



**WHITE
PAPER**

Leveraging IIOT in Machinery Business

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Industrie4.0 and IIOT are leading discussions in industrial forums like never before, and yet first movers have not capitalized on their effort, thanks to the massive disconnect between the real power of these inventions to deliver solid business results and the complacency in implementing technology for the sake of technology. These powerful inventions are being implemented just like any other IT projects, although with considerable excitement. Companies now realize that the high upfront commitment and the frenetic changes in technologies require more than visible project kick-offs. Confusion abounds also on where to start, forcing many organizations to start many projects only to stall them midway for want of organizational bandwidth, as each project faces midway obstacles and uncertainties. Few have worked backward from what they want to finish with, choose a solid initiatives and accept the need of flexibility in their solution. That finish line has to be unarguably the business benefits, the real power of these technologies deliver at their core not periphery.

Of course, reading about the success of a technology based initiative is often getting into too much scientific jargon that raises undesirable hype. How about for a change, reading about the innovated business model that lies at the heart of leveraging power of technology. Here is a case study of a traditionally managed company transforming itself into a digitalized organization, businesswise.

Start with Biz Context

CTM is a legendary machinery manufacturer for spinning mills and ranks #3 globally, in terms of installed base. Its revenue comes from sale of Machinery (product) and Service (service and spare parts). However, during last few years, its revenue has been fluctuating, while its market share has gradually come down due to scorching global competition and rapidly evolving technology. The company is now bending backward to transform business by figuring out difficult to replicate breakthrough value, it must offer to its customers.

Till recently, CTM has been involved in making machinery and selling it to spinning mills owners on turnkey basis. The price and margins of these products have come down with time, as learning curve helped regional competition to catch up. Also, customers of its service, started directly procuring spare parts from original suppliers, while also getting it made locally.

A good profitable part of its business was service; but after few years of buying machinery, the mill owners maintenance and engineering teams have begun taking over, adversely affecting CTMs earnings.

Characteristically, these machines are sold with a life of over 40 years. Literally, CTM has seen commoditization of its business.



Nail Down Strategic Problem

A TOC (Theory of Constraints) based analysis of the business situation revealed a massive conflict within the organization that often forces the customer to take decisions against giving business to CTM.

CTM has a way of looking at its revenue streams, e.g. machinery is a high revenue - low margin biz, while service is low revenue-high margin although recurring one.

Long back, the revenue from service business was miniscule and the business line was quite a neglected lot in terms of customer service, innovation, promptness, pricing etc. However, during the course of time many things changed. The service business became sizeable, even when the yearly sales of machinery grew at modest pace. But CTMs business practice remained what it was, unchanged.

Now there is a competition between the two businesses for getting share of customer budget. The machinery business recommends new product to its existing customers, however, the service team might be more confident that the best option for the customer is to go for service contract or at best a retrofit. This led customers receiving conflicting signals from different teams of CTM, directly or indirectly. For that matter, even the customers do routine internal calculation for deciding whether to buy a new machinery or upgrade the existing one.



What to do when your product is rapidly commoditised?

Create Higher Value

This conflict seemed hard to resolve, and somehow the CTM has been surviving the compromise, but the organization couldn't afford it anymore. By using TOC's methodology, the direction to the solution broke the conflict between the two business lines by surfacing the underlying limiting assumptions of the current business model, i.e. win-win for both, and bigger win for the organization

The systematic and involved discussion amongst the management led to emergence of a breakthrough solution, which helped CTM to come out with a new business model and a new brand positioning, the 'Full Service Company'

Incidentally, CTM had some experience in applying a focusing mechanism, TOC in manufacturing operations, although in another division. That experience did help them in walking through uncertainty of transformational solution. Here is how it is innovating its business

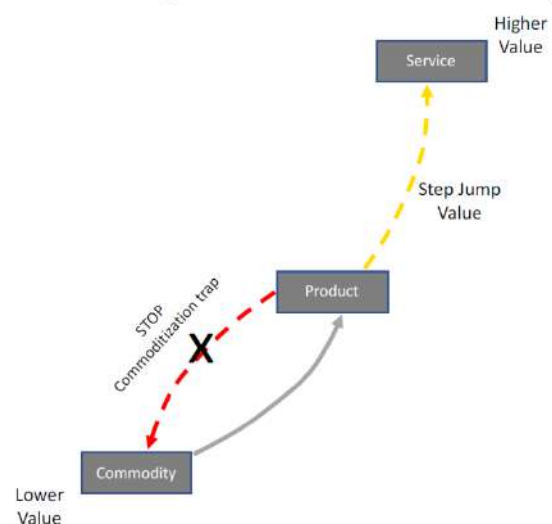
Detail Unbounded Solution

It has taken decision to IOTise its machineries, not only the ones in making but also those installed globally (over 100 thousands).

Given that most of its past machines already have automation interfaces for collecting machine performance, by sitting in its office CTM wants to have access to the status and operational performance of machines over the cloud. This would allow it to diagnose the current health and issues with machines and predict their performance. It then would make irrefutable offers to its customers (offers that have high probability of conversion into customer orders) that guarantee extremely high uptime of the mills. Spinning mills being process plants, even a 1% increase in productivity means a lot to the bottom line of the business.

The way the guarantee is framed, is a major innovation in textile machinery industry that no competitor would dare to offer.

Not only this, CTM wants to rationalize spare parts requirements (which are not only expensive but have messiness in ensuring their availability) by bringing down the inventory levels of customers and avoiding forced shutdown due to shortages. This is quite a paradigm shift compared to the industry practice to push as much inventory of parts to customers as possible, even if some parts are in excess.



