

# TECHNOLOGY: BUILD, BUY OR RENT? EXTERNAL FACTORS......4 Technology......4 Disruptors.....5 Regulation.....5 The Market ......5 Momentum ......6 INTERNAL FACTORS ......7 Legacy......7 Focus......7 Bias......7 BUILD.....8 Intellectual Property.....8 Talent......8 Incentives.....9 Leverage ......9 Evolution.....9 BUY......11 Leverage ......11 Ownership......11 Replacement......12 Security......14 Integration......14

#### INTRODUCTION

Financial services are evolving rapidly, with much of the change being driven by technology. The speed and volume of the changes that are sweeping through the industry are remarkable and, in some cases, it is causing a long-term, systemic and dramatic shift in the way financial services firms do business.

New market entrants, process improvement, disruptive technologies, increased consumer expectations, shrinking margins, increased regulation and shifting demographics are all contributing to a chaotic operating environment for many firms.

This is a major change from the historic banking model – branches with core banking and wealth management products, supported by mainframe banking and custody systems. Transactions were paper, files were in banker's boxes, customers walked into a branch and transactions were analog.

Today more than 85% of transactions are digital and that number is expected to be closer to 95% by the end of the decade. Virtual banking, online trading and smartphone applications are the new ways clients manage wealth and do their banking. With that pressure for innovation, financial institutions now compete with digital giants for client wallets.

The challenges for the incumbent firms are legacy systems, limited resources, regulatory constraints and how to compete against agile and sophisticated competitors who are attacking their traditional client segments.

This white paper discusses how financial services firms – banks and wealth managers – can build a strategic technology plan to compete in this digital market, and specifically whether to build, buy or rent technologies.

The decision to build new technology, buy existing technology from a third party, or rent the technology from a partner firm is analyzed in the context of what delivers the maximum return on investment (ROI) and provides a sustainable competitive advantage for the least amount of business risk.



There are numerous external factors that can make technology planning and decision making a challenge for any organization. The interactions between the various factors are complex but they come down to five major themes – technology, disruptors, regulation, the market and momentum.

# Technology

According to a report from EY, the four major future trends in technology and wealth management will be cloud computing, analytics, social media and mobile.<sup>2</sup> These technologies are having, and will continue to have, a profound impact on the way consumers bank, borrow and invest, and in most cases we have yet to see the full impact of what they can deliver.

**Cloud computing** will drive down costs for operations and products, decrease time to market for new functionality and applications, and challenge regulators and privacy advocates in how data is secured and used.

**Analytics** is already reshaping how businesses view their clients and their behavior, and new predictive analytics and meta data will only add to this understanding. The technology and methodology have already had a profound impact on the market and how businesses manage inventory, marketing, logistics and growth, with firms like Walmart<sup>3</sup> and Google<sup>4</sup> leading the market. The impact on financial services still lags the retail market, but with the volume and granularity of data available, the opportunities are immense.

**Social media** will drive how consumers interact with financial services firms. Beyond simply like/dislike, social media builds brand and market presence, facilitates client communication and interaction, and has the opportunity for new business models such as peer to peer lending and micropayments.

It is arguable that no single technology has impacted the way financial institutions do business faster or more profoundly than mobile. It has changed the way consumers interact with their financial institutions, how they access their information, how much they expect to pay for the service. Smartphones – more than 7.2 billion global subscriptions<sup>5</sup> – and the rapid market penetration of tablets (unknown until the 2010 launch of the iPad) have driven much of the changes in technology over the past 5 years.

As new market entrants deliver a digital experience that is consistent with market leaders such as Google and Amazon, the demands from consumers on their financial institutions will continue to raise expectations on what a digital experience really means. The challenge for incumbent financial institutions is to find how to build a competitive digital experience when the foundations they must work with are old legacy systems, and secondly, how to compete with nimble market entrants to deliver new functionality and capabilities.

# Disruptors

Financial services have traditionally had significant barriers to entry. Up until ten years ago, a new bank or broker not only needed capital and regulatory approval, but significant investment in branches and infrastructure, back office systems, operations and front office staff, products and services, advertising and branding, as well as dedicated legal, compliance and regulatory teams. All this needed to be in place before the doors could open and the first client walked in the door.

Some of these barriers remain – regulatory, compliance and capital requirements – but almost everything else has gone. The ability to market, build a brand, develop and deploy products online, and outsource back office and administration has enabled smaller firms to efficiently enter the market over the past 5 years.

