

Digitalisation trends in Enterprises



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Macro-economic and Business Drivers:

At Macroeconomic level the economic, demographic and lifecycle & social trends are challenges in sustaining the overall global GDP growth. The economic trends are increased disposable incomes in emerging economies through globalisation initiative. This also results in increasing mobility specifically in urban sector contributing to 64% of travel kilometres. Growing scarcity of rare minerals and depleting fossil fuels is pushing the energy companies to find out alternatives technologies in energy sector. From the demographic standpoint, rapid urbanisation led to world population increasing in city from 51% to reach 61% by 2020, this results in challenges in creating the urban infrastructure like water, electricity, transportation, healthcare, security at the government level, that is one of the reason for various countries planning for smart cities and India also has plan to have 100 smart cities. Cities contribute to more than 60% of countries GDP. The urban population has a significant behavioural shift in Lifestyle and social trends, through adoption of social media network in a connected world, with affordable mobile communication, cheaper network bandwidth and cloud computing. The consumer expectation in terms of needs and behavioural patterns is changing fast. Environmental awareness has increased to have more green products and living, major contribution is from cities of approx. 80% Greenhouse gas (GHG) emission.

Business Drivers for the companies.

The business impact for the companies after globalisation is multifold. The below picture depicts the various contributing factors. 1) The product cost is coming down through stiff competition, innovation, and advanced manufacturing technology for a sustainable green products, which can be realised through low development cost, BOM cost, manufacturing and supply chain cost. 2) Talent shortage and availability on demand is acute globally. 3) R&D budget for new product development and sustenance project is shrinking. Companies are leveraging external eco system R&D capability in addition to in-house capacity through innovation in maximising the return on R&D spend. Top innovators have more market cap valuation and revenue growth and margin compared to Top R&D spenders.



Business Drivers for sustainability and growth

4) Product development time is also decreasing, with new development methodology and tools and virtual product development tools and software becoming available virtual product development is done before prototype is being built and tested for launch. 5) Stringent emission norms as result of global warming challenges put enormous amount of compliance in terms of complete business to be eco-friendly, right from product development, materials being used,

extinct, if we look at the average life span of the companies it is decreasing and has come down from 60 years to 10 years.

Technology trends and its impact on the enterprises:

There lot technology development happening in all almost all sectors, some of them are disruptive in nature and called disruptive technologies which has potential disruptive impact on the nature of business and also the market changes due to those technology advancements. The market condition and the way business is conducted also will be changing continuously. Below are some of the technology trends which are top trends which affects all the industry segment in terms of product performance, way it is manufactured and distributed and marketed etc., customer relationship being influenced by SMACS (social media, analytics, cloud and security) undergoing major transformation. Key technology areas are the automation of knowledge work starting from robotic process automation(RPA) in technical support, design and development methodology done in cloud environment leveraging the crowd sourced ideas, design etc., if we categorise work into below types like a) managing others, b) applying expertise c) stakeholder interaction d) dynamic physical activities e) data processing f) predictable physical activities , then e,f, can be approximately 50% can be automated easily and c, d around 25% can be automated with little effort and finally a, b, which is approximately around 25% will need some more maturity of the technology to be automated. The percentage of work mentioned are indicative and varies for different industry. Automation need is basically a key factor for cost optimisation and reduction. This is similar to industry 3.0 when factory shop floor manufacturing was automated using robotics and control automation. Another area of focus for cost optimisation is on advanced materials development in metal, polymer, ceramic, composites, and nano technology due to demand in high performance materials, which requires advanced manufacturing technology. Additive printing which is evolving and maturing to be medium volume manufacturing technology eliminates costly dies and moulds etc., and complex design shapes and customised styles can be realised.



Mobile Internet



Internet of Things



Automation of knowledge work



Cloud technology



Advanced robotics



Autonomous Vehicles



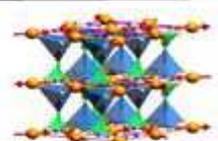
Next-generations genomics



Energy storage



Advanced oil & gas exploration



Advanced materials



3D Printing



Renewable energy

Source: Mckinsey & Co

Top Technology Trends (Mckinsey & Co)

With so much happening business process and model has to change and adapt to the digital reality which will evolve and mature in 3-4 years.