So, while it improves inventory and machinery performance, by holding customers and having relevant stock information, it will be able to keep its own spare parts always available and aggregated at minimum level. When the new solution is implemented across clients, it would give a massive uptick in its spare parts revenues and an increased feed for its machining division in the factory that has been thinking about manpower rationalization in view of slowing demand of spare parts.

Using its TOC knowledge of manufacturing, CTM also intends to closely scan end to end processes of individual customers, help them identify the constraining operation and make best out of it. On its part, it would take a share of the improved productivity as the fee thus giving a bigger legitimacy (real skin in the game) to its service business.

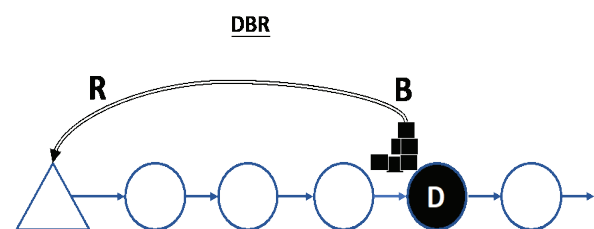
As it accumulates plant data across various models, it would be in a better position to also suggest the hundreds of retrofits its R&D team had so carefully developed for years but could not take off. And, this will also pave the way for focused innovation in its R&D team on those value vectors that the customers need the most.

Set Really Ambitious Goal

CTM, in fact, wants to extend its service business to a level, where it would take ownership of the installed machinery base and manage its productivity on behalf of customers. Gradually, it would also add service of competitors machines into its portfolio of full service. In another 5 years, it has set its sight to top up offerings that will take it to a 10X company.

Operations of spinning mills is complex and it takes time to gather adequate experience and achieve mastery in operating and managing machines. Considering this, with its own experience of making machines and serving 1000s of customers globally, and knowing the whole legacy of technologies, it intends to provide a full operational service that includes MRO to spinning mills, where it will establish best practices and deliver exceptional performance results in short time. To this, it will add people training and establish mill management system.

Being aware that textile mills have always been in dire straits without having enough funds to buy or upgrade their processes, CTM wants to offer its machinery on lease that will mean much lower upfront payment for the mill owner. In lieu, CTM will take full ownership of the machines as well as provide productivity solution, and it would take part of its fee on revenue share basis.



There is nothing called product business, all are service businesses!

CTM knows that its 10X plan is based on leveraging the rapidly advancing IOT technology and has built a centre of excellence, CoE just a little away from its main plant and is driving the team to totally revamp its product and business model.

Master Paradigm Shift

But the real key to CTM's business transformation is the underlying assumption. In the old business model, it was doing business by selling machinery, assuming that the customer owns them and it is the customer who needs to call CTM for service. This was a transactional mode of running business, where the whole business was machinery centric, internally focused looking at one's own skills, cost savings and hard negotiating with customers for profit.

In the new model, CTM considers itself in a mutually dependent relationship business for the life time of the customer and an ecosystem player. It considers that the machinery is its own and that the customer wants the spinning to be done. This opens up a 'customer' life time value of revenue to CTM; looking at the business for long term, all that could be done to improve customer business and then make money from the benefits the customer gets.

So, that's quite a bit about the innovation in the business model of CTM. How does it operationalize the model?

Operationalize Solution

Since customers always feel that CTM overdesigns and over standardises its machines and charges them for features they do not need, CTM established a design decision matrix to develop business offer to the purpose, while keeping lifetime of the customer in view. It would offer the machinery with base configuration; and take add-ons and retrofits as a part of the full service contract calibrated with the growth of the client business over time. It also trained its techno commercial team on designing value based business proposal (Irrefutable Offer) that has extremely high conversion ratio. To manage spare parts as well availability of service team, it implemented two different versions of DBR (a constraint based scheduling mechanism), a mechanism for balancing flow. It is now connecting the engineering and assembly of machines to their installation date at customer site through an end to end S-DBR (Simplified DBR), that decouples various parts of the business from variability. Of course, the control room at the COE is now the nerve centre of the business, making CTM a truly digi-tech enabled business.

Ride the Wave

It is easy to see how CTM made best of the real power of IIOT by value stacking business applications in multiple areas with each one intrinsically linked to business outcome. It is now riding on a value vector that's transforming itself from hardware based organization that used to sell complex machines on the basis of tonnage of material and price of bought out parts, to a thought-ware one that mints money every time it generates an insight from digitalization letting its business model to innovate. It is now in the business that offers Machine as a Service, MaaS.

About the Author

Shridhar hand-holds entrepreneurs and business leaders in spotting leverage points and realizing their full potential.

Advises small to large organizations, in IT, manufacturing, health care, industrial automation and ev-mobility.

He has been part of Start-up and SME ecosystem, and associated with NEN Foundation in accelerating growth of businesses. Associated start-ups include, Remidio Innovative Solutions, Infoteq Global Solutions GmbH, Precise Engineering Models, BlackbukeV, Ziroh Labs and Bitfia Labs.

Shridhar is author of 2 books, and a co-creator of the game changing book on innovation, 'Business Model Generation'.

He has undertaken really large business innovation assignments. Till recently led implementation of Goldratt Consulting's business transformational projects in China.

Formerly, was group manager at Industrial IT Research Centre of swiss conglomerate ABB.

His current interest is in ensuring that his clients achieve unprecedented business growth despite uncertainty and resource constraints.