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The mortgage industry is in the midst of disruption that's being caused by changing consumer behaviour and demands. Todays' borrowers are more tech-savvy and more open to a complete digital experience. Customer experience is being redefined by other industries such as personal transportation (Uber), e-commerce (Amazon) and non-bank mortgage providers too are raising the bar. This is forcing banks to rethink the way to interact with customers, improve customer journeys and deliver seamless experiences. Heightened regulatory changes have strengthened, yet, have added complications to an already complex industry. Today, mortgage providers need to leverage technology to re-imagine and transform their business processes to build a consumer relevant mortgage business.

In October 2019, Infosys surveyed 251 senior executives from f inancial institutions across the U.S., the U.K., Germany, France and Australia, with revenue over US\$500 million. The objective was to identify where financial institutions are on their digital journey of transforming the mortgage experience. The research aims to identify the trends in the mortgage market, the challenges and opportunities for mortgage providers and the areas of technology that can help improve the mortgage space. It dives deeper into the mortgage functions that executives are focused on in terms of investment and when these investments are expected to mature. The research also discusses the challenges for mortgage providers along their digital transformation journey.







Within financial services, mortgages continue to be one of the largest and most important sectors, particularly in developed economies. However, since the financial crisis of 2008, mortgage market growth has been slow or non-existent. In the U.S. for example, the value of residential mortgage outstandings has fallen by nearly 20% in real terms since 2007.¹ Profits too, have been under pressure in these economies.²

At the same time, new players have emerged and are grabbing market share from traditional mortgage providers. Non-bank providers accounted for over 60% of mortgage originations in the U.S. in 2018. Fintech startups have increased competition with their focus on innovation and enhanced customer experience. These digital startups are playing to the fact that customers increasingly expect digital services and demand faster and more transparent processes.

The cost of originating mortgages has increased. After the financial crisis, the tighter regulatory regime brought in to protect customers also impacted regulatory costs. Traditional mortgage providers have multiple processes that are manual in nature — that impact customer experience and the cost of operations. On the other hand, fintech startups are concentrated on streamlining processes, lowering costs and passing on some of the benefits to customers.

Some traditional players, such as Capital One in the U.S., have already decided to exit the market in the face of all these challenges.³ However,

most providers are staying put and our survey shows that they are relatively complacent about their own capabilities, since almost all rate themselves as being better than the industry benchmark in their own region, and that most claim to have a high level of digital maturity. Their primary focus is also on cost efficiency rather than revenue growth. Revenue growth drivers such as innovation and improving the customer experience are not getting the attention that might be expected.

The investment plans of mortgage providers also lack focus, with investments being made or planned across the whole value chain. There is a need for modernisation and digitisation in all aspects of the process. Yet, it needs to be seen whether it is practical for companies to invest in so many different activities and build all the digital capabilities that they will need in the future all at one go.

The key digital technologies that mortgage providers expect could help improve their business include robotic process automation, advanced analytics and cybersecurity. Simultaneously, they are also keeping an interest in artificial intelligence and blockchain as more uses for such technologies emerge. Mortgage providers remain open to pursuing external partnerships to build the capability they need in these and other areas.

Digital transformation is essential for all companies to survive in the current environment but on its own may not result in a competitive advantage - providers also need to focus on creating a differentiated customer experience and/or building a new business model. Traditional strategic options for growth could also be pursued such as acquisition, geographic expansion or entering new market segments. However, for many providers these options will not be viable and more radical new business models are developing such as "banking-as-a-platform". These models are not entirely new but have been given a new impetus by digital technologies and may provide the option for providers to focus on either the customer and customer experience or processing and cost efficiency.

In order to decide the best way forward, and taking account of the starting position of the organisation, we would recommend:



Make a realistic assessment of the organisation's capabilities



Carefully analyse the market, particularly the impact of new competition and trends



Choose a strategic direction and where to focus, and decide on the business model



Prioritise investment resources and consider external partnerships across the value chain

It may feel more comfortable for providers to maintain the status quo and make incremental investment to stave off new competitors, but ultimately this could prove to be insufficient and a full range of alternatives should be considered.



