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**Leading Digital Transformation:
Three Emerging Approaches for Managing the Transition**

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Abstract

Despite over half a century's research and practice, our track record in leading digital transformation remains notoriously poor, with a failure rate of over 70%. The challenge is not in developing new strategies and business models or new organizational designs enabled by digital technologies, nor in successfully executing them as planned, but in effectively managing the transition from where the organization is towards a desired future state when both the path and destination are frequently shifting. Emerging evidence suggests that in the highly unpredictable digital economy, the traditional linear process of developing a strategy and then executing it is increasingly replaced by an iterative process where strategy is developed and recalibrated through execution. My research of a group of global digital champions at the forefront of digital transformation – including Amazon, Alibaba, Baidu, Google, JD.com, Uber, VMWare and Slack - has found that three new approaches are emerging, which enable these firms to successfully manage the transition while mitigating the huge risks involved. The coronavirus pandemic has forced many organizations to go digital almost overnight, which has significantly increased the urgency imperative for digital transformation. A new opportunity exists to systematically study such emerging approaches in order to develop new theories, guide practice and maximize impact.

Introduction

The rapid development of digital technologies has facilitated profound changes in the strategies and operations across different industries around the world. Digital transformation has been described as the modern-day fight to survive the existential threat of digital disruption. The leadership challenge is not in developing new strategies and business models or new organizational designs enabled by digital technologies, nor in effectively executing them as planned, but in successfully managing the transition from where the organization is towards a desired future state by frequently evaluating and recalibrating both the path and destination for the organization using emerging intelligence (Li, 2018a; Ross, 2020).

In the volatile digital economy, multi-year strategies are inherently flawed, as it is nearly impossible to develop accurate strategic plans so far ahead; and breakdowns in execution can cost companies 40% of their new strategies' potential value (Mankin, 2017). With the coronavirus pandemic, the urgency for digital transformation has increased substantially when a large proportion of the workforce are forced to work remotely (Ivanov, 2020). Traditional linear approaches to bridge the strategy-execution gap are increasingly replaced by more iterative approaches when new strategies are developed and recalibrated through execution. This paper uses emerging evidence from eight leading businesses at the forefront of digital transformation to identify and illustrate three such approaches, and highlight new areas for future research in order to develop new theories and methods, guide practice and maximize impact.

The Need for New Approaches

Digital Transformation is not new, which refers to corporate initiatives to use the new capabilities afforded by digital technologies to transform the strategies and operations of organizations. However, such initiatives are notoriously difficult to get right despite over half a century's research and practice. Previous studies have shown that over 70% digital transformation programs fail (Reeves, *et al*, 2018). However, my research with Amazon, Alibaba, Baidu, Google, JD.com, Uber, VMWare and Slack has found that three new approaches are emerging, which enable these (and many other) firms to effectively manage the transition while mitigating the huge risks involved.

Since the late 1950s, digital technologies have been used to facilitate strategic and operational changes across different sectors around the world. The mainframe computers significantly increased an organization's ability to centralize control. The mini and personal computers and client-server architecture allowed organizations to further centralize control while decentralize responsibilities and associated activities. The internet, mobile communications, smart phones and the cloud enabled the development of new business models and new organizational forms, disrupting industries from travel and retailing to entertainment and financial services. Emerging digital technologies, from 5G, internet of things (IoT), big data, artificial intelligence (AI), distributed ledger technologies (DLT) and multi-cloud environment, to autonomous vehicles and 3D printing, are opening up new possibilities to transform strategy and operations in ways we could not even envisage only a few years ago (Dubey *et al*, 2019).

Unfortunately, our track record in leading digital transformation has been surprisingly poor (Ross, Beath & Mocker, 2019). [High profile failures](#) – from Generic Electric (GE), Ford to Proctor & Gamble (P&G) – have highlighted the lack of strategic communications or failure to define a clear roadmap to plan and execute the right steps as the main causes. However, addressing such issues does not guarantee success, because in the volatile digital economy, the path and destination of digital transformation are nearly impossible to define from the outset (Siebel, 2019). Yet despite the uncertainties and high risks, business leaders must act quickly. If they wait for a point of deep crisis, their company may never recover (Li, 2018a; Saldanha, 2019). New approaches are urgently needed.

