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Industrial Engineering Must Get out of Comfort Zone

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Abstract: Comfort Zone is a psychological state when things are familiar and people feel they are in control and hence experience less anxiety. However for a person to grow the person must step out of comfort zone into an optimum performance zone. What is true for persons can be true of an academic discipline. Industrial Engineering, which essentially means Optimisation, is currently in comfort zone of office/factory/shop set up. Industrial Engineering must step out of this familiar set up and get into everything, everywhere and every time. Getting out of comfort zone is scary, but not so hard. And indeed being out of comfort zone is what will ensure growth and eventual success. No growth can happen by staying with familiar. Scientists and Inventors have to step out of comfort zone. Explorers had to step out of comfort zone to discover new continents. If humans had not step out of comfort zones we would not have had aeroplanes or ships for that matter. Academic discipline also has to move out of comfort zones to grow. Some of obvious instance of an academic discipline growing by stepping into interdisciplinary mode is Biotechnology, or Process Control that borrows from Electrical engineering and Computer Science as much as from Chemical Engineering.

Keywords: Industrial Engineering, Comfort Zone, Optimisation, Growth, Psychological State, Unknown, Operations Management

1. Introduction

Most humans like to stay in comfort zone in their career, relationship, fitness, hobbies. And that is what constraints growth. Comfort Zone is basically place where you are familiar - say an engineer doing technology and for fitness perhaps going for a walk. Now that is safe. But also one that prevents growth. For one to grow, one must step out of zone. For instance if the same engineer joins a start up rather than mid size company, that would be stepping out of comfort zone. Or instead of a walk the person signs up for a gym.

Getting out of comfort zone is scary, but not so hard. And indeed being out of comfort zone is what will ensure growth and eventual success. No growth can happen by staying with familiar. Scientists and Inventors have to step out of comfort zone. Explorers had to step out of comfort zone to discover new continents. If humans had not stepped out of comfort zones we would not have had aeroplanes or ships for that matter.

Academic discipline also has to move out of comfort zones to grow. Some of obvious instance of an academic discipline growing by stepping into interdisciplinary mode is Biotechnology, or Process Control that borrows from Electrical engineering and Computer Science as much as from Chemical Engineering. After all Political Economy or Social Psychology are instance of each academic discipline finding tentacles into other academic discipline. Biomedical engineering is a very exemplary instance of two academic disciplines stepping out of comfort zone.

Luddites is an expression with historical origins that refers to someone who is afraid of embracing new technology. A new word could be coined called ‘Technology Luddities’ who are so stuck in technology that they hesitate to step out of it. After all what do they know of technology who only technology knows. It was because computer science stepped out of familiar that today Information Technology is all purpose information, communication and entertainment life style instead of being just a sophisticated calculator.

2. Get out of Comfort Zone

It is high time that Industrial Engineering moved out of

comfort zone. Industrial Engineering has helped achieve efficiency in production and supply chain and materials management and work place design. However its limited role in improving work place efficiency underestimates what industrial engineering is capable of, if only Industrial Engineering were to be applied outside of factory/office/shop set up.

Here is definition of Engineering.

Engineering is application of science and mathematical models to the innovation, design, construction and maintenance of structures, machines, materials, devices, systems, processes and organisations.

And here is definition of Industrial Engineering.

Industrial Engineering is optimisation of complex processes, systems and organisations by developing, improving and implementing systems of people, money, knowledge, information and equipment. [1-7]

Basically, industrial engineering seems to be some sort of specialisation in engineering with focus on OPTIMISATION.

Now what is OPTIMISATION?

In lay person's term - optimisation means making best or effective use of situation or resource.

Hence it could be argued that Industrial Engineering means making best use of something.

Industrial Engineering is a recognized academic discipline in the same category as Civil Engineering, Mechanical Engineering and Electrical Engineering. Operation Management is specialisation within Business Administration which has hair splitting difference from Industrial Engineering. [8-15]

Now Industrial Engineering is applied largely in a factory set up or office set up or in a retail set up. But what if Industrial Engineering steps out of its traditional application areas and seeks tentacles in newer avenues such as interior design, political campaigning, public finance (taxation), transportation, educational system, judiciary, health care, construction indeed, everything besides what industrial engineering has been involved till date.

One realizes that such an idea that a branch of engineering get into political campaigning or taxation or construction is rather blasphemous and sacrilegious. But what is so heretical about this rather revolution thought and idea? After all Industrial Engineering is essentially all about Optimisation, isn't it? And doesn't marketing need to be optimised? Doesn't Judiciary need to be Optimised and shouldn't heath care be Optimized.

After all a modern factory set up could have done with Electrical Engineering and Mechanical Engineers and Civil Engineers. However, what was needed was a greater level of Optimisation than these disciplines were geared for or trained to. Hence stepped in Industrial Engineering.

