



Mortgage Lender Sentiment Survey®

End-to-End Integration Needed for Next-Gen
Technology Solution Providers (TSPs)

Q4 2016 Special Topic – Published March 13, 2017

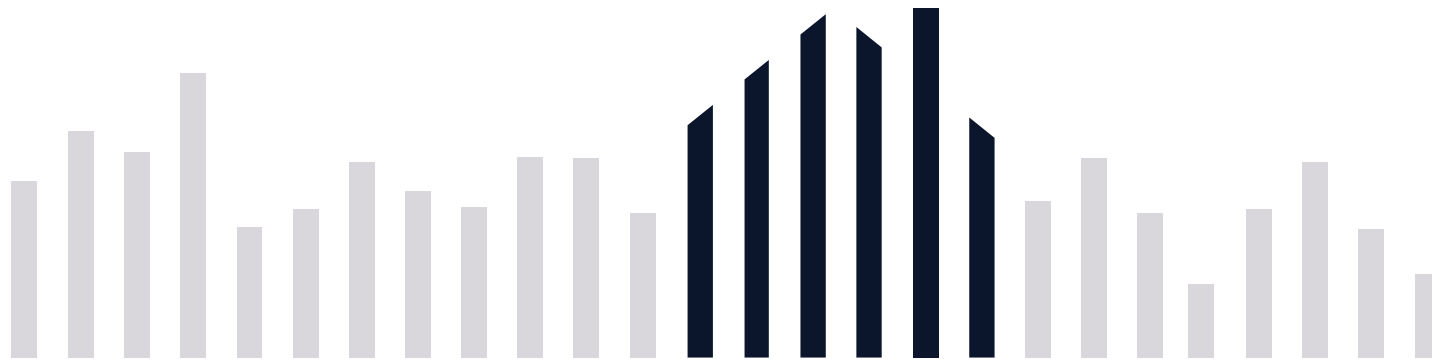




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Lenders look for next-gen technology service providers (TSPs)¹ to focus on loan production, compliance, and analytics, but need help with end-to-end integration.

Usage Level of Next-Gen TSPs

- **Experience with next-gen TSPs varies greatly.** About one-third of lenders surveyed currently use next-gen TSPs. Another third have started investigating, and the final third haven't yet looked into using next-gen TSPs.
- The majority of next-gen TSP users are satisfied with their providers.

Current Usage Areas and Future Needs

- Across the whole mortgage lending cycle – from origination, loan delivery, secondary marketing to servicing – lenders currently use next-gen TSPs primarily for **loan production, regulatory compliance, and business analytics**. The same three areas are also seen as the top areas for future next-gen TSP usage.

Barriers and End-to-End Integration Needs

- The biggest barriers cited to using next-gen TSPs are **costs, implementation difficulty, and integration difficulty**. Likewise, when selecting next-gen TSPs, lender cite integration, functionality, and costs as the most important criteria.
- Almost all lenders say end-to-end integration of various solutions would be valuable for their firm. When asked to share ideas for further improvements for next-gen TSP solutions, lenders overall point to **better integration and more user-friendly systems**.
- Two in five lenders believe **current loan origination systems (LOS) providers** have the greatest potential to offer an end-to-end integrated system, while almost one-quarter believe **GSEs** have the greatest potential.
 - Those who say LOS providers have the most potential point to their experience, expertise, and resources, while those who point to GSEs say they are industry standard-setters, trusted, and knowledgeable about the industry.

¹ Next-Gen TSP examples include Roostify, Motivity (acquired by Black Knight), Blend Labs, DataVerify, and RexHub (acquired by LoanLogics). Fannie Mae does not endorse these companies. These companies do not represent the whole sector of next-gen TSPs. These are provided as examples to help illustrate what “next-gen TSPs” are referred to.



Business Context and Research Questions

Business Context

Over the past few years, a new generation of companies have emerged to provide new technological solutions. They are transforming mortgage origination and servicing by digitizing transactions and removing manual steps. Their ambition is to render the consumer and lender experience more similar to current online leaders such as Amazon and Uber. Solutions provided often focus on a specific aspect of the loan life cycle – from consumer application, to underwriting, to servicing. Examples include Roostify, Motivity (acquired by Black Knight), Blend Labs, DataVerify, and RexHub (acquired by LoanLogics).¹

Fannie Mae's Economic & Strategic Research Group (ESR) surveyed senior mortgage executives in November 2016 through its quarterly Mortgage Lender Sentiment Survey[®] to gather their views of and understand their experiences with next-gen mortgage technology service providers (TSPs).

Research Questions

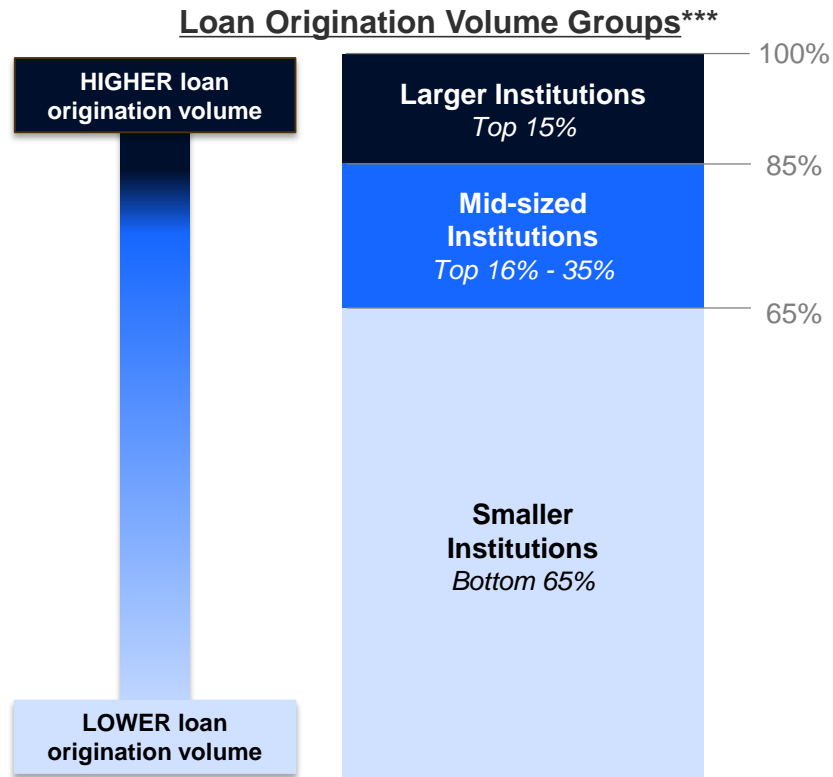
1. In what business functional areas do lenders use next-gen mortgage TSPs? In what functional areas do they find innovation gaps?
2. What are lenders' needs in two years? In what functional areas do they expect to use these TSPs after two years?
3. What are the key criteria lenders use when selecting next-gen TSPs? What are the key reasons/concerns that keep lenders from using next-gen TSPs?
4. How valuable do lenders find an integrated platform (as opposed to individual tools or services)? And, who has the greatest potential to offer an end-to-end technological solution?

1. Fannie Mae does not endorse companies listed here. The list provided here does not represent the whole sector of next-gen TSPs. These are provided as examples to help illustrate what "next-gen TSPs" are referred to.



Respondent Sample and Groups

This analysis is based on the fourth quarter of 2016 data collection. For Q4 2016, a total of 206* senior executives completed the technology section of the Mortgage Lender Sentiment Survey from November 10-20, representing 184 lending institutions.**



Sample Q4 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.		184
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)	87
	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)	52
	Smaller Institutions Fannie Mae's customers whose 2015 total industry loan origination volume was in the bottom 65% (less than \$176 million)	46
Institution Type****	Mortgage Banks (non-depository)	67
	Depository Institutions	70
	Credit Unions	38

* There were 51 respondents with CIO/CTO titles. Overall, no significant differences were observed between their responses and responses from those with other titles.