Challenges for Senior Business Leaders

There are two aspects to digital transformation. Developing new strategies, business models and organizational designs that are superior to traditional forms is not easy; but getting from where the organization is to where you want it to be often poses far greater challenges. New *resources* (particularly investments in new technologies and capabilities) are inevitably required; the *risks* involved are substantial; *resistance* from different stakeholders, even from those who will ultimately benefit from the transformation, is unavoidable; there are serious *repercussions* if things go wrong; and *rewards* often take a long time to materialize. Digital transformation has been described as akin to “*changing flight in mid-air*”. One consequence is the growing disconnect between *rhetoric* and *reality*, and the persistent “strategy-execution gap” (Li, 2018a; Siebel, 2019).

The leadership challenges are particularly pronounced for CIOs/CTOs, but for CEOs and COOs as well. On the one hand, smart phones and a growing range of consumer technologies have become deeply

embedded in every aspect of our lives. These consumer technologies, by and large, function smoothly with minimal hassle, and the “consumerization of IT” has significantly increased user expectations. In contrast, our embrace of digital technologies at work is far less advanced; and persistent frustration with corporate IT has pushed many people to bypass it and carry out a growing range of work tasks with personal technologies. This serves to further undermine the authority of CIOs/CTOs.

On the other hand, resource allocation for corporate IT has been diminishing; and much of what remains is taken up by maintenance of existing IT infrastructure and essential new developments for regulatory compliance and customer facing services, with little (if any) left for long-term strategic development. The CIO of an American bank I spoke with has an annual IT budget of \$4bn. However, 80% of the budget is earmarked for maintaining existing systems – particularly the legacy systems originated in the 1960s which still form the backbone of the bank’s core IT infrastructure. A further 8-12% is used for essential new developments for regulatory compliance, security and consumer facing services, leaving less than 10% for genuine long-term initiatives. A recent [survey](#) of 200 CIOs shows that only one in four IT leaders see their efforts delivering competitive advantages. This has led to persistent frustrations and disappointment by CEOs, COOs and the Board.

Managing the Transition: Three Emerging Approaches

Given the complexity and high risks associated with digital transformation, the temptation for many senior business leaders is to make one big bet (a large scale, radical digital transformation) and hope for the best (Sebastian *et al*, 2017; McGrath & McManus, 2020). After all, business leaders have been urged to take bold actions in order to achieve sustainable competitive advantages. Large scale digital transformation is also more glamorous and exciting, and the paybacks can be enormous if successful (Anthony, *et al*, 2019). However, the high failure rate suggests that it is probably unwise to “bet the farm” and run the risk of losing everything if it can be avoided. Furthermore, it has been argued that most competitive advantages are not sustainable for prolonged periods, mainly as a result of imitation or innovations by competitors (D’aveni *et al*, 2010; Li, 2019). Are there any alternative or better ways of leading digital transformation than the traditional linear, big bang approach? My research has found at least three new approaches that are emerging in some leading organizations around the world (Table 1).

Table 1: Three Emerging Approaches for Leading Digital Transformation

<i>Approaches</i>	<i>Differences from traditional approaches</i>	<i>Main features</i>	<i>Examples</i>
Innovating by Experimenting	From a linear process of strategy making and execution to an iterative, recursive, learning process	Using experiments to evaluate and recalibrate strategy and guide execution	Alibaba Google Amazon VMWare
Radical transformation through incremental approaches	From one radical transformation to a series of incremental inter-locked steps to achieve radical change cumulatively	Strategy is developed, evaluated and recalibrated frequently through execution	Amazon Slack JD Didi

Dynamic sustainable advantages via temporary advantages	From sustainable competitive advantages to an evolving portfolio of temporary, transient advantages	Using successive temporary advantages to create sustainable advantages dynamically and cumulatively	Baidu Uber VMWare Slack
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Innovating by Experimenting

Despite the growing uncertainty in the business environment, the traditional annual or multi-year cycle of strategy making and execution have persisted in many organizations. There is nothing wrong with periodic strategic retreat by senior business leaders, but such linear approaches are no longer fit for purpose. It is rooted in a level of certainty and pre-defined path and outcome for the organization that no longer exist. When the future is uncertain and the destination and path are frequently shifting, it is essential for business leaders to use emerging intelligence to inform, evaluate and update strategic plans on a regular or even continuous basis. This calls for an iterative and learning process where strategy is made and recalibrated through execution and implementation.

