

Understanding Digital Transformation from CIO's and Senior Leaders' Perspectives

by  
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**DEDICATION**

To EGH, my biggest fan

## Understanding Digital Transformation from CIO's and Senior Leaders' Perspectives

### A. WHAT IS DIGITAL TRANSFORMATION?

#### 1. Consulting firms

Consulting firms describe digital transformation a variety of ways:

- Digital transformation is enabled by technology, but it is about business-wide change, modifying an organization's structures and processes, and the way its people work. Digital transformation must redesign current processes, revise business structure and change the way people work KPMG [32]
- The transformation of improved customer experience. “Business success today requires a customer-focused digital transformation. It starts with prioritizing a superior and relevant customer experience and aligning the organization, processes and technology to power it.” Focus on customer experiences, and the organization should prioritize the customer-facing technology. Accenture [24]
- The use of technology to radically improve the performance or reach of an organization. Achieving digital transformation isn't driven by mastery of the technologies, but by the ability to articulate the value of digital technologies to an organization's future.” Focus is on the ability to align the technology with the future outlook of the organization. Deloitte [31]
- “Digital business transformation is the process of exploiting digital technologies and supporting capabilities to create a robust new digital business model.” Focus on digital technology to create new digital business models. Gartner [8]

- Digital transformation is “Integrating across multiple digital processes to offer customers individualized experiences, such as omni-channel and single view of the customer initiatives.” Under IBM’s definition, digital transformation is just a step towards digital reinvention. “Fundamental reimagining of the way the organization engages with customers and other stakeholders, such as orchestrating financial and other associated services to help realize customer aspirations.” IBM [5, 6]

There is no agreed-on definition of digital transformation among these consulting firms. They agree on introduction and adaption of new digital technology, but they do not agree on the rest.

## **2. Technology leaders**

Between January and March 2020, I contacted 13 senior executives, with titles such as CIO, CTO and Senior VP. Out of the 13 interview requests, 10 accepted the interviews and 7 of the interview notes are used in the thesis. I asked the senior executives to share their understanding of digital transformation.

*a. Technology enablement.* Many interviewees describe the core of their digital transformation project is to become a technology-enabled company. It is about a better way to use and collect data, and it is about the ease of access to information. From a former senior consultant of a leading consultancy firm, digital transformation is the use of underlying technology to bring the capabilities closer to the point of need. He emphasizes the use of data has shifted from core corporate and moved much closer to the customers, who anticipates the availability and the assistance of the data from corporates in order to help them to make real time decisions. [interview 4] According to a CTO of a Canadian banking company, digital transformation is about leveraging data to better run the organization. They can observe the different usage of data. [interview 11] From the senior consultant’s view, the use of data is pushed to the edge, ideally at the fingertips of end users. [interview 4] From the CTO of the banking company, the use of data is to enable operational efficiency and also to experiment areas of innovation. [interview 11]

*b. Making organizations effective and efficient.*

A CIO from a mid-size NGO describes digital transformation as a definition of a plan of action to use digital tools to make sure the organization is effective and efficient. [interview 7] Another senior IT leader shares a similar point of view; part of the digital transformation plan is to use technology to automate certain functions of the business in order to drive efficiency. [interview 1] During the interview with a European based IT leader, he describes the IT department as measured by various matrices to demonstrate efficiency and cost reduction. [interview 9]

*c. Growing the business.*

The CIO of a large NGO in Canada defines digital transformation as putting a set of the best digital tools in the center, and tying the processes, the staff and the capabilities of the organization in order to grow the organization's business. [interview 1] The Senior VP from the communication industry describes digital transformation as centered around how organizations take advantage of technology to focus more on either the informational needs to enhance their business decision process and or to enable them to move even more nimbly than their competition. [interview 5]

*d. Prioritizing needs of people.*

According to the Chief Innovation Officer of a non-profit consortium, digital transformation is enabled by the abundance of technology and connectivity to allow organizations to focus on the needs of human beings. [interview 14] Another interviewee mentioned the companies need to use improved digital tools as a leverage to strengthen the companies' partnership with their suppliers and customers. [interview 5]

## **B. THE DIGITAL IN DIGITAL TRANSFORMATION**

The word, digital, implies it is a form of technology. However, whether the use of technology to digitize or digitalize is debatable. Digitization is the process of converting analog into digital formats. [8] For example, scanning documents or books and converting the physical copies into zero's and one's. Bloomberg J, [34] clarifies digitization as digitizing information and not

process. When it involves the changes of processes, it is often considered digitalization, which is apparently much more complex than digitization.

In the enterprise setting, digitization is often associated with automation of existing processes to enhance efficiency. On the other hand, digitalization means to use digital technology tools and change organizations' business model, which may include new ways of delivering services or engaging customers. In other words, digitalization suggests the scale and complexity of the project is larger than the digitization effort. While the industry seems to share a common understanding of the "digital" of digital transformation should be about digitalization, the IT leaders that I interviewed pointed out each organization has a different footing. Some may require more digitization work than others. [34]

From the interviews, some suggest we can divide the technology into two categories: internal and external tools, for examination. [interview 1, 4] For some interviewees, internal tools include IoT, automation, machine learning, and pattern matching. [interview 4, 11] These tools provide additional insights to generate new understanding of current business and to provide data to feed into the new business model innovation pipeline. While for others, internal tools mean digitalization tools and technology: replacing paper-based forms, manual scanning and storing them in databases. [interview 1, 11] Introduction of corporate gmail account and Microsoft 365 also make this list. [interview 7]

On the list of external tools, the list includes apps, platforms, and websites. [interview 4, 9] What makes these "external" digital tools is due to the end-user facing characteristics. It is worth noting that it is difficult to reach a consensus of this division and reconcile the viewpoints. The flaw of this internal and external view misses the density and the interwingibility of the backend and frontend technology. External digital tools rely heavily on automated data generated and analyzed by backend technology.

