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Common Sense Industrial Engineering

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ABSTRACT
Industrial Engineering is basically Optimisation - making best use of everything. Now usually Industrial Engineering is applied in context of production of modern factory. However industrial engineering can as much be applied to ordinary day to day life. That in short is common sense industrial engineering.
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.
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 use of something.
Hence it could be argued that Industrial Engineering means making best use of something.
Of course as most academic and corporate practitioners of industrial engineering might presume this would only be applicable in factory setting or office setting. But shouldn't it be obvious that optimisation can be applied to everything outside of factory as well
Why has nobody thought of this before?
Industrial Engineering colleges have subjects such as supply chain management, operation research, total quality management and human factor engineering and materials management and work system design.
But what about a new subject called COMMON SENSE INDUSTRIAL ENGINEERING.
After all optimisation can be applied to everything in life. Indeed there could be million places where optimisation can be applied and hence sky is the limit as far as common sense industrial engineering is concerned.
Let us explore a few:
Crowded Trains in Mumbai
Trains in Mumbai are so crowded in peak hours that not only is it difficult to enter, but people hang on doors risking their lives. Now there can be many commonsense industrial engineering(optimisation)solution to this problem.
1.Give incentives to offices to locate on the other side of town.
2. Make tickets at peak hours expensive.
3. Make organisations rotate their week ends - so instead of fixed week ends the week ends are rotated...thus reducing commuters on any day.
4. Cancel all public holidays and allow people to take more casual leave.
5. Encourage Work from Home
6. Encourage Flexi Timings/ Shifts
7. Increase number of bogies in trains
8. Arrange seats so that number of people who can stand increases

Online Shopping
There are so many online shopping sites. However each has its own delivery mechanism. This clearly adds to number of people engaged in delivery and thus increases costs.
An industrial engineering solution would be to mandate that all delivery sites use government postal services for delivery.
This will reduce delivery costs. Alternatively there can be regional hubs where delivery sites drop their goods and these regional hubs will have their own delivery mechanisms to exact addresses.
Or delivery sites can have their pick up points from where customers can pick up their goods.
Traffic Jams
The greatest problem of 21st century is not climate change but traffic jams. And the solution to that can be found in industrial engineering.
Several solutions exists such as
1. Car pooling
2. Buses.
3. Increasing parking charges prohibitively.

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4. Having differential octroi rates for different times.
5. Reducing car sizes by at least 50%

Education Stress

Education is rather stress causing exercise especially higher education. There can be many OPTIMISATION strategies to reduce stress such as:

1. Have holidays between exams - say 4 days.Thus students can study near exams and this can reduce stress levels.
2. Have quiz immediately after lecture. This will reduce stress of continuous evaluation.
3. Substitute exam as method of evaluation by studying textbook and summarizing text book as method of partial evaluation.
4. Have multiple choice questions for exams.
5. Reduce the pressure of getting high grades.

Shop Timing in Europe and USA

Most Shops in Europe and USA are open between 9 am to 5 pm. However this is also the time when people are in offices. Hence it makes sense for shops to be open after 5 pm so that people can avail of services. And shops can close between 9 am to 5 pm. This is because people are in offices any way.

Entirely Online Banking and Cash Free Economy

One does no understand why cash still has to continue. Ban all Cash. This way we can control black money and corruption in India. That is industrial engineering optimisation in India.

Money can be paid via credit/debit cards, or mobile payment solutions or net banking.

Also this will reduce cost of banking operation, thus making available money to entrepreneurs at lower rate and getting higher rate of interest for depositors.

Efficient electioneering in India

Election expenses in India are 70 times legal limit. Of course it is another matter that election expenditures do not result in more votes. Psephological studies indicate that vote swing in constituencies where leaders canvass rarely exceeds 1%. Why waste all that money.

Bank all offline campaigning and permit only campaigning via Internet Social Media or Mobile Whatsapp kind of groups.

This will reduce election spending without adversely affecting election outcomes.

And thus reduce corruption.

This is Optimisation at best - or Industrial engineering in short.

Indian Railways differential Pricing for Tickets.

On long distance travel, Indian Railways runs to full capacity during vacations and is lean during non vacation days. If one prices double during the vacation thus still running full capacity during vacation, one can allow discounts during non vacation time thus increasing occupancy during non vacation time and reducing lack of occupancy during non vacation time.

This sort of optimisation has long been adopted in airlines. It is high time that indian railways adopted it also.

Public Sector and Government Efficiency

Government and Public Sectors in India as in almost all nations of the world are inefficient. It is safe to say that government and public sector employs at least twice as much employees as required.

Of course Public sector companies run into losses due to this inefficiencies and are booted out of market place. But government can afford these inefficiencies due to revenues from taxation.

Now it should be mandated that Government immediately sack 50% of employees. Of course this will result in temporary increase in unemployment. But that will correct itself in 6 - 9 months.

However that will give Government at least 3 % of Gdp which can increase welfare expenditures in health care, education, housing etc.

That is OPTIMISATION within Government or Industrial Engineering.

Housing Optimisation

Housing is very expensive in India.

One easy way to solve the problem is to increase FSI - Floor Space Index. Which means builders can build tall storey buildings. This is artificially limited in cities like Mumbai. Once you allow increase in FSI more housing will be available and at cheaper rates too.

Again there is the question of unoccupied homes. If it is made illegal to have unoccupied homes, Housing prices will fall due to increase in supply.

This is optimisation or industrial engineering applied to Housing.

Optimal Reduction of Tobacco and Alcohol

Governments are not inclined to ban Tobacco and Alcohol despite obvious health hazards due to revenues from these.

However it is possible to have the cake and eat it too.

Governments can increase taxes on tobacco and alcohol sky high. This way the revenues from tobacco and alcohol will continue even as consumption of tobacco and alcohol will reduce substantially thus negating health hazards.

Thus tobacco and alcohol consumption be reduced without reducing revenues.

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Work Load Reduction

For most people 80% of value additions comes from 20% of work and remaining 20% of value addition comes from 80% of work. That is Murphy's Law. It is possible to reduce work load by as much as 50% if you optimize of your priorities.

Thus if Industrial Engineering or Optimisation is applied to Work you can get away with "Hardly Work" rather than get bogged down with "Hard Work"

Industrial engineering does not have to increase production, Industrial Engineering can increase leisure.

Agile Information technology

Most rudimentary software product can be developed fast and with less efforts. It is complicated software that requires more time and lots of efforts.

Hence agile software development methodologies which do quick turn around of software development make lot of sense.

While traditional water fall methods of development can take long, agile software methodolgies can quickly turn around a good enough if not great softwate product.

That is Industrial engineering applied to Software Development and Information technology.