The move to a digital delivery of all facets of the new business has eliminated the requirement for physical locations, and as a result has allowed the new entrants to compete aggressively on price while offering an enhanced digital experience in comparison with established traditional financial organizations.

The market is more crowded than ever before as new entrants move into niche markets or create entirely new markets. Incumbent banks and wealth management firms are moving to defend existing franchises and at the same time compete head-on with these new, highly flexible competitors.

# Regulation

Regulation is a fact of life for financial institutions. The increased level of oversight over the past 15 years is a direct result of the market volatility, the banking crisis of 2007-2008 and the increased focus on disclosure and conflicts of interest for all financial services providers.

Post 2008, the regulatory environment for all financial services firms has become significantly more challenging as regulators move to reassure a more demanding public that money is safe and they are being treated fairly. Changes in disclosure requirements, transparency, fees, conflicts of interest and compensation have increased the demands, and the cost of doing business, on the entire industry.

The increased regulatory burden has been most significant for organizations with older infrastructure and legacy systems. If not part of an overall strategic technology plan, simply updating the older technology to support a new regulatory requirement can be a material capital investment, with no ROI. It is simply the cost of doing business in the current market.

#### The Market

The market has delivered some significant headwinds in terms of assigning capital for technology development and implementation for some sectors of the financial services market. Low interest rates, market volatility and increased regulatory costs have created a difficult environment in which to conduct long-term strategic technology planning.

Low interest rates are also putting increased pressure on firms to develop new business lines and products that are less dependent on interest income. Wealth management and trust services, financial planning and tax services all help diversify revenue but require specialized expertise, and in most cases, new, or upgraded, technology to deliver efficiently.

#### Momentum

Just about every segment of the industry, from payments to loans, capital markets to wealth management, is seeing significant technology-driven change. The question is why is this change happening now, and why does it appear to be different to changes in the past. There is definitely a sense that the market is changing more rapidly and significantly than it ever has in the past.

This sense of technology speeding up is actually a fact. Studies from the New York Times, Harvard Business Review and the Massachusetts Institute of Technology have all demonstrated that adoption rates are significantly faster now than in the past few decades. For example, it took more than 30 years for electricity to reach 10% adoption in US households and 25 years for telephones to hit 10%. Tablets hit 10% in 5 years.<sup>6</sup>

It took the telephone 64 years to reach 40% penetration; smartphones hit 40% in 10 years.

It is not only the speed at which the technology is changing, it is also the number of technology platforms – devices, hardware, operating systems, formats and protocols – that are changing at the same time.

The breadth and the pace of change can be defined in one word – **momentum.** 





Internal factors that impact technology planning are obviously very specific to each firm. There are, however, some common threads that apply to most incumbent financial institutions and these are almost uniformly a result of legacy technology, processes, operations and infrastructure.

# Legacy

Banks and wealth management firms are constantly struggling with the ongoing constraints, costs and operational drag of legacy technologies.

Examples of legacy technologies are outdated core banking applications, custody systems or payments platforms that were inherited through an acquisition, or platforms that were not prioritized for replacement in the past.

The fact that these systems are old, complex and tightly integrated means that challenges of "untangling" the processes and systems they support are significant. Simply unplugging and then replacing a core banking, custody or brokerage system can have huge downstream impacts to multiple supported applications, disrupt current business growth, and require significant resource and time commitments over several years.

#### Focus

Traditionally, most financial institutions have developed process improvement technology – like processing account opening forms or loan approvals – faster or more efficiently and with fewer people. In large organizations, the ability to achieve incremental process improvements creates significant impact on the bottom line.

Process improvement has been the focus for most firms over the past decade or more, supported by an army of consultants, and the efficiencies gained have been dramatic.

As a result, financial services firms have significant experience in process technologies and most firms consider process improvement as a core competency.

Traditionally, process improvement technology has been focused on mid and back office processing applications – account processing, transaction processing, document management, data storage and administration – with only a small impact on the end clients or their digital experience. One area that still relies on paper-based processes is account opening, as many jurisdictions still require physical paper applications and supporting documentation at the point of sale for anti-money laundering compliance verification.

#### Bias

The process improvement focus discussed previously can create a significant bias within an organization. If compensation and recognition are designed to reward process improvement, then the bias towards those skills will be reinforced. IT professionals, managers and executives who excel at implementing, developing and managing process improvement technologies are valued by the organization.