My hypothesis is: to embark on the digital transformation journey, the organization needs to start somewhere by picking something to work on. Depending on where the company is in their digital transformation journey, and the problem areas they identify, the "what" will be different.

Internal tools are typically the first choice since they are considered the backbone of the infrastructure which provides the foundation for future customer engagements or new business opportunities.

In their paper, Sebastian et al described “operational backbone as the technology and business capabilities that ensure the efficiency, scalability, reliability, quality and predictability of core operations” [14]. My interview findings echo this as well. Some CIO’s are working on providing standardized backend systems and collaboration tools under the bandwagon of providing a “single source of truth”. [interview 1, 7]

As Sebastian et al noted, the effort to work on an operational backbone shares many similarities with the implementation of ERP since the late 1990’s. [14] However, as previously pointed out, the emphasis on the digital transformational type of backend efforts goes beyond providing efficiency and automation. The tech leaders have a vision to connect the internal tools to enable new types of customer engagement. For example, the Canadian NGO consolidated provincial based databases into a centralized database so the data could be used to engage existing and new donors on the website. Their project is not about finishing the ERP and then declaring victory. If the completion of the project gives the organization the ability to do marketing campaigns but not in a personal way, it is not done correctly. The new database allows them to replace the declining event-based fundraising efforts with digital and social fundraising. It even provides tools and data to encourage co-creation of content. The CIO is describing new ways of doing fundraising, which fundamentally changes how the organization operates. [interview 1, 2]

In summary, there are not a one-size-fits-all type of scenarios. One IT leader puts it well. “It’s about creating those customized journeys for the constituents of your organization.” [interview 1]

### **C. THE TRANSFORMATIONAL IN DIGITAL TRANSFORMATION**

I asked IT leaders to define what “transformation” means to them. Could they describe their ways of measuring transformative results?

One interviewee gives a set of high-level strategic guidelines. For him, to meet the transformative results, businesses must change both the business model and the way that their solution or services are being delivered to their customer. It also means the organization profoundly changed the underlying capabilities that they are striving at, in order to operate in this new mode. [interview 4]

One interviewee emphasized customer engagement. “Bringing those tools to satisfy the needs of what that customer wants. The (success of) digital transformation allows for co-creation of content.” [interview 1]

The other tech leader describes the project being transformative because it touches more than 95% of staff, and fundamentally changes the core of the organization, including how it is conducting its business, how the organization measures impact and how they collect data. [interview 7]

Another IT leader dramatically changed their business model to increase profit and revenue. A senior executive emphasized digital transformation projects’ financial objectives. Will the project increase company bottom-line and will it increase market share? [interview 5]

### **D. DIGITAL TRANSFORMATION PROJECTS**

As previously described, digital transformation projects are at a larger scale and are impacting multiple departments within the organization. Some interviewees argue it is not just an IT function anymore, since the traditional IT department is viewed as focusing on keeping the infrastructure running. One interviewee went on to say, “IT departments are often not

considered the champion of the new technology.” [interview 4] If that’s true, who leads the effort? The journal articles [27] [25] suggest there should be a new role called Chief Transformation Officer. The Chief Transformation Officer is charged with creating synergy within the organization. The aspiration of ideal candidates for this job include developing organizational strategic initiatives, overhauling legacy systems, mapping out customer needs, orchestrating business infrastructure, getting internal funding and to be a role model for change. [25]

Analysts also suggest the organization should create new positions such as Chief Digital Officer (CDO). Despite the title sounding different than a Chief Transformation Officer, the responsibility seems identical. They are expected to create new business opportunities, to manage change across both internal and external stakeholders, and to be resilient. The Forbes article suggests Chief Digital Officer should report directly to CEO. The article goes on to argue it is critical for Digital Officers to have their own independent budget and revenue responsibility. [28]

During my interview, none of the interviewees mention such roles, Chief Transformation Officer or Chief Digital Officer, within their organization. Despite the fact that the scope of a digital transformation project is more cross-functional, and more than the typical IT functions, the CIO’s and Head of IT are still the de facto lead on such initiatives. To compensate the complexity of internal organizational workflow and navigate the ever-changing industry landscape, IT leaders bring on external consultants to help digital transformation projects. [interview 1, 3, 4, 5, 7, 9, 11] The companies and organizations also form steering committees and ad hoc groups to oversee the design and execution of digital transform projects. [interview 7, 11, 14] Even though it’s a small sample from the industry, how the senior IT leaders lead the digital transformation project is still worth mentioning. The proposal from the industry about creating roles of Chief Transformation Officer or Chief Digital Officer may not be feasible after all.

## **Roles of external consultants in digital transformation projects**

Almost all interviewees I spoke with use external consultants to help their digital transformation initiatives. Area technology leaders describe consultants who bring their unique value including:

*The ability to provide a third person perspective.* They describe consultants' ability to look at things in a fresh way and the ability to provide an unaffiliated and objective view to the organization. [interview 7] The ability of not knowing what the norm is, is appreciated. Furthermore, since the consultants don't inherit historical failure, it's easier for them to drive the change.

