



A Definitive ROI Guide to Evaluating Risk & QC Tech Stacks



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Introduction

The purpose of this document is to provide Certified Mortgage Bankers with a framework to define, measure, analyze, improve, and control the return-on-investment (ROI) for the purchase and ownership of technology solutions for *Risk & Quality (QC)* within the mortgage origination and servicing processes. While larger lending and servicing organizations typically have enough resources to share this task, the focus of this document to help guide small to mid-size businesses tackle this challenge with an understanding of how to effectively evaluate their own ROI. If your company fits this range, you need not take on this challenge alone.

Measuring ROI is not difficult, but it does require understanding, commitment, and patience. The following will deliver confidence in yourself of a great decision that you can prove. Or, at least knowing existing technology stacks you currently have are not performing to your expected ROI and why. Knowing the “why” is the biggest misunderstanding with Risk & QC technology ROI underperformance. It is extremely important to know the “why” before attempting to replace technology. For example, if the root cause of the “why” is not the technology itself, but something else, then you may be spending time and money unnecessarily. Replacing technology and getting similar results will be painful. The following pages will guide you to know all the “why’s” before, during, and after any Risk & QC technology implementation.

The biggest expense for any lending institution is the personnel it carries to produce a loan. The 3rd Quarter 2022 average production expense per loan is over \$11,000- the highest it has ever been in the history of the mortgage industry. According to a 3Q22 MBA Performance Report ([Marina Walsh, 2022](#)), 66% of that figure is personnel. Of the 326 basis points earned to produce a loan, 230 basis points is personnel and nearly half (113) of that is Sales Personnel. A review of least performing sales and operations personnel offers the greatest ROI to improve your Net Production Income ([James M. Deitch, 2022](#)). Conversely, technology represents only about 12 basis points. If you have reviewed your personnel costs and made the necessary changes to gain the highest level of production per employee, then it makes sense to begin looking at other factors like your tech stack. The following will focus on tech stacks related to risk assessment of the loan and its manufacturing and servicing processes.

Understanding Tech Stacks in Mortgage Banking

Certainly, your experience as a CMB in the mortgage industry has given you plenty of time to know that there are many technologies utilized in mortgage operations to complete the manufacturing and servicing of a mortgage loan. While this paper will focus primarily on the Risk & QC areas, the guidance here can be generally applied to other tech stacks as well. Point-Of-Sale, Pricing Engines, CRM’s, LOS, Data Analytics, Document Management, Compliance, Fraud Prevention, Secondary Marketing, Servicing and many others all have similar goals. They were designed to give you an edge over your competition to

close a loan faster (efficiency) and for less cost, get the best pricing on sale of the loan or MSR, or to service that loan with the least amount of personnel cost (automation). These are all the benefits of technology and their respective investments. Other benefits may include stronger compliance, reduced risk, or even simply improving the customer and/or employee experience. And they all must work together as seamlessly as possible.

As you are likely already aware, most software will drive speed, efficiency, and lower cost. However, there can be many other facets of software that can be quite impactful to your ROI. Looking at the difference between using spreadsheets for managing checklists in quality control and using software for that same process presents immediate savings when you know where to look. Yet, the difference between two similar software's can be more difficult to discern. Risk & QC software tends to have underlying structure that may go unnoticed to the casual observer. Therefore, we will focus on the key areas of Risk & QC to drive greater understanding in this area.

Factors Affecting ROI

Technical

It is recommended to perform an analysis of the current technology by conducting a survey of end users and itemizing the issues reported. Once responses are obtained and the itemization of responses has been completed, the list should be scrubbed and categorized into the following buckets.



1. Operational Errors – Analysis may reveal some of the end user's complaints are simply operational errors on their end. This is easily remedied via simple training by the lender or whatever fashion they choose. For instance, when end users are not applying the current system features properly, they wind up creating their own workaround. This makes for extra, unnecessary work and precious time wasted. Furthermore, using the system in ways which it was not designed to function could create problems in other areas the user is unaware of. If this is the case and goes on for long enough, a disaster is looming unbeknownst to everyone. It is more than likely the case their current system can handle what needs to be done, but the users simply do not know the system well enough to leverage it to its full potential. Hence, more training is required. As the old saying goes, an ounce of prevention is worth a pound of cure.

