

From Digitized 2 Digital Transformation

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Abstract: This paper talks about how to transform your organization from digitized to a digital transformation organization. The paper also discuss some of the major challenges intervened during the transformation journey and the anticipated benefits as an outcome from this transformation. Digital transformation is about more options, greater outcome, better efficiency, higher revenue, and a lead position in the business market.

Keywords: Digital Transformation, Digitized, Artificial Intelligence (AI), 4th Industrial Revaluation (4IR), Data Analytics, Robots, Cobots, Internet of Things (IoT), Operation Excellence (OE).

I. INTRODUCTION

Prior to the major shift the world had intervene during the last few years, prior to the 4th Industrial Revaluation (4IR), the business world was quite different. In an organization employees reported to work at office building, products were fabricated and manufactured at factory complex, salesmen where out in the field prompting the organization products to potential customers, and marketing was done thru TV advertisements or in the papers. Once the product left the organization, it seldom returned unless it required a fix. This was the predominant structure for any organization in the past, but a vital pillar from this model was missing, the customer. (Adrin Cockctoft VP. AWS, 2018, Nov 27)

The majority of the decisions and strategies were precooked at the organization top management level without the involvement of their customers. These products were designed, manufactured, quality tested, and delivered directly to the market. Customers bought whatever offered in the market or on-the-shelf, not because it's exactly what the customer desired, but it can serve their needs and perform the job required. Altering these products to match customer need could have saved in production cost and also produced more efficient outcome.

Today we are living in the 4IR era, which is a game changer to the majority of product and service-oriented organizations. Many organizations prefer to have their employees work remotely from home, their manufactured products are literally the developed Applications (apps), both sales and marketing are done online, and all your products are connected online via sensor (Internet of Things, also known as IoT). Customer plays a major role in 4IR organization, where almost all organizations track their customers and get their feedback to improve the products/services provided. If a product losses its online connection for few sec/min, then it's conceded as not working properly and require a fix. Customer evaluation and rating of a product/service is a key measure for the success of the product in the market as organizations depend on this rating to further expand the product or discontinue it. (Adrin Cockctoft VP. AWS, 2018, Nov 27)

II. WILLINGNESS TO CHANGE

Before you start planning and allocating your fiscal budget, or registering your employees for training or even setting goals towards your digital transformation strategy, you need to test the willingness of change in your organization. Transforming your organization will require everyone's participation to successfully reach the desired goal. You could be spending a lot on capital expenditure and exerting employee efforts, but not able to fulfil any of your digital transformation initiatives if your organization does not have the willingness to change towards digital transformation. And this is 'THE' most important thing to check for before you begin your digital transformation journey. For an organization to effectively transform, it must be agile and willing to adapt to the new changes this transformation mandates. This adoption will require a change in employee routines, skills, and even changes at the management level. The management style we typical see in most organization either top-down or bottom-up methodology will not be as effective in the newly digital transformed organization as both management and employees need to adapt to a more coherent relation.

When you look at the top-down management style, all the decisions are made at the top management level and then the decisions will cascaded down to employee level for execution. These decisions, strategies and plans were made at the top, and employees are the doers and executors of these plans. This approach relies heavily on key managers or a leader to solely drive employees to a decisive desire. Transforming to digital will require a vision change in the organization, and for the top-down organization, this vision change which was done at the top level, may collide with the employee routine and standard way of performing the daily operations, especially if the new transformation vision is not yet very clear to the majority of employees in the organization. This route will encounter slow-pace of change and might degrade the organization performance during the transition and encounter profit drop.