*Extra resources: hire consultants by their specific domain knowledge.* More than one interviewee mentions the lack of internal resources is the reason to bring in external consultants. With the rapid changes of their industry and the advancement of technology, it is impossible for corporations and organizations to develop their own talent. Not only is it cost prohibitive, but also a time lag. [interview 1, 7, 11]

It is worthwhile to note the CIO's and tech leaders describe a pattern to bring in subject matter experts during specific phases of their digital transformation projects. For example, bringing in enterprise architects when they need to figure out the interconnects of various databases. [interview 1] Hiring a different consulting company to develop the software solution. Or hire a specialist to lead the change management process. [interview 11]

*Not worrying about being fired.* The role of external consultants is project focused and that seems to land itself into a different hierarchy outside of the typical organizational chart. [interview 4] This independent role allows them to drive the project forward and hold people accountable. [interview 7] They don't worry about pointing out the problem areas with the potential backlash of upsetting their direct superiors and get them fired.

## E. THE DRIVE FOR DIGITAL TRANSFORMATION

Digital transformation increases bottom line. Consulting firms and technology companies are promising digital transformation will increase market share, profitably and revenue. [34] To that end, more than one interviewee considers digital transformation as a way for organizations to innovate, to come up with new business ideas, and to increase business bottom line. [interview 4, 5, 11]

*Digital transformation provides a reason to strengthen backend infrastructure.*

For some, it is an opportunity for renewing foundational and infrastructural layers of IT. Under the digital transformation workshop, a CIO was able to help senior management and the board realize that under-invested IT infrastructure would prevent the organization from achieving its future goals. Once he got the buy-in, he was able to ask for additional funding from the board and management team to provide digital collaboration tools, such as Microsoft 365 and Microsoft Teams. [interview 7]

*Competitive advantage.*

Fear of losing competitive advantage also plays a role in driving digital transformation projects. According to the article by *Computer World*, [26] 89% of the survey respondents indicated their industry is being disrupted by technology or they foresee disruption is coming. It is not just the for-profit companies worrying about their competitors. Tech leaders in the NGO sector also expressed concern about staying current. One interviewee mentioned the emerging competition of non-profit sectors is coming from well-funded foundations going directly to beneficiaries and bypassing NGO's. He also mentioned there are more and more for-profit companies doing social good. [interview 8]

*Customers' request.*

Customers are using new tools and they have a different set of expectations for the organization. The customer's behavior change also impacts revenue sources and ways of spending. These are the driving forces outside of the control of an organization, and these external changes drive the need to embark on digital transformation journeys. [interview 1, 2]

The popularity of social media provides a direct feedback loop into the companies' and organizations' business. Customers can point out flaws and issues of the supply chain, and customer services and so on.[29] Many companies now view social media as the primary marketing channel to reach customers. To finish the feedback loop, a better integration of the frontend and backend database and management becomes essential. [interview 2, 4]

## **F. THE PROCESS OF DIGITAL TRANSFORMATION PROJECTS**

How do companies start their project?

*Decide on the “What”:* Imagine & dream about the “what” the org wants to do.

People used workshops and meetings to identify problem areas or opportunities. [interview 4, 7, 9, 14] Dan, H. [30] described it took tremendous effort to overcome the “problem blindness”, which may explain why organizations do not change, because they simply don't know what the problem is. As it is discussed in section C, the Transformational in the Digital Transformation, companies are looking for transformational results in digital transformation projects. Deciding on the “what” to work on is critical. From the interviews, it is common for companies and organizations to use workshops as a way of generating ideas. [interview 4, 7, 9, 14] Other than ensuring the senior executives will be present during this kind of workshop, one interviewee mentioned it is also important to invite various stakeholders for collaborative ideas and ask them to forget about their ranks and titles. [interview 14] Deciding on what to work on is an important first step of digital transformation projects.

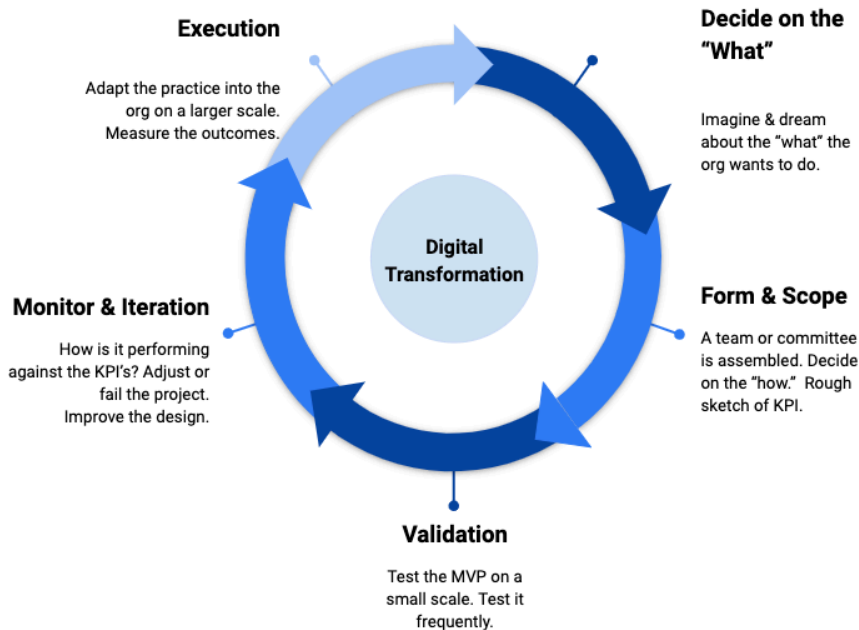


Illustration 1- The Digital Transformation Wheel

*Team Formation & Define Project Scope.* A team or committee is assembled. Decide on the “how.” Rough sketch of KPI.