** 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.



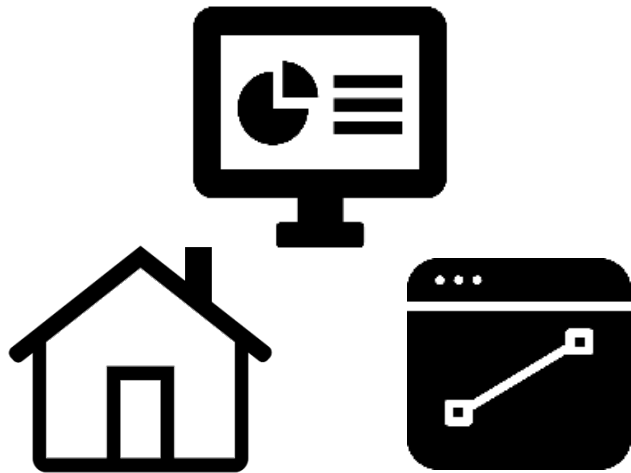
Next-Gen TSP Usage Level



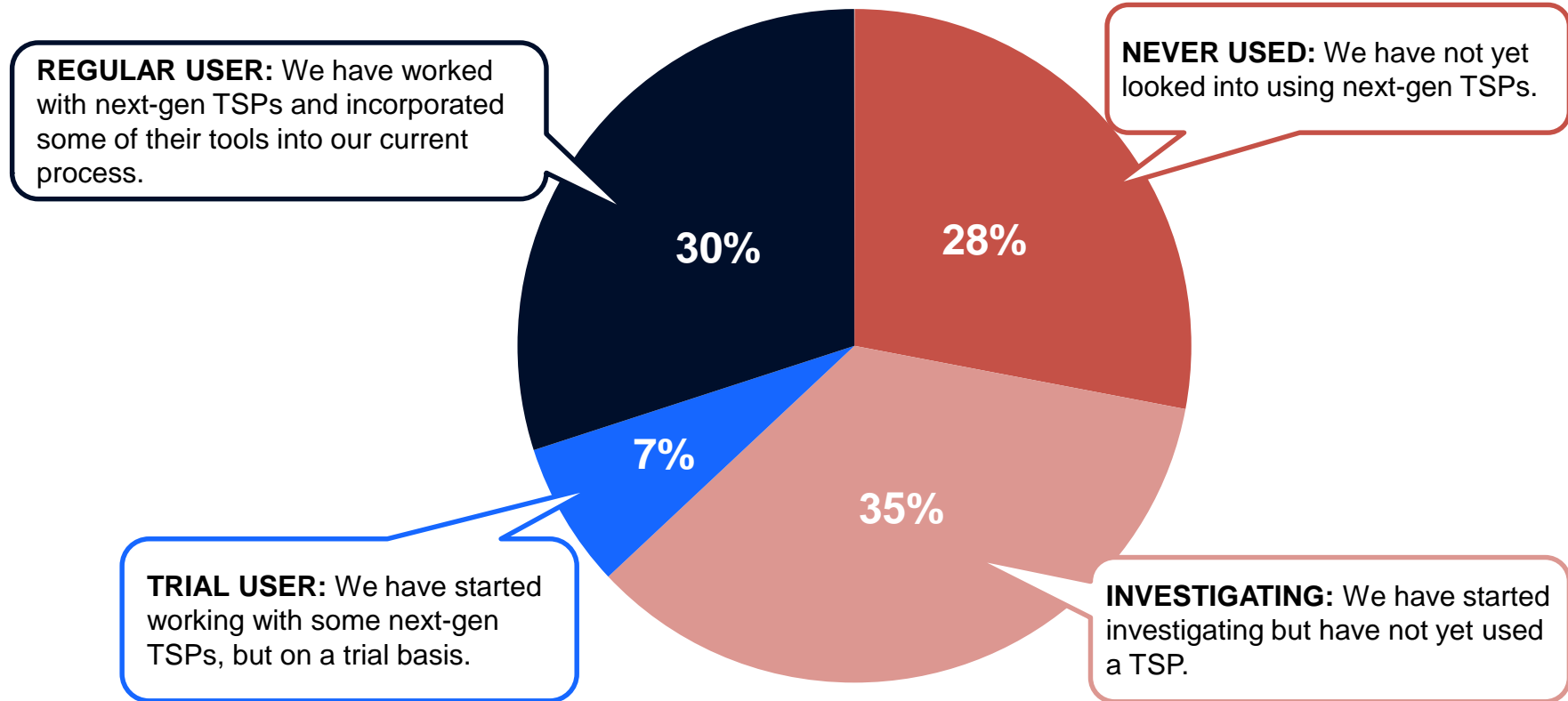
Usage Landscape: Next-Gen Technology Solution Providers (TSPs)

Experience with next-gen TSPs varies greatly. About one-third of lenders surveyed are current users. Another third have started investigating next-gen TSPs, and the final third have not yet looked into using next-gen TSPs.

Current Lenders' Next-Gen TSP Usage Status:



37%
of lenders are
next-gen TSP users



Q: Which of the following statements best describes your firm's current status on next-gen TSPs for your mortgage business?

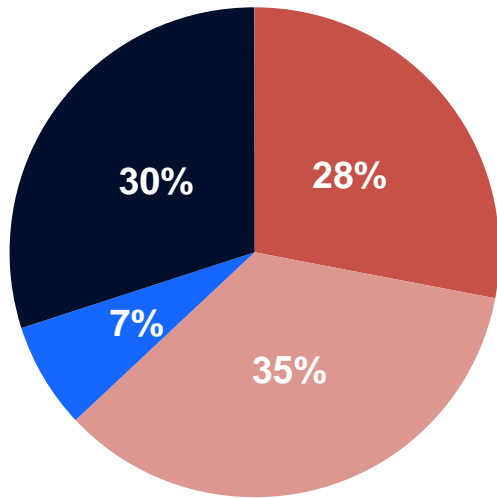


Next-Gen TSP Usage Landscape by Lender Size and Type

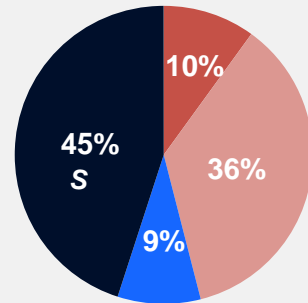
Larger and mid-sized institutions are significantly more likely than smaller institutions to currently use next-gen TSPs. Among lender types, mortgage banks are significantly more likely than depository institutions and credit unions to use next-gen TSPs.

Which of the following statements best describes your firm's current status on next-gen TSPs for your mortgage business?
Total N=184

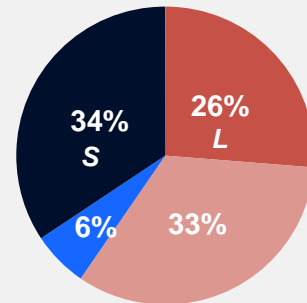
TSP Regular User	Never Used TSPs
TSP Trial User	Investigated TSPs



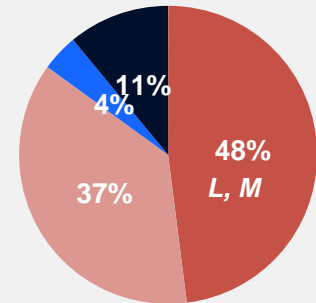
Larger Institutions (L)
N=87



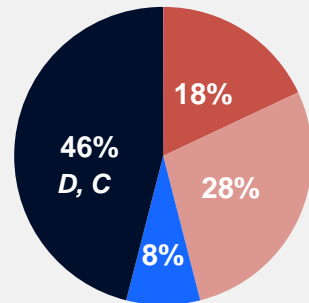
Mid-sized Institutions (M)
N=52



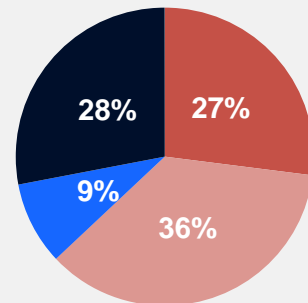
Smaller Institutions (S)
N=46



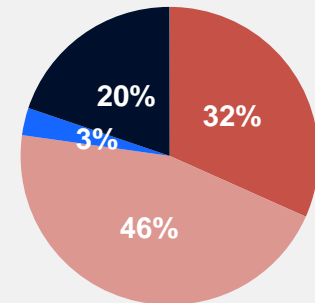
Mortgage Banks (M)
N=67



Depository Institutions (D)
N=70



Credit Unions (C)
N=38

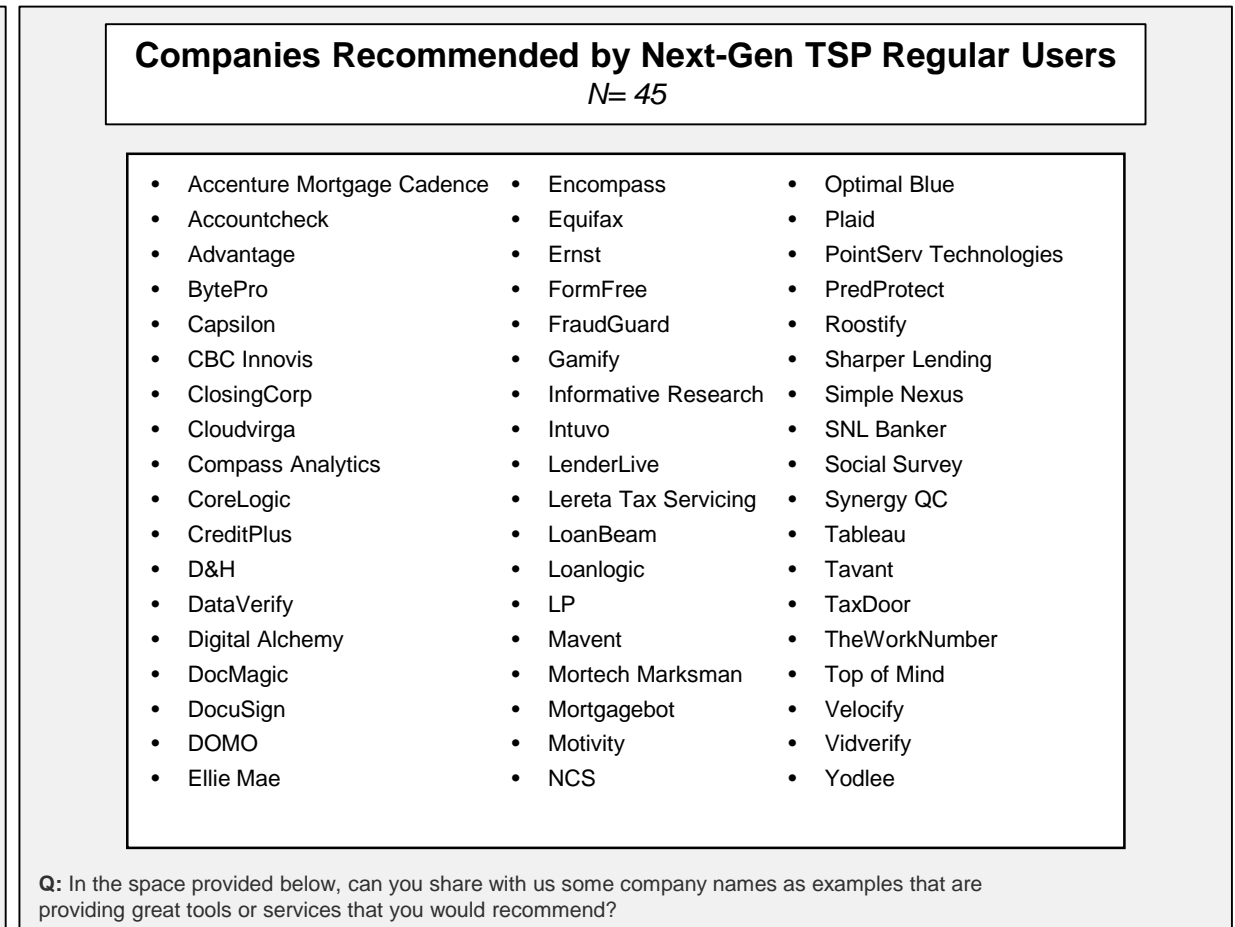
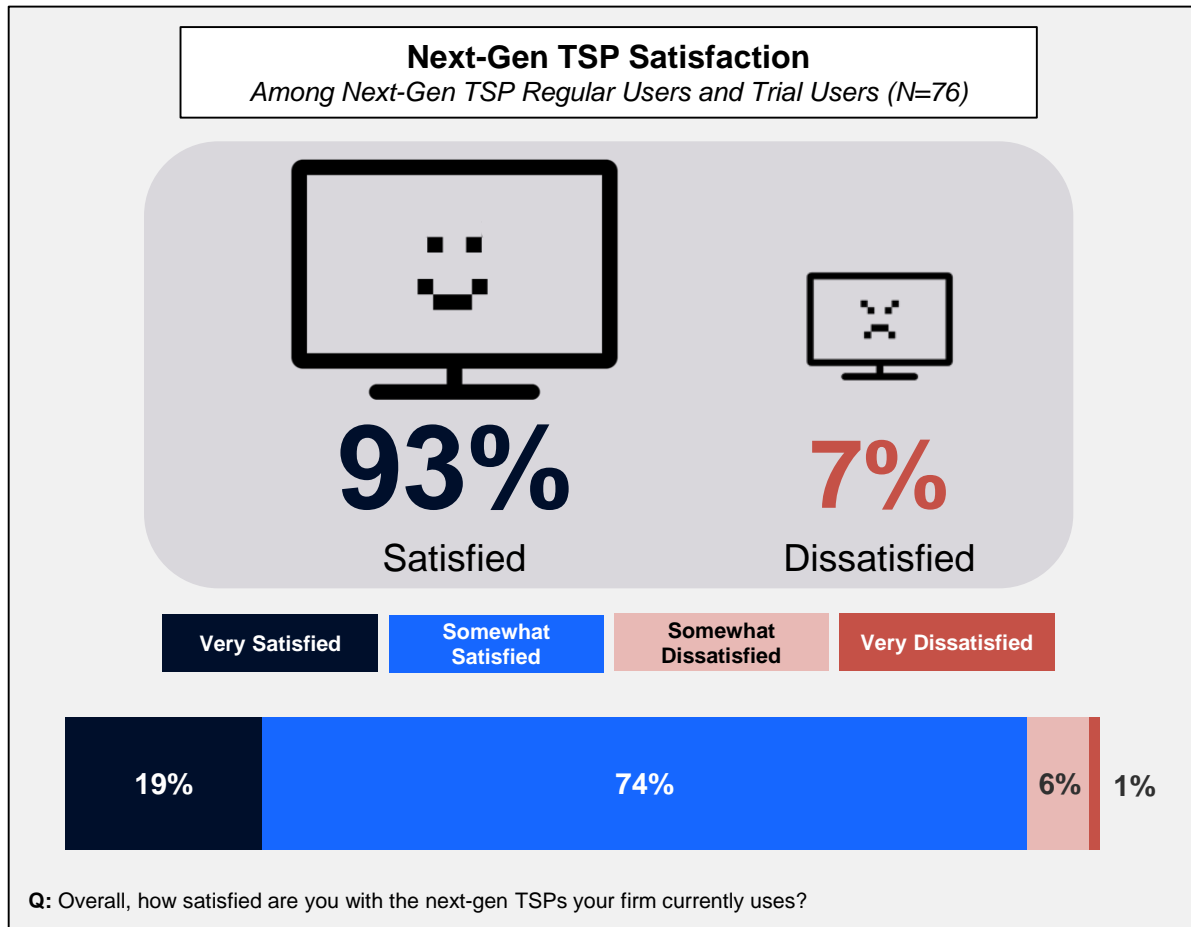