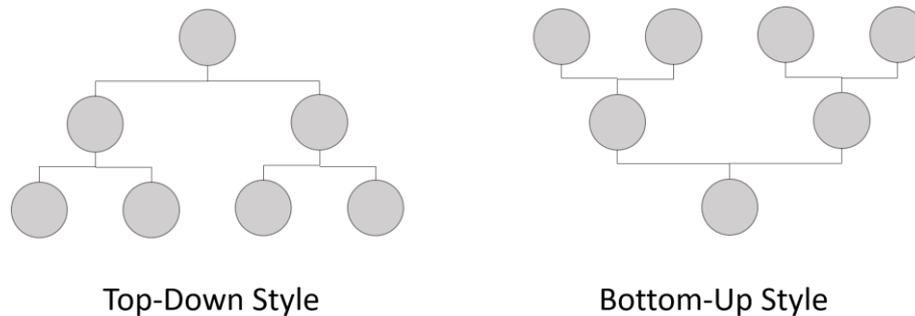


Fig. 1

On the contrary, the bottom-up style opens up creativity in the organization and encourages every employee to be part of the organization challenge and an inspiration to deliver solutions to the organization challenges. This approach improves employee morale, empowerment, and increase the number of initiatives proposed by the employees in the organization. But this approach has its down side where management, quite frequently, are overwhelmed with numerous ideas, initiatives and many proposed solutions for a single challenge. All the organization projects might shift to an ad-hoc mode and will make project budgeting and forecasting a real pain. Uncertainty will be predominant in this style and will hinder management from developing clear organization strategies.

Transforming your organization to digital will require a stronger bond between management, employees, and most importantly with their customers. The customer involvement is a key success factor for your digital transformation. Management, employees and customers will all work hand-in-hand to achieve mutual benefit. Agility and willingness to change will assure a success transformation in this fast-pace digital world. The organization employees will not be able to develop products if the customers are not interested to buy them, and management will not be able to set the organization goals and strategies if there are no market demand for that approach.

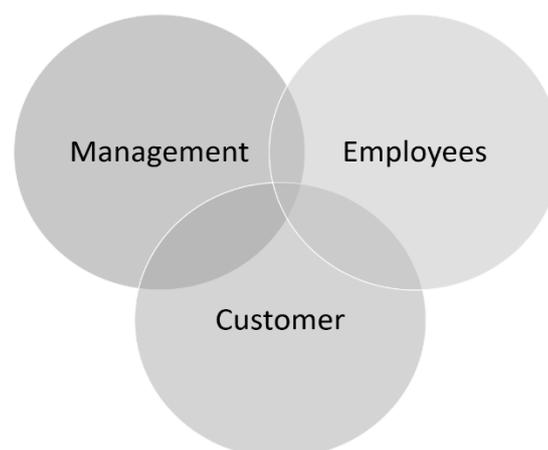


Fig. 2

III. DATA COLLECTION

A famous quote by Peter Drucker, “If You Can’t Measure, You Can’t Improve”, and this very valid statement in digital transformation. If you need to elevate and transform your services to digital, you need to improve and define the way you collect data. In the Digital Transformation era, the more data you collect about a product (Big Data), the better consents you obtain about that product thru your Data Analytic process. In recent years, the demand on sensors have gone up rapidly as many products were configured as IoTs, which forced a drop in sensors cost dramatically in the global market. The average cost of IoT sensor was \$1.3 in 2004, \$0.7 in 2012, and expected to reach below \$0.38 in 2020. The majority of organizations are developing IoT products, and the global IoT spend is projected to exceed \$1 trillion in 2020. (Microsoft 2019 Manufacturing Trends Report).

This made it easier for corporations and companies to develop internet connected products (IoT) on majority of their new products. All these products are transmitting loads of data back to their companies, where analytics plays a major role in digesting the load of data to improve and/or develop more efficient products. For example, a company, may install a sensor in a typical hair brush. This IoT brush will record data gathered from the frequency of using the brush, speed of brush on the surface, type of hair in contact with brush, and so on. All this data will be sent back to the company and/or the customer, where data will be analyzed and processed to improve the product itself or suggest an ideal way-of-use to the customer based on historical data collected from the product.

Such service and analytics about an IoT product will not come cheap, an equilibrium balance between both the customer and manufacturer needs to be in place, to set which products demands an IoT feature from those that does not require it. The customer needs to balance this overhead cost associated with these IoT products, and evaluate the new features/benefits versus the extra cost.

In 2016, David Kenney was the CEO of The Weather Company, and he was trying to generate more profit for the company especially since their app users open the app only for few seconds to check the weather then close the app. The app was definitely important to many users, as many clients have downloaded the app and they frequently checked the weather throughout the day, but the duration of app-use was extremely minimal, and thus, advertisement in the app had very low return. So he started to collect data from his users and the advertised material.

One of the advertisements in the app was for a company that sells lady’s hair shampoo. And after David performed data analytics, he was able to see direct correlation between the use specific kinds of shampoo depending on the weather condition (either humid, dry, rainy, etc.). David approached his customer, the shampoo company, and showed them the discovery he made from the data collection and he also proposed a recommendation that might yield for higher revenue to the shampoo company.