Summarizing from the interviews, the typical next step is to form a core team who will be responsible for digital transformation projects. As discussed in section D, Digital Transformation Projects, the CIO is still at the front and center of the taskforce while a special team or committee is often assembled to ensure the project is well informed about all areas of business processes. [interview 5, 7, 11]

This is also the phase when the team decides on the “how” and which tool to use. The “How” is about using various digital tools to get the companies to go to where they want to go. During this stage, the organizations are venturing out using new digital tools that they are not familiar with, so it is common to use external consulting firms at this stage. For example, companies might hire an Enterprise Architect to map out the current state, the ecosystem of the digital spaces a company uses, and the use-cases of applications; they also try to figure out the interconnections of various databases, and where the data is going. [interview 1] The Enterprise

Architect may also suggest the future state [interview 4]. Another interviewee described an Agile type of stand-up meeting to harvest ideas worth experimenting on and to scope out minimal viable product ideas. [interview 11] It is also important for the team to discuss how they measure success and track the progress. [interview 2, 6, 12]

*Build and Validation: Test the MVP on a small scale. Test it frequently.* Depending on if there is inhouse talent for the digital transformation project, companies may outsource the prototype-build to external vendors or bring in consultants for the tasks. Senior IT leaders agree on the importance of validation of ideas through small scale testing. Limit the project scope to a reasonable size and ideally be able to have a quick win. [interview 6, 12] The CIO based in Canada described picking a test of the idea in a province first because it had the right conditions: a medium level of complexity, a relatively mature local IT staff and good communication among teams. [interview 1] The CTO from the Fintech sector emphasized the importance of early success: to start small and demonstrate value quickly. In his mind, it makes change management a lot easier when the benefits of digital transformation projects are supported by data. [interview 11, 12]

*Monitor & Iteration.* How is it performing against the KPI's? Adjust or shoot the project. Improve the design. The team carefully examines the results against the KPI's that they have sketched during the pilot run. They make adjustments, finetune the process, and improve their communication plan. If the results are not meeting the matrix, find out what went wrong. If there is no remedy, the team may choose to cut their losses and terminate the project at this stage before a large-scale implementation. [interview 1, 5, 6, 10]

*Execution.* Adapt the practice into the org on a larger scale. Measure the outcomes. At this stage, the task-force team is busy planning their roll out plan. The effort is about how they might adapt their experiments into other areas of business and ensure the digital transformation projects deliver the same experience and achieve similar or better results. Development of an organizational wide communication plan is useful. [interview 2] Senior executives may choose to have an all-hands-meeting or a town hall conversation. Email flyers of mission and the

benefits of digital transformation projects. Guidebooks such as self-serve style Q&A to address commonly asked questions or animated videos. [interview 1, 2]

## **G. HOW TO BE SUCCESSFUL IN DIGITAL TRANSFORMATION**

Interviewees agreed on the importance of getting strong business involvement and senior executive support. A few CIO's mentioned they get the message across to senior management during consultant-led workshops. [interview 7, 9] Without the trust and support from senior executives, it is hard to sustain in a multi-dimensional digital transformation project.

It is also about having the vision, a picture of what the finished project will look like. Interviewees mentioned the use of internal marketing campaigns and catch-phrases to create a shared understanding of what the destination looks like. [interview 2]

It is important to be able to hire the right talent, whether to bring them onboard or outsource to do the work. One interviewee mentions that he maintains a relationship with a core team, whom he hires repeatedly either for permanent roles as consultants for similar projects as he moves from one organization to another. He describes it is easier to have a team that already has a trust relationship and knows how each other works, and the team has accumulated experiences from previous projects. [interview 1]

Experienced IT leaders also mention it's critical to develop a set of tangible measurements and linkage. [interview 4] How might we prove the results are contributed to the digital transformation projects instead of luck? According to a CIO in an NGO organization, the evidence of success of an infrastructure-related digital transformation project might be that the organization is able to beat its own record of sending out tax receipts to its donors 4 weeks earlier.

Others changed the incentive mechanism to encourage employees and customers to embrace change. One interviewee worked on replacing in-person workshops by delivering online training to the companies' distributors, who contribute to more than 90% of the business revenue. To

motivate distributors to train themselves and their employees, he also introduced a tiered pricing schedule associated with the training status. For example, if the distributor is able to pass the certification process from bronze to silver, the distributor will receive an additional 5% discount on goods. The online training model also allows the distributors to send more employees to be trained at the same cost as sending a selected few to the costly in-person workshops. In summary, this senior VP is able to successfully convince customers to accept the change because the customers themselves see the benefits.

## **H. THE STRUGGLES OF DIGITAL TRANSFORMATION**

Schuler analyzes reasons individuals resist change, and the descriptions are aligned with what the tech leaders experience in their large-scale projects. [35] People are comfortable and identified with the current situation and current way of doing things. They feel overwhelmed and uneasy about the change.

One interviewee pointed out companies are not really appreciating the level of change that introducing some of these new digital capabilities requires. “Digital technology oftentimes runs faster than existing capabilities.” He described the organizations found themselves struggling with catching up. [interview 4] Digital technology creates a series of connected changes: process, training, people, and data in a loop, and it’s constantly evolving and changing.

He also shared his experiences from advising companies to go through digital transformation projects. People resist change because most of the technology projects fail, and people don’t want to be associated with failure. [interview 4]

Another interviewee portrayed an example of how the program management stalled the digital transformation project by entrenching over which tools to use. They feel comfortable with the current ways of doing things. He also described the struggles of unifying processes across different countries. [interview 7]

A similar point of view was observed by a CIO in Canada, he described human beings as habitual creatures that cling on to things. In his organization, he observed a different attitude to change generationally. Younger generations are ready and anticipate digital change, and the older workforce are entrenched in the past. The same phenomenon was described by Schuler. He writes people are unable to picture the new destination since there are no role models or successes that they are unsure the change is a good idea at all. [interview 1]

The CIO from a Fintech company described when he tried to lead an innovative type of digital transformation, that people struggled with the mindset shifts. For him, it is not only the shift of focus, but also trying to mimic the mentality of a young start-up within a well-established company. [interview 11]