The challenge is that process improvement technology and client centric digital technology require very different skill sets, expertise and outlook in order to deliver long-term competitive advantages.

With rapidly evolving technology, more competition, tighter regulation and a tough market, combined with internal constraints, what are the options for wealth management firms and banks to develop a competitive, efficient and affordable technology development and implementation strategy that will deliver long-term and sustainable ROI?

Three options for acquiring technology remain – should you **build, buy or rent?** 



Building was the traditional way large organizations developed technology. Mainframe and centralized technology with slow, predictable and incremental change, combined with healthy margins, was an easy solution.

Barriers to entry for new market entrants into financial services were high, dependent on paper processing, bricks and mortar locations, and high capital requirements. In short, the market was large, profitable, stable and predictable.

# The internet, mobile and tablet technology changed all that.

The options for financial services firms when selecting a technology solution are now more complex, but essentially come down to build, buy or rent the technology. In this section we will discuss the pros and cons of the build option.

# Intellectual Property

There are a few advantages of building the technology; first and foremost is that the organization owns the potentially valuable intellectual property (IP) that they develop. The internal solution will be designed and developed to meet the specific operational and structural requirements of the firm, and the organization has complete control of the development and evolution of the technology.

A recent example is Merrill One, deployed in early 2014 at Merrill Lynch. The organization invested more than \$100 million in the platform, which impacts both advisors and clients, merges legacy systems (some dating from the late 1980's) and

integrates multiple product lines. The system was designed and developed to replace a system that was implemented in 2012.

Merrill Lynch has the scale (more than 8,000 advisors) to justify the expenditure and allocation of resources, and the technology replaces multiple legacy systems, which should improve efficiency and save costs over the long term.

Internal builds tend to focus on core functionality applied to mid and back office processes (processing and custody) and meet very specific requirements. The projects are capital intensive and usually long-term strategic builds and only make sense where there is no obvious solution available in the market that meets the firm's requirements.

#### Talent

The skill set required to build new innovative technology is very different to the skills required to deliver process improvement. Financial services firms are in the business of banking, wealth management, payments and loans, and as a result, generally value skills associated with these businesses. In order to develop innovative technology solutions, they will need to attract and retain the talent required to build that technology.

Top talent is scarce and if financial services firms are going to compete in developing their own technology, they will be competing for that talent with Apple, Google, Oracle, etc.



#### **Incentives**

The financial and market incentives to build innovative technology are significant. Market capitalization, share price, compensation, bonuses, share and options are all significant incentives for technology firms, their owners and employees to innovate, create and market new technology solutions. Firms are rewarded for innovation by investors, venture capitalists and the market to constantly reinvent, develop and create new business models and segments.

Develop a new technology (GoPro), segment (Betterment), device (iPad) or business model (Amazon) and the rewards can be worth billions. Disrupt a traditional market (Uber) or create a new market (Facebook) and the rewards are just as significant.

The incentives for a financial institution are based on asset and revenue growth, cost control and ultimately business value or share price.

There is no incentive, for both the organization and the individual, for creating technology innovation that can compete with the market and global technology leaders.

#### Leverage

Assume a bank develops a truly innovative technology solution. It provides a competitive advantage in client acquisition, grows revenues, increases efficiency, reduces costs and is easy to implement and use. The bank spends \$50 million to develop the technology over 5 years and there is nothing like it on the market and every other bank in their market wants the technology.

The bank has 2 options:

- 1. License the solution to their competition and recoup their development costs.
- 2. Keep the technology and gain market share.

Most financial services firms decide on option #2 – they have a vested interest and incentives to value long-term market share over technology licensing revenues

When technology firms develop the innovation, they select option #1 every time. They monetize the development, sell to as many firms as possible, and continue to develop the platform. Over time, the technology will evolve to deliver ever more capabilities and functionality.

Technology companies have incentives to build and distribute technology. Financial services have incentives to use technology to control costs and build market share.

#### Evolution

Assuming the bank or wealth manager can build competitive and innovative technology, it will also need to continuously evolve the technology to maintain pace with the momentum we have seen over the past decade in technology. The organization will need to ensure that the delivery of the technology is on time and on budget while contracts with vendors provide protection, managing internal resources to schedule and budget can be much more challenging.