One popular approach is innovating by experimenting, which enables businesses to try out many new ideas inexpensively (Li, 2018a). Emerging intelligence from internal and external sources can be used to evaluate them. *“If an idea works, then scale it up rapidly; if not, move on to other ideas and you have not lost much”* [Senior Executive from Alibaba]. This approach gives business leaders the opportunities to test and learn, which has been proven far more effective than traditional linear approaches. It has played a key role in the success of Alibaba, Amazon, Google and Didi Chuxing (Li, 2018b).

The bottom line is that in today’s unpredictable digital environment, it is no longer viable to develop a new strategy and then execute it over many years. Instead, strategy is increasingly defined as an overall direction, and the broad path and final destination are frequently evaluated and recalibrated through execution using emerging intelligence. This approach significantly increases the odd of delivering great results through new strategies and operations enabled by digital technologies.

Radical transformation through incremental approaches

In many ways, the digital economy is fundamentally different from the industrial or the service economies. The rules (economics) of the game and the key players in the market are changing, so the mismatch between traditional business models and the digital future is often too great to bridge in many organizations. However, radical transformation does not have to be planned and implemented in one big step. Rather, radical changes can be achieved through a series of incremental steps.¹ For example, some leading businesses use an outcome driven approach to ensure digital transformation

¹ Radical transformation through incremental approaches entails breaking up a radical change into multiple, smaller steps to allow frequent evaluation and recalibration of both the path and destination based on emerging intelligence. It should not be confused with the notions of radical and incremental innovations, or disruptive and sustaining innovations. While radical innovation stems from *‘the creation of new knowledge and the commercialization of completely novel ideas or products’*, disruptive innovation describes *‘a process in which new entrants challenge incumbent firms, often despite inferior resources’* (Hopp, et al, 2018). Radical transformation based on any types of innovations can be executed and recalibrated in multiple, smaller steps rather than in one big, single step, hence through incremental approaches.

initiatives are delivering the expected results at each stage. By breaking up large scale, radical digital transformation into smaller, more manageable strategic investments, organizations are able to experiment with many new ideas based on rapid piloting and scaling (Li, 2019). This approach enables organizations to nurture and test an evolving portfolio of innovations and constantly move forward while avoid the risks of one big bet. Ineffective ideas can be killed off before they cause any real damages. Different from the “big bang” approach, this approach asks business leaders to decide whether the initial up-front investment is worth making in the light of potential returns; and if the balance changes, they can stop investing. In doing so, radical transformation is achieved through a series of incremental steps, while the high risks are effectively mitigated.

Dynamic sustainable advantages through an evolving portfolio of temporary advantages

The main objective of digital transformation is to deliver sustainable competitive advantages (SCAs), but in the digital economy, few competitive advantages are genuinely sustainable for a prolonged period. Most competitive advantages are temporary, or transient, in nature which can be eroded rapidly or suddenly, either as a result of innovation or imitation by competitors (D’aveni *et al*, 2010; Li, 2019). However, one key new feature of the digital economy is the network effect and the “winner-takes-all” market dynamic, where only one or two key players can eventually thrive in each market niche. When sustainable advantages are rare and difficult to come by, temporary advantages can snowball with the increasing return to scale dynamic. Instead of obsessing with the elusive sustainable competitive advantages, some business leaders are increasingly pursuing successive temporary advantages by experimenting with an evolving portfolio of incremental - and sometimes, radical innovations. The gains from each temporary advantage are often small, but the cumulative effect can be significant over time, and any one such temporary advantage can become “*the last straw*” to tip the balance of competition. In so doing, sustainable competitive advantages are achieved *dynamically* through an evolving portfolio of temporary advantages, when successive new temporary advantages are introduced before old ones are eroded. This is clearly reflected in the competition between American and Chinese digital firms in China – for example, Alibaba versus Amazon, and Uber versus Didi Chuxing (Li, 2019).