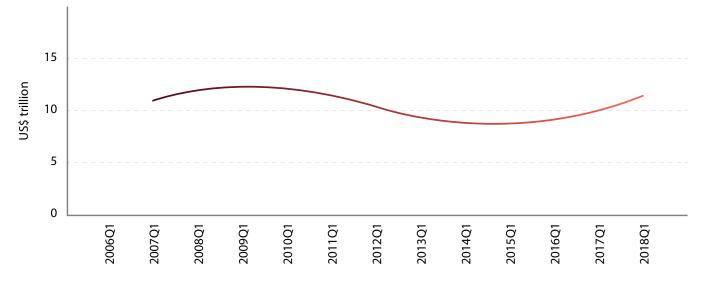
The mortgage market represents one of the largest and most important financial services sectors in developed economies. In North America, total residential mortgage outstandings at the end of 2018 were US\$11.8 trillion^{4,5} and in the European Union (including the U.K.), the figure was €7.3 trillion.⁶

However, apart from occasional rallies due to a reduction in interest rates

leading to increased refinancing, there has been limited market growth in recent years. From US\$11.3 trillion in 2007, just prior to the financial crisis, residential mortgage outstandings in the U.S. fell to US\$10.9 trillion at the end of 2018 (see Figure 1).⁷ In real terms outstandings declined 19%. In the U.K., Europe's largest mortgage market,⁸ outstandings growth was muted during the same period, at 2% in real terms.⁹

The mortgage market in Australia, in contrast, has doubled in size since the end of 2007, though growth has slowed considerably in the past couple of years.¹⁰

Figure 1. Residential mortgage outstandings in the U.S. are yet to regain the peak of 2007*



Source: Board of Governors of the Federal Reserve System *One to four family residences



While market growth is sluggish at best in most regions, profitability challenges and increasing competition are real threats to the established players. At the same time, customer expectations are changing. Millennials are becoming more of a factor in the market, and attractive digital propositions are becoming an essential requirement.

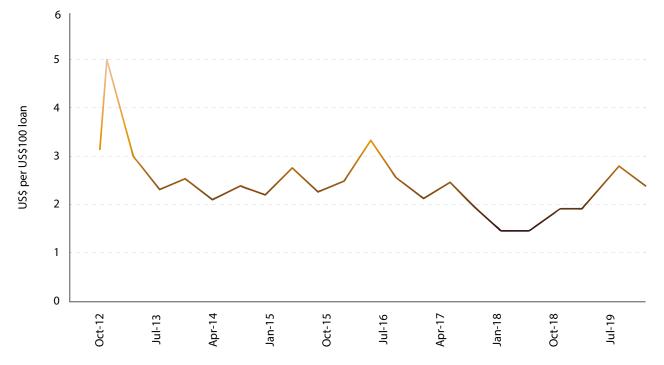


Profitability under pressure

Mortgage originator profitability per loan in the U.S. is volatile (see Figure 2) but remains relatively low, although there was some improvement in 2019 due to falling interest rates and a ref inancing boom.¹¹ The average

profitability in 2018 and 2019 was U\$\$2.0 per U\$\$100 of loans, compared to an average of U\$\$2.7 in the post-crisis period from 2010 to 2017. In the U.K., the 15 biggest lenders were engaged in a price war in 2019, resulting in lower profit margins and some small lenders exiting the market.¹²

Figure 2. Originator profitability in the U.S. has declined



Source: Federal Reserve Bank of New York





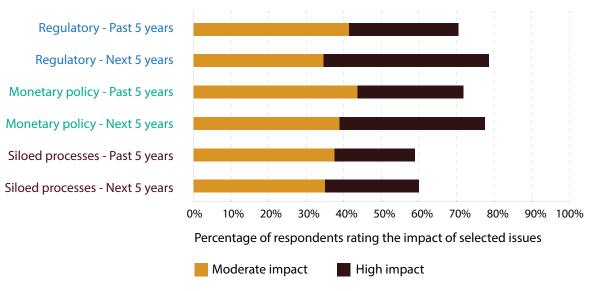
Since the financial crisis, the mortgage industry has been under severe pressure due to the regulatory environment and the low interest rate environment. In Europe, some lenders have even offered negative mortgage rates.¹³

We asked mortgage providers what had been the impact of regulatory policy on origination costs over the past 5 years. 71% of respondents felt the impact had been moderate or high (see Figure 3). A total of 72% of respondents felt that the impact of monetary policy on origination costs had been moderate or high.

Significantly, an even greater

proportion of restpondents believed that the impact of regulatory and monetary policies on origination costs would continue to be high in the next 5 years. Also notable is that an even greater proportion of the C-level respondents in our survey expected the impact of these policies to be high in the next 5 years.

