

Paradigms of Wisdom Economy for Manufacturing in Post-Pandemic World

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Abstract

We are now at the beginning of the fourth industrial revolution. We could see the impacts of third industrial revolution started in 1950, which gradually boosted up to the information and research based knowledge economy. We know, the knowledge economy was steered by research-driven companies that followed the science to make innovations and gain productivity from R&D (Švarc, J., & Dabić, M. 2015). We could observe how manufacturing under the knowledge economy attempted eaten up the earth. The bust of COVID-19 as the pandemic had changed social, technical, managerial, geopolitical aspects of earth finally impacted on the industrial manufacturing to serach the new principles and guidance.

The pandemic economy of the world force the human being to search alternatives, consequently realizing to say “now is the right time to say by-by knowledge economy”. We must explore the wisdom economy and its implications on the world of manufacturing. Wisdom economy as the emerging economy based on the conscious and collective notions of human being, the truism of it has obvious possibilities of changing established paradigms of the knowledge economy.

In this piece of writing the author highlighted the foundation, history and evolution of manufacturing management approaches. Focused on the present situation, realizing the need for intervention through the principles of wisdom economy in manufacturing management. Thus, the author churns out the wisdom economy paradigms to guide the manufacturing of the post pandemic economy.

Keywords: *Covid-19, Chaos, Resilience, Climate Change, True Value, VUCA, Ecosphere*

Introduction & History of Manufacturing Management

The simple concept of manufacturing is a group of activities undertaken by a person or company that makes goods for sale. The person or the company who undertakes activities for manufacturing is the manufacturer who supplies the goods to the distribution centre; they may be whole seller, retailer, or be an exporter. From the meaning of manufacturing and manufacturer, we can define the term “manufacturing management”. In simple parlance, planning, organizing controlling and directing of activities manufacturing of goods or produce is known as manufacturing management. Once, the manufacturer decides to sell goods to the seller or to the consumer from that point responsibility of manufacturing management starts.

Manufacturing as a series of activities is carried out through processes. A process any activity or group of activities that takes one or more inputs, transform them to one or more outputs The

outputs could be for external customers or internal customers. External customer may use the product for sale to others or direct consumption. Internal customer may use it for the next process to give a shape of the final output. The manufacturing process in other words are transformation processes which change the materials or inputs or raw materials.

Frederick Winslow Taylor in short F.W. Taylor was a pioneer contributed in developing the concept of manufacturing management. F.W Taylor contributed through scientific management, scientific manufacturing process management, process improvement and design. F.W Taylor proposed that manufacturing managers need to take responsibility for developing manufacturing methods. Frank Galbrith contributed by studying motion study in manual work or machine operated work. Frank Galbrith with Lillian Galbraith conducted fatigue study of machine operated and conjectured the negative consequences in manufacturing operation. They proposed to prevent fatigue and the negative consequence thereof.

Table-1: **Contributors to Manufacturing Management**

Theorists	Main Contribution	Contribution(s) to Production Management
F. W. Taylor	Scientific Management	Manufacturing Process Management, Process Improvement & Process Design
Frank Galbrith	Scientific Shopfloor Management	Motion study
Frank and Lillian Galbrith	Human impact on Manufacturing Operation	Fatigue Study
Henry Ford	Production System	Assembly Line in Operation
Henry Gantt.	Scheduling Production Activities	Gantt. Chart
Harry Emerson	Efficiency and Industrial Engineering	Efficiency of Manufacturing System
F. W. Harris	Theory of Batch Processing	Batch quantities in Production and Purchase
Walter Stewart	Statistical thinking in Control	Statistical Process Control
Hawthorne	Hawthorne Experiment	Impact of Psychological Variable & Behavioural Variables.

Source: *Comiled by author in Table Format*

Manufacturing management got its momentum with the development and integration of operation research (OR). OR helped to manufacture to understand and optimize the system of manufacturing better. Further integration of OR let to advanced system implementation like manufacturing resource planning (MRP) which was extended to enterprise resource planning (ERP).