A further benefit of this approach is that instead of treating strategy as a pre-defined plan, it allows companies to treat strategy as a direction for action. It encourages business leaders to focus on short-term decisions and execution, but with the long-term strategy and destination in mind. It also enables business leaders to explore alternative routes frequently rather than presuming there is only one path or one best way. In some cases, it even allows business leaders to change destination. In so doing, strategy and execution are intertwined, and emerging intelligence from execution is used to inform the evaluation and recalibration of the strategic direction. As Rosabeth Moss Kanter argued: “*A strategy is never excellent in and of itself; it is shaped, enhanced, or limited by implementation. Top leaders can provide the framework and tools for a team, but the game is won on the playing field.*” (Kanter, 2017). The power of this approach cannot be over-emphasized in today’s volatile environment. The result is that strategy is increasingly made and recalibrated through execution.

The Power of Portfolios

One common feature of these three emerging approaches is the power of portfolios. Portfolios are widely used by investors to manage risks. Venture capitals routinely invest in a portfolio of promising new ventures. The majority of these new ventures will not generate significant returns, and previous studies have shown that less than 6% of such ventures generate more than five times the original investment. However, the small number of winners is often sufficient to cover losses from the large number of failures and make a healthy return at the portfolio level, effectively mitigating the huge risks.

A growing number of organizations have adopted a portfolio of business models to tackle different market niches; different stages of work-in-progress; multi-sided markets via platforms and ecosystems; and using different business models sequentially over time to maximize revenues (Li, 2020). The financial returns from each business model is often modest, and some perhaps are not even financially viable as an independent business, but by sharing infrastructure, resources and costs, the profitability and resilience of the whole organization can be significantly improved.

The high risks inherent in digital transformation call for the portfolio method. By experimenting with a large number of incremental and radical innovations and by pursuing an evolving portfolio of temporary advantages, radical transformation and dynamic sustainable advantages can be achieved cumulatively while the risks can be effectively mitigated in the “winner-takes-all” digital market. These approaches have led to the market dominance of many of today’s global digital champions around the world.

Beyond Your Organization

Digital transformation is a perpetual, never ending process. Even with each successful digital transformation, the long-term prospect of any organization cannot be guaranteed. When Jeff Bezos was asked about the future of Amazon, he replied that “*I predict one day Amazon will fail. Amazon will go bankrupt.*” (Kestenbaum, 2018). Many leading organizations are hedging their bets not only through the digital transformation of their existing core business, but also by investing in a portfolio of promising external opportunities. The underlying rationale is that *when* (not *if*!) the current core business is eventually disrupted, some of the new ventures would have grown significantly. Sustainability is achieved *dynamically*, not only by sustaining and reinventing the current core business operations, but also by investing in emerging new opportunities outside the current organization and its core markets.

“Born Digital” versus Traditional Companies

This research is based primarily on emerging insights from some “born digital” companies, but similar trends have also been observed in traditional companies across different industries. Born digital behemoths such as Amazon and Alibaba are under constant pressure from new disruptors to reinvent themselves using emerging digital technologies. In the meantime, nearly every traditional organization has been digitally transformed to varying extent, making every business is a digital business. While incumbent banks, for example, contemplating whether to build or buy a digital bank to fend off the disruptions from born digital fintech firms (such as the acquisition of Atom and Simple by BBVA, or the creation of Bó by RBS and Marcus by Goldman Sachs), they cannot avoid transforming the old banks.

The Covid-19 pandemic introduced a new kind of disruption for all businesses, but in many ways, it is simply accelerating changes that were already well under way. It forced every organization to scale their digital initiatives in a matter of days or weeks, fast forwarding to a future world where digital has become central to every interaction. Tens of millions of people were forced to adopt full time remote working. From education and administration, banking, journalism and government, to yoga and gym classes, concerts and medical consultations, face-to-face meetings have been replaced by video conferencing. The daily commuting and business travel have stopped. Most of all, it is forcing a mass upgrading of our digital literacy across different age and social groups around the world. After decades of digitization, the distinctions between born digital and traditional companies were already blurring before the pandemic. When life returns to 'normal', such distinctions may become irrelevant. The new distinctions will be between those that are successful in continuously managing the transition to new technologies, new business models and new organizational designs and those that are left behind.