2. Under-utilization – Another issue may be lack of using the system’s available features, therefore causing frustration to the end user. A simple solution to this problem is to ask the current vendor to complete a discovery session together. The discovery session will manifest what features need to be adopted, and a project plan can be put into place to roll out enhancements to the team. This provides a morale boost by empowering the end user with the tools needed to do their job efficiently and this exercise shows the team that management is listening, and that is of vast importance.

3. System Functionality – All systems have their advantages and disadvantages, and no one technology has it exactly right. There may actually be functions the end user needs that the system cannot perform. This is a system functionality issue. In the discovery session with the vendor, determine which items are system functionality deficiencies. Understanding these deficiencies and reporting them alerts the vendor to your concern and gives them the opportunity to address it in an upcoming release or to add it to their roadmap. Vendors want to know the needs of their lenders, and lenders providing that information constructively is extremely important.

4. Vendor Deficiency – As not all systems are perfect, that can also be true for the vendor. Vendors can be deficient in many manners: financially, experience, motivation to innovate, lack of willingness to support or partner with the lender, etc. Most items captured in the complaints list from step 1 will fall into the first three buckets, but when working with the vendor to determine how they can be of help, management should pay close attention to the vendor’s actions. If there are red flags in the exercise that land in bucket four, then shopping for a new vendor and technology partner is a path to explore.

In most cases, the issues can be resolved, and projects can be developed to adopt and implement the features. Most vendors want to keep their lender clients and will work with the lenders to use the system to its maximum capabilities. Lenders that complete the exploration of this analyzation prior to shopping often find they do have what they need. They also discover they can save a significant amount of money. This would allow for additional allocation of funds for other technologies to complement their current stack and long-term strategy, should they choose.

Organizational

When it comes to utilizing technology, we can often get tunnel vision, focusing solely on rooting out problems in the system. However, there could be contributing factors outside of the system creating impediments to mission success. That is where lender reflection comes in, and by lender reflection I am talking about turning the spotlight inward and taking a hard look at the internal process and workflows. This is essential in evaluating whether purchasing new technology is necessary.

There are two reasons this reflection exercise is important.

1. Lenders often do not accept that major change will be necessary when adopting new technologies. The lender may be aware change is needed, but only partially to what level change management needs to take place. Without proper change management assessment, adoption can suffer which will take a negative toll on the ROI of the technology purchase.
2. Lenders need to consider their nuanced and custom needs of their workflows, and how it relates to their technology systems. These can be prohibitive factors to the ROI in the new technology purchase.

Change management is often overlooked or considered later in the project when it becomes time to talk about training. The truth is, change management actually starts the moment a lender begins the process of shopping for technology. It does not matter if a lender is replacing a technology or buying a new technology, workflows will need to be adjusted. A thorough review of the current-state workflows allows a lender to quickly target what changes will take place when viewing demos from prospective technology vendors. Those items can be prioritized, role impacts can be identified and change management can be put into place, all factors that should be accounted for in the project plan.

In addition to having a good grasp on what needs to change, lenders can determine if the nuances and customizations they have will play a factor in the new technology project. If a lender is not able to change a process in their workflow, and their new technology does not accommodate the need, customizations may need to be developed requiring the vendor to create a statement of work. This cost should be understood up front as much as possible so the lender can make a good choice on vendor selection. Often customizations are not addressed until configuration discussions begin, and at that point it is too late. The lender finds themselves in a position of forced adoption of the vendors out of the box program or accepting the additional charge(s) to configure the system to their custom needs. These

exercises can be a positive factor towards ROI for lenders. If these things are not addressed or only given a cursory review, lenders may find they do not realize their expected ROI after deployment.

Vendors appreciate the transparency from the lenders as this information is incredibly helpful for their implementation team and allows them to understand the lender's expectations for a successful go live deployment. This upfront analysis will pay long term dividends to the lender.