Till the end of the 20th century, manufacturing management not only locked up with US-based techniques and theories but also plastered by the many Japanese techniques. The major Japanese concepts total quality management (TQM), total productive maintenance (TPM), total cost management (TCM) became the strategies for production, manufacturing and organizational management. Later, Just in Time (JIT) or lean systems became the best practice for production systems. New technologies dominated along with the advancement of production engineering.

The theory of Business Process Reengineering (BPR) helped in utilizing the full power and potential of the adopted new technologies more. Along with the spread of internet and adoption of new technologies, the manufacturing process could acquire the ability to look like a superior and superior system using operation research models, the system dynamics models, and ability to access data anywhere using internet-based communication made coordinated and distributed global facilities. With the development of technology, strategies, last two decades (during 1990-2010) there was a rapid succession of manufacturing management concepts. From the year 1984 to till 2012 the 'theory of constraints- (TOC)' was a dominant innovation fling for manufacturing management (TOC, Institute). During that period the concepts like focused factory, just-in-time manufacturing, concurrent engineering, total quality management, supply chain management, flexible manufacturing, lean production, and mass customization etc. ar not last, had pushed forward manufacturing management to a high-tech economic activity.

Manufacturing in Knowledge-Economy

Manufacturing activities just after the break mortar economics began to hold close the knowledge economy paradigm. Production and manufacturing purely become very specialized activities with high-level automation and mechanization to fulfil the demand and supply. Consumers demand was an un-satiate psychological attribute generated by information and knowledge. Due to the infusion of information along with production, the attempt of a marketer to differentiate the product with the help of customers knowledge manipulation consumer become unsatiated. The producers used to take advantage of individual demand, national, regional and even at the international. Thus, knowledge (K) component have been hiddenly added with the traditional inputs such as land (L), labour (La), capital ©, organization (O). The production function of the knowledge-led economy was comprehended as mix, i.e. $P=f(L, L+k, C+k, O+k)$. Deploying these manipulative inputs combination production management become a multi-faceted production gimmick as revolutions in the name of mass manufacturing, just-In time (JIT) manufacturing, Quality led manufacturing for competition, and finally, technology integrated economic activities.

Knowledge-Economy Paradigms

As stated earlier, knowledge as a critical input mix with all traditional inputs combinations of production and manufacturing. A few distinctive characters of knowledge economy controlled every activity in any economy of the world. These characteristics exerted as knowledge economy paradigms, they are-

- (1) The *knowledge economy always wants more* i.e. never satiating wants and needs is the prime character. Knowledge economy values only accumulation.
- (2) As the knowledge can not be assessed easily, therefore, the knowledge economy *demands qualifications*. Performing work in a knowledge economy needs skilled workers formally qualified to perform.
- (3) The knowledge economy is built around ideas, intellectual capital; In common parlance, the knowledge economy is the *technology-driven* and driving force of the technology-led economy is determined by the pace of development of ideas and intellectual capital.

- (4) All sector of the knowledge economy is responsive to ideas, intellect, and level of technology, hence, the *knowledge economy is innovative* to adopt high technology and change.
- (5) As the knowledge leverage as the competitive enablers in the economy, so the knowledge economy is competitive. The economic value of knowledge is recognized in the knowledge economy.
- (6) As the knowledge economy wishes to prove the knowledge superiority, but the establishing superiority in natural context is difficult. Due to complicity, to establish knowledge as superior, the component of power gets mixed through politics and society. Therefore, the *knowledge economy is political by nature and autocratic in the spirit*.

The above paradigms dictate the scenario of manufacturing management in the entire world. To demonstrate behold knowledge as superior, along with the speed of globalization manufacturing economies used heinous, health crisis, and geopolitical strategies during the peak of the knowledge era.