L/M/S - Denote a % is significantly higher than the annual loan origination volume group that the letter represents at the 95% confidence level
M/D/C - Denote a % is significantly higher than the institution type group that the letter represents at the 95% confidence level



Satisfaction with Next-Gen TSPs and Recommended TSPs (among current users)

The majority of next-gen TSP users are quite satisfied with the providers their firm currently uses. They mentioned a variety of companies when asked what next-gen TSPs they would recommend.



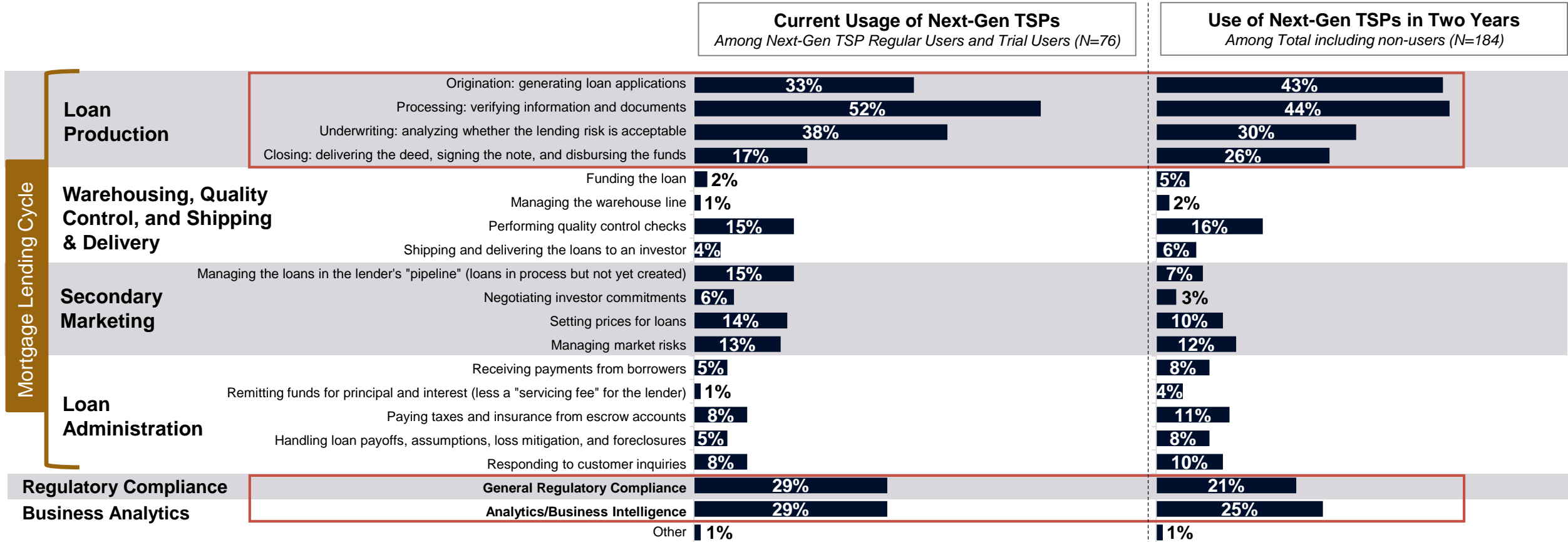


Current Usage Areas and Future Needs



Current and Future Next-Gen TSP Usage Areas

Across the whole mortgage lending cycle – from origination, loan delivery, secondary marketing to servicing – lenders currently use next-gen TSPs mostly for loan production, regulatory compliance, and business analytics. The same areas are also seen as the top areas for future next-gen TSP usage.



Q: What are the three most important functional areas **where your firm uses next-gen TSPs** to fulfill your needs? Please select up to three business areas and rank them in order of importance. / **Q:** Now, think about your firm's needs over the next two years. What would be the three most important functional areas where you envision your firm would use next-gen TSPs to fulfill your needs in two years? Please select up to three business areas and rank them in order of importance. More details can be found in the appendix.

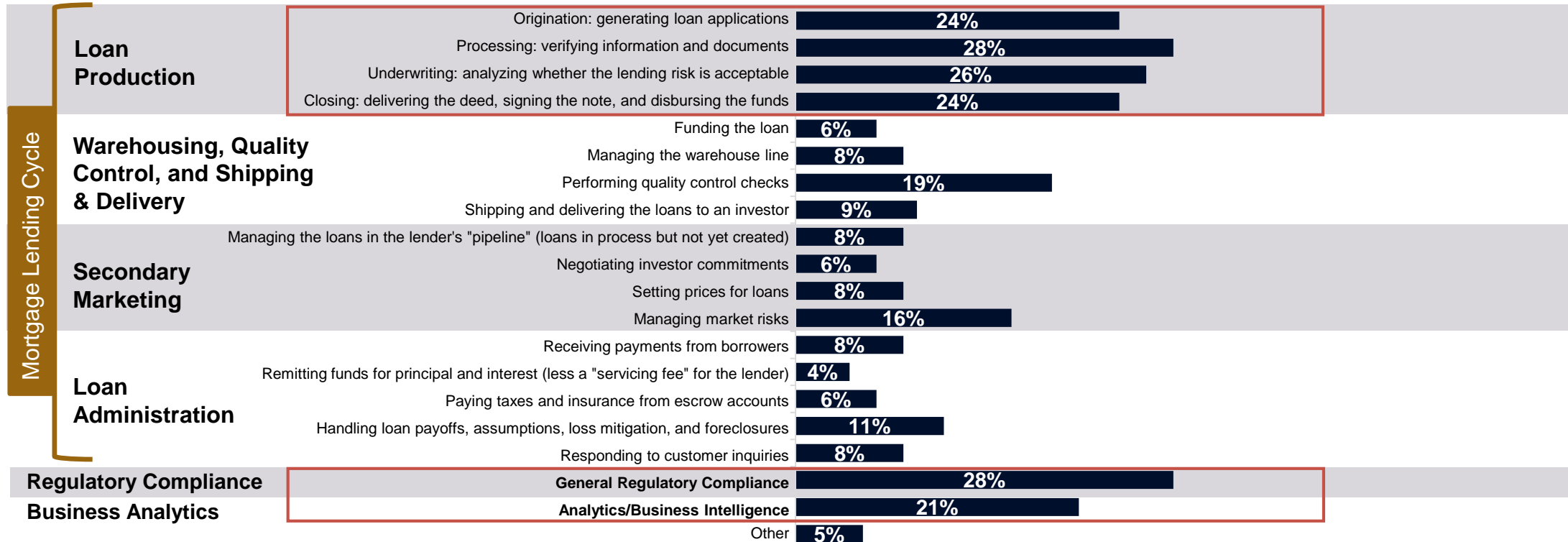


Areas Where Next-Gen TSP Solutions Could be Improved

Loan production, compliance, and business analytics are also seen as the top areas of the lending cycle where innovation efforts should be focused, suggesting strong consistency between current and future usage and innovation needs.

Areas where Current Next-Gen TSP Solutions Could be Improved

Among Total (N=184)



Q: In which functional areas do you think solutions currently offered by next-gen TSPs do not fully meet your needs or could be further improved? Please select up to three areas in need of further innovation and rank them in order of importance. More details can be found in the appendix.