Another area of struggle of digital transformation is lack of funding and resources. A Chief Innovation Officer of a large NGO consortium pointed out digital transformation has not been recognized by major foundations and donors, who are having a hard time understanding the importance. [interview 14] A European based CIO provided a little more detail about his funding struggle. It seems difficult to categorize the investment of digital transformation as a “more than IT” project so it is not easy to tap into the strategic and non-restricted funding. Typically, the IT department is asked to search for areas of cost-reduction as a way to show improvement and efficiency. Funding agencies are not making the connections to the benefits of investment in digital transformational projects and they continue to invest in traditional projects. He further noted in the NGO space, there is a lack of culture for “risk capital” when compared to Silicon Valley where investors want companies to experiment and take risks. [interview 9]

However, the funding struggle is not unique to the NGO sector, a senior VP from a major equipment provider shared his story; he said it required a lot of convincing for the company to provide initial funding to start the investigation of his digital transformation project. Most of the people thought they were out of their minds to create a series of 30-minute online training materials in 1999. [interview 5]

## **Change Management**

During the interviews, many interviewees mentioned it is critical to be mindful about “change management” during digital transformation. An IT leader from a European NGO made a clear connection between digital transformation and change management. “Change management is an indispensable enabler of digital transformation.” He went on to describe it as essential, due to the complexity of becoming a digital organization, to provide a vision (both long-term and short-term), or an end point that the org can identify. One must deal with resistance and incorporate the different ways of doing business. He considers the function of change management is to provide leadership and to build up the digital capabilities of the organization. He further commented “if digital transformation is about people, processes and technology, then change management is the set of measures needed to bring them from old style to a digital organization.” [interview 9, 10]

A senior executive from a Telecom company echoed this viewpoint. For him, change management is process-driven with a set of clear-defined metrics. He highlighted the importance of planning with the involvement of key stakeholders, and a roll-out execution and communication plan; the use of metrics to track progress made and success and failure feedback for course corrections. [interview 5, 6]

The Chief Technology Officer from a Canadian Fintech company also agrees change management is key to transformational projects since the nature of digital transformation projects are at a larger scale. He emphasized the importance of getting buy-in from people by explaining the rationale behind the changes and creating the ownership and accountability. He suggested organizations to start small and demonstrate value so there is data to back up the necessity and the reason to change. [interview 11, 12]

The former CIO of a large Canadian NGO uses various communication tools for his change management effort in large digital transformation projects. He mapped out the stakeholders’ roles and created pushed materials (emails, newsletters and videos) and self-guided help style

FAQ's, physical reminders (posters) and town hall style live webinars to communicate the benefits of digital transformation projects and to address concerns. [interview 1, 2]

The team rolled out the implementation across the organization after the initial success of the pilot and followed the change management communication plan to cope with resistance and reluctance of change from users.

*Who should lead the change?* In Kotter's essay, "Leading Change: Why Transformation Efforts Fail?" He described the reason why transformation fails is mostly due to the organization that has too many managers and not enough leaders. His solution is to install "real leaders," either to promote them from within or bring in external talent, and that is his phase one goal. [36] As he pointed out, transformation efforts are often political. His viewpoints confirm the digital transformation projects should not just be focusing on technology. Process, culture, and the digital capacity building should also be put into consideration. If we follow this logic, it also means it is not a pure IT function or should be driven by IT teams alone. Due to the transformative nature of the change and the level of complexity, it should be treated differently than a typical IT project.

In Kotter's article, he differentiates the role of management and leadership. Management's job is to keep the current system running and minimize risk. When the organization undergoing transformative change, that translates to a huge undertaking on the organizational level. Kotter suggests ensuring this kind of leadership by promoting enough leadership to senior-level positions. But is that the only way to ensure leadership?

During my interview, a CIO at a US NGO presented a different scenario of creating a steering committee with senior C-suite people as business owners, a project managed by an external consultant with a focus of change management, plus the CIO and other business stakeholders. The group met as frequently as needed. They reviewed budget requests on a needed basis. This evidence suggests there are enough impacts and risk-taking that the organization has given the project a special status. The recognition differentiates the digital transformation initiative from other projects. [interview 7, 8]

During the interview with the CTO of a Canadian Fintech company, he shared the use of agile methodology when the company created a new business model to use data. Instead of tapping a new senior person to be in charge, the Canadian Fintech company also took a committee approach. The agile team was formed to run experiments. They pulled in quality engineers, data people, and customer support. [interview 11, 12]

Forming a committee is an alternative solution than the political war within the organization when encountering the fast pace of change. If the scope of digital transformation involves various competencies of the organization, tapping one function over others as preferred may create hostility rather than a collaborative environment.

## I. CONCLUSION

According to the IDC report, *Worldwide Digital Transformation 2020 Predictions*, published in 2019 [37], the forecast for direct digital transformation investment is expected to reach \$7.1 trillion dollars from 2020 to 2023 at a compound annual growth rate of 17.5%. The report also indicated the trends for companies and organizations will build on existing strategies and continue to invest in digital transformation in order to become digital enterprises in multiple areas.

If the prediction is accurate, the direct investment to digital transformation related projects is equivalent to twice the size of the GDP of Germany in 2019, or one third of the 2019 US GDP. At this size, it is critical to increase academic efforts to understand the digital transformation phenomenon.

According to the *Digital Transformation Initiative (DTI)* report published by the World Economic Forum in 2018, the DTI team documented over 130 digital transformation initiatives across 12 sectors with an estimated \$100 Trillion US dollars of business value. [40] Given the sample size, we can only imagine there are many other digital transformation projects happening in most industrial sectors.