Cessation of Knowledge Supremacy

Knowledge is useful information and facts. Once selected, analyzed the information, and facts mean process, when the processed information and facts are employed produces some results. By deploying the knowledge economy paradigm with manufacturing some economies even dreamed to be a superpower in the world. Before COVID-19, the supremacy of knowledge economy had signalled a muffling picture. Dobson, J. (2017) in headlines “stop talking about the knowledge economy, start building wisdom economy”. Dobson stated- “we know we're in the middle of seismic shifts in the way the world operates. He articulated a few speculations based on the development and trends spawned by the operation of the knowledge economy in the world. Dobson in his language expressed- we don't know where they'll end up, or where any of us will be when the dust settles if it ever does. Will we have a job? A pension? A home? Will there be someone to care for us in old age?” This is the pride of knowledge-based manufacturing economy. Because the knowledge workers in manufacturing use information to achieve tasks of manufacturing to full fill the target. To make single aimed decision to manufacture goods knowledge workers rely on education and training those very specialized or aimed to full the target through knowledge. Knowledge workers in manufacturing work rely on the rules dictated throughout the education that gained from the training for manufacturing.

In the knowledge economy never uses moral, ethical, intellectual, and philosophical, experiential insights blending with information for doing things. Either knowledge led manufacturing to rely on industry-wide observation nor apply any principle to seamlessly navigate emerging situations (*Jakovickas. J, 2019*). It is implicit that insightful workers possess the ability to synthesise all rudiments of knowledge and experiences and wherever they work, they can “convert them with insights, that give them the more profound capacity to understanding the connections, in reality, the relationships between things with the meaning of life (*Roberts. R, 2019*). Considering the inherent attributes of manufacturing philosophy in knowledge economy distasted the humane economists. Therefore, it is realized that it the time to give a full stop in the furthering the knowledge economy in the world.

Covid-19 on Manufacturing

COVID-19 a laboratory-produced virus, used by China as a weapon for conspiracy against the global economic war. It was spread for Wuhan Lab of China during the last part of September 2019, to satisfy the heinous ambition to make the tag “Made in China” as the superpower in the globe. This was the ambition of China to posit its productions and manufacturing at an ultimate height of the global business. Chinese acclimatization to the knowledge economy and consequent arrogance impact the human dwelling as the earth for dead bodies and domes. This was a weaponless massive disruption to the social and communities, economic life, technological life, and political lives of human in the world. COVID pandemic forced the manufacturing industries and the businesses for a radical reaction not to survive through but to ensure the survival of life by instantaneous changes. Factory closures, short-time work, and salary and job cuts are significantly impacting lives around the world. However, there is also room for opportunity, as manufacturing can use this time to focus on projects that were halted, clean up IT and supply chain inefficiencies, and reset their product catalogue and strategy. Covid-19 enforces on mid-term actions or interventions as the chaos and in long-term availing the opportunities in industrial manufacturing amid all the disruptions.

Covid-19 forced to think, human being should start thinking from the ground zero which had have been failed in many areas. The ground zero thinking areas are- economics, mathematics, moral philosophy and history (Hart. D, 2020). The outbreak of COVID disaster left no one in the world to feel that “everyone is vulnerable, every one facing a high degree of uncertainty, consequent circumstances in the world is very complex at all levels”, there is no single solution to a problem, all problems demand multiple answers and options together due to ambiguity. In the IESE Insight (Business Knowledge), stated that COVID-19 outbreak has strong VUCA situations- in acronym referring *volatility, uncertainty, complexity and ambiguity*.

Encountering VUCA paradigms due to COVID displacement, dislocated systems, process, structures, infrastructure and philosophy behind manufacturing. Its become complex to comprehend as whole manufacturing as the activities in global economics. The search for solutions and application for restoring the system entangling multiple issues with numerous doubts. All those disarrays twiggged many promising suggestions to counter the chaos created by COVID-19. The twiggging solutions for post-COVID-19 manufacturing appealing epistemes, they are- Agile Manufacturing; Flexible Manufacturing; Digitalised and Automated manufacturing (TULIP, 2020). Suddenly the manufacturer had to forget the broader world, situation compelled to look inside the factory, consequently, the whole manufacturing world had to militate against the rapid shift in production in own way. Amid all meddling situations, society hoped “COVID-19 will end within months, and things will go back to normal. Many aspects of our society may never return to normal” (Kropenev. A, 2020). The global shutdown became history in the modern knowledge-based economy and in the history of manufacturing management by the impacts of demand and supply disruption, workforce availability simultaneously. To comprehend more- the effects of COVID disrupted manufacturing can be categorised under two heads- Short Term Effects and Long Term Effects (table below).