Once the technology has been deployed, the organization will need a long-term development roadmap to support the systems that will need to be funded and managed into the future. Finally, the organization will need to retain existing technology talent and attract new talent to support the technology as the market demands change.

Without a long-term strategic commitment to the technology and the support that it requires to keep pace with the market, internally built technology constantly fights obsolescence and becoming another unmanageable legacy system that needs to be replaced.

Technology companies view the products they develop and deploy as revenue-generating economic assets that need to be managed, upgraded, funded and developed in order to continue to generate revenue for the organization.

Banks and wealth managers view internally-developed technology as a cost centre, draining revenues and resources, rather than a strategic economic asset.

#### Cost

The internal costs of developing technology to compete against standardized and market-tested software is considerable. As the available market solutions cycle development faster and deliver ever more sophisticated and integrated functionality, the costs incurred by organizations to develop in-house solutions is simply too high.

As an example, what if an organization wanted to build an in-house Microsoft Office equivalent to handle spreadsheets, presentations, word processing, email, notes and desktop publishing? Scott Welch, who was one of the founders of SoftArc Inc. in 1999, has done a high level estimate of what would be required to build Microsoft Office and the associated costs as described below.<sup>10</sup>

The following applications would need to be developed:

- Word Excel
- PowerPoint · Outlook
- OneNote
  Publisher

This would require a development team for each application, a project management team, and a quality assurance and testing team. Based on numbers for comparable technology builds, a business would need a team of approximately 600 full time employees to build the product.\* Assuming an average cost per employee at \$200,000 per year (including benefits and associated costs), the cost per year for the project would be at least \$120 million.

The challenge is that the \$120 million would not deliver a production-ready application. The project would need a couple of years of development to deliver a prototype, and a couple more years to be production ready. So 4 years of development and testing would cost a total of \$480 million.

The organization would then need to commit resources to maintain and develop the platform and support and train the end users. The ongoing maintenance and development budget would be at least \$5 million a year. Assuming the organization has 50,000 employees, the development costs would be roughly \$9,600 per employee. All this effort and expense to get a product that would be 4 years behind the market leader.

Microsoft currently offers an enterprise version of Microsoft Office which includes Excel, Word, PowerPoint, Outlook, Publisher and OneNote. It also has Skype, OneDrive (Cloud), email with a 50 GB mailbox, 1 TB of file storage and sharing, and high-definition video conferencing capabilities. It can be installed on a PC or a Mac, and select Office apps can be installed on tablets and smartphones. All this for approximately \$2011 per user per month. Based on the Microsoft pricing, this would give a payback period for the initial investment of almost 40 years.

Rather than expending resources to develop a technology that already exists, it makes economic sense for banks to allocate their resources to activities that leverage existing technology: implementation, training, analytics, business intelligence, client engagement and digital experience.

<sup>\*</sup> Each platform team – Word, Excel, PowerPoint, etc. – would require 50 full time equivalent/employees. The core team would require 50 FTE and project management and QA would need 125 FTE.



Buying technology has been the most common strategy for almost all financial firms over the past couple of decades. As the technology has become more sophisticated and the functionality more specialized, most firms have realized that they could acquire capabilities more efficiently than building.

The initial technology purchase decisions were generally related to hardware – personal computers, servers and networking infrastructure – and generic productivity software such as Microsoft Office. These were solutions to the relatively straight-forward issue of migrating from a centralized mainframe infrastructure to a decentralized PC-based environment.

The decentralization caused a series of new issues; chief amongst them was version control and security. Installing a desktop application on several thousand individual computers and maintaining information on version, patches, integration and compatibility required significant resources and infrastructure. The decentralized model also created an ideal environment for the introduction of malware, viruses and other digital security threats.

Buying can still make sense for certain types of technology, and can have significant advantages in terms of capital costs versus operational costs, but there are strategic constraints on the option over the long term.

# Leverage

Buying technology allows organizations to leverage capabilities developed by the market. When it comes to hardware, no financial services firm is going to attempt building monitors, computers, servers, or networking equipment and the options to either purchase or lease the equipment are extensive. The decisions are usually driven by the size of the organization, with smaller firms potentially buying equipment and depreciating the assets over time. Larger organizations will typically outsource the technology asset management to a third party or manage it internally through leasing the equipment.

Buying software also allows firms to leverage the technology industry and acquire market-leading products and functionality. Overall, buying technology will provide organizations with access to the latest applications, systems and hardware.