Digitalisation domain

Companies seeking to embrace digital technology for process efficiency gain should have digital strategy and implementation roadmap aligned to the business strategy and business model innovation that is being targeted. CEO of the company should be driving supported by digital experts and council which will continuously get insight on the socio economic and technology trends. There should be a digitalisation roadmap with a step by step implementation plan. Major impact in digitalisation of the company will be the business models that will fundamentally change the way business is conducted for the existing and as well as for venturing into new business segments/ markets.

- Business model innovation can be put into below 10 types which are predominantly being adopted and shown in the table below.

Subscription	Customer must pay for the subscription price to access to the product/services	NETFLIX
Freemium	Basic services are free to access but additional features and services are chargeable.	Linkedin
Free	End users are not charged (directly). Revenue realised from the data and the behaviour of the users.	Google
Marketplace	Facilitate through a platform where parties commercial transaction is done with each other.	ebay
Access over ownership	Customers uses the product without buying it. "Everything as a service."	Zipcar
Hyper market	Digital stores, offering enormous amounts of products and/or services.	Zalanda
Experience model	Provides the customers with an unseen (user) experience	Tesla
Pyramid	Companies let the revenue stream upwards with less effort with terms for affiliates & resellers.	Amazon
On Demand	Generates revenue addressing the need of people right away with speed and convenience.	UBER
Eco System	Build an entire universe of products and services with a eco system for the customers	Apple/Google

Business model innovation

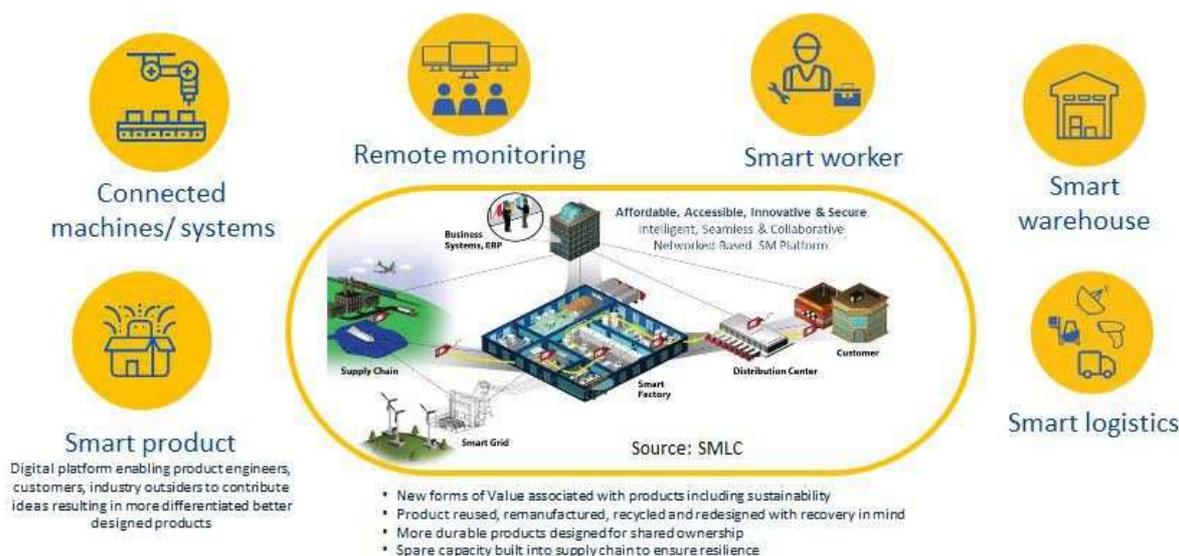
- One of the potential change is digitalisation of products and services. Products and services which can be smart and provide intelligent insight on its performance, remaining life prediction, any failure and safety features and finally consumer behaviour during its term of usage. Alert the service provider for any deficiency or fault for prompt preventive action to be taken up reducing the downtime which may minimise or eliminate costly recall etc.
- Top most priority for CEO is relook and revamp the existing operating models and bring lean approach to core business and the support functions for better operational efficiency and help the right stake holders in decision making at the right time with speed. Business process analytical tools are to be deployed to analyse and provide the correct insight on the business process status, increased engagement, loyalty, advocacy and personalised experience for the consumers. This transformation has profound impact on the leadership skill requirement to lead an organisation. Below summarizes the key skill needs:
 - Lead interdisciplinary skilled people in the digital domain
 - Innovative business / operating models
 - Create a vision and drive change for business performance
 - Influence stakeholders for change management for cultural mind-set change.
- The operating business model and associated complexity needs different set of digital talents and skill, investment has to be made to attract, retain and develop the right talent. Embrace the cultural transformation first in terms of mind-set change and encourage millennials to be part of the collaborative global work force, virtual team and second integrating robots with human workers in the work place.
- Digital metrics and dashboard in tracking the overall performance of the business in monitoring and reacting in real-time has to be identified and right type of KPI indicators to be available for all the stake holders at the real time for decision makers to act with agility and velocity. Real time data for any fraud, data security compromise, data theft detection and subsequent business risk foreseen to be alerted.
- Customer are telling us what they need implicitly through behaviour (social media data) and explicitly through direct communication and has a direct influence on the marketing, selling of product, so listening to customer