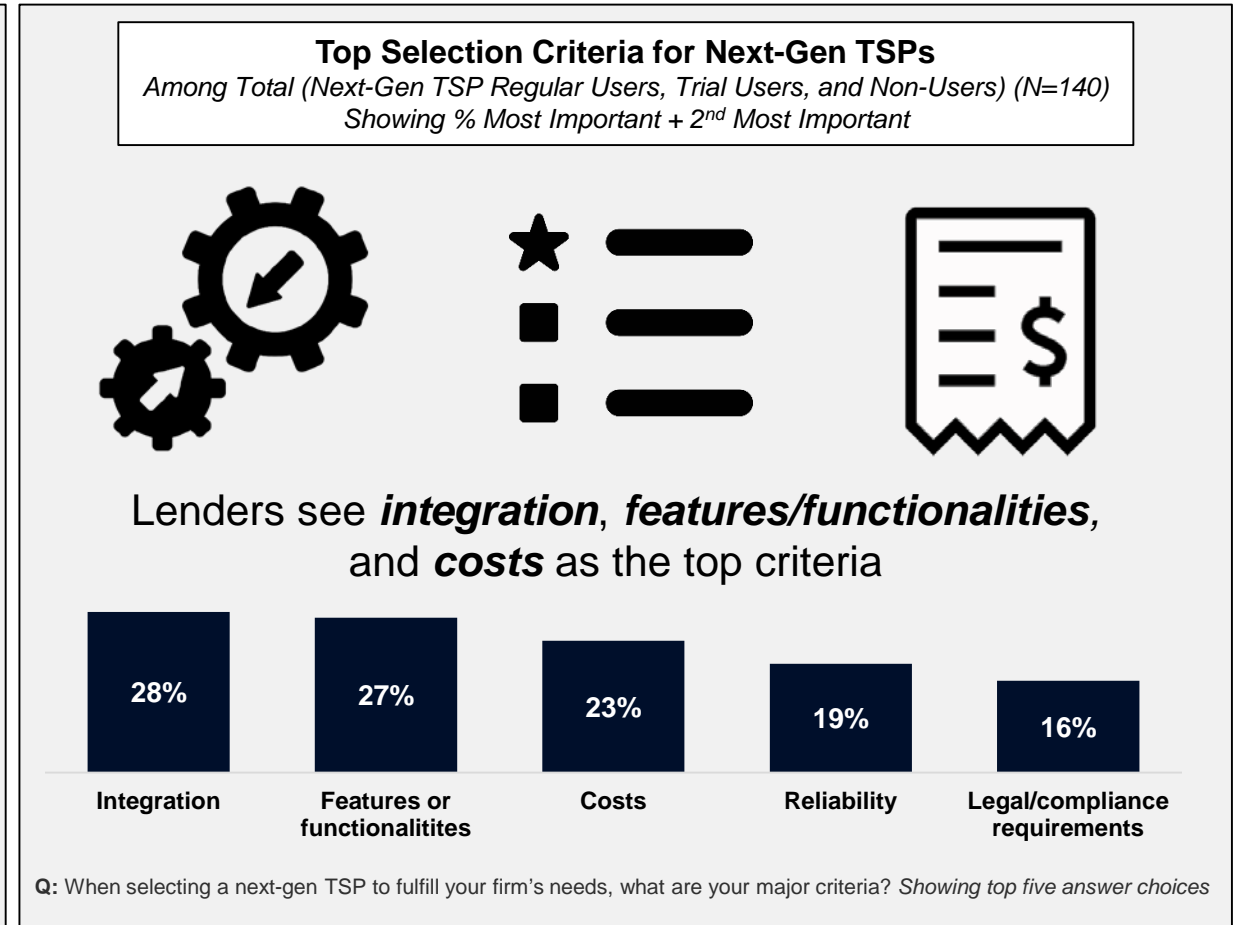
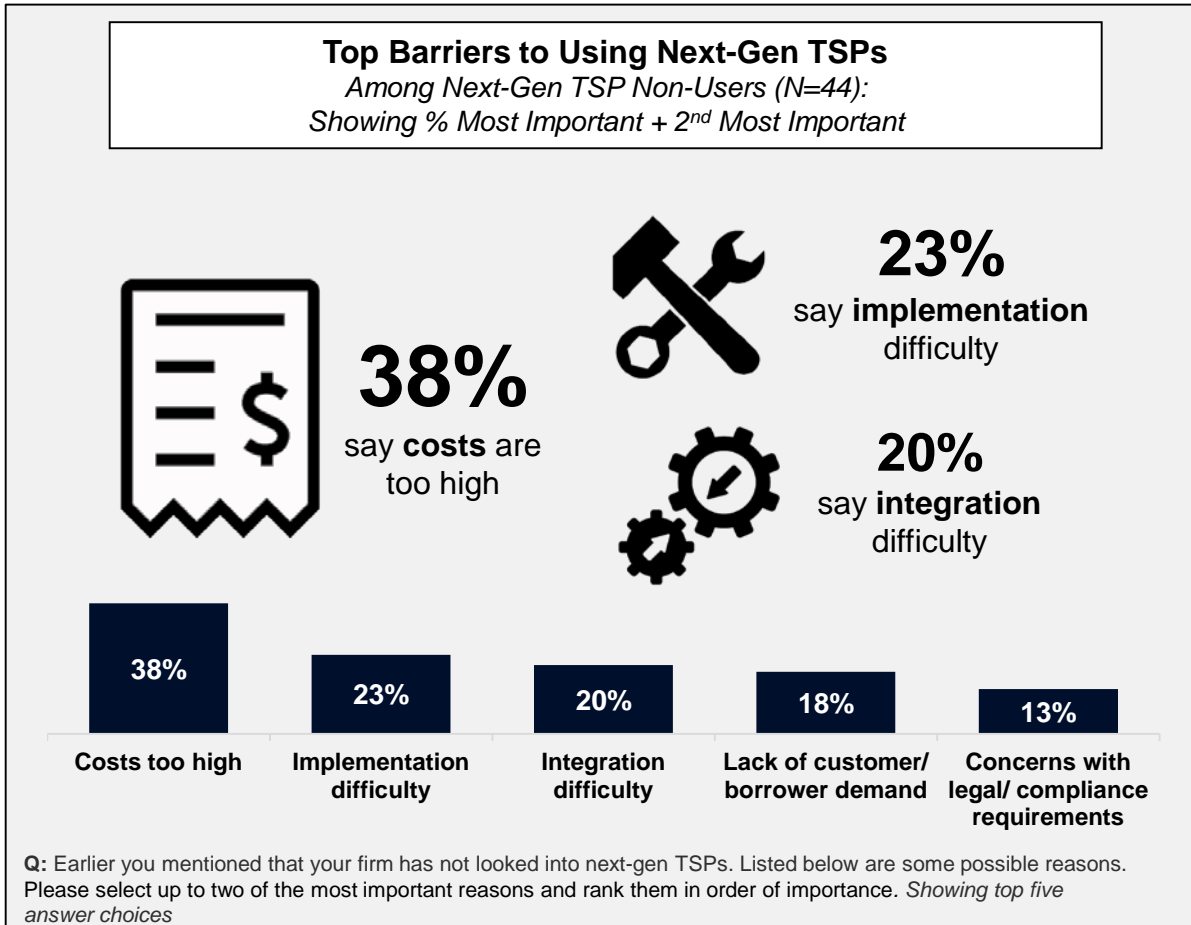


Barriers and End-to-End Integration Needs



Barriers to Using Next-Gen TSPs and TSP Selection Criteria

Lenders say the biggest barriers to implementing next-gen TSPs are costs, implementation, and integration. Likewise, when selecting next-gen TSPs for their firm, lenders see integration, functionality, and costs as the most important criteria.





Business Areas in Need of Further Improvement

When asked to share ideas for further improvement, lenders overall point to better integration and more user-friendly systems as key improvements next-gen TSPs could make.

Areas that could be improved through technological innovation

General Themes for Further Innovation

- Better integration
- More automation or useful friendly systems

“Integration and the burden of how much ‘data’ must pass between systems for them to be effective. Burdens that go upstream to humans to gather in the first place.” – Larger Institutions

Origination / Processing / Underwriting

*“Integration with 3rd party vendors are weak or **do not offer a menu of options** for vendor solutions. **Integration** into LOS’s are **complicated** or created data integrity issues that are required to be validated or run thru a QC process.” – Mid-sized Institution*

“Online applications.” – Larger Institution

“There is a lack of continuity between systems. ...i.e. utilize available data to perform more and faster verifications.” – Larger Institution

*“For verifications, we’ve tried a couple of tools to gather things like bank statements. Each time they seem great until you use them. Each time they ended up being **MUCH more complicated** to the average borrower than just logging into their account and printing the statement.” – Larger Institution*

*“There is still **too much risk for small to mid size firms**, streamline underwriting, tax return analysis would be helpful. compliance review via technology in every aspect of the process would reduce exposure as well.” – Smaller Institution*

*“Current systems **lack intuitive nature**.” – Smaller Institution*

*“Better **integration** and **ease** of fulfillment.” – Mid-sized Institution*

Closing / Regulatory Compliance / Business Analytics

*“Broader adoption of **eClose, eNotary**, etc. some of which is **limited** by investor-state-county adoption.” – Mid-sized Institution*

*“**E-Closings** (electronically signed Notes) and electronically signed and recorded **Security Instruments** is also an area where further technology advancements and industry adoption is needed).” – Larger Institution*

*“For compliance - QC, we rely heavily on Mavent. It is decent, but not nearly descriptive enough. It is **vague** to the point of being a **major time waster** having to investigate failures.” – Larger Institution*

*“Incorporating myriad rules (state, federal, Agency) in a **more streamlined way**.” – Larger Institution*

*“More analytical reporting focused on **profitability**.” – Smaller Institution*

*“In order to benefit from these providers **better integration into existing systems** is needed.” – Smaller Institution*

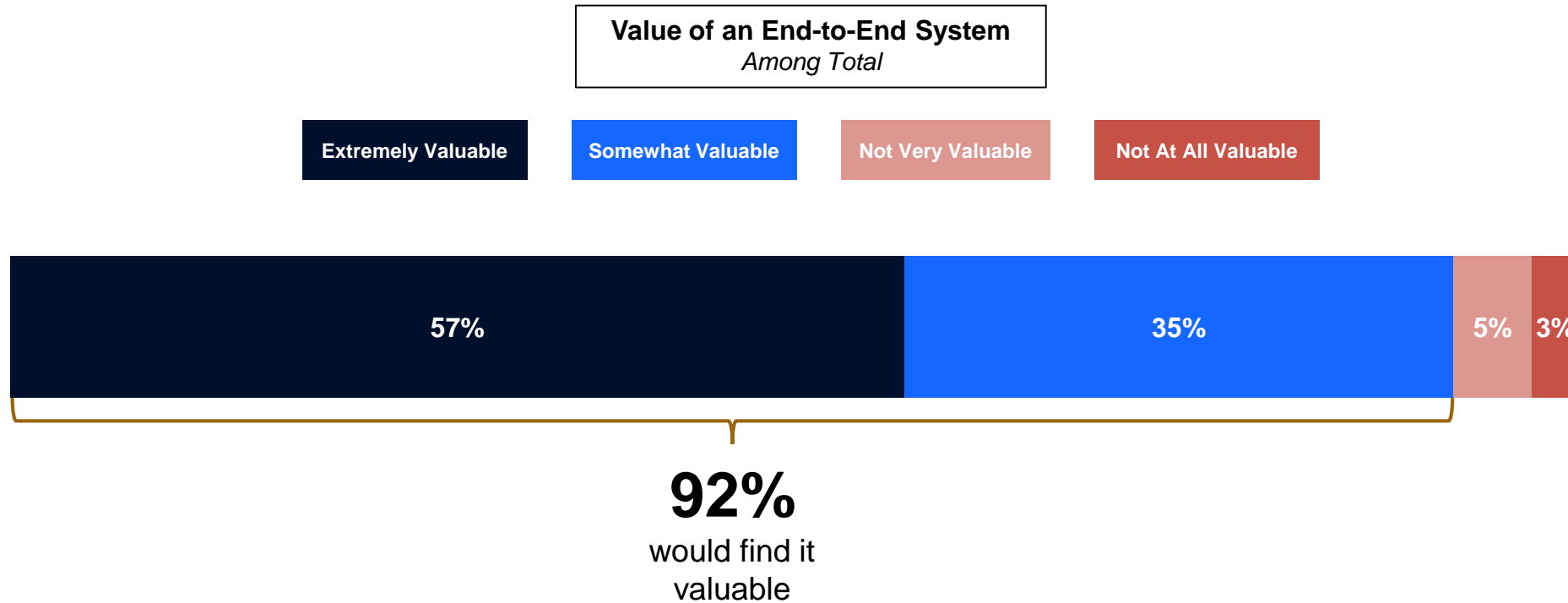
*These technological innovations need to be **integrated with the core LOS systems** so that only **one system of record** needs to be maintained in order to achieve the **highest efficiencies**. – Mid-sized Institution*