# Ownership

Buying technology shifts the demands for maintenance, upgrading, hosting and training from the vendor to the purchaser of the technology. The fundamental issue with any technology purchase – from buying a laptop for a home office to installing the latest software on thousands of desktops – is that the organization or individual owns the technology.

Capacity and resources are required to support the technology; these are either internal help desks and service teams or outsourced IT support. Infrastruc-

ture is required to host and maintain the technology, along with teams and resources to support it. Training, manuals and online resources must be developed to integrate the system and support the user base once deployed.

Most large vendors will provide support, training and hosting of other functions (for a cost), but smaller vendors may not have the capacity to provide much beyond the initial installation and roll out. After that, the purchasers are on their own.

# Risk Management

Internal requirements have also driven the trend to buy technology. Sensitive information and associated privacy concerns have created a drive to host and protect information internally.

Reputational and business risk management are a priority for any business, but the risks for financial services firms are potentially more acute. Millions of clients, personal and financial data, high visibility and an army of litigators make data protection and security top issues for any board and CEO.

The advantage with internally hosted technology – custody, CRM, application processing, etc. – is that the systems are aligned with the organization's security protocols and requirements. The business has control.

With technology hosted by a third-party vendor, the risk management department must rely on audit controls and inspections. Ultimately, they rely on a third party to meet their regulatory, privacy and security requirements.

#### Partners

Vendors are incented to sell their products and technology, implement the system and then move on to the next deal. Their business model is based on sales revenues, rather than support and maintenance revenues. Replacement and upgrade business is important, but essentially once the technology has been sold, there are limited incentives to focus time and attention on the purchasing firm.

Where the technology is relatively standardized and the purchaser has expertise in managing and maintaining it, this is not a major issue. However, where the technology is more specialized, complex or requires a significant level of support and training, the lack of vendor engagement can have a material impact on the client firm.

Assessing the amount of vendor engagement that will be required over the life of the technology and the resources available internally to fill that gap is a critical component of any technology purchase.

# Replacement

The biggest challenge with buying technology is the eventual cost and challenges of replacement. Eventually all technology becomes obsolete and needs to be replaced, and while there are financial advantages from depreciation, the efforts required to upgrade or replace are significant.

Firms that have acquired technology will often customize the application to meet operational and business needs – application processing, internal communication, reporting and data collection. The custom development combined with the level of integration within the organization can lead to extremely complex projects to document and replicate the functionality with the replacement system. One large organization documented more than 600 macros running off Windows XP. The project to document and replicate the functionality delayed the transition from XP to Windows 7 by four years.

Buying technology restricts strategic flexibility. While it may make sense for some hardware and systems, and it is definitely less capital-intensive than building the technology, it still represents a strategy that will impact mid- and long-term strategic options.



The pace of change and the number of technology platforms that are evolving has created significant momentum. This momentum will not reverse direction (less change and slower pace), but it will actually continue to gain pace.

Erik Brynjolfsson makes a compelling case in *the book The Second Machine Age*<sup>12</sup> that the progress in computing power, artificial intelligence and data storage over the past several decades is simply the beginning.

Assuming this is the case, then all businesses should be prepared to adapt to this new normal for technology. In this scenario, the options to build and buy technology have a significant drawback in almost every case. They lack flexibility.

As the market evolves, changes and adapts to new technology and functionality, the ability to predict even short-term trends becomes more and more difficult. Predicting the future is a challenge for everyone. Steve Bulmer, CEO of Microsoft, famously predicted in 2007 that the "iPhone will never get any significant market share".

With rapid change and an inability to predict the future, the only option is to maintain as much flexibility as possible across all technology platforms and applications.

While it is impossible to predict future technology trends with any useful accuracy, it can be assumed that the following will be true:

There will be change. Change will be rapid. Change will be disruptive.

What is the best option? In order to maintain as much flexibility as possible to adapt to new markets, technology, competition and consumer demand, the best option is to rent.

#### Outsource

Renting requires a firm to partner with a technology provider to rent/lease technology solutions. The partner firm hosts the application through cloud based services or a software as a service (SaaS) application. Most firms will opt for the SaaS solution as it offers enterprise-level security and privacy protection; it is essentially a private cloud.

The partner firm is responsible for the application, upgrades, development, deployment and technical support. The financial services firm focuses on integration and implementation deployment.