## **1. Research question**

My hypothesis is that digital transformation is not just about using technology to automate current processes. Nor should it be centered around the capability of technology and disregarding the current business processes and culture.

How do senior IT leaders understand the digital transformation? If we gather information about the digital transformative projects from various companies, and compare them, could we gain additional understanding about digital transformation?

## **2. Methodological design**

The research is a combination of literature review and qualitative interviews of technology leaders. Based on the literature review, I developed the initial research scope, and established the hypothesis. Based on the discussion with my advisor, I developed the interview guidelines and framework to use during the interviews. Since the central point of this thesis is to gain CIO's and senior tech leaders' perspectives about digital transformation, the research effort focuses on interview findings.

The search criteria of the keyword “digital transformation”, format as “publication”, and “journal article” during the 2010- 2019 period, in English with abstract and full text available online.

To familiarize myself with the subject of digital transformation, I skimmed through the initial result of 283 articles by reviewing the abstract to decide whether the article is relevant to the research and included them into the readings.

During January 2020 to April 2020, I reached out to 13 senior executives to request interviews. The candidates were recommended by a group of advisors familiar with the area of research. The interview requests were sent out by emails and LinkedIn messages. 7 interviewees are from for-profit sectors and 6 of them are executives in the NGO's.

Out of the 13 interview requests, 10 accepted the interviews; of these 7 were written and used in the thesis. Two interviewees did not use any digital technology for the transformative projects; one is working on country-level transformative projects which are not comparable to other organizational-level projects; one couldn't disclose enough information due to nondisclosure agreements.

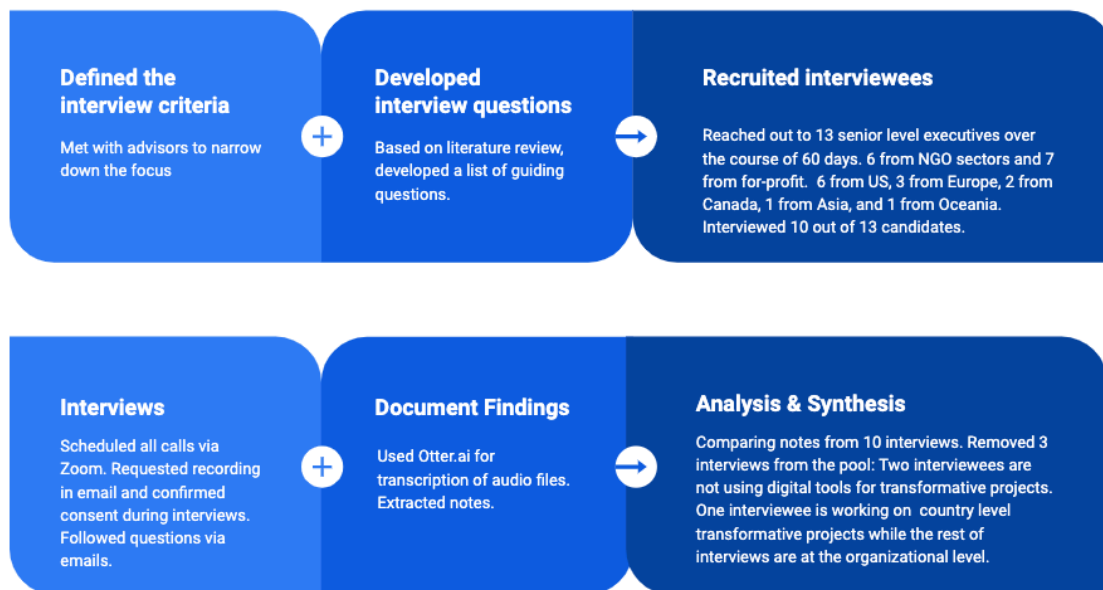


Illustration 2- Research process

The nature of the research and its analysis is primarily qualitative with the goal to combine the literature review and interviews of field experts to gain an understanding of digital transformation and its underlying motivations and struggles with an end-goal to provide insights for practitioners who are currently working on digital transformation projects.

Prior to the interviews taking place, all interviewees were notified the interview would take place via a video conference tool, Zoom. The emails also asked for permission for video call recordings for note taking purposes. In the beginning of the call, the interviewer reminded the interviewees the session was being recorded.

The interviewer used the established interview questions to gain understanding about the person's experiences in digital transformation. The interview started with a few warmup questions then the interviewees were asked to give a definition of digital transformation, and their involvement of projects that meet their own definition. The interviewer asked follow-up questions within the research scope to obtain additional information. The interviews last from 35 minutes to 2 hours with a median length of 55 minutes.

The audio file was uploaded to Otter.ai to use the voice recognition tool to produce automatic transcripts. After the transcripts became available, I listened to the recording and extracted the notes. The notes were categorized by the interview questions. In addition to Zoom interviews, I also used email to follow up with interviews for additional questions.

The initial search for literature suggests there were some academic efforts in recent years trying to understand the phenomenon of digital transformation taking places across industries. The approach the author has taken is to gain a general understanding of digital transformation without limiting the scope to a specific technology, (for example, AI, IoT and social media) with the hope to generate a general model of how digital transformation takes place in organizations.

## **J. FINDINGS**

### *1. Technology driven digital transformation vs. people-first digital transformation*

Interviewees agreed on the elements of digital transformation but disagreed on what the driving force should be. In broad categories, there are people who focus more on what technology can bring to the organization and design their projects based on the constraints of digital tools. On the other end of the spectrum, a group of senior leaders consider that technology is the last thing they worry about. Understanding the people needs drove their selection of digital tools and framed the project scoping.