Q: For the areas that you just identified that are in need of further innovation, could you explain how these areas could be improved through technological innovation? *Showing selected verbatim*



Value of End-To-End Integration

Almost all lenders believe end-to-end integration of various solutions would be valuable to their business.

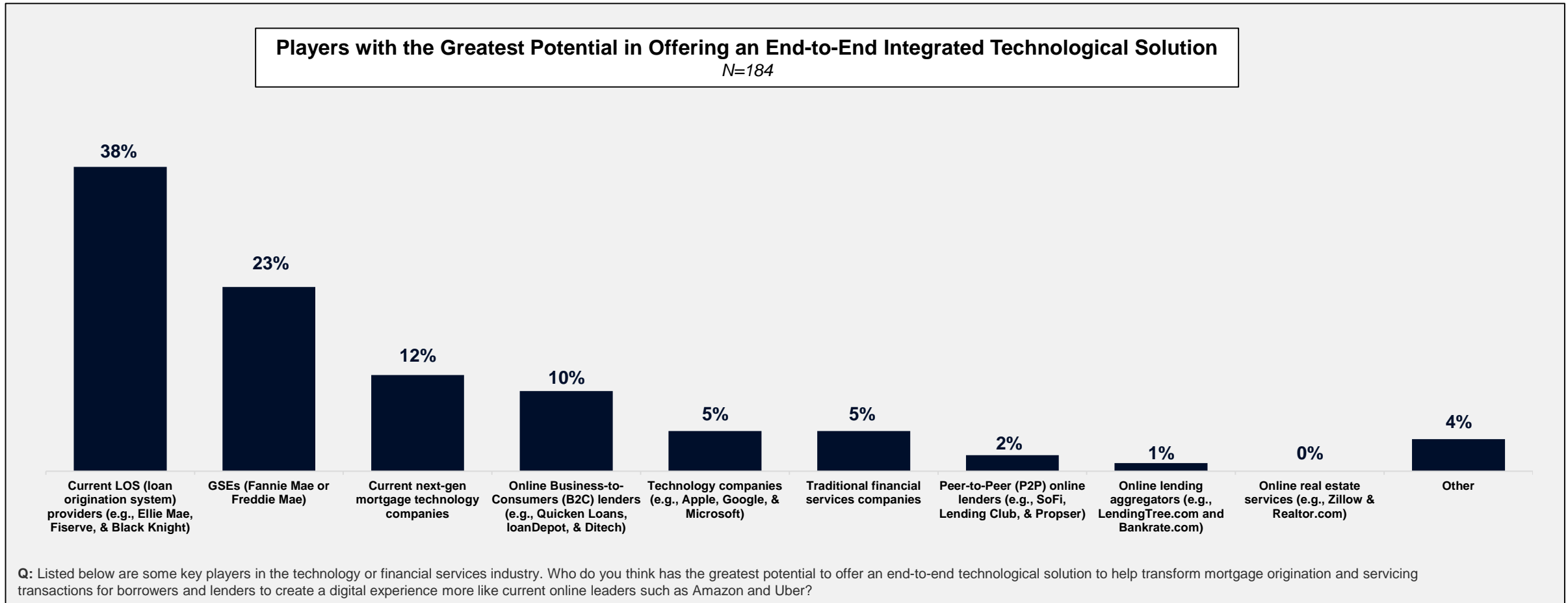


Q: The current marketplace of next-gen TSPs appears to be fragmented with some only offering a technical solution that focuses on a specific aspect of mortgage lending. If a company could integrate these different solutions and **offer an end-to-end system, how valuable will it be to your business?**



Players with the Greatest Potential in Offering an Integrated Solution

Almost two in five lenders believe current loan origination systems (LOS) providers have the greatest potential to offer an end-to-end integrated system. Almost one in four say Government-Sponsored Enterprises (GSEs) Fannie Mae and Freddie Mac have the greatest potential.



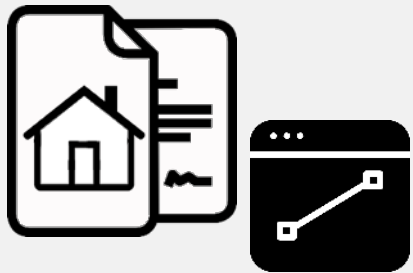


Reasons for LOS Providers and GSEs as Players with the Greatest Potential

Lenders who say LOS providers have the greatest potential to offer an end-to-end integrated solution point to LOS providers' experience, expertise, and existing resources. Those who see GSEs as having the biggest potential say they are industry standard-setters, trusted, and more knowledgeable than any other entity.

Technology Players with the Greatest Potential

N=184



38%

say **Current LOS providers** have the greatest potential

“Natural Fit.”

Top Reasons from Lenders

- Experience
- Industry Expertise
- Ease of Integration
 - Existing Data
- Market Share
- Financial and Technical Capability
- Interest in Innovation



Fannie Mae™



23%

say **GSEs (Fannie Mae or Freddie Mae)** have the greatest potential

“They set the rules.”

Top Reasons from Lenders

- Trusted
- The “Standard Setters”
- Most Knowledgeable
- Tools and Data available
- Reach

Q: Listed below are some key players in the technology or financial services industry. Who do you think has the greatest potential to offer an end-to-end technological solution to help transform mortgage origination and servicing transactions for borrowers and lenders to create a digital experience more like current online leaders such as Amazon and Uber? / **Q:** Why do you think that [previous answer choice for key player to offer end-to-end solution] have the greatest potential? Please share your thoughts.



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Research Objectives

- 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.
- 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 Outlook
- Mortgage Servicing Rights (MSR) Execution Outlook
- Profit Margin Outlook

Featured Specific-Topic Analyses

- The Role of Quality Control
- Mortgage Technology Innovation
- 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.

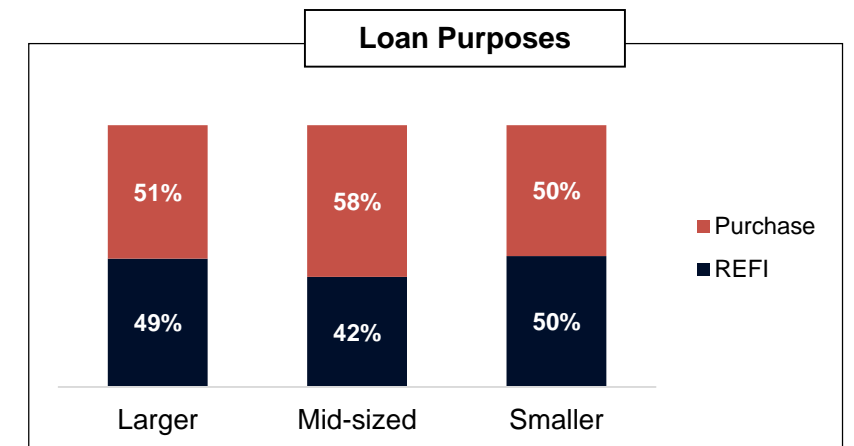
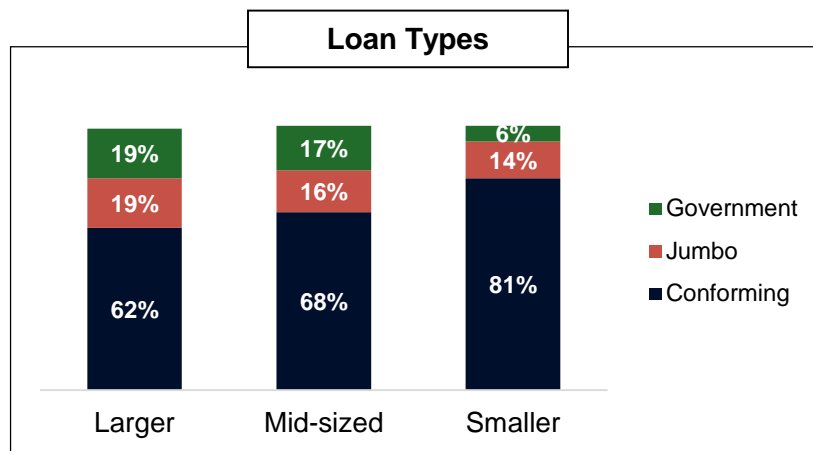
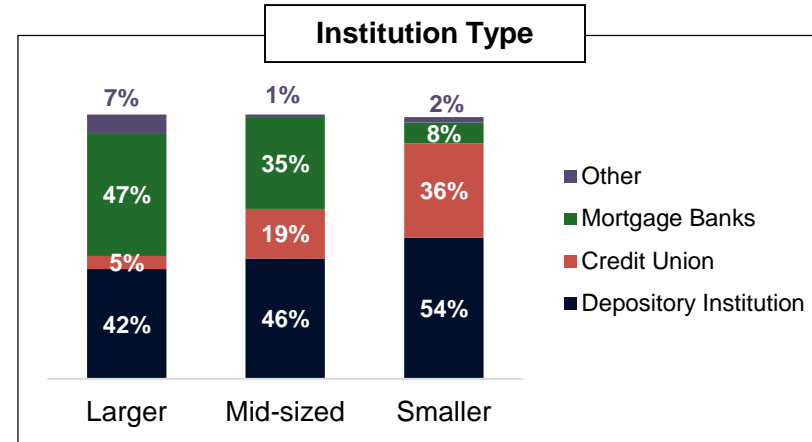
Data Weighting