SaaS solutions are lighter on infrastructure and easier to manage. They are also usually priced based on a monthly user subscription fee for a fixed contract term. In the example used previously, Microsoft Office can be rented for less than \$20 per month and if a better option becomes available over the life of the contract, the switching costs are significantly less than internal build or purchased/hosted systems.



#### Security

Historically, the biggest concern with vendor-hosted systems is the security risk. No financial services firm will entrust critical client data to a third party without significant controls and security requirements in place. The development of encrypted SaaS applications that meet, or in some cases exceed, the client firm's current requirements, combined with dedicated networks and secure locations, have put these concerns to rest for most established vendors. There may still be risk concerns with newer market entrants as they may not have the financial resources, the experience and the expertise to meet the control and security demands of a large financial services firm and this should be taken into account when selecting a technology partner.

# Integration

Renting and outsourcing the technology allows firms to focus on their business and moves the strategy from "what to build?" to "what is the client experience?"

Developing a clear vision of what the end user experience should be and how to convert that into a sustainable competitive advantage is the true intellectual property of a financial services organization. The outsourced technology then becomes a series of tools that can be integrated to deliver that vision.

Integration of digital forms and e-signature, goals based financial planning, portfolio management, social media, CRM, messaging, process flow management, trading, analytics and tax planning will deliver a comprehensive wealth management offering to clients and advisors.

These can be delivered securely over the web, via mobile, tablet or computer, anywhere and anytime.

All the applications come from different vendors. The key is to integrate the solutions; that is the core skill that all businesses need.



Renting technology is the safest, most cost-effective and most efficient way to provide maximum strategic technological flexibility. Organizations should look for solutions that are SaaS-based, mobile, hosted offsite or cloud-based, and integrated with internal systems to give them the required flexibility and scale.

The optimal solutions should also be light on infrastructure, easy to manage and easily updated or replaced.

# When considering options – build, buy or rent – organizations should ask some fundamental questions:

#### Build

- 1. Is the technology we want to build currently available in the market?
- 2. Is the technology core to our business?
- 3. Does the technology provide a sustainable competitive advantage?
- 4. Can we build it with current resources and personnel?
- 5. What is the return on investment and payback period does it make financial sense?
- 6. What is the long-term development and evolution plan?
- 7. Is the firm at risk if we build the wrong technology?

# Buy

- 1. How do we select the "right" technology?
- 2. How do we manage the platform evolution?
- 3. How do we ensure vendor engagement?
- 4. What are the internal costs to support the platform?
- 5. What is the replacement cost for the technology?
- 6. What are the skills required to maintain the technology?
- 7. Do we know what the technology requirements will be 12-24 months from now?
- 8. What is the strategy to manage evolving technology trends?
- 9. Is the firm at risk if we pick the wrong technology?

#### Rent

- 1. Does the outsource partner have experience managing bank/wealth management clients?
- 2. What is the governance model to ensure minimal risk exposure?
- 3. What are the internal costs to support the platform?
- 4. How do we ensure vendor engagement?
- 5. Can we afford to give up technology to a third party?
- 6. How does the organizational model need to change in order to leverage SaaS solutions?



With the pace of change in technology ever accelerating, new market entrants and disruptors putting increasing pressure on traditional revenue streams, clients demanding ever more flexibility and transparency at lower cost, and market conditions adding significant financial headwinds, can financial services firms spend scarce resources building or supporting inflexible technology solutions?

Outsource, rented technology based on secure SaaS platforms and integrated with best of breed applications offer organizations the maximum strategic flexibility.

What business are you in?

#### References

- 1. Bain & Co Rebooting IT: Why financial institutions need a new technology model
- 2. EY Moving towards a new model for IT
- 3. Datafloq Walmart Is Making Big Data Part Of Its DNA
- 4. Wired Google Throws Open Doors to Its Top-Secret Data Center
- 5. Fast Company <u>Twenty Predictions For The Next 20 Years</u>
- 6. Harvard Business Review The Pace of Technology Adoption is Speeding Up
- 7. Merriam-Webster <u>Momentum</u>
- 8. Oxford Dictionaries Momentum
- 9. WallStreet & Technology Merrill Lynch's 'Merrill One' Platform Raises the Bar on Investment Solutions
- 10. Quora How much time and money would it cost to develop a software suite such as Microsoft Office?
- 11. Microsoft.com
- 12. Erik Brynjolfsson (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company Inc. New York, N.Y.