Table-2: Effects of COVID-19 on Manufacturing

Short Term Shifts	Long Term Shifts
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Demand Increased and Supply Decreased due to-	The revival of automated domestic manufacturing
➤ Panic buying of delivering vital goods like personal care, paper, pharmaceutical	Emphasis on robotics and digital application for productivity enhancement
➤ The dramatic drop in demand for other than above	Decoupling supply chains with existing technology, with geographical locations, and new economic collaborations
Disrupted supply chain- became volatile	Digitalisation as a means for competitive advantage, use of Artificial Intelligence (AI), and Internet of Things (IoT) technologies.
Social distancing and safety measure, the deficit on-site labour	Scheduling on-site workers management by virtual shift and physical shifts.
Remote work (for knowledge system)	The rapid adoption of remote diagnostic management and application of collaboration.
Heavy demand for networking tools and infrastructures	Responding to the fundamental shifts of Government Policies, consumer behaviour; response to geopolitical behaviour, new normal local political behaviour.
Source: <i>Compiled by Athor in Table Format</i>	

Developing Resilient System

The pandemic situation dictated to create a safe workplace, flexible technology, and rapid adoption, responsive to demand system of infrastructure. Considering the requirement of social distancing in crowded operating workspace stipulating the adoption, application and absorption of robots in many complex manufacturing processes, technology and infrastructure became more than foreseeable. In the episode of post-pandemic preparation in Mahindra & Mahindra witnessed that "rise of robots in automobile manufacturing was inevitable," also stated as they "have automated the body shop, most of the paint shop and parts of the final assembly line; touchpoints need to get automated" (Bhattacharya, R. & Phillip, I. 2020). Besides, industrialists are imagining to apply the virtual reality (VR), augmented reality (AR), mixed reality (MR) layering over reality to produce goods and entertainment will not be far from reality to cope up the manufacturing process disruption (Robert, R. 2019). Interacting the complex event under the business reality the reliance of collective intelligence and cloud manufacturing become centre stage imagination. Knowledge-based manufacturing due to the impact of COVID-19 may further remain as the victim of technology. As manufacturing is understood as a socio-technical system, the rigidity of the manufacturing needs to be busted down by integrating technology for intelligence. But, it also understood that the combination of technology and intelligence together does not have the power of maintaining manufacturing resilience. We experienced, how COVID-19 dictating to normalize the whole paradigms of manufacturing. Manufacturing management understands the urgency of being conscious of pragmatism and concern for the social world.

Wisdom Economy

Manufacturing as the victim of emerging technology contradicts the universal of wisdom the manufacturing is the socio-technical domain. Furtherance of discussion on manufacturing management under the ambit of technology integration, adoption, absorption may lead to a qualm of deficiency that manufacturing under knowledge economy would not serve the human being by the foundational meaning. Might be pre-COVID economy was not that mature to explore on wisdom, but there is evidence on theoretical exploration on wisdom manufacturing.

Yao, Xifan and et.al, (2014) investigated and conceptualized wisdom based manufacturing as the synthesis of organisational wisdom, collaborative learning, innovation and creativity. The implicit and explicitness to the holistic integration of organisational wisdom, collaborative learning, innovation/creativity, computers, human integrated into a system engineering may trigger a vast paradigm shift in the manufacturing world. Let us go to the basics of wisdom economy to understand the potential vigour in paradigm swing connecting to manufacturing in future.

The nucleus of wisdom economy designates “wise application of knowledge” as the key driver; and “complex adaptive system” as the core metaphor (Findley, J, 2011). Economists continue to assert the creative power of human collaboration in generating new ideas, innovations, and discoveries that on the whole have improved our quality life and created enormous opportunities (Sunde, 2014). Quality of human life relies on wise production. The wisdom began to act only at a specific point. As a human when anyone realizes and starts to fear god, from that point onward wisdom starts working. A human person participates in the broader human family by his nature (Sunde, 2014) by the level of acquisition of wisdom. We understand that every individual family in an ideal sense is a rich expression of love and solidarity. Let us understand, the consumers and the producers are the two groups’ members in a family bounded by the market or by the society, then both of them must witness the love and solidarity in the world. The juxtaposed point between love and solidarity work as the corollary wisdom that may control demand, supply, production and consumption, in other words, will be characterized as wisdom economy. What are those foundational attributes of the wisdom economy?