Figure 3. The impact of regulation and monetary policy on origination costs is perceived to be moderate or high



Source: Infosys Mortgage Provider Survey October 2019

Market structure and market dynamics vary across countries but in all cases the established players are under threat from new competitors. For example, in the U.S. there has been a dramatic rise of non-bank mortgage originators in recent years. This group represented just 25% of the market in 2008 according to the Bank for International Settlements but increased their share to over 60% by 2018.14 The share of the top 3 banks (Bank of America, JPMorgan and Wells Fargo) declined from nearly 50% in 2010 to less than 20% in 2019.15 In Australia, non-bank lenders were reported to be growing 7 times faster than major banks in 2019, offering lower rates and faster approval times. 16

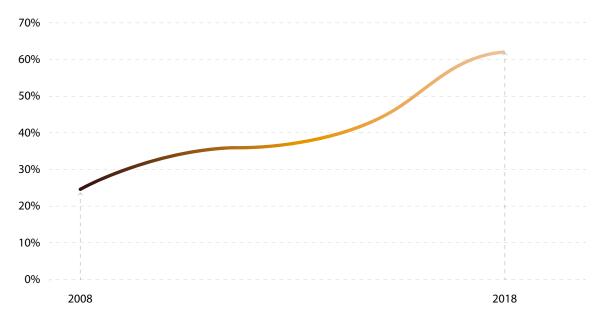
These non-bank originators are not all new fintech companies. Some like Quicken Loans, which was founded in 1985, have been around since before the financial crisis. However, they are typically taking a lead in digital offerings, with Quicken launching its highly successful Rocket Mortgage in 2015, and also being the first to offer electronic closing of mortgages in all 50 states in the U.S.¹⁷

In fact, fintech innovation has been relatively slow to impact the mortgage market compared to other financial services products. According to an Urban Institute report on fintech innovation in the home purchasing and financing market, most online mortgage applications are eventually picked up by a loan officer for manual processing.¹⁸ The Institute notes how different this is from personal loans, auto loans or credit card applications which can be completed in an end-toend digital process. The primary drivers of this difference have been the need for so much additional documentation and the various product options that need to be explained to the potential borrower.

However, new digital players are emerging across the whole mortgage value chain. These digital players are not only creating customer friendly front-ends, but trying to actually shorten the whole sales cycle in order to be able to give the end user a quote quicker and also process the entire mortgage cycle. For example:

- In the U.K., a digital mortgage startup called M:Qube raised UK£5 million in December 2019 promising to revolutionise an antiquated market with "decisions made in minutes rather than the standard 15-20 working days".¹⁹
- In Australia, Athena Home Loans which has built a digital mortgage loan platform allowing customers to receive a loan decision in minutes, raised a A\$70 million funding round in October 2019 bringing its total funding to A\$113 million.²⁰





Source: Bank for International Settlements

• In the U.S., a digital mortgage company called Better Mortgage raised a Series C round of US\$70 million in January 2019. Investors included American Express Ventures and Goldman Sachs. According to American Express "by building a mortgage platform to be fully digital from the ground up, Better Mortgage has reduced the complexity around the home buying process".²¹



Changing customer expectations

Customer expectations for digital and mobile services have increased across the whole of the financial services market. This is particularly the case for younger customers where the take-up of new digital and mobile technologies is proven to be higher than for older generations. Millennials are now a crucial segment of the mortgage market. Realtor.com has reported that the share of primary mortgage originations by millennials had increased from 20% at the beginning of 2014 to 46% by the third quarter of 2019.²²



Leading financial services companies are consequently investing heavily to digitise their end-to-end processes and are focused on increasing the proportion of product sales which are digital. For example, Bank of America recently reported that, following the launch of the bank's new digital mortgage offering in April 2018, digital mortgage originations reached 38% of its total mortgage originations in the third quarter of 2019.²³

"Mobile first, digital everything" said Jamie Dimon, Chairman and CEO of JPMorgan Chase & Co, as he continues to lead initiatives for the firm to become the clear technological leader in the banking industry.²⁴



Millennials demand speed, yet want the branch connect

In the mortgage market, the demand is also for a faster process. In a survey of 3,000 U.S homebuyers, Ellie Mae found that a faster process was the most common response when asked how the experience of taking out a mortgage could be improved.25 However, one interesting aspect of the survey was that, for millennials, face-toface interaction in the process was also seen to be important. This is perhaps due to the complexity of the product and the size of the commitment being made by the customer which raises their anxiety over a purely digital process. Infosys research also found that the branch channel remains important for some customers when applying for a home loan. According to the survey of 1,250 consumers, just over 30% said that their preferred channel of choice for home loans was the branch.26



The Infosys survey of mortgage providers covered a range of different themes but particularly performance, investment, transformation and digital. The results highlight the priorities and challenges faced by existing mortgage providers as they try to navigate through the changing market dynamics set out in the previous section.