- 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 Q4 Cross-Subgroup Sample Sizes

	Total	Larger Lenders	Mid-Sized Lenders	Smaller Lenders
Total	184	87	52	46
Mortgage Banks (non-depository)	67	38	24	5
Depository Institutions	70	30	16	24
Credit Unions	38	10	12	16



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:

The defect rate could be used by your management team to fulfill multiple purposes. Listed below are some common purposes. For each, please indicate if the management team at your firm uses the defect rate to fulfill that purpose.
Showing % Yes

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)
N=	184	87	52	46
We have not looked into these TSPs yet	28%	10%	26% ^L	48% ^{L,M}
We have started investigating but have not yet used any	35%	36%	33%	37%
We have started investigating but have not yet used any	7%	9%	6%	4%
We have worked with TSPs and incorporated some of their tools into our current process	30%	45% ^S	34% ^S	11%

48% is significantly higher than 26% (mid-sized institutions) and 10% (larger institutions)

45% is significantly higher than 11% (smaller 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:

Which of the following statements best describes your firm’s current status on next-gen TSPs for your mortgage business?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)
N=	184	87	52	46
We have not looked into these TSPs yet	28%	10%	26% ^L	48% ^{L,M}
We have started investigating but have not yet used any	35%	36%	33%	37%
We have started investigating but have not yet used any	7%	9%	6%	4%
We have worked with TSPs and incorporated some of their tools into our current process	30%	45% ^S	34% ^S	11%

“Total” of 28% is
 $(10\% + 26\% + 48\%) / 3$



Appendix

Additional Findings



Current Status on Next-Gen TSPs

Which of the following statements best describes your firm's current status on next-gen TSPs for your mortgage business?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	184	87	52	46	67	70	38
We have not looked into these TSPs yet	28%	10%	26% ^L	48% ^{L,M}	18%	27%	32%
We have started investigating but have not yet used any	35%	36%	33%	37%	28%	36%	46%
We have started investigating but have not yet used any	7%	9%	6%	4%	8%	9%	3%
We have worked with TSPs and incorporated some of their tools into our current process	30%	45% ^S	34% ^S	11%	46% ^{D,C}	28%	20%

*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*



Satisfaction with Next-Gen TSPs

Overall, how satisfied are you with the next-gen TSPs your firm currently uses?
Among TSP Users & Trial TSP Users

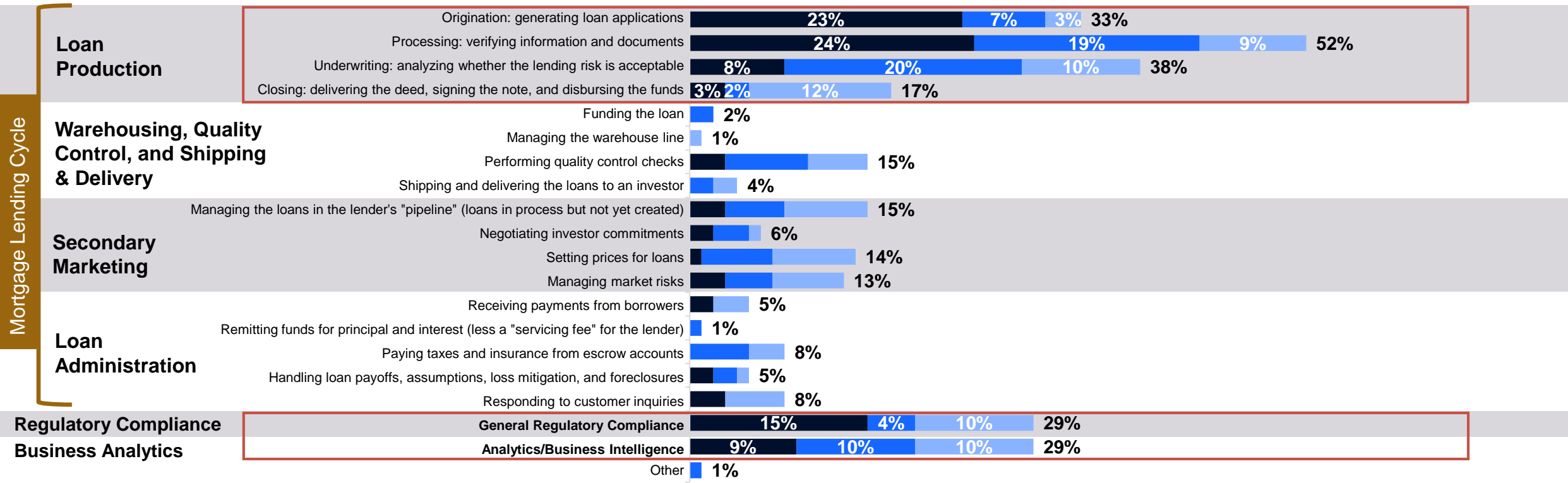
	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	76	48	22	7	36	26	8
Very satisfied	19%	15%	20%	29%	15%	16%	47% ^M
Somewhat satisfied	74%	75%	75%	71%	68%	84%	53%
Somewhat dissatisfied	6%	8%	5%	0%	14%	0%	0%
Very dissatisfied	1%	2%	0%	0%	3%	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*



Purpose of Next-Gen TSP Usage (among current users)

Across the whole mortgage lending cycle (from origination, loan delivery, secondary marketing to servicing), Lenders use next-gen TSPs' technological solutions mostly for loan production, regulatory compliance, and business analytics.



Q: What are the three most important functional areas where your firm uses next-gen TSPs to fulfill your needs? Please select up to three business areas and rank them in order of importance.



Important Functional Areas of Next-Gen TSPs for TSP Users

We would like to know what functional areas your firm currently uses next-gen TSPs for, if any. Listed below are several key functional areas based on the mortgage lending cycle. What are the three most important functional areas where your firm uses next-gen TSPs to fulfill your needs?

Showing % ranked Most, 2nd most, and 3^d most important. Among TSP Users & Trial TSP Users

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	76	48	22	7	36	26	8
LOAN PRODUCTION							
Origination: generating loan applications	33%	36%	32%	28%	36%	29%	36%
Processing: verifying information and documents	52%	50%	48%	71%	54%	50%	53%
Underwriting: analyzing whether the lending risk is acceptable	38%	38%	43%	29%	50% ^C	30%	12%
Closing: delivering the deed, signing the note, and disbursing the funds	17%	13%	23%	14%	17%	18%	12%
WAREHOUSING, QUALITY CONTROL, and SHIPPING & DELIVERY							
Funding the loan	2%	0%	0%	14%	0%	4%	0%
Managing the warehouse line	1%	2%	0%	0%	3%	0%	0%
Performing quality control checks	15%	19%	10%	14%	18%	10%	12%
Shipping and delivering the loans to an investor	4%	7%	0%	0%	4%	4%	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*



Important Functional Areas of Next-Gen TSPs for TSP Users (Cont.)

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	76	48	22	7	36	26	8
SECONDARY MARKETING							
Managing the loans in the lender's "pipeline" (loans in process but not yet created)	15%	17%	17%	0%	12%	8%	48% ^{M,D}
Negotiating investor commitments	6%	4%	5%	14%	0%	12%	12%
Setting prices for loans	14%	10%	25%	0%	6%	24%	0%
Managing market risks	13%	12%	12%	14%	15%	8%	12%
LOAN ADMINISTRATION							
Receiving payments from borrowers	5%	6%	5%	0%	6%	8%	0%
Remitting funds for principal and interest (less a "servicing fee" for the lender)	1%	2%	0%	0%	0%	4%	0%
Paying taxes and insurance from escrow accounts	8%	6%	14%	0%	6%	16%	0%
Handling loan payoffs, assumptions, loss mitigation, and foreclosures	5%	6%	5%	0%	3%	12%	0%
Responding to customer inquiries	8%	8%	10%	0%	11%	8%	0%
General Regulatory Compliance	29%	31%	21%	43%	20%	44% ^M	29%
Analytics/Business Intelligence	29%	26%	37%	14%	38% ^D	12%	42%
Other	1%	2%	0%	0%	3%	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



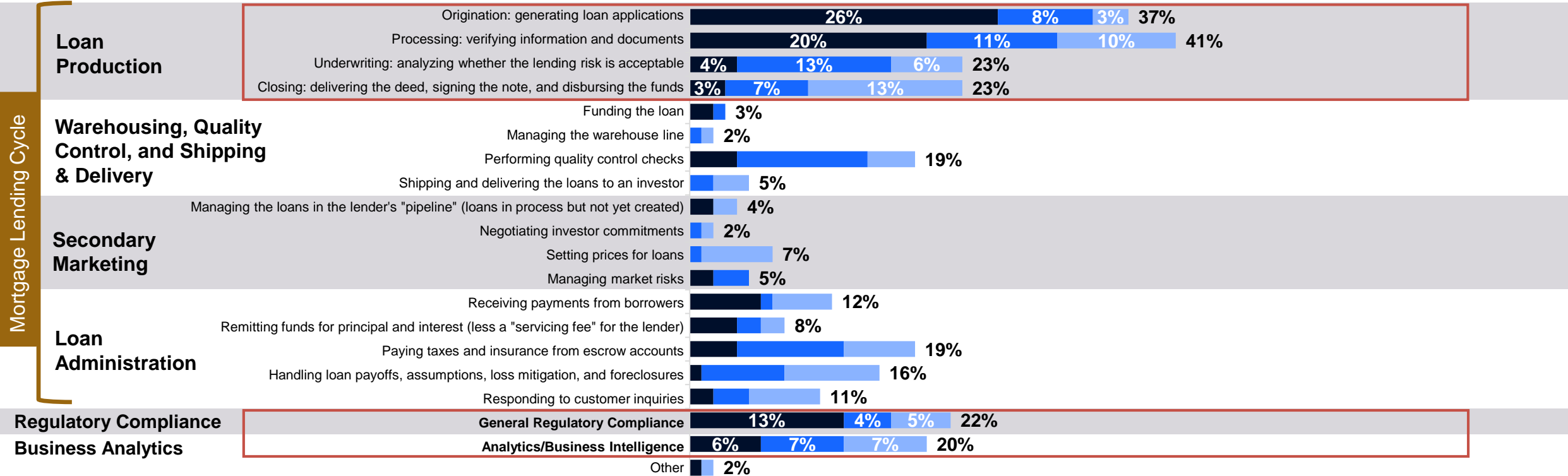
Areas of Interest for Next-Gen TSPs Usage among Non-Users

Similar needs are observed among non-next-gen TSP users. For them, the top desired areas for future next-gen TSP adoption are loan production, regulator compliance, and business analytic.