Characteristics of Wisdom Economy

“What makes a sense?” of the wisdom economy is a grave issue to ponder over. Deeping down in the philosophy of wisdom connotes phenomenon of the impermanence of anything in the world is the permanent phenomenon. As par the Buddhist dictum “**impermanence**” says about everything on the earth changes; ignorance is the main cause of sufferings. A human being can not alternate many things in the earth so human at the time of uncontrollable situation should adopt letting go or leave everything to god feelings. A present moment spent meaningfully will beget a fine future moment (Sarma, R. 2020). So, human to follow the instructions of ultimate wisdom to live in the present. Wisdom economy will propagate material production by the constructs of abundance and will be controlled by the theory of constraints. If human being (producer and consumer) remains as the ignorant then they must suffer. To live in the present in the earth through demand and supply, the wisdom economy dictates to use ultimate wisdom suffice to present and future. The fundamental characters of wisdom economy are explained in the table- 3.

Table-3: Key Attributes of Wisdom Economy (WE)

SL No	Key Attribute (S)	Interpretations and Implications
1	Concept of “Enough or abundance”	Wisdom knows that a person's life doesn't consist in an abundance of possessions. Wisdom understands prosperity as a state of sufficiency;
2	Insistence for Quality	The wisdom economy is reflective. The quality of anything counted is understood deeper, thoughtful, philosophical, insightful as opposed to superficial.
3	Collaborative	Wisdom economy is collaboration, wisdom economy does not encourage much competition. They better ensure co-existence through collaboration.

		Producer and consumers collaborate to co-exist.
4	Local Product	Wisdom economy emphasizes in crafting or creating a local product and the known consumptions.
5	Personal Economy	Wisdom economy ensures higher personal welfare.
6	Crowd View	Wisdom is the view from crowd point “Crowd Wisdom” assumes the grouped people collectively smarter than a single or individual expert.
Source: <i>Compiled by Authorin Table Format</i>		

As there is issue to live in present through the impermanence, the wisdom age proliferates complex adaptive system which makes a sense in the economy of wisdom age. The metaphors of wisdom age would help us in understanding wisdom age manufacturing functions.

Metaphors of WE on Manufacturing

Wisdom economy (WE) is metaphorical, means it is emblematic, symbolic. The wisdom economy activities, e.g. the manufacturing management is symbolized on every subactivity. The component “system” in economic activity obviously will be symbolized as a complex adaptive system. The way the complex adaptiveness reflexes in the ecology, market, or brain, in the same way, any system adapted for manufacturing must be reflexive of complexity and adaptiveness. Thus, many components of wisdom economy are metaphoric and can be understood with the following table-4.

Table-4: **Metaphors of Wisdom Economy**

Component of WE	Metaphors of Wisdom Economy
System	Complex adaptive, e.g. Ecology, Market or Brain
Technologies	Nano Technology, Biomimicry, Advance Energy,
Tools for Expanding Consciousness	Social Media, Complex learning environment, Complex and ever-changing knowledge will be an enabler to remain connective in the world.
Productivity Gains	Automates scientific, Judicial, Leadership or Wise Expert work
Change	Rapid Change, Transformational, from Unconscious to Conscious state
Nature of Knowledge	Wise application of knowledge
Role Orchestrator	Interactor, Challenger- Designer or Creator, Inspirer Activist, Researchers, Discoverer, Production user
Production and Manufacturing Methods	Agile, Adaptive, Value Add-High Value Add System, Rapid Prototyping, Customisable by Customer, Anticipate own need and customise
Strategic Focus	Whole System, Multiple Generation, Paradigms and Cultures,
Shift of Focus	From Boundaries to Horizon i.e. Prospect, Possibility, Perspective of product use
Principles of Coordination	Facilitate what emerges, Improvisation at local space, simulation, aims at maximum efficiency.
Source: <i>Compiled by author in table format</i>	

Wisdom as philosophical is critical. Similarly, capturing the traits of manufacturing activities with a defined set of metaphors is difficult to reflect wisdom based manufacturing due to overlying aspect of depth embedded inside the wisdom economy. Hence, further amplification on paradigms of wisdom economy’s impacting on manufacturing management provoking discussions on total value management, ecology-environment and sustainability, cha-ordic & agility aspects etc. which are needed to considered even above the limits of indispensability.