Similarly Business Administration could have done with Financial Management, Marketing Management and Human Resource Management, but you had to have Operations Management Step in into Business Administration. And Industrial Engineering and Operations Management are almost one and same thing, except that the former is from Engineering while the later is from Management.

Actually it is Industrial Engineering when applied to Business Administration that we have had Operations Management. Now if Industrial Engineering could step out a bit out of comfort zone, can Industrial Engineering be made to step out a lot out of comfort zone? Actually Operation Managements area of focus in not very different from the focus areas of Industrial Engineering, but significantly different to be detectable but not adequately different to be conspicuous.

However if Operations Management is but an evolution of Industrial Engineering which in itself is evolution from Scientific Management of Freidrich Taylor and Frank Gilberth, now what is needed is not for evolution of Industrial Engineering but revolution of Industrial Engineering.

And revolutions require courage which is what stepping out of comfort zone is all about. Industrial Engineering must step out of comfort zone into House Decoration and Transportation Planning for instance. Industrial Engineering must get into Political Campaigning and Business Marketing, which is big leap out of comfort zone. Industrial Engineering must get into Taxation and Education, which may seem impossibly out of comfort zone, until you realize that if in essence Industrial Engineering is all about Optimisation, then it should logically follow that not only is Optimisation applicable everywhere, but also that there is nowhere that optimisation is not applicable.

3. Examples

Actually there could be thousands of areas where Industrial Engineering Optimisation can be applied once the discipline of Industrial Engineering steps out of comfort zone. Here are a few.

3.1. Journalism

Now a newspaper in India has 25 pages roughly after removing advertisements. And each page has 4000 words. Thus every newspaper has around 100,000 words. Now average reading speed is 250 words per minute. Hence reading a complete newspaper could take 400 minutes or almost 7 hours, when an average reader would like to spare at the most 7 minutes to a news paper.

If Industrial Engineering Optimisation steps into Journalism, then it would question, if newspaper sizes could be drastically reduced, and if all newspapers could create a cartel to jointly reduce sizes of newspapers, would that not help cut on printing costs and thus increase profits. Of course this will require Industrial Engineering to step out of comfort zone.

3.2. Political Campaigning in India

Even during a general Election a leader of a National Party addresses at the most 100 meeting, the average audience of which could be 10,000. This means out of India's population

of 1000 million or more only 1 million people attend political rallies. Again India has 4000 cities and 600,000 villages. Clearly 100 meetings can miss nearly 99.9% of audience.

Can we optimize campaigning through Industrial Engineering by going entirely online, where each leader's social media has 100 million followers and if that is not enough rely on social media accounts of celebrities and add to that the power of campaigning by Whatsapp, thus reach close to 100% of audience instead of just 0.1% of audience through present means.

3.3. Interior Decoration

Beds take so much space. And beds don't have use during day. How about thick large mattresses which can be held vertical during the day and horizontal during night? Similarly, tables can be folded against walls when not needed as can be chairs. And storage space can be held up above in a false ceiling instead of occupying space below. Thus almost entire room can be empty and thus used for dancing, sports, training anything.

But this line of thought gets into particular when it is necessary to be general and not specific. Essentially one must try to apply optimisation everywhere and and leave no stone unturned, proverbially speaking in application of optimisation.

4. Conclusion

And that is what Stepping Out of Comfort Zone means.

Just consider a normal person. This normal person goes to a job, comes back home, watches TV, reads books and listens to music and spends time with family. But what if this normal person takes Karate Classes, signs up for Dancing and Singing lessons and tries hand at acting in films. What if this normal person gets into social work of NGO variety and even more courageously of the Political Variety.

Actually none of this is difficult and by no means impossible. All it requires is for one to step out of comfort zone. But then there is the fear of unknown. But it is the Unknown that is the zone of growth, even if it means something less familiar.

Humans have travelled into oceans, skies and space, all of which requires stepping out of comfort zone. Those who don't step out of comfort zone stagnate and stop growing if not perish.

If science had not stepped out of comfort zone, we would not have had applications of sciences such as engineering and technology or medicine and health care.

Admittedly it is a big stretch for Industrial Engineering to step out of Production but if Industrial Engineering could step into Business Administration to become Operations Management, there is no place too uncomfortable for Industrial Engineering to step into if only it gets out of comfort zone.

Psychologist Abraham Maslow talks of need hierearchy of humans consisting of pyramid of needs beginning from Physiological Needs, Needs of Security, Needs of Belonging and Needs of Esteem and finally Need for Self Actualisation. The need for Self Actualisation can be described as being everything a person can ever be.

It is time for Industrial Engineering to metaphorically speaking Self Actualise, which means be everything that Industrial Engineering can be. Thus Industrial Engineering can be into Taxation, Human Relations and Education. There is no place where the essence of Industrial Engineering, which is optimisation cannot be applied.

All it requires is for Industrial Engineering to step out of Comfort Zone.

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