Areas of Interest for Using Next-Gen TSPs among Non-Users

Among Investigated TSPs and Never Used TSPs (N=108)

Most Important 2nd most important 3rd most important



Q: What are the three most important functional areas where you would be interested in using next-gen TSPs to fulfill your needs? Please select up to three business areas and rank them in order of importance.



Important Functional Areas of Next-Gen TSPs for Non-TSP Users

We would like to know in which functional areas your firm would be interested in using next-gen mortgage TSPs, if any. Listed below are several key functional areas based on the mortgage lending cycle. What are the three most important functional areas where you would be interested in using next-gen TSPs to fulfill your needs?
Showing % ranked Most, 2nd most, and 3rd most important. Among Never Used TSP & Investigated TSP

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	108	40	30	38	30	44	30
LOAN PRODUCTION							
Origination: generating loan applications	37%	44%	32%	36%	30%	41%	40%
Processing: verifying information and documents	41%	40%	45%	39%	36%	35%	52%
Underwriting: analyzing whether the lending risk is acceptable	23%	15%	28%	26%	18%	25%	19%
Closing: delivering the deed, signing the note, and disbursing the funds	23%	30%	26%	15%	13%	22%	38% ^M
WAREHOUSING, QUALITY CONTROL, and SHIPPING & DELIVERY							
Funding the loan	3%	6%	0%	5%	3%	3%	3%
Managing the warehouse line	2%	0%	0%	6%	3%	2%	0%
Performing quality control checks	19%	10%	23%	21%	12%	15%	19%
Shipping and delivering the loans to an investor	5%	6%	6%	5%	6%	8%	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*



Important Functional Areas of Next-Gen TSPs for Non-TSP Users (Cont.)

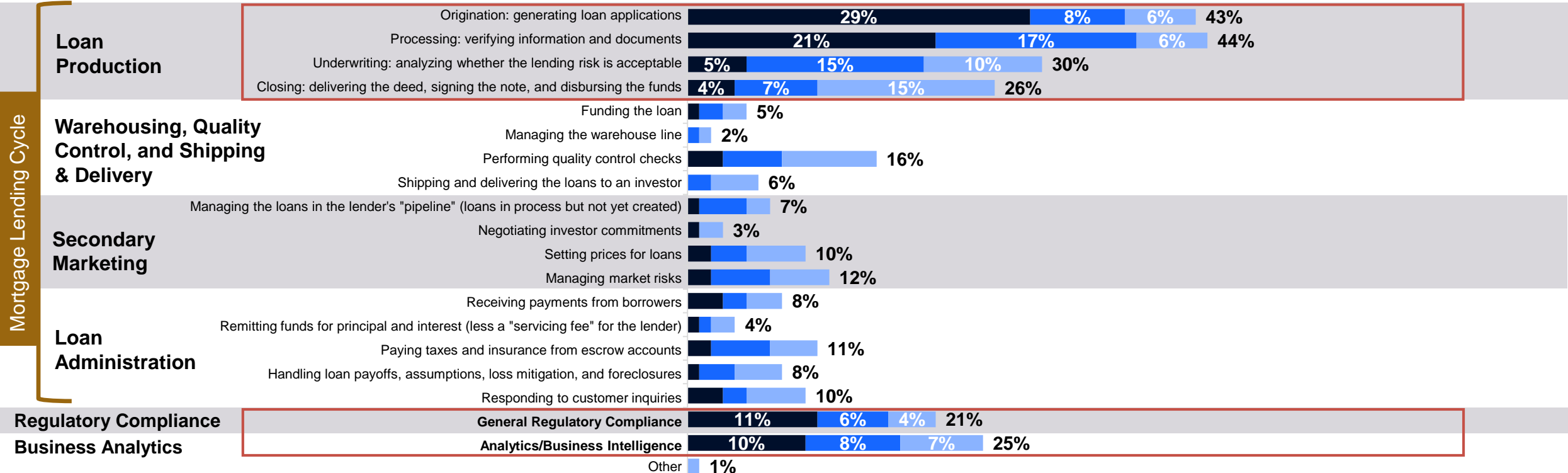
	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	108	40	30	38	30	44	30
SECONDARY MARKETING							
Managing the loans in the lender's "pipeline" (loans in process but not yet created)	4%	0%	5%	8%	2%	4%	6%
Negotiating investor commitments	2%	2%	3%	0%	0%	4%	0%
Setting prices for loans	7%	5%	8%	8%	5%	9%	7%
Managing market risks	5%	5%	10%	3%	5%	4%	10%
LOAN ADMINISTRATION							
Receiving payments from borrowers	12%	7%	13%	15%	16%	8%	10%
Remitting funds for principal and interest (less a "servicing fee" for the lender)	8%	8%	10%	9%	9%	10%	7%
Paying taxes and insurance from escrow accounts	19%	15%	17%	21%	18%	21%	16%
Handling loan payoffs, assumptions, loss mitigation, and foreclosures	16%	16%	12%	18%	24%	18%	6%
Responding to customer inquiries	11%	11%	12%	11%	20%	10%	7%
General Regulatory Compliance	22%	34% ^M	12%	23%	38%	19%	19%
Analytics/Business Intelligence	20%	30% ^S	23%	11%	28%	17%	21%
Other	2%	2%	0%	3%	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
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Expected Usage Purposes of Next-Gen TSPs in Two Years

Original and processing in loan production are the most important functional areas where respondents envision their firm using next-gen TSPs to fulfill their needs.



Q: Now, think about your firm's needs over the next two years. What would be the three most important functional areas where you envision your firm would use next-gen TSPs to fulfill your needs in two years? Please select up to three business areas and rank them in order of importance.



Future Important Functional Areas of Next-Gen TSPs

Now, think about your firm's needs over the next two years. What would be the three most important functional areas where you envision your firm would use next-gen TSPs to fulfill your needs in two years?

Showing % ranked Most, 2nd most, and 3rd most important. Among TSP Users & Trial TSP Users

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	184	87	52	46	67	70	38
LOAN PRODUCTION							
Origination: generating loan applications	43%	51%	38%	42%	37%	48%	45%
Processing: verifying information and documents	44%	44%	51%	37%	49%	34%	51%
Underwriting: analyzing whether the lending risk is acceptable	30%	28%	33%	30%	35%	30%	19%
Closing: delivering the deed, signing the note, and disbursing the funds	26%	27%	29%	22%	19%	28%	39% ^M
WAREHOUSING, QUALITY CONTROL, and SHIPPING & DELIVERY							
Funding the loan	5%	5%	0%	8%	4%	5%	3%
Managing the warehouse line	2%	3%	0%	2%	4%	1%	0%
Performing quality control checks	16%	11%	21%	16%	15%	9%	21%
Shipping and delivering the loans to an investor	6%	10%	5%	4%	4%	9%	3%

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Future Important Functional Areas of Next-Gen TSPs (Cont.)

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	184	87	52	46	67	70	38
SECONDARY MARKETING							
Managing the loans in the lender's "pipeline" (loans in process but not yet created)	7%	7%	7%	6%	5%	9%	9%
Negotiating investor commitments	3%	6%	0%	2%	4%	3%	3%
Setting prices for loans	10%	12%	11%	8%	7%	13%	11%
Managing market risks	12%	13%	14%	9%	11%	13%	12%
LOAN ADMINISTRATION							
Receiving payments from borrowers	8%	4%	12%	14%	5%	9%	11%
Remitting funds for principal and interest (less a "servicing fee" for the lender)	4%	2%	1%	8%	4%	3%	3%
Paying taxes and insurance from escrow accounts	11%	10%	11%	13%	15%	9%	8%
Handling loan payoffs, assumptions, loss mitigation, and foreclosures	8%	3%	9%	10%	4%	7%	8%
Responding to customer inquiries	10%	6%	13%	10%	16%	7%	6%
General Regulatory Compliance	21%	22%	22%	21%	23%	24%	20%
Analytics/Business Intelligence	25%	32%	22%	20%	31%	23%	23%
Other	1%	1%	0%	2%	0%	1%	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
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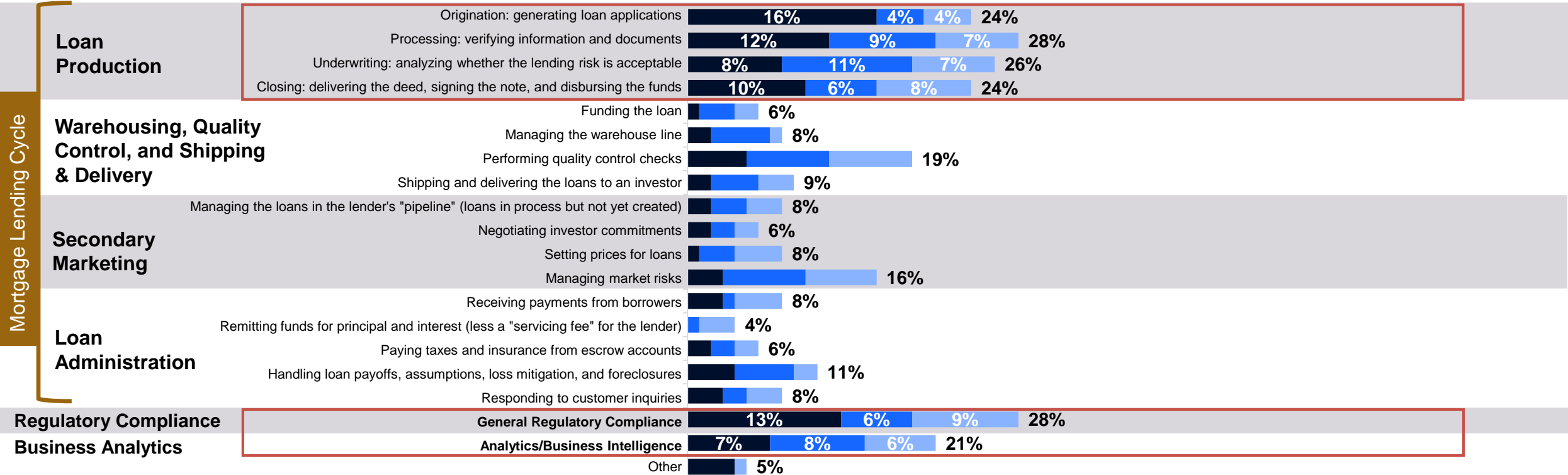
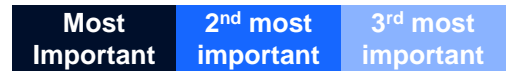


Areas in Need of Further Innovation for Next-Gen TSPs

Loan production, compliance, and business analytics are seen as the areas of the lending cycle where innovation efforts should be focused.