Total Value Management through Manufacturing

It is a common-sense matter, manufacturing management must correlate the consumption of manufactured goods to a better quality of human life referred to earlier. Furthermore, it more than an ordinary sense that the beyond a level of consumption may well have negative consequences (*TVM*), can be substituted with “too much everything is bad”. That means overconsumption can not be a solution by the use of refined and costumed terminology, like

'adaption'. The basic wisdom that need to controlled by the guiding of 'what impact was' will be controlled by 'design what if', the cause of action will is 'decide what to do'? Knowledge dictum of value management will get the next shift to Total Value Management (TVM). The total value of production and manufacturing having cane weighed with 5Ps. So, the 5Ps as the mix in manufacturing value management work. in the following figure.

5 Ps for Manufacturing

5Ps (Manufacturing Mix)	Value for Whom/What/Why?		Total/True Value
P1- Process	Engineering		Value for Human's Life
P2-Profit	Economic Goals		
P3- People	Families, Society		
P4-Place	Where People Live		
P5-Products	Quality of Life		

Source: TVM (True Value Metrics), compiled by the author

As value management is an umbrella term, that contains a lot of value engineering terminologies which reflex how much ethical and wise. Say, to create value in manufacturing scarcity economics and knowledge economy uses the cost of reduction techniques. Cost reduction as a technique of value management may impact either positively and negatively. Value engineers must use the wisdom for value optimisation by considerin the 5Ps of manufacturing. Going further for value management the more others inputs and assumptions may add the paradigm of manufacturing. They are-

- (a) Value management is a creative solving process need methodical problem-solving approach. So, total value management demands creativity, cooperation, collaboration, and competition-free exchange for the solution of any problem relating to product and processes.
- (b) Total value management is all about design. Designers in manufacturing connect the value strings of the product of services where to pinned up. Collaborative designs may delve over critical aspects of the value those intended to create through products.
- (c) The aspects of value are more about value governance. In the process governing the value; for governance, 5P- true value matrix may serve as the underpinning principles and provisions.
- (d) Value management in manufacturing is a transdisciplinary subject. So, mere professional excellence for manufacturing may not serve any good result. The professionalism expertise suffices in the knowledge economy, but in wisdom economy more than professionals will a major concern.

Technology and Sustainability Paradigm

The issue of sustainability in handling manufacturing operation during the last two decades have had been giving a serious message of squirting of human collective wisdom. We would be able to experience the prolonged taste of reaching the seventh heaven only when we collectively follow those controlled manoeuvring grounds of collective ecstasy through sustainability. The controlled manoeuvring exercises would cover the controlled use of energy, resources, and environment those used in the manufacturing of goods and services. The technocrats are suggesting hybrid equipment in electrifying, de-carbonized fuel utilization, use of digital technology for sustainable manufacturing operations. The industries of the world have to adopt

hybrid technology, process, and systems in the future to come. The hybrid- the future already has begun (Somers, K., Speelman, E. and Witteveen, M, 2020).

The “Hybrid” will dominate as well as revolutionize the whole manufacturing in wisdom based Econo-sphere. Hybrid manufacturing will leverage the most exclusive capabilities of both additive and subtractive methods having high-value precision in a single machine-based manufacturing system. It is assumed that hybrid manufacturing will not only reduce the manufacturing costs but also will increase the economic competitiveness of technology-based manufacturing. Hybrid manufacturing will have the capacity to integrate traditional manufacturing with high profile machining (*Strong.D, Kay. M, & et.al, 2018*). The future manufacturers will be able to produce custom material and rapid prototypes very with the hybrid operation. The hybrid manufacturing principle may ramp up in providing an opportunity for the new products development, delivery with better efficiency (*DMS, 2018*).