The proposal was to advertise certain types of lady’s shampoo depending on the upcoming weather forecast. Hinting to lady’s to buy the suitable shampoo, in preparation to the upcoming weather. The shampoo company sales went up by as much as 28% due to David’s innovative data analytics. Shortly after, IBM Corporation were fascinated about this data analytics approach and they were thrilled with how this could play a major profit gain to an organization. IBM bought David’s weather company and later formed IBM Watson for data analytics, led by David (Jeanne Ross, Principle of Research at MIT, 2018, May 31).

IV. TRANSFORMING FROM DIGITIZED TO DIGITAL

In recent years, many organizations have started to have a deeper look in to the way they run the business and how to optimize their processes to deliver a more efficient service and reduce their operation expense (OPEX). The common terminology for such activities was known as Operation Excellence (OE). The organization would identify all processes, assign a Subject Matter Expert (SME) whom is well aware of the process details, and then develop a rigors well-documented report for each process. Key Performance Indicators (KPI), and benchmarking with other organization will be done to identify the process gaps and improve the process deliverables. In simple terminology, OE transformed your organization to the Digitized phase, a phase that is globally recognized as standard structure.

The digitized phase will have all your critical processes documented, measured in OE perspective and will have the majority of your processes optimized to yield an optimum results. In some processes you may even develop an app to ease customer experience and speed up the process cycle time. Transforming your organization from the Digitized phase to the Digital phase, is an entirely different level of excellence.

In the digitized phase of an organization, your OE initiatives will ensure a proper integration is done between related processes in a standardized format and produce a well-documented OE manual. Each process is governed by a well-defined control measures to ensure specific level of quality is met with a process owner assigned for accountability purposes for each process. The digitized phase will strive to optimize the process efficiency and deliver cost saving/reduction to the organization. The typical funding strategy in the digitized phase is that all projects are funnelled into a single centralized unit, where they are evaluated and prioritized before the funding-approval is secured for each project.



Fig. 3

Where as in the digital phase, the organization processes have to generate new 'digital' offerings and proposition to the customer. A product-owner is assigned by the organization for each product or service offered to the customer. And the customer engagement is a vital role to assess the quality of the outcome and ensure it meets his/her expectation. The funding model based in the digitized phase will slow down the fast vivid approach of the digital phase, as in this phase, the swiftness delivery is a vital key of success in the digital phase. Many digital organization have adapted to locally fund new offerings under a dedicated digital business unit found in each stream in the organization, Fig.3. (Ross. Sebastian, and Beth, MIT CISR, 2016)

In the Digital phase, as Jenny Ross, Principle of Research at MIT, said: "IT shifts from enabling to inspiring business strategy". Your digital phase must bring new values to the organization, and generates new sources of revenue. The Digital phase will inspire your employees to take full benefit of the ubiquitous data and do massive data processing to generate new source of profits to the organization. The Digital phase will stimulate business innovation and creativity to deliver the best service your customers could have experienced and will keep the organization ahead of others in the global market, Fig.4. (Jeanne Ross, Principle of Research at MIT, 2018, May 31)

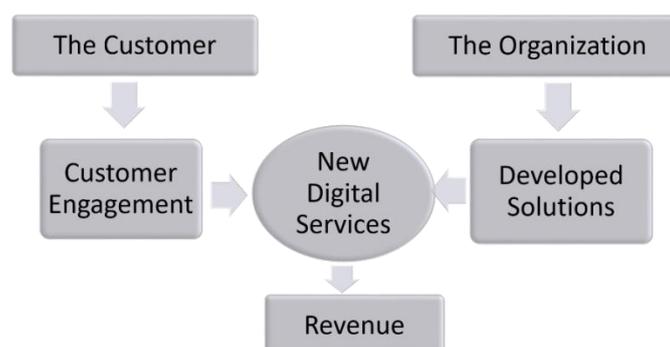


Fig. 4

A Digital offering is the revenue generated from the digitized process. The customer engagement with the organization will yield to the development of customer solution which will result in a revenue for the organization.

The transforming from digitized to digital will have the organization management to envision the 'to-be-state' of the organization. And once this is clear to everybody, the organization vision needs to be re-evaluated and clearly defined and publicized in the organization to ensure everyone is committed towards a common goal. Soon after, the organization part-by-part will spark the rebuild of its priorities in preparation to the digital transformation launch.