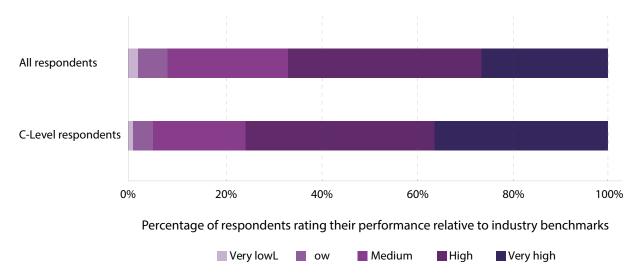
Performance assessment

Before looking more closely at how banks and other providers can respond to the challenges in the mortgage market, it is worth understanding how they view the current situation and how they are prioritising investment. Mortgage providers appear to have an unrealistic assessment of their own performance and capabilities because a large majority rate their own performance as better than the industry benchmark, which is not possible. This may lead them to be more complacent when it comes to dealing with emerging threats from new players across the value chain. 66% of respondents believe that their performance across the mortgage

lifecycle is much better than the industry benchmark. Only 8% felt that their performance was low or very low relative to the industry. It is also notable that C-level respondents scored their performance higher compared to other respondents (see Figure 5). There was relatively little difference between the responses across the value chain – originations, servicing and defaults – but the survey found that smaller providers are less positive about their own relative performance than the

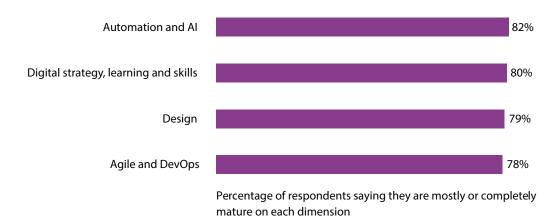
larger providers.

Figure 5. The majority of respondents rated their own performance to be higher than the industry benchmark



Source: Infosys Mortgage Provider Survey October 2019

Figure 6. A large majority of respondents believed their maturity level to be high in selected areas



Source: Infosys Mortgage Provider Survey October 2019

Respondents were asked to judge their own level of maturity across multiple different aspects of technology, transformation and innovation. The research found that the vast majority of respondents rated their own level of maturity to be high (see Figure 6). For example, 79% said that they have the capability to deliver agile programs at scale, and 83% said that they have a well-articulated strategy for automation and are implementing that plan.

The survey shows that mortgage providers are complacent about the state of their own capabilities, making them vulnerable to the new wave of competitors which are gearing up to do business in a fully digital environment.



Respondents rated creating operational efficiencies to reduce processing costs as a priority objective for their business (see Figure 7). Following that the most important were growing revenue organically and inorganically. This implies that operational efficiency is a slightly higher priority overall than revenue growth.

Although they are contributors to growing revenue organically, the survey found that innovation and enhancing the customer experience were rated as only the 6th and 9th most important objectives. However, the research also noticed that C-level

respondents rated enhancing customer experience as their 2nd most important objective highlighting a difference between what the C-level thinks the business should be focusing on and what the majority of managers in the business are actually doing in practice. Further, the survey found that the top priorities for SVP level respondents (one level below the C-suite) were all cost related, indicating that this group is primarily focused on operational efficiency and cost cutting.

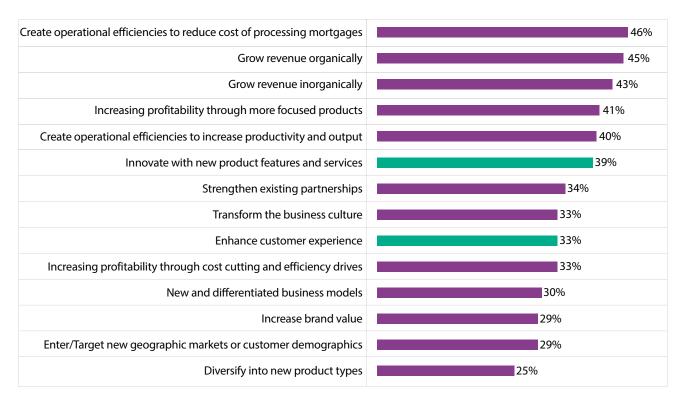


Smaller companies, potentially the fintechs, are focused on increasing profitability through focused products, so they are actually hyper-personalizing offerings. They are going after newer market demographics and enhanced customer experience. Whereas the bigger players are still looking at growth of revenue or acquiring new customers and reducing costs and increasing efficiency.