expectation, needs, and services is a must through various social media. No of customers having smart phones has increased. 6.8 Billion Mobile subscription equal world population. Globally 2.7 Billion people are online. More than 1 Billion people use social networks, data is doubling every 18 months, unless you listen to what they say and understand their behaviour it will be challenging to fulfil the consumer demands. Demand assessment should be in real time, competition details, helping in forecasting for effective and efficient supply chain and inventory management. Mobile broadband subscription has jumped to 2.1 billion, what content, usage and sharing of information is happening in real-time has to be understood. All the above has influence on product needs and requirements and design, product lifecycle becoming shorter, frequent requirement change, preference and usage pattern are more important for product launch.

Digitalisation of Manufacturing Industry:

With the rapid advancement in SMACS and data cost going down, realisation of digitalised enterprises is becoming a reality and necessity in this new networked world.

From manufacturing in early 80s which was predominantly through mass production and automation manufacturing shop floor, in the 21st century we are moving towards the mass customisation. In smart manufacturing the whole eco system from customer product needs to conceptualisation and manufacturing until distribution has to be smart. In the shop floor basically machines are interconnected and intelligent and can collaborate with other machines and /or with humans. The production line should be flexible and should be responsive to product line, variants and volume and accordingly responsive in the scheduling and balancing the line. Energy saving and optimisation during idle time etc. The primary objective is to reduce the CAPEX and OPEX cost.



Digitalised Industry

Machines will be remotely monitored using IoT sensors inbuilt to give overall real time status of the machines usage, condition, and scheduled maintenance, preventive maintenance reducing the downtime etc., Workers in shop floor has to be working along with robots in the production line. Smart warehouse no more a storage center but with IoT and smart wearables for workers, integrated with autonomous robots(AGV- Automated guided vehicle) and pallets, with RFID tag on the stock which can be raw material input and finished goods storage, ware house efficiency will improve when warehouse management and control is also integrated with building management system. With application of artificial intelligence and optimization methods warehouse through put will improve a lot. Smart logistics for tracking of the components /parts, integrated quality assessment, inventory tracking and optimisation. This should be synchronised to the shop floor, warehouse and end consumer demand and needs and delivery model for on time delivery. Ultimate smart logistics goal is JIT with the integration of manufacturing operations and processes into a single unit that removes the need for a handling and storage processes and equipment between them.