Leading Successful Digital Transformation

It's an exciting but challenging time to be a senior business leader. When it comes to corporate IT, "keeping the lights on" at minimum cost is no easy feat, when resources are squeezed, services are outsourced, expectations are increasing, changes are constant and unpredictable, and new requirements from regulatory compliance and new customer-facing and internally-oriented digital services are persistent. However, "keeping things as they are" is not enough, because failing to upgrade the IT infrastructure regularly to enable perpetual digital transformation, the organization will fail.

Despite the enormous challenges, however, business leaders today are ideally positioned to initiate strategic and operational changes by exploiting emerging digital innovations. For example, digital technologies enable organizations to profitably serve low-end markets that were traditionally uneconomic or difficult to reach. There are also growing opportunities for businesses to play a key part in addressing Grand Societal Challenges while generating market rate financial returns – such as those highlighted by the 17 UN Sustainable Development Goals (SDGs), from health and social care in ageing societies to social inclusion, poverty reduction and sustainable development. Digital transformation enables organizations to develop new business models and new organizational forms to tackle such societal challenges using financially sustainable and scalable operational models, generating profit and impact at the same time - something difficult to achieve without the support of digital technologies.

As strategies are increasingly developed and recalibrated through execution in an intertwined, recursive manner, the challenges for senior business leaders are immense. Digital transformation represents a fundamental and risk-laden reboot of a company, with the goal of achieving dramatic improvement in performance and altering its future trajectory. Critical to success is the ability to manage the transition to new technologies, new strategies and operational models and new organizational forms, constantly evaluating, adjusting and recalibrating the path and destination for the organization based on emerging intelligence. This calls for new leadership skills.

For most business leaders, the timing and condition will never be the perfect for undertaking digital transformation, but wait and see is not an option. Even before the pandemic, some forward-looking

business leaders are already carving out resources and slacks in their existing systems to start something new, to innovate by experiment, to initiate and nurture an evolving portfolio of incremental and radical innovations, and to gain sustainable advantages dynamically and cumulatively through a successive pipeline of temporary advantages. When some of these initiatives are showing initial results, these business leaders are then in a far stronger position to secure the full support and adequate financial resources from the Board, to scale up innovations and initiate new digital transformation.

Digital transformation, indeed, even the initial experimentation to try out new ideas, can sometimes seem a risky game, as changing familiar operating models can create resistance from even those that will ultimately benefit from the changes. However, the COVID-19 crisis has forced a mass transition to digital, which made experimentation and rapid scaling both a necessity and an expectation. Those failing to do will struggle to ride out the current storms, let alone thrive in the post-pandemic world.

Future Research

Academics have a key role to play, and more systematic research is urgently needed to conceptualize such emerging approaches and develop robust theoretical frameworks to guide practice and maximize impact. Three types of research are particularly relevant.

Firstly, qualitative research based on case studies and ethnographic approaches is needed to identify and illustrate international best practice in both developed and emerging economies. We need to explore the complex new relations between strategy and execution, and conceptualize effective approaches to manage the transition. In particular, our research context needs to expand well beyond traditional centres of innovations in North America, Europe and Japan, as exciting new approaches are emerging in newly industrialized economies such as South Korea and Singapore, and in emerging economies such as China, India, the Middle East and Africa.

Secondly, through large scale quantitative research both locally and internationally, new research is needed to identify, measure, validate and compare the complex relations between the key factors, processes, mechanisms and contexts for digital transformation. New insights from such studies can inform the development of new theories and be used to guide practice and policy making.

Thirdly, the rapid pace of change calls for the development of new research methods, as our existing methods are often too slow, too rigid and take too long to make sense of emerging phenomena and offer practical guidance in a timely fashion. Technologies continue to develop extremely rapidly, and when published studies in mainstream academic journals are often based on data that are 5-10 years old, the “new insights” are essentially derived from technologies that are two or three generations old. New methods are urgently required to identify, conceptualize and validate emerging phenomena as and when they emerge, long before they become quantitatively significant in the real world.

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