Moreover, the hybrid process of manufacturing by using the additive method holds the potential of reduction of wastage, thus would decouple the environmental loss and the value creation. Hybridisation and additive technology would substantiate many potential sustainable benefits, can be sharp out under three strands-

- ❖ **Improved Resource Efficiency** (*Ford.S. and Despesise.M, 2016*) with the help of redesigning the use phase(s) and the processes of manufacturing.
- ❖ **Extended Product Life** can be accomplished through technical approaches such as repair, re-manufacture, and refurbishment, and more sustainable socio-economic patterns, such as person product affinity, maintaining close relation between producer and consumers (*Kohtala. C, 2015*).
- ❖ **Reconfiguration of Value Chain** by shortening and simplifying, adopting more localized production, innovative distribution, and new collaboration (*Ford. S and Despeisse. M, 2016*).

Climate Change Paradigm

Manufacturing and greenhouse gas footprint is directly connected. Manufacturing in future will be impacted by the potential climate change regulatory regime. Economic activities in future will be impacted by the non-familiar chaos created by climate change. Rifkin through his review foresees the non-familiar consequences of climate change. Rifkin predicted many worldwide happenings due to climate change, they are like- shrinking food availability, superstorms, high-intensity water-related events, extreme wind, changes in climate patterns, droughts, uncontrollable wildfires, and loss of biodiversity, etc (Rifkin.J, 2017). The days have come to close down the present fossil fuel economy in the world. Value of renewable energy has its potential to enter to energy, product, market and value chain. At this moment, mere thinking about carbon reduction and manufacturing will not be that much mature to prognosis on human and economic activities would re-balance the climate-related happiness in the world. It would be extremely foolish if the human being does not understand the signal of the climate change, perhaps the human race is going create an imminent doomsday.

VUCA-Paradigm

The world under the tumultuous situations due to present COVID impact could help to imagine the 4 situations, they are- volatility, uncertainty, complexity and ambiguity in short VUCA. Business world in 2020 could realized the volatility, in the constext of society, economics, geo-politics which

still jerking through instability and through the unexpected changes (Barman. A, and Potsangbam. C, 2017). Disruption created by COVID-19, created lot of uncertainty. The scientist, industrialists, businessman, and politician could not visualize clearly due the foggy situation created unseen virus. Every one has had been suffering opaqueness situation due to lack of understanding- what will cause change for next normality, how it will? Economic phenomenon occurs under open, complex, dynamic interplay of the various factors. As manufacturing management need under take evermore open environment hence due to complexity of interrelation whole system and processes need to operate under the undefinable complexity. When the world remains under the situation of unknown unknowns or in other words when there are no obvious precedents then we called ambiguous (synonyms are indistinct, hazy, unclear) situation. COVID pandemic created a lot of ambiguity in manufacturing and production due to competing demand solution in the short run as well as for long run. VUCA situations experienced by the world due to COVID-19 ‘demands strategic shift that need to be grounded by the scientific, realistic, practical, and humanistic’ (Barman. A, & Potsangabam. C, 2017).

As the post COVID industry and manufacturing will face continuously VUCA situations, a resilient or agile system of manufacturing would be considered as a direct solution. A knowledge-based view of VUCA response is to develop the absorptive capacity of the manufacturing system. The knowledge-based view of absorptive capacity highlights the role absorptive capacity has in “developing knowledge, promoting organizational learning, enhancing open innovation, managing alliances, creating strategic variety and impacting financial performance” (Lichtenthaler, 2016). In promoting learning based manufacturing as the perfect fit for VUCA responsive system will rest on design thinking. Design thinking and design attitude in connection with the complex external environment would support in “operating in VUCA environments focus organizations on co-creative and proactive learning by building design thinking structures to pre-empt the VUCA environment” (Cousin. B, 2018). Learning to produce things proactively for the VUCA situations ensuring human well being would glorify the wisdom economy in future. Putting an insight gained from VUCA parlance, the Wisdom Economy is going the ensure opportunity in and out of chaos.