Challenge in adoption of Digitalisation:

The key challenge for analogue companies to adopt digitalisation is visualisation of what and how digital adoption can be done, how to assess and value the ROI, and build a business case. Next level of hurdle is getting senior leadership buy in and influence all the relevant stake holders' mind-set change and commitment to the digital journey. What skill

set is required and how to acquire the skillset, and also attract millennials, manage and retain the talent. The Millennials have the innovation mind-set they are key in workforce composition. The right process change alignment, adoption and the necessary technology required to implement partially or fully or in staged manner. The implementation of the Digital drive needs to be supported by the eco system partners and their readiness to embrace digitalisation. Once this planning is done, bringing the change management and also to take a make or buy decision with limited digitalisation knowledge.

Digital Talented workforce:

Skill set which are important to be focussed upon for workforce to be ready for a digital enterprise categorised into 10 areas in the table below. Digitalisation requires new roles and skills as well as placing increased importance on some existing roles. In addition to having to master emerging technologies, adopt new ways of working, new methodologies, and ensure a shift in emphasis from building solutions to acquiring and integrating them. Many of the skills required, like User eXperience design, Social media, Mobile, Analytics, Cloud Computing and Security (SMACS), are in very short supply, specifically for some of the new roles, such as solutions architect, product / service and customer support manager.

Sl.No	Skill set	Description
1	Multi-discipline	Literacy and ability to understand concepts across multi discipline
2	Design Thinking	Ability to represent and develop work process for desired outcomes
3	Sense making	Ability to determine the deeper meaning or significance of what is expressed
4	Virtual collaboration	Ability to work effectively , drive as member of virtual team
5	Social Intelligence	Ability to connect to others to sense and simulate reaction and interaction
6	Cognitive load Management	Ability to filter information, to maximise cognitive functioning using a variety of tools
7	Cross cultural Competency	Ability to operate in different cultural environment
8	New media literacy	Ability to critically assess and develop content using new media forms
9	Adaptive thinking	Proficiency in thinking and coming with solution and responses beyond that is rule based
10	Computational thinking	Ability to translate vast data into abstract concepts, data based reasoning

Select skill set needs for digital enterprises.

The Inevitable: Understanding the 12 Technological Forces That Will Shape Our Future

Much of what will happen in the next thirty years is inevitable, driven by technological trends that are already in motion. In this fascinating, provocative new book, Kevin Kelly provides an optimistic road map for the future, showing how the coming changes in our lives from virtual reality in the home to an on-demand economy to artificial intelligence embedded in everything we manufacture can be understood as the result of a few long-term, accelerating forces. Kelly both describes these deep trends flowing, screening, accessing, sharing, filtering, remixing, tracking and questioning and demonstrates how they overlap and are codependent on one another. These larger forces will completely revolutionize the way we buy, work, learn and communicate with each other. By understanding and embracing them, says Kelly, it will be easier for us to remain on top of the coming wave of changes and to arrange our day-to-day relationships with technology in ways that bring forth maximum benefits. Kelly's bright, hopeful book will be indispensable to anyone who seeks guidance on where their business, industry or life is heading what to invent, where to work, in what to invest, how to better reach customers and what to begin to put into place as this new world emerges. The book outlines twelve trends that will forever change the ways in which we work, learn and communicate.

1. Becoming: Moving from fixed products to always upgrading services and subscriptions
2. Cognifying: Making everything much smarter using cheap powerful AI that we get from the cloud
3. Flowing: Depending on unstoppable streams in real-time for everything
4. Screening: Turning all surfaces into screens
5. Accessing: Shifting society from one where we own assets, to one where instead we will have access to services at all times.
6. Sharing: Collaboration at mass-scale. Kelly writes, "On my imaginary Sharing Meter Index we are still at 2 out of 10."
7. Filtering: Harnessing intense personalization in order to anticipate our desires
8. Remixing: Unbundling existing products into their most primitive parts and then recombine in all possible ways
9. Interacting: Immersing ourselves inside our computers to maximize their engagement
10. Tracking: Employing total surveillance for the benefit of citizens and consumers
11. Questioning: Promoting good questions are far more valuable than good answers
12. Beginning: Constructing a planetary system connecting all humans and machines into a global matrix

Courtesy & Source: <https://goo.gl/bu4tbu>