Areas where Current Next-Gen TSP Solutions Could be Improved

Among Total (N=184)



Q: In which functional areas do you think solutions currently offered by next-gen TSPs do not fully meet your needs or could be further improved? Please select up to three areas in need of further innovation and rank them in order of importance.



Functional Areas That Can Be Improved

In which functional areas do you think solutions currently offered by next-gen TSPs do not fully meet your needs or could be further improved?
Showing % ranked Most, 2nd most, and 3rd most important. Among TSP Users & Trial TSP Users

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	184	87	52	46	67	70	38
LOAN PRODUCTION							
Origination: generating loan applications	24%	31%	18%	23%	31%	25%	17%
Processing: verifying information and documents	28%	32%	24%	31%	37%	27%	22%
Underwriting: analyzing whether the lending risk is acceptable	26%	21%	27%	28%	33%	19%	24%
Closing: delivering the deed, signing the note, and disbursing the funds	24%	28%	19%	24%	21%	19%	32%
WAREHOUSING, QUALITY CONTROL, and SHIPPING & DELIVERY							
Funding the loan	6%	5%	7%	8%	4%	7%	7%
Managing the warehouse line	8%	4%	8%	11%	7%	6%	8%
Performing quality control checks	19%	19%	22%	17%	17%	18%	21%
Shipping and delivering the loans to an investor	9%	7%	13%	6%	7%	8%	12%

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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*



Functional Areas That Can Be Improved (Cont.)

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	184	87	52	46	67	70	38
SECONDARY MARKETING							
Managing the loans in the lender's "pipeline" (loans in process but not yet created)	8%	9%	9%	6%	4%	9%	13%
Negotiating investor commitments	6%	6%	6%	4%	3%	7%	7%
Setting prices for loans	8%	9%	11%	2%	2%	8%	8%
Managing market risks	16%	12%	20%	18%	16%	20%	9%
LOAN ADMINISTRATION							
Receiving payments from borrowers	8%	7%	10%	8%	7%	10%	6%
Remitting funds for principal and interest (less a "servicing fee" for the lender)	4%	6%	2%	4%	6%	2%	0%
Paying taxes and insurance from escrow accounts	6%	6%	9%	4%	7%	6%	6%
Handling loan payoffs, assumptions, loss mitigation, and foreclosures	11%	9%	14%	11%	11%	7%	18%
Responding to customer inquiries	8%	7%	8%	11%	8%	7%	14%
General Regulatory Compliance	28%	30%	29%	24%	26%	32%	27%
Analytics/Business Intelligence	21%	21%	20%	23%	13%	25%	24%
Other	5%	3%	4%	7%	0%	7%	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



Major Criteria for Selecting a Next-Gen TSP

When selecting a next-gen TSP to fulfill your firm's needs, what are your major criteria?
 Showing % ranked Most and 2nd most important. Among Investigated TSP, TSP Users & Trial TSP Users

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	140	78	38	24	55	51	26
Integration	28%	31%	31%	16%	28%	32%	25%
Features or functionalities	27%	25%	28%	29%	24%	27%	27%
Costs	23%	20%	29%	16%	29%	20%	20%
Reliability	19%	18%	21%	16%	24%	12%	22%
Legal/compliance requirements	16%	20%	8%	20%	18%	18%	19%
Proven record of success	13%	10%	16%	12%	7%	18%	13%
Scalability	12%	14%	13%	8%	17%	10%	9%
Data privacy/security	11%	11%	7%	16%	7%	11%	19%
Customer/borrower demand	9%	13%	4%	8%	6%	11%	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



Major Criteria for Selecting a Next-Gen TSP (Cont.)

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	140	78	38	24	55	51	26
Business intelligence analytics and reporting	7%	5%	2%	16%	6%	4%	12%
Investor requirements	7%	6%	5%	12%	9%	7%	4%
Market influence/share	6%	4%	8%	8%	2%	5%	12%
System speed	5%	7%	4%	4%	7%	6%	4%
Financial stability (how long will they be in the business)	5%	1%	10%	4%	2%	7%	0%
Customer service and support	5%	5%	4%	4%	7%	4%	4%
Implementation	3%	6%	2%	0%	6%	2%	0%
Other	5%	4%	5%	4%	2%	8%	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
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Reasons For Not Looking into Next-Gen TSPs

Earlier you mentioned that your firm has not looked into next-gen TSPs. Listed below are some possible reasons. Please select up to two of the most important reasons and rank them in order of importance.

Showing % ranked Most, 2nd most, and 3rd most important. Among Never Used TSP

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	44	9	14	22	12	19	12
Costs too high	38%	33%	43%	36%	42%	40%	33%
Implementation difficulty	23%	33%	35%	14%	33%	11%	42% ^D
Integration difficulty	20%	11%	18%	23%	8%	11%	42% ^D
Lack of customer/borrower demand	18%	11%	18%	19%	33%	14%	8%
Concerns with legal/compliance requirements	13%	17%	21%	9%	17%	21%	0%
Market influence/share too small	10%	0%	18%	9%	0%	3%	34% ^{M,D}
Features or functionalities not meeting my needs	9%	11%	7%	9%	16%	10%	0%
Concerns with data privacy/security	9%	17%	7%	9%	8%	10%	8%
Quality of customer service and support	8%	11%	14%	5%	0%	16%	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*



Reasons for Not Looking into Next-Gen TSPs (Cont.)

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	44	9	14	22	12	19	12
Lack of proven record of success	7%	0%	14%	5%	8%	5%	8%
Lack of scalability	5%	0%	0%	9%	8%	5%	0%
Uncertain financial stability (how long will they be in the business)	5%	0%	0%	9%	0%	11%	0%
Poor reliability	3%	22%	0%	0%	8%	5%	0%
Business intelligence analytics and reporting not sophisticated	3%	0%	0%	5%	0%	0%	8%
Concerns with Investor requirements	3%	0%	0%	5%	0%	0%	8%
Insufficient system speed	1%	11%	0%	0%	0%	5%	0%
Other	12%	6%	4%	19%	8%	16%	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
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Value of an End-to-End System

The current marketplace of next-gen TSPs appears to be fragmented with some only offering a technical solution that focuses on a specific aspect of mortgage lending. If a company could integrate these different solutions and offer an end-to-end system, how valuable will it be to your business?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	184	87	52	46	67	70	38
Extremely valuable	57%	66% ^S	69% ^S	37%	67% ^D	44%	70% ^D
Somewhat valuable	35%	31%	27%	46%	30%	46% ^C	25%
Not very valuable	5%	3%	4%	9%	3%	6%	3%
Not at all valuable	3%	0%	1%	9% ^L	0%	5%	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



Greatest Potential to Offer an End-to-End Technological Solution

Listed below are some key players in the technology or financial services industry. Who do you think has the greatest potential to offer an end-to-end technological solution to help transform mortgage origination and servicing transactions for borrowers and lenders to create a digital experience more like current online leaders such as Amazon and Uber?

	Total	Larger Institutions (L)	Mid-sized Institutions (M)	Smaller Institutions (S)	Mortgage Banks (M)	Depository Institutions (D)	Credit Unions (C)
N=	184	87	52	46	67	70	38
Current LOS (loan origination system) providers such as Ellie Mae, Fiserv, and Black Knight	38%	44% ^S	49% ^S	22%	32%	49% ^M	42%
GSEs (Fannie Mae or Freddie Mae)	23%	22%	24%	22%	33% ^{D,C}	16%	14%
Current next-gen mortgage technology companies	12%	11%	13%	13%	13%	9%	19%
Online Business-to-Consumers (B2C) lenders such as Quicken Loans, loanDepot, and Ditech	10%	5%	4%	22% ^{L,M}	7%	9%	13%
Technology companies such as Apple, Google, and Microsoft	5%	6%	6%	2%	7%	1%	5%
Traditional financial services companies such as banks	5%	1%	0%	13% ^{L,M}	1%	6%	5%
Peer-to-Peer (P2P) online lenders such as SoFi, Lending Club, and Prosper	2%	3%	2%	0%	3%	1%	0%
Online lending aggregators, such as LendingTree.com and Bankrate.com	1%	0%	0%	2%	0%	1%	0%
Online real estate services such as Zillow and Realtor.com	0%	1%	0%	0%	0%	1%	1%
Other	4%	5%	2%	4%	4%	7%	0%

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Question Text

qR162. Which of the following statements best describes your firm's current status on next-gen TSPs for your mortgage business?

qR163a/b/c. We would like to know what functional areas your firm currently uses next-gen TSPs for, if any. Listed below are several key functional areas based on the mortgage lending cycle. What are the three most important functional areas where your firm uses next-gen TSPs to fulfill your needs?

qR163d/e/f. We would like to know in which functional areas your firm would be interested in using next-gen mortgage TSPs, if any. Listed below are several key functional areas based on the mortgage lending cycle. What are the three most important functional areas where you would be interested in using next-gen TSPs to fulfill your needs?

qR164. In the space provided below, can you share with us some company names as examples that are providing great tools or services that you would recommend?

qR165a/b/c. Now, think about your firm's needs over the next two years. What would be the three most important functional areas where you envision your firm would use next-gen TSPs to fulfill your needs in two years?

qR166a/b/c. In which functional areas do you think solutions currently offered by next-gen TSPs do not fully meet your needs or could be further improved? Ranked top 5 things that could be improved

qR167. For the areas that you just identified that are in need of further innovation, could you explain how these areas could be improved through technological innovation?

qR168a/b. When selecting a next-gen TSP to fulfill your firm's needs, what are your major criteria?

qR169a/b. Earlier you mentioned that your firm has not looked into next-gen TSPs. Listed below are some possible reasons.

qR170. Overall, how satisfied are you with the next-gen TSPs your firm currently uses?

qR171. Why are you not satisfied? Please share your thoughts.

qR172. The current marketplace of next-gen TSPs appears to be fragmented with some only offering a technical solution that focuses on a specific aspect of mortgage lending. If a company could integrate these different solutions and offer an end-to-end system, how valuable will it be to your business?

qR173. Listed below are some key players in the technology or financial services industry. Who do you think has the greatest potential to offer an end-to-end technological solution to help transform mortgage origination and servicing transactions for borrowers and lenders to create a digital experience more like current online leaders such as Amazon and Uber?

qR174. Why do you think that [INSERT QR173] have the greatest potential? Please share your thoughts.