Holistic Econospere Paradigm

Let us understand the meaning “this is a world that most fundamental aspect of everything” (Thomas. C, 2009) of holistic paradigm. Under this frame of reference, a manufacturer needs to make their intelligent choice from what we are- a producer for human wellbeing or something else? Similarly, every human being can decide a course of action(s) with an intelligent choice under the holistic frame of reference. Thomas. C (2009) has forwarded a wise dictum “we are living, breathing, working with self-regulating holistic econosphere, whether we know it or not”. Only we need to regulate ourselves while in manufacturing under the frame of the truism of holistic econosphere.

We are expecting that the entire human race to collaborate directly with one another, will democratize our own economic life. Future technological realm predicting on digital integration would help to connect producers and consumers, together “prosumers” (Rifkin. J, 2017). The evolving Internet of Things (IoT) will enable conventional produce, businesses as well as the millions of prosumers to decide and democratize about their manufacturing under the holistic econosphere. As the zero marginal cost economy will grow more and more will boost up sharing economy will influence on the trend of decision under holistic econosphere. The information technology-based sharing economy may raise further doubt- “where is the wisdom when we lost

ourselves on information and knowledge? Unless we operate anything in keeping mind for the world information economy may create a dark and disconnected world.

The Innovation Perplexity

Manufacturing activities cannot be operated efficiently without compatible standardization or innovation. In contrast, too much standardization till the point for compulsive stoppage of innovation may lead to stultification and pushed to losing out in nimble competition. Excessive innovation without care for without standardization may result in quality control further lead to manufacturing chaos. Managing manufacturing normality requires coupled innovation and standardisation drive, the logic behind, if we go all-in for innovation to exclusion of standardization, we may create many big problems. The challenges of manufacturing management will be “to explore how we could draw on the strengths of each of the interdependent poles while simultaneously avoiding the problems that each brings when it is over-emphasized”(Shenchez. A, 2020). This would bring back to face the question relating to pandemic at global, national, and at local scale.

Let us remember ‘wisdom economy is innovative and reflexive’. Reflexion does not drive out any innovation. Wisdom economy promotes responsive innovation in any sector. It testifies the statement “simplicity in the complexity” for warded by Findlay. J. & Straus. A.(2013). Manufacturing activities must not be under the perplexity on innovation but integration of reflexivity on innovation.

Linking Paradigms and Conclusion

The logic and philosophy behind wisdom economy principles with manufacturing management may look like subjective. We must go ahead of the objectivities which were embedded in the knowledge economy in the world. It is time to make our economy shift along with the shift of industries. Before deeping down minds in analysis and the effects of impending full-fledged wisdom economy on the manufacturing management “we need to value wisdom as much as we have come to value knowledge and make it central in our decision-making and leadership”. Here, the crux of value statements of the wisdom economic council’s need to be taken into consideration.

1. We must believe in the global healthy business climate for the prosperous global economy, which is possible to make sustain through the healthy and vibrant quality of life for all human beings.
2. We must demonstrate the highest level of ethical business practice and should act for peace and humanitarian causes locally and globally.
3. Every actions and strategy meant for economy must adopt a more inclusive approach embedded with wisdom for sustainability, insight, context and common sense as the clichés of the wisdom-based economy.
4. We must promote the consciousness for the needs of others before devising out the solution or displaying intellectual brilliance.

The days have come, the human being will operate everything under the ambit of singularity- the wisdom connected globe. And the global wisdom may put everything in the cloud as well as everything will be among the crowd. The wisdom economy in future will accelerate the wisdom of crowds which will set in motion to the next stage of economic development. Anyone whether

the producer of industrialist can participate, contribute ‘manage’, lead or govern any “thing” anywhere, anytime, involving anyone (*Cake. M*). The only requirement will be “wisdom”.

Under the wisdom economy’s, manufacturing management will be impacted by Total value and True value management; Technology; Sustainability, Climate change, VUCA, and Innovation Perplexity. Paradigms above the whole aspects will be controlled wisdom for earth and human being would be a deep-seated determinant of all activities of human being on the earth. The post pandemic manufacturing world may strike the balances by considering the short-term and long-term perspective of human welfare.

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