22%	34%	26%	30%	25%	30%	25%	30%	27%
Remained about the same	47%	52%	38%	53%	47%	49%	54%	44%	53%	41%	57%*	41%	53%
Contracted somewhat	13%	20% ^S	15%	5%	23% ^{D,C}	4%	5%	13%	13%	14%	13%	14%	12%
Merged into other roles	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
N/A (Do NOT have this role)	1%	1%	0%	2%	1%	1%	3%	1%	1%	1%	2%	1%	1%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Past 2-3 Years: Closers

Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Expanded significantly	10%	6%	10%	14%	12%	5%	20% ^D	10%	10%	12%	7%	13%	7%
Expanded somewhat	27%	20%	30%	32%	24%	32%	29%	29%	23%	26%	29%	27%	27%
Remained about the same	52%	64% ^S	48%	44%	51%	54%	43%	49%	56%	49%	56%	48%	55%
Contracted somewhat	8%	8%	10%	5%	11%	6%	3%	9%	6%	9%	7%	9%	6%
Merged into other roles	1%	2%	0%	0%	1%	0%	0%	1%	0%	1%	0%	1%	0%
N/A (Do NOT have this role)	3%	1%	2%	4%	1%	3%	5%	1%	6%	3%	2%	1%	5%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Past 2-3 Years: Quality Control (QC)

Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Expanded significantly	13%	6%	18%	16%	8%	16%	18%	14%	11%	17%	8%	15%	12%
Expanded somewhat	31%	28%	35%	30%	40% ^D	23%	25%	31%	31%	32%	29%	33%	29%
Remained about the same	46%	56% ^M	32%	49%	42%	52%	51%	45%	49%	41%	53%	40%	52%
Contracted somewhat	7%	9%	12% ^S	1%	10%	5%	0%	9%	5%	9%	6%	10%	5%
Merged into other roles	.%	0%	0%	1%	0%	0%	3%	1%	0%	1%	0%	1%	0%
N/A (Do NOT have this role)	2%	2%	2%	2%	1%	3%	3%	2%	4%	1%	5%	1%	4%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Past 2-3 Years: Compliance/Legal

Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	183	52	40	91	71	73	38	121	62	103	80	88	95
Expanded significantly	15%	12%	20%	14%	11%	15%	21%	16%	12%	16%	14%	15%	15%
Expanded somewhat	31%	27%	32%	35%	37%	29%	25%	33%	28%	35%	26%	37%	26%
Remained about the same	45%	53%	38%	44%	43%	49%	43%	40%	53%	39%	53%	37%	52%*
Contracted somewhat	5%	7%	8%	2%	8%	2%	3%	8%	1%	9%*	1%	10%*	1%
Merged into other roles	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
N/A (Do NOT have this role)	4%	3%	2%	5%	1%	5%	8%	2%	6%	2%	6%	1%	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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Next 2-3 Years: Loan Officers

Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?
Asked if a firm has the role and it hasn't merged into other roles

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	176	50	39	87	68	70	37	120	56	101	75	88	88
Will expand significantly	19%	17%	21%	18%	20%	14%	24%	25%*	6%	23%	12%	26%*	11%
Will expand somewhat	34%	30%	37%	34%	26%	43% ^M	31%	29%	44%	35%	33%	32%	35%
Will remain about the same	26%	20%	27%	31%	28%	24%	31%	26%	25%	22%	31%	23%	29%
Will contract somewhat	21%	31% ^S	15%	16%	27%	17%	14%	20%	22%	18%	24%	19%	22%
Will merge into other roles	1%	2%	0%	1%	0%	3%	0%	0%	3%	2%	0%	0%	2%

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

** Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts*



Next 2-3 Years: Processors

Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?
Asked if a firm has the role and it hasn't merged into other roles

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	177	49	39	89	68	71	38	119	58	100	78	87	90
Will expand significantly	20%	17%	27%	15%	23%	13%	18%	20%	19%	22%	16%	23%	16%
Will expand somewhat	33%	30%	26%	43%	22%	43% ^M	46% ^M	34%	32%	38%	27%	38%	28%
Will remain about the same	16%	15%	10%	24%	18%	18%	20%	15%	18%	13%	22%	14%	19%
Will contract somewhat	26%	31% ^S	32% ^S	16%	32% ^C	20%	13%	25%	28%	25%	27%	24%	28%
Will merge into other roles	5%	7%	5%	2%	4%	5%	3%	6%	3%	2%	8%	1%	9%*

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Next 2-3 Years: Underwriters

Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?
Asked if a firm has the role and it hasn't merged into other roles

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	180	52	40	89	70	72	37	120	61	103	78	88	93
Will expand significantly	15%	11%	21%	12%	16%	12%	14%	18%	9%	20%*	8%	21%*	9%
Will expand somewhat	31%	26%	32%	34%	21%	41% ^M	31%	33%	27%	35%	24%	35%	27%
Will remain about the same	27%	23%	19%	39% ^M	23%	32%	39%	23%	34%	17%	40%*	19%	35%*
Will contract somewhat	26%	37% ^S	25%	15%	38% ^{D,C}	15%	14%	25%	27%	27%	25%	26%	26%
Will merge into other roles	2%	3%	2%	0%	1%	1%	3%	2%	2%	1%	3%	0%	4%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Next 2-3 Years: Closers

Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?
Asked if a firm has the role and it hasn't merged into other roles

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	176	50	39	87	70	71	36	119	58	99	78	87	90
Will expand significantly	13%	10%	19%	9%	14%	11%	8%	14%	11%	15%	9%	16%	10%
Will expand somewhat	31%	28%	31%	36%	28%	32%	40%	34%	26%	35%	26%	36%	27%
Will remain about the same	32%	30%	24%	43% ^M	30%	38%	40%	32%	34%	28%	38%	31%	34%
Will contract somewhat	22%	30% ^S	26% ^S	11%	27% ^C	18%	8%	20%	28%	20%	26%	17%	27%
Will merge into other roles	1%	2%	0%	1%	1%	0%	3%	1%	2%	1%	1%	0%	2%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Next 2-3 Years: Quality Control (QC)

Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?
Asked if a firm has the role and it hasn't merged into other roles

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	178	51	39	88	70	70	36	118	60	102	76	87	91
Will expand significantly	13%	8%	15%	15%	11%	16%	11%	14%	11%	18%*	5%	15%	10%
Will expand somewhat	31%	24%	40%	31%	33%	29%	29%	33%	29%	33%	30%	37%	26%
Will remain about the same	42%	44%	35%	47%	33%	48%	57% ^M	40%	46%	32%	57%*	32%	52%*
Will contract somewhat	12%	21% ^S	10%	6%	21% ^{D,C}	6%	3%	12%	13%	16%	7%	16%	9%
Will merge into other roles	2%	4%	0%	1%	2%	2%	0%	2%	1%	1%	2%	1%	2%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Next 2-3 Years: Compliance/Legal

Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?
Asked if a firm has the role and it hasn't merged into other roles

	Total	LOAN VOLUME			INSTITUTION TYPE			Front-End Digital Transformation Efforts		Back-End Digital Transformation Efforts		Front-End and Back-End Digital Transformation Efforts	
		Larger (L)	Mid-sized (M)	Smaller (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)	A great deal of effort	Not a great deal of effort	A great deal of effort	Not a great deal of effort	A great deal of effort	All Other Lenders
N=	176	51	39	86	70	70	35	118	58	101	74	88	88
Will expand significantly	11%	8%	13%	13%	10%	13%	13%	14%	5%	16%*	4%	16%	7%
Will expand somewhat	32%	22%	37%	36%	29%	32%	37%	32%	30%	33%	30%	34%	29%
Will remain about the same	44%	49%	37%	45%	42%	46%	47%	41%	50%	34%	58%*	35%	53%*
Will contract somewhat	12%	18% ^S	13%	5%	18%	6%	3%	11%	14%	15%	7%	14%	10%
Will merge into other roles	1%	3%	0%	1%	1%	2%	0%	1%	1%	1%	2%	1%	1%

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

* Denote a % is significantly higher between those who put in a great deal of effort vs. those who didn't put in a great deal of effort for a type of digital transformation efforts



Question Text

QR302: Does your firm directly interact with borrowers/consumers on mortgage inquiry, loan application, or underwriting?

QR356: To improve efficiency and save costs, some industries have outsourced things like manufacturing and operation. In your view, would it be beneficial for the mortgage industry to outsource loan origination?

QR357-R359: Please indicate the level of effort your mortgage business has dedicated to improving the consumer experience and achieving back-end operational efficiency through digital transformation efforts over the past 2-3 years.

QR360: Please indicate the level of effort your mortgage business has dedicated to improving the back-end operational efficiency through digital transformation efforts over the past 2-3 years.

QR361-R367: Listed below are some benefits of digital transformation efforts. How much has your mortgage business experienced each benefit?

QR368: Over the past 2-3 years, how have your digital transformation efforts for loan origination impacted the scope and structure of your workforce?

QR369: Now, let's focus on the future. In 2-3 years, how do you think your digital transformation efforts for loan origination will impact the scope and structure of your workforce?

QR371: How have your digital transformation efforts for loan origination impacted your mortgage business' ability to recruit, hire, and retain talent? Have they made it...?

QR372: How have your digital transformation efforts for loan origination changed your mortgage business' recruiting profiles for new hires such as skills and prior experience?

QR373-QR378: Listed below are some key roles across the loan origination value chain. For each role, please indicate how much the role's responsibilities have changed over the past 2-3 years because of digital transformation efforts for your mortgage business.

QR379-QR384: Now, let's focus on the future. Over the next 2-3 years, how much do you expect each role's responsibilities to change because of digital transformation efforts for your mortgage business?

QR385-QR390: For the role of [xxx], you mentioned that that role has [INSERT QR373-QR378] over the past 2-3 years and you expect that role [INSERT QR379-QR384] over the next 2-3 years due to digital transformation efforts. Could you share some details? For example, what changes have you seen over the past 2-3 years or what changes are you foreseeing for this role? (Optional)