A few interviewees are firm believers that technology can and will delivery transformative results. With that mindset, they are willing to change current processes when necessary in order

to fit the technology constraints. But that doesn't mean they neglect the people's needs completely, for the technology driven digital transformation projects, they also develop plans to upskill people's digital capability. However, such plans are mostly driven by technology needs with an emphasis on getting the right persons onboard.

*2. Getting the technology right is the easiest part. – Senior Digital Transformation Consultant [interview 4]*

For people-first digital transformation, the CIO and the task-force team's primary tasks are to discover the needs of stakeholders, which may include employees and customers. This is based on the assumption that technology is like utility, and digital tools are abundant. Their selection criteria to pick the digital tools will be developed after figuring out people needs and understanding current and future process. It's worth noting they emphasize more on the collective wisdom and problem solving as a group and encourage people to disregard the job titles and rankings during workshops.

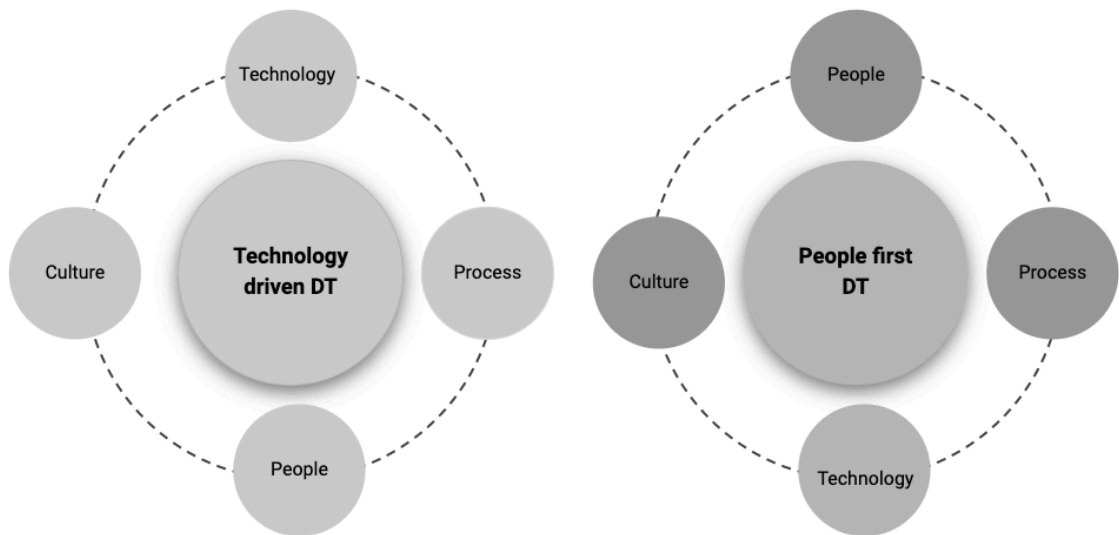


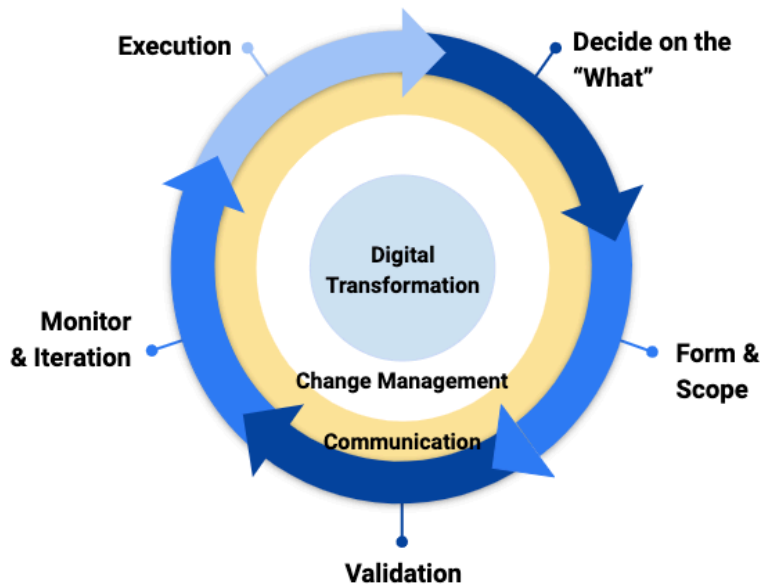
Illustration 3 – Technology driven digital transformation vs. people first digital transformation

As one of the interviewees pointed out, it is getting more and more difficult to separate the business from the technology that underlines it. We can only foresee more adoption of

technology into organizations with the hope to improve business efficiency and maximize benefits. However, each company and organization has its own nuance and contextual differences that require a different consideration for the leaders to decide on what type of digital transformation is suitable for their situation. Even if no two organizations will have the same digital transformation projects, it is still useful to consider the framework of digital transformation and the key elements of introducing change. As noted by the senior IT leaders during my interviews, change management is core to digital transformation projects. People resist change. We may anticipate that resistance by incorporating communication techniques, and by changing incentive mechanisms to encourage employees and customers to embrace change and take that as their own initiative.

### *3. Change Management and communication are core elements of digital transformation*

In addition to the stages of digital transformation projects, change management and communication play critical roles to ensure the success of the projects. The function of change management ensures the team meets its project objectives by creating and executing change management plans that maximize employee readiness and adoption, and minimize resistance. As we have seen from the interviews, some organizations choose to outsource this function to minimize internal conflicts while others form a committee and encourage collaboration to drive the changes.



**Illustration 4 – Change Management and Communication are inner layers in the digital transformation wheel**

The sense of the change management is embedded in each stage of the digital transformation cycle, such as planning and scoping. The key is to update and maintain the stakeholder analysis relevant to the functions and to build relationships and work with key.