The bottom line is no one likes to be frustrated in their work. It leads to discouragement, dissatisfaction, and in this scenario would eventually create the aforementioned feeling of, "This isn't working. We need to find a new vendor." When we analyze the problem, itemize the problem, present simple, yet effective solutions to end users as described above, and encourage reflection to the internal workflows, the great majority of the time, everybody wins. It could be revealed a new system is the right solution.

When a lender is at the point of technology selection, evaluating risk, selection and ROI are the next step in the journey.

Elements of Calculating ROI



What is ROI? This acronym is Return On Investment. There are two ways to think about ROI on Risk & QC tech stacks - Direct ROI, and Indirect ROI. These elements will represent factors that will contribute to building a broad-spectrum calculation in determining the true value of the technology chosen.

Direct- These elements typically get the most attention as they are more easily assessed and calculated in comparison to the previous methodology used. Costs saved, time saved, better results, etc. Direct ROI doesn't take much effort and is a valuable benchmark, hence the reason it gets the most attention. A familiar example of this is the MPG expected from a new car purchase. You divide the miles driven by the gallons of gas used. You could even determine the price of each gallon to calculate the cost per mile to drive that vehicle.

Indirect- Further analysis between previous methodology and the new processes implemented may prove quite valuable. Even though Indirect ROI is often overlooked or ignored, this is the area that separates the best solutions from others that appear similar. More importantly, Indirect ROI may have potential to completely change your overall ROI when adding it to the Direct ROI. While these indirect ROI's are harder to quantify, they should still be questioned during and throughout the use of any new solution. Similar to MPG discussed above, there are contributing factors in the cost to operate a vehicle. Such as cost of financing, insurance, taxes, maintenance, repairs, and even re-sale value.

Indirect ROI areas to consider include, but are not limited to, adoption, learning curve, administration, compliance, morale, and reputation.

- **Adoption** is critical to the success of any new solution. Change is an enemy unless it is presented in a way that encourages positive adoption. Will you need to change your process to match the capabilities of the software? Will those changes be positive or negative? A vendor providing consultation during the implementation stage should listen for any "frowns" when encouraging adoption that creates a new way to manage a specific task. Uncovering reasons for initial dismay could elucidate valuable reasoning to not change a specific practice and potentially allow for software or configuration modification before advancing to the next stage. Moreover, the purchaser should embrace changing "the old way" if there is potential to advance efficiencies. Open, candid feedback between executive level & user level promotes positive change and prohibits later derailment of the adoption process. Morale is a subset of Adoption and is noted below.

- [Learning Curve](#) relates to how fast the adoption takes place. This time factor can easily increase the cost to deploy any solution. $FTE \text{ hourly rate (R)} \times \text{number of users (U)} \times \text{the hours (H)}$ it takes to fully implement a new user to the solution.
- [Administration](#) of any new solution is the amount of time and effort it takes to conduct the day-to-day operations, maintain current and new users, configure new changes for operational use, etc. This can vary greatly between solutions.
- [Compliance](#) in the mortgage industry typically rears its head in every aspect of loan manufacturing/servicing. Regardless of the type of solution, there are risks associated with non-compliance or weaker compliance controls. I am always reminded of this quote from US Deputy Attorney General Paul McNulty when thinking of the cost of compliance- "If you think that compliance is expensive : try non-compliance." Engage compliance staff or legal counsel every time to be sure compliance is solid.
- [Morale](#) is tied to adoption. It plays an equally important role after adoption if the solution forces users down a path of more resistance. Adoption can be short term if morale for the use of the solution decreases quickly. Address this regularly with any feedback between executives and the user base.
- [Reputational](#) risk can be less common but very destructive if not considered. Great reputations are hard to cultivate and take time but are easy to destroy very quickly. Whether it is employees not in favor of the new solution, or there are unforeseen hurdles with compliance that may have a negative impact on investor relations and loan quality down the road, reputation is worth considering in any final ROI formula.

Metrics

When you begin your project to determine your current tech stack ROI for Risk & QC, there will be certain metrics you will need.