– Jay Nair SVP, Regional Head -Americas, Financial Services, Infosys

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Figure 7. Innovation and customer experience did not feature highly among the top 5 objectives of respondents



Percentage of respondents rating each objective as one of their top 5

Source: Infosys Mortgage Provider Survey October 2019



Plans: Most respondents say their institutions are investing now, or planning to invest over the next 1 to 3 years, across the whole mortgage value chain including originations, servicing and defaults. Perhaps this suggests that they are not prioritizing investments, or it is just not possible because of the range of investment needed. Table 1 highlights that it is back office tasks related to servicing and defaults that are the 5 most important areas of current investment. This includes activities such as Collections, Reporting and Payments Processing. Slightly less important were the front-end aspects of the process from Proposition Design and Marketing to Funding and Closing, areas which would help to drive revenue growth. However, if

we look more closely at the C-level responses, and where they say they are currently investing, it is Proposition Design and Marketing, and Funding and Closing, which are the highest ranked. So it appears that these areas may be getting a relatively high level of immediate focus from the most senior executives in the industry.

Respondents also indicated that they have invested in or are currently investing in a range of different digital

technologies to ease manual tasks. For example, 75% said they were investing in Digital Verification and 71% said they were investing in Paperless Documentation. Notably, 69% reported that they were investing in Blockchain and in Artificial Intelligence and Machine Learning, suggesting a desire to find uses for these emerging technologies.

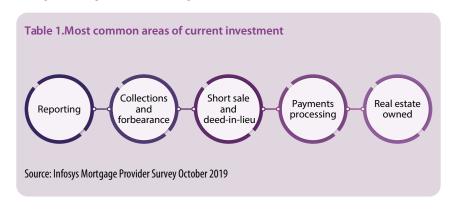


Figure 8. Investment in lead management and originations is most likely to yield a return within 12 months



Source: Infosys Mortgage Provider Survey October 2019

Return horizon: The two areas where most respondents expect the investment return time to be less than 12 months are Lead Management and Originations (see Figure 8). In areas like Escrow Administration, less than 25% of those investing expect a rapid return.

Barriers: The most significant barrier to investment is believed to be security and compliance, followed by regulatory factors and then financial implications. This highlights the critical importance of security, particularly cybersecurity, when making investment decisions and implementing new technologies. Some mortgage providers will be tempted to make do with the systems and processes they currently operate rather than take the risk of transitioning to a new environment.

Table 2. Highest ranked barriers to investment

Based on the number of instances noted as a top 3 barrier



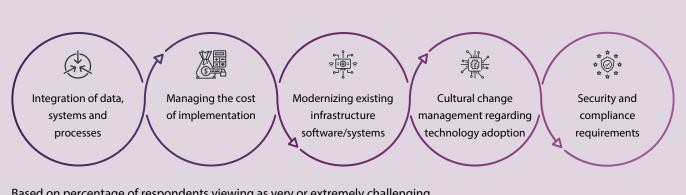
Source: Infosys Mortgage Provider Survey October 2019



Mortgage transformation roadmap

The survey cited security and compliance as one of the top 5 challenges with respect to the mortgage transformation roadmap of the respondents' organizations. Managing the cost of implementation was also seen to be a significant challenge. However, the top challenge was the integration of data, systems and processes. Modernizing existing infrastructure, software and systems was one of the top challenges which raises the question of how easy it is to evolve existing systems and processes compared to starting with a clean sheet of paper when trying to build a fully digital offering. Interestingly, one of the founders of a mortgage fintech startup in the U.K. cited this as a reason for leaving his previous employer after failing to make the digital transformation transition work.27

Table 3. Highest ranked challenges with transformation



Based on percentage of respondents viewing as very or extremely challenging



Importance of digital technologies

The most important technologies across the value chain for mortgages are seen to be Robotic Process Automation, Advanced Analytics and Cybersecurity, but organizations are also exploring AI, ML, and Blockchain. With the emergence and deployment of new digital technologies such as Al and Blockchain, mortgage providers have a lot of new areas in which to build skills and implement systems. The most important technologies identified by the survey respondents for each stage of the mortgage lifecycle are shown in the table below.