Another key element that merits a call-out is the communication plan. It is about creating specific project communication materials to maximize relevancy and effectiveness with local audiences. Remove technical jargon and provide context relevant to stakeholders. Interviewees provided engagement event examples of online webinars, townhall meeting, and workshops. The purpose of the communication plan is to initiate conversations and drive discussions and also to provide stakeholders opportunities to ask questions and provide feedback. They need to be part of the discussion and own their share of the project.

Change management and communication also goes hand-in-hand with training components, especially if there is an introduction of new digital tools and/or a process change. It is critical to anticipate resistance to such change, so providing training needs assessment from various

departments, and coordinate training programs according to user needs. Start with something small and build up the capacity and trust before the large-scale roll-out.

#### *4. The “strategy” of digital transformation*

Brown et al, [7] conducted a systematic literature review of digital business strategy attempting to outline key elements and a flow chart of digital business strategy. They argue the organization must have a detailed digital transformation strategy which will be the blueprint of the execution and realization of that vision. They also pointed to a success outcome of achieving the digital maturity.

During the interviews, there was much debate about whether strategy is dead in the digital era, since the external environment is changing at a rapid speed and the lack of certainty about what digital transformation will entail. In this sense the organization may not have a completely formed strategy, and the pace of change does not permit the time to form a detailed strategy.

IT leaders had different ways to cope with the uncertainty during the interview. For some, it was important to change the way of managing a digital transformation project by introducing Agile methodology when the company is figuring out a new business model utilizing data. The agility of a task force team of various stakeholders is about quick check-in’s and iterative experimenting. For some, digital transformation is a journey, and they have a clear sense of direction and destination, however there are too many unknown and unexpected circumstances that may happen. It is important for organizations to respond to changes and adjust the plan. As the interviewees pointed out that companies that are using scenario planning are enriching their capabilities portfolio. [interview 4, 13]

## **K. REFLECTION**

At the time of writing the thesis, the world is combating the COVID-19 pandemic and struggling to fight the crisis. COVID-19 acts as an extremely powerful external force to disrupt all

industries big or small, and put numerous constraints on stakeholders. The University of Michigan shut down physical classrooms and converted the business model from in-person lectures to remote dial-in videos in less than one week. To continue delivering values to students and communities, the University of Michigan pivoted and introduced new digital tools in record time. During the first week of COVID-19 shut down, the school reported 21 times increase of video conferencing by BlueJeans. [38] The number continues to climb. University of Michigan conducted 49 Million minutes of video conference between March 16 to April 2, 2020. [39] While the reach of digital tools is well accepted, and converting the service model to remote seems “successful”, one wonders how the school should measure the success of the digital transformation forced by COVID-19? Could we simply use the conversion rate of the number of classes run remotely to measure success? How do students rate the quality of the lecture before and during COVID-19? How will enrollment and tuition be impacted by an online model? How will they rate their experience of their university education five years down the road? Does that impact their relationship with the school as alumni? The list goes on and on. We can see the complexity of a digital transformation cannot be measured by a few simple matrices even in the case of COVID-19 driven projects, where all stakeholders have a shared understanding of the need and urgency in terms of why the organization must undertake a large-scale digital project. In most of the situations, not all parties are on the same page and the lack of shared vision creates further resistance to change.

In the COVID-19 case, it demonstrates another issue, that the “born digital” companies are also struggling to keep up with the change. The classic argument that born-digital companies are better positioned to pivot and embrace the challenges is itself being challenged. In the COVID-19 case, the struggles are beyond the digital literacy or the agility of backend infrastructure. Companies are struggling to keep up with the demand, and the rapid change of physical logistics. They are struggling about brand image and customer relationships. Instacart, the same-day grocery delivery and pick-up service founded in 2012, is unable to keep up with the demand and tried to hire 300,000 shoppers. These are people that go into the supermarkets and stores to pick up and deliver groceries. In a crisis like this, does paying a premium justify the risk of other people's health? How does that define the contractual relationship between digital employees and contractors? What is the minimum legal and ethical obligation as an organization? Having

“the best” digital capability clearly doesn’t address the full issue of the transformation the organization is going through.

## **L. FUTURE CONSIDERATIONS FOR DIGITAL TRANSFORMATION**

To manage the scope of the master thesis, my focus is on generating a general understanding of digital transformation, particularly from senior IT leaders’ point of view. The broad stroke type of research approach is meant to develop a shared lexicon and a few models for future analysis. During the interview process, an important theme emerged from various dialogues about trust and data privacy. As digital tools are becoming cheaper and readily available, the key differentiator will rely on companies’ ability to interpret data and to generate enough intelligence to help business decisions. At the same time, senior executives are facing the dilemma of collecting enough data vs. trying to collect and store every byte with a risk of infringing customers’ privacy and destroying trust. Brand loyalty is not going to be just about a product or the service anymore. It's also going to be about the relationship of organization, data processing, information privacy and trust. I can see the need for scholars to research this area.

Another area for future study could be to explore the adaption of digital transformation and its correlation between UX professions. One can hypothesize that in the highly connected society, we will see a dramatic increase in the complexity of structure, the possibility of things getting more intertwined, and the layers of information get stacked on top of each other. It becomes difficult to navigate in the digital space and professions such as Information Architecture help to make sense of the structure by organizing things in meaningful ways to help users to navigate retrieving information, they need to make decisions.

From the interviews, the frustration and the sense of loss often creates resistance to the adoption of the technology within the org. One interviewer said we might lose certain people along the way, but we also want to make sure we have the right people in the ship with us. The mindset of technology first dictates the processes, and the people become the replaceable objects according to this logic. It is unfortunately outside of the current research scope, but I wonder if future

research can go into this area and explore the impact of turnover during digital transformation and how UX discipline may help to bridge the gap.

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