The Direct ROI questions you should ask are: What are my hard costs to sustain this software each month? How many loans was I able to review for that cost on a monthly basis? How many people am I using to produce results and what are my labor costs for them? Essentially you are looking to formulate the Direct cost per loan. This formula will help you to equalize your final analysis between your current tech stack and any previous or new potential replacement. Equally important could be the cost to replace a solution and what those implementation costs and learning curve costs might do to your overall bottom line. For instance, you might ask "Will it cost me more to fix what I have, or replace?"

The Indirect ROI questions you should also ask are: Are the Users committed to using the automated efficiencies available to them in the software and/or has morale softened since initial launch? Does my software have KPI reports that help us to track this? Or, are the Users reverting back to old manual processes or “workarounds”? How much time and effort is spent administering the software? Is compliance oversight burdensome on your software Admin or compliance team(s)? Would any of these areas lead to potential reputational damage should they not be tracked and reviewed on a regular basis? (Think investor relations and examiners).

Being able to answer these questions relies heavily on your software being able to provide you insights into the underlying data points that will be necessary. And, while you could use other methods of evaluating tech stacks such as total cost of ownership (Sue Woodard, Senior Advisor, Stratmor Group, 2023), time-to-value, and total economic impact, we will continue to focus on ROI for the remainder of this paper.

Case Study: Best Practices for Measuring ROI of QC Tech Stack Investments

The owners of ABC Mortgage Company, Brian and Susan, have decided that they wish to evaluate their current cost in QC. They close an average of 1000 loans a month, audit loans in prefund and post close, plus some occasional early payment defaults (EPD) with the use of software and have 1 QC Manager and 2 auditors. Their QC Mgr. stated that they currently audit 10% of loans in prefund (100) and 10% of loans closed (100) and have an average rate of 1% EPD reviews each month (10).

The **total monthly audit volume {TMAV}** is $100+100+10=210$.

Looking at the hard cost of the software they noted that they spend \$3,692 a month. Next, they examined their FTE cost annually, including salary + benefits. Their QC Mgr. costs \$95K a year, and each auditor accounts for \$75K a year. $[(\$75K*2)+\$95K=\$245K]/12=\$20,416.67$ a month. Daily cost per auditor is $\$300.05 = [(\$75K/12) / 20.83 \text{ days per month}]$

Combined, their **total QC department cost {TQC}** is $\$3,692 + \$20,416.67 = \$24,108.67$ a month.

There are an average of 20.83 business days per month $[(50 \text{ weeks} * 5 \text{ business days}) / 12 \text{ months}]$. Subtracted 2 weeks vacation from 52 weeks. The QC Mgr. reported that the prefund auditor completes an average of (6) files a day. The Post Close auditor completes an average of 4 files a day, plus (0.48) EPD files a day (10 per month divided 20.83 days).

The prefund auditor has the capacity to cover 124.98 files a month = $[6 \text{ files a day} * 20.83 \text{ days}]$. 24 more files a month capacity than needed for the 100 prefund file audits. Or, 4 business days $(24/6 \text{ files a day})$.

The post close auditor has capacity to cover 93.32 files a month = $[(4+0.48) \text{ files a day} * 20.83 \text{ days}]$. That leaves a gap of 16.68 files from the 110 $(100+10 \text{ EPD})$ each month that the prefund auditor has capacity to cover $(4 \text{ business days} * 4 \text{ files a day})$. That leaves only a remainder of 0.68 files that will need to be covered by the QC Mgr.

Meanwhile, the QC Mgr. supports the entire process of being system admin to import loan data, sample those loan populations, assign loans to auditors, manages supervisory reviews on all auditors, coordinates defect remediation to the business line, compiles all audit results, and reports those results up the chain.

The Cost Per Review {CPR} is equal to {TQC} divided by {TMAV}.

Brian and Susan have determined that their $\$24,108.67 \text{ {TQC}} / 210 \text{ {TMAV}} = \$114.80 \text{ {CPR}}$. Also of interest is that 210 is 21% of their total monthly closed loans of 1000. If they wished to spread the total QC cost across their entire monthly closings, then $\$114.80 * 0.21 = \24.11 for every loan closed.