V. ROAD BLOCKS

It is common to intervene few obstacles that prevents you from achieving your desired goals whenever a change endeavour in the organization. Having to know the upcoming road blocks an organization might face during their digital transformation journey will definitely help to overcome such obstacles and prepare in advance. Deloitte Development made a study in 2018 on many organizations and discovered that the common road block challenging your digital transformation are Cost, Vision Ambiguity, Skill-set, and lack of training.

Any change in an organization will encounter cost, especially if this change involves a radical transformation, management needs to adequately cater for extra funding for this transformation to succeed. This change is very tempting as it will lead to huge potential revenues and/or prime position in global market that every organization is aiming to obtain. The organizations need the courage to entrepreneur and take smart risks of change that will unleash prosper revenues.

Digital transformation will impose a vision-shift in the organization, and this new vision must be clearly announced and shared to all the employees in the organization, ambiguity and constant change in the organization, the unknown, accounts for 13% of the digital transformation challenge in organizations (Anh Phillips, Deloitte, 2018). The organization must develop an awareness session illuminating the new vision and mission to everyone in the organization. Or even create a marketing campaign to level-out ambiguity in the organization that might hinder from marching towards the common goal of the organization. Any major change to an organization will stimulate a counter-effect force resisting that change in the organization and it will anchor its current position from the wave of change. As a common human nature, we tend to stay in our comfort-zone to escape from the fear of change and new forthcoming.

Many organizations were under the impression that acquiring the right technology would be the major player to drive the organization towards digital transformation, but acquiring the right technology accounts for only 12% of the organization challenges impacting the digital transformation (Anh Phillips, Deloitte, 2018). An organization need to attain the right technology that fits their needs be it: Artificial Intelligence (AI), Analytics, Robotics, Blockchain, and so on, but it also need to ensure that employee skills are elevated to cope with such technologies. Lack of employee training was evidently the utmost element hinders employees to effectively operate in a digital transformation organization. Employees need to continuously update their skills, at least every 6 months, due to the rate of technology advancement (Anh Phillips, Deloitte, 2018). Skill update and training are the digital transformation enablers and the vital success recipe to effectively transform in digital environment.

This learning gap is not only due to lack of training the organization provides for their employees, but training companies are also struggling to update their training courses to catch-up with the fast-pace of technology evolvement we see today. Developing a course, preparing the course material and securing professional trainers take exponential time to prepare. On the other hand, the on-the-job experimentation and testing is the fastest way to gain knowledge and elevate the employee required technical skills.

VI. EXPERIMENTATION

For an organization to innovate or develop new products or services, it must experiment and venture new ways. These experimentations will drive the organization to take few risks that might interrupt the steady flow of work in the organization or might cause few services to temporary fail. Fearing from taking such risks will hinder the organization from innovating and developing new features and technologies or becoming among the lead (MIT Sloan, Gerald C. Kane, Boston College, 2018). A due-diligent study of all risks associated to a change must be taken in consideration with prioritization of efforts and effect of such risks. The organization should prepare a well-studied contingency plan to mitigate any defects might accrue as some risks might materialize. The organization must identify few risks that potentially will have low effort and high benefit, or if we can call them as 'Smart Risks'.

Smart risks are the strategic driver for innovation and development of new technology. The organization that does not take a risk is subject to miss-out potential investments and revenue that competing organization will acquire instead. Experimentation and getting your employees to test in a secure test labs away from your main production environment is extremely important for the success of the organization. The Massachusetts Institute of Technology (MIT) conducted a survey in 2018 on large number of organizations and noticed that only about 20% of these organizations are willing to take risks (MIT Sloan, Gerald C. Kane, Boston College, 2018). This is considerably low percentage of organizations, but in reality, the number of distinctly innovative organizations in the world are always low compared to the mass. Smart risks usually glide in parallel with potential revenue opportunities.