Robotic process automation features as a top 3 technology in each of the main stages. Advanced data analytics and cybersecurity are in the top 3 for two of the main stages. These are areas in which mortgage providers need to build capabilities or leverage external partnerships to provide the necessary support.

Table 4. Most important technologies for each stage of the mortgage lifecycle

Rank	Originations	Servicing	Default Management
1	Cybersecurity	Advanced data analytics	Optical character recognition
2	Advanced data analytics	Cybersecurity	Robotic process automation
3	Robotic process automation	Robotic process automation	Anomaly detection

Source: Infosys Mortgage Provider Survey October 2019



Capability development

The survey found that mortgage providers need to develop capabilities across a range of new digital technologies and are equally prepared to invest internally or to leverage external partnerships to achieve this. Building expertise through acquisition is seen to be the least preferred option. In fact, we asked respondents whether they would invest internally, leverage external partnerships or grow through acquisitions across 9 different digital technologies. At 41% each, investing

internally and leveraging external partnerships were the most common strategies that mortgage providers intend to use to enable these technologies in their organizations. The responses for each technology were relatively similar though in the case of Blockchain there was a significant bias toward leveraging external partnerships, which perhaps highlights the challenge of getting the right skills internally for such a complex area of technology development. The reality is that any sort of digital transformation will require a significant

investment and effort. For example, Quicken Loans reported that it required a team of more than 500 to develop and launch its new digital offering in 2015. For most medium and smaller providers this is not an option.

ff More than 500 Detroit-based developers, designers, QA technicians and business analysts from QL Labs have worked for over three years to completely redesign the highly complex mortgage process.

> -Quicken Loans Press Release, November 2015



Faced with a relatively slow growth market and with new digital players aiming to radically shake up the business, what options do incumbents have for profitable growth? Due to consumer expectations and the experience provided by the new competitors, digital services have become the minimum requirement to operate in the market and a deeper digital transformation encompassing end-to-end processes is essential. Strategies for driving operational efficiency and cost control are also important and as we have already noted are a key area of focus for incumbents. Beyond that, broadly speaking, in these situations the traditional strategic options for growth are:



Consolidate by merger or acquisition

Consolidation tends to happen in waves and there has been limited activity since the financial crisis when some failing mortgage providers were acquired by other institutions, for example the acquisition of Countrywide by Bank of America, and Lloyds TSB's acquisition of HBOS. Some markets, such as Canada or Australia, are already quite concentrated, so the potential for consolidation is limited. But the U.S. market remains very fragmented with over 7,500 commercial banks as of the third quarter of 2019,28 and there is a gradual process of consolidation still taking place.



Compete on price

The "price war" going on in the U.K. market instigated by some of the

medium-sized players wanting to gain market share, forced a few relatively small players such as Tesco and the AA Mortgages to leave the market. However, a price war is difficult to sustain and to benefit, a provider will need substantial scale, so it is only a reasonable option for a few market participants.



Enter new market segments

One strategy for growth that was adopted before the financial crisis was for mainstream lenders to enter adjacent market segments such as near-prime or sub-prime. These strategies were largely reversed during the crisis and it is hard to see how they could easily be revived. It is the case that new credit scoring models, using big data and analytics, might enable safer lending to what were previously seen to be higher risk segments, but we do not expect this to be a route followed by most providers as the risks are perceived to be high.



Expand into new geographic markets

Prior to the financial crisis, this strategy was typically employed by banking groups rather than specialist mortgage providers, so there is a broader rationale at work for those companies. There has been mixed success, and like the consolidation strategy, is more viable for larger industry players.



Diversify into new products and services

The current structure of the financial services market in many countries is a product of firms diversifying over a long period of time into new business lines. Banks in the U.K. for example did not always provide mortgages or insurance products but these are now core to their business. Mortgage providers need to constantly assess the opportunities to diversify but be aware that diversification is not easy and usually requires a very long timeframe to make a significant difference.