Additionally, there may be interest to further breakdown their cost on the prefund audits and post close audits, if a comparison to outsourcing these audits makes any fiscal sense. We will have to divide the salary of the QC Mgr. equally between the two audit types as they are nearly equal in size and will make the calculation fair and simplified $[(\$95K/12)/2 = \$3,958.33]$.

- Prefund per file cost of \$88.00 = salary per month $[(\$75K/12 = \$6250) + \$3,958.33] = \$10,208.33$ divided by monthly file production $(100+16=116)$. Outsource cost for prefund averages anywhere between \$100 to \$130 per file.
- Post Close per file cost of \$109.39 = salary per month $[(\$75K/12 = \$6250) + \$3,958.33] = \$10,208.33$ divided by monthly file production (93.32) . Outsource cost for post close averages anywhere between \$160 to \$195 per file.

If there is any interest to outsource Post Close audits, then 100% of the QC Mgr. salary would need to be applied to the prefund per file cost. Here we see that it does not make sense to outsource their file work as it would cost more. However, it should be noted that there could be extenuating circumstances that may dictate that necessity.

Vendor Selection Strategy

If, by using your own figures for the formulas above, you have found that reviewing new vendors is the correct action to take, then the following guide will be useful to plan your approach. The first thing you need is a clear definition of your desired outcome and risk appetite- via an Expectation Statement. You will want to answer your own questions about 1) whether in-house (build/maintain) vs. outsource (purchase) is your most cost-effective approach, 2) potential staffing costs for each approach, as well as 3) the percentage of the software you will use versus its cost to deploy, use, and maintain. This need only be high level as there are components of this decision that may only present themselves once you interview peers on how they handle, or learn directly from the vendors, whether one path is more appropriate than another.

Technology today is being designed to grant many choices in the way it can be deployed and used. Therefore, it is imperative that you provide vendors with your desired outcome to help them learn how to best configure and deploy the right solution. Be ready to embrace change. “If you’re not moving forward, you’re falling back.”

Vetting- During the sales process, a good salesperson will be asking questions to learn about your desired outcome. The first thing will be to evaluate whether your loan volume supports an in-house solution or if outsourcing is best. Please be patient in this area and answer as much as you can. Only by listening and understanding can a salesperson truly know the best path forward for your unique circumstance. Many purchasers have done some preliminary research to level the playing field to the correct vendors. Don’t squeeze your list too small and miss the potentially correct vendor. 3 is good, 5 is better. Nearly every tech vendor protects their proprietary advantages. Thus, it is always wise to get a Non-Disclosure Agreement in place as soon as possible to protect yourself as well as obtain key data during vetting any new vendors.



You have your Expectation Statement, a list of vendors you selected to review, initial contact made with each for a discovery call and an NDA with each. Now what? Get the right team on the initial call. At a minimum there should be the lead business user/admin that will be responsible for this tech setup and its ongoing use. Additionally, representation from the technical side and the executive level can not only be useful on these initial discovery calls, but it may also be possible to further reduce your vendor review list more quickly if the tech stack being reviewed does not solve for the Expectation Statement or has some inability to communicate data elements easily and securely with your current systems. Keep in mind that direct LOS integrations can be sensitive to a regular cadence of updates and

having options from the vendor to import your own data has tremendous value. This is especially true if the integration fails or works improperly during/after an update process.

Discovery Call- Use this time to interview your vendors and answer their questions. Key elements of a vendor review should include risk reviews in: 1) Security, 2) Compliance, 3) Experience, 4) Support, and 5) Cost. We will break these down below.