General Electric Company (GE) is one of the perfect examples for a well process-oriented organization that is strongly committed to Six-Sigma concepts to improve their work processes. GE is a motto for lean processes and a low-error manufacturing organization. Any experimentation will encompass trial and error, and this might collide with the six-sigma notion as this is considered as a fat/waste that produce deficiency downswinging the desired KPIs and SLAs of the organization desire. This level of perfectionist, zero-risk, made it very difficult for employees in GE to experiment and try new things, as the organization approach is to strive for perfection all the time. GE management realized that in order for them to keep their competitive position in the market, they must change their routine or they will miss out big opportunities in the near future. So they have introduced what they called “Fast-Works” program, which is an entrepreneurial mind set to enable their employees to innovate and experiment new things in the organization and can share results with their customers. This program have enhanced GE productivity and produced a large flow of innovation. (MIT Sloan, Gerald C. Kane, Boston College, 2018)

The “Fast-Works” program ensured that GE remains among the lead of innovative organizations in the market. Similarly, if you like to have your organization among the leaders in digital transformation, you need the courage to innovation and work outside the norm which might entail taking few ‘smart risks’ that will open new venues of revenue to the organization.

The biggest challenge of an organization impacting digital transformation is the fear from experimenting and the courage to explore smart risks. Experimentation is eminently ranked as the highest challenge, at 20% of all challenges, impacting the digital transformation in an organization. Experimentation is the paramount contributor to skill-up the organization talent, and it is the orchestrator of your digital transformation. (Anh Phillips, Deloitte, 2018)

VII. BENEFITS OF DIGITAL

Considerable number of benefits will be driven from the digital transformation in the organization. And probably one of the most business benefits is the real-time monitoring of products and services the organization provides to their customers. The organization will be able to receive data-points from their IoT products and apps where such data is evaluated and analyzed to further enhance the product. At any given time, the organization will be able to view, or update, their products to meet business requirements or customer demand.

Another major benefit arises from the customer engagement to the organization, where customers play major role in the organization daily operational work that in return will produce cost reduction of services. For example the airline self-service ticketing counters enables customers to do the majority of ticket issuing process without the need of airline staff involvement. This had reduced cost to the airline industry and availed transparency with the customers.

Distributed Automation is when machines/robots are taking major role in collaborating and assisting the organization employees at their daily operational work. As in late years the cost of robots and sensors has dropped dramatically, and made it much feasible to own robots or cobots (collaborative robots). According to Barclays Equity Research, projects of cobots in the market will reach to \$12.23bn by 2025, which is more than 8x increase from 2018 at an estimation of \$1.35bn. Cobots will complement human labor, and will not replace it. (Microsoft 2019 Manufacturing Trends Report).

Another major benefit from digital transformation is the outstanding role of AI plays in operational work. For example AI is used for image analysis where many hospitals depend heavily on AI to analyze x-ray images to assist doctors in developing their reports. AI have proven substantial achievement in radiology during the COVID-19 pandemic, were hospitals across the world were overwhelmed with the high number patients, AI have helped to expedite the CT and x-ray image analysis of patient chest scan to identify if they were infected with the virus. This technology have shown over 98% of accuracy, so far, and the rate is improving rapidly. (Megan Scudellari, IEEE, 2020 March 31). Automation and AI have reduced operational work from hours to minutes or even seconds. AI industry is undergoing a phenomenal growth, with anticipated AI software growth from \$10.1bn in 2018 to an estimated of \$126bn in 2025. (Omdia.com).

VIII. CONCLUSION

The transformation journey from digitized to digital will mandate on the organizations to adapt to new routines and work methodologies that were not presented previously in the organization. The wave of transformation will confront the organization's management to endeavour with a challenging circumstances to decide on the way forward. If management would like to take the lead in the business world and move faster than other competing organizations, this will require making few risks, smart risks that is. Being among the lead will avail much greater benefits and revenue to the organization, but be ready as some of these risks could materialize and your organization will learn how to deal with these risks. Moving towards a desired target in fast-pace, may result arriving with imperfection, but its far better goal to pursue from not venturing at all.

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BIOGRAPHY



Ibraheem A. Al-Sheikh is an Information Technology System Analyst in Saudi Aramco, Dhahran Saudi Arabia. Ibraheem holds over 19 years of experience in IT technologies and IT infrastructure. He had worked in multiple areas during his career; IT computing infrastructure, Cloud computing, capacity planning, control centre, renewable energy systems, Microsoft Exchange support, and much more. Ibraheem is a Computer Engineer graduated from Louisiana State University, and achieved many technical certifications throughout his career: ITIL, COBIT, MCTS, CDCP, and much more.