Innovate within the current business

This should be standard practice for all mortgage providers but there are some advantages of scale which makes it more difficult for the medium and smaller companies in the market to be fully effective. Innovation can be applied to improve all aspects of the product or process from the front-end customer experience to the back-end document management. Finding employees with the right skills, particularly given the range of new technologies being deployed, can be challenging. Various options exist to bolster the innovation effort, such as working in partnership with start-ups or technology suppliers or participating in accelerator and incubator programs.

However, the digital revolution has opened some other strategic options for mortgage providers who also need to consider how new business models might impact them and how they should react.



But how do traditional mortgage players differentiate themselves from others? They can't grow organically in a market that is not growing if they are not going to focus on digital experience. Statistics show that the customer is demanding more digital, yet mortgage lenders are not sufficiently focusing on it. It is slightly controversial perhaps to say that mortgage providers are ignoring the real threat. They are losing their relevance to new-age customers and are not doing enough to woo them. Maybe the emergence of new business models can help.

Discussions and debates about the disaggregation of the value chain have been floating around financial services for over 30 years. Specialist companies emerged for credit card processing and for mortgage processing in the 1980s and 1990s, for example. However, since the financial crisis, there has been somewhat less of a focus on outsourcing of processing, perhaps due to the more immediate focus on risk and compliance issues.

Nevertheless, the new era of fintech is putting pressure on banks to reconsider their business models again. Start-ups, like Starling Bank in the U.K., are building their banks as platforms, offering multiple services from third parties connected to the core banking service by open APIs. Companies such as Solaris Bank in Germany are offering white label "banking-as-a-service" to other companies that want to provide banking and payments services to their own customers, but do not want to

own or operate the infrastructure. "There is a clear need for banks to establish a services platform to make a meaningful impact in the lives of their customers. While the traditional pipeline banking model focused on delivering a bank's own products through its own channels, the new-age platform bank will deliver value to its customers by aggregating products and services offered by multiple vendors on its platform." — Banking As A Platform: A New Age Transformation, Infosys Knowledge Institute, May 2019

The mortgage market should not be immune to these considerations and mortgage providers need to decide which parts of the value chain they want to focus on and invest accordingly — is it the front-end and customer experience or is it the processing activities?

There is already some evidence that disaggregation of the value chain is gaining momentum. In the U.S., a mortgage technology company called Blend has received over US\$310 million of venture capital and is now providing front-end digital services to more than 150 lenders, processing US\$234 billion of mortgages in 2018. In the Netherlands, ABN Amro recently sold 75% of its mortgage processing company Stater to Infosys and commented that "while mortgages are a key product for ABN AMRO, providing administrative mortgage services is not a core activity."29



Blend describes itself as a mobile-first consumer lending platform powered by data and intelligence. The core product is a digital layer on top of the existing systems of mortgage providers, which helps them to reduce the time and cost of loan origination while enhancing the customer experience. Blend merges data from trusted sources to streamline pre-approval, reduce the need to scan paper documents, and simplify the home lending process. Blend's technology uses artificial intelligence and data-driven workflows to identify and resolve issues that often cause delays.30



Case Example: Stater

Stater manages mortgage processes for more than 40 mortgage lenders in the Netherlands and Belgium. The company collaborates with banks, insurance companies, investors and agents to jointly determine the best possible services. Stater provides all services involved in the mortgage process ranging from setting up an overflow facility for mid-office activities to handling entire mid-office and backoffice operations. Stater also provide a range of supplementary services, including for example management information, risk models for fraud prevention, and insight into the portfolio using analytics.31



Given the growth challenges in the mortgage markets of developed economies, and the changing nature of competition taking place, mortgage providers need to carry out a fundamental re-assessment of their strategy and investment priorities, ideally following the steps listed below. Ultimately, any decision on strategy will also depend on the starting point of the organisation itself - the right approach will not necessarily be the same for small, medium and large organisations, or for diversified banks compared to focused mortgage companies.

Step 1: Realistic assessment of capabilities

The first step is for mortgage providers to conduct a full and realistic assessment of their own capabilities, benchmarking themselves against the best players in the market and new players, and also on certain dimensions against leading companies from other industries.

Step 2: Analysis of new competition and trends

Companies then need to understand how competition is working in their market and the current and emerging trends which are going to shape the market, such as the disaggregation of the value chain and the development of more focused platform plays.

Step 3: Strategic decision on where to focus

With a realistic assessment of capabilities and a thorough analysis of the market, mortgage providers will then be able to make a strategic decision on where they want to focus over the short, medium and long terms.