1. Security- How is customer data (PII) protected in transit and at rest? What protocols are used to assure security? What are the end-user security protocols/options?
2. Compliance- Are there any federal/state regulations that must be followed during the use of the vendor/software that could impact our ROI? How is compliance and regular updates handled? Are there any logs or reports for change management in this key area? Do they show what changed and why, who made the change and when?
3. Experience- What experience does this vendor have with supporting our type of business model? IMB, Bank, CU/FCU, etc.? Is there experience on your staff with this technology already? How intuitive is the User Interface? Does it require any new User skill sets, or does it draw on existing skill sets? A best practice is to ask vendors of experience with other clients similar to your model and associated use cases. This will help you to score vendors that have recent clients, similar to yourself, and what driving factors prevailed for their ultimate benefit. Eliminate unknowns to build confidence!
4. Support- How is support provided during implementation and after launching? Is there a cost for either? What will be your internal support cost (if any)? Is Training provided on-going to your new team members? Are there User Guides, training decks, and any other support materials within the software? Is there a cost for training post-implementation?
5. Cost- Does my specific use-case warrant a software purchase, or are my needs best-served with any available or additional outsource solutions? What are the terms and conditions of the contract? What are all the ancillary costs that could potentially occur monthly, annual, or event triggered (i.e., you request something not yet available)? Perhaps a good question to your prospective vendors would be to ask if they have any examples to share of new clients that did require a statement-of-work that caused ancillary cost? This could highlight for you if there is anything similar to your potential use case. This should expose any potential weakness where the system did not perform well out-of-the-box, thereby preparing you to know in advance of any potential surprises or conditions.

Next, assemble your team from the Discovery Call to review/compare vendors. Cut your list to 2 or 3 “preferred” vendors and schedule deeper discussions and demo’s. Be sure to include some users to attend the demonstrations. The greatest challenge to any ROI is User Adoption. All best efforts can easily be derailed if end-users were not given a chance to share their input at this early stage. Their experience with the day-to-day operations of a system is extremely valuable. Proving to them that the new system purchase will make their jobs much easier is vital to its expected impact on the overall ROI and adoption of a better way to manage their tasks.

Conclusion



Key Findings from this whitepaper should empower you to understand:

- Benefits of tech stacks in mortgage today.
 - The factors that affect ROI, both in technical and organizational areas.
 - The Direct and Indirect elements of calculating ROI, including the types of data necessary to obtain a strong grasp of it.
 - Formulas you can use immediately to find the cost of your current solutions.
- A strategy to guide you through new vendor selection, if necessary.

Recommendations and Call to Action

- Analyze your current tech stack for: Operational Errors, Under-utilization, System Functionality, and Vendor Deficiency.
- Perform your own reflection for: Proper Change Management assessment, Potential requirements for nuances and customizations.
- Review current Direct and Indirect ROI elements.
 - Obtain your specific elements of: Loans closed per month, Types of audits performed and sampling percentages of each.
 - Formulate your own: TQC- Total QC Dept. Cost per month & TMAV- Total Monthly Audit Volume to get your own CPR- Cost Per Review. This CPR figure will help you normalize a value to be used anywhere you look to compare with other solutions and vendors.
- If planning to review the marketplace for vendors/solutions, you now have a framework to guide you through proper vetting and discovery. And your own CPR will be the basis for a true comparison between options and their respective costs to change.

Design tracking and reporting method for all the Direct and Indirect ROI factors. Continually re-assess each and summarize. Influence weak ones and replicate best performers. Communicate these KPI's up and down the chain of command.

Remember, calculated efforts reap tremendous rewards. A well-oiled machine with regular maintenance costs less to operate and poses much less risk overall. Replacing or starting this process all over again costs far more than the initial effort to perfect the decision-making process.

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Additional Resources

Fannie Mae Quality Insider - <https://singlefamily.fanniemae.com/originating-underwriting/loan-quality/quality-insider-archive>. Quality Insider is an article series designed to help lenders manage loan quality through tips and best practices. Articles include short call-to-action insights that lenders can reference in enhancing their quality control processes.

CMB Society (Landing page- requires login)-

<https://connect.mba.org/communities/openforumhome?CommunityKey=2b36350e-2cbd-43ce-bc16-6570a8fc437b>

- **CMB Tech Committee Library**- <https://connect.mba.org/communities/community-home/librarydocuments?communitykey=2b36350e-2cbd-43ce-bc16-6570a8fc437b&LibraryFolderKey=335f3269-091c-43cb-a1b2-b728624dc9f1&DefaultView=folder>

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