Implementation of a strategy may take time but creating a flexible roadmap is key.

Step 4: Prioritisation of investment resources

The strategic roadmap will provide the basis for deciding how to prioritise limited investment resources, and where capabilities need to be enhanced – perhaps by hiring or maybe by partnerships. Central to this stage will also be the assessment of the potential for greater outsourcing.



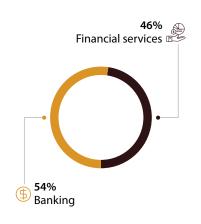


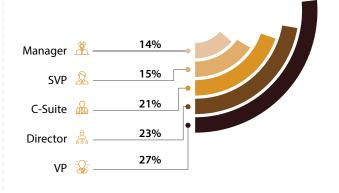


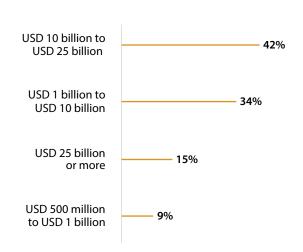


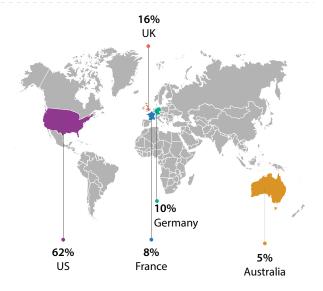
In October 2019, Infosys surveyed 251 senior executives from financial institutions across the U.S., the U.K., Germany, France and Australia. The survey attempted to capture the responses from large financial institutions with over US\$500 million in annual revenue. Respondents were executives that lead or were involved in any part of the mortgage function. The targeted institutions excluded digital natives.













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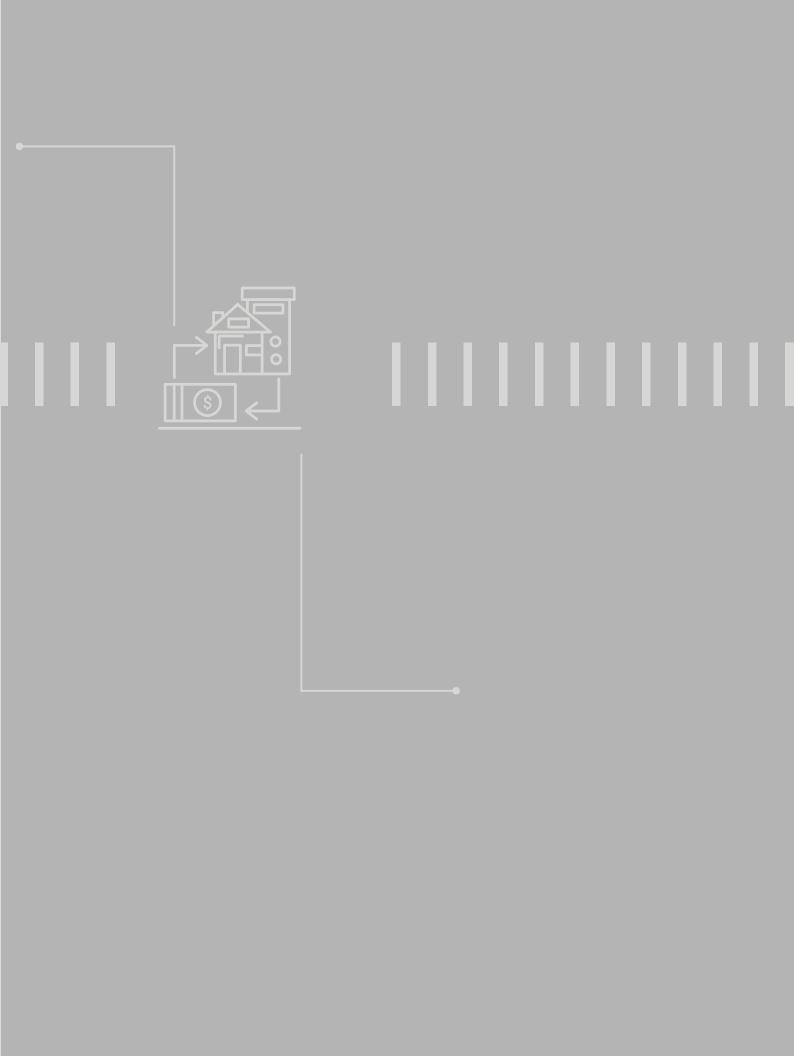
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