

Factory as idiom for growth:
Re-thinking the predominant Indian IT Services Supply Chain model

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Abstract:

The preferred idiom for scale in Indian IT services companies has been the Factory. Development and Testing factories are offered to clients worldwide, and companies have set up large training facilities that ‘manufacture’ client ready engineers from raw graduates. While this model (often based on Japanese manufacturing) has been very successful, is it the right path to follow for a midsize IT services company that is seeking to break the club of companies with over a billion USD in annual revenue?

The author was deeply involved in developing the factory process in the Services Supply Chain group at a large MNC in India. He then saw the effects of the factory processes on a niche consulting group at one of India’s major IT services firms, and is currently thinking about the effects of scale on internal and external differentiation at one of the leading Indian mid-size services firms.

This paper presents the non-batch processing factory options available to grow for a mid size Indian IT services company as it seeks to break through the billion USD revenue barrier in the next few years. Other models used for manufacturing are considered, and an approach of using a unit-based structure modelled on the German Mittelstand (instead of the more popular Japanese factory model) is presented. These issues and lessons are applicable to all Indian midsize companies as they scale, and provide a way to differentiate in the marketplace as well as attract and retain talent.

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Introduction

Wipro Technologies “decided to use Toyota as a model for overhauling operations” (Businessweek, Aug 22, 2005). Infosys Technologies advertises the Global Validation Factory on its website (www.infosys.com), complete with illustrations of factories with smokestacks. Other IT services majors have their own version of factory offerings (www.hcltech.com), as the factory - specifically batch manufacturing - influences how Indian IT services firms structure and serve their clients.

Clearly, this approach has been extremely successful for the large Indian IT services companies. Their revenues are now around the USD 5 Billion annual mark, and each company has developed a large training infrastructure, essentially being able to transform graduates into Java or .net programmed on demand. Some of these players are now seeking to tap into non engineering graduates as they take more and more human resources to feed their growth engines.

For a midsize company, following the footsteps of the large Indian IT services companies like Infosys, Wipro, TCS and HCL is fraught with multiple problems. One, as the firms grow and cross the USD one billion threshold, they will need to differentiate against the majors in the market. Additionally, there is competition for talent that will be increasingly scarce. Finally, the problems of internal and external differentiation (lack of domain skills, difficulty developing and delivering higher value services, loss of responsiveness and attrition) will become a concern as well as size increases.

The need for external and internal differentiation

Forrester in a recent report (“Right and Wrong Reasons to Work with Tier Two Offshore Providers”, Forrester Research Inc., Aug 17, 2010) said *“as the major Indian providers grew and matured, they lost the flexibility and client responsiveness that SVM professionals had come to expect from those firms. As a result, clients who want to engage with their vendors’ top management and want deal flexibility - in addition to quality and efficiency - look for other options like working with smaller players.”* This loss of flexibility and responsiveness is a result of the choices that the Indian IT services majors made in favour of standardisation. This standardisation is typically in the form of rules that are imposed on the organisation, such as:

- Demand of a certain revenue and growth commitment every year;
- Restrict commitments that a project manager can make on a project (in order to reduce value leakage, or value given away without charge)

In addition, there are other rules that come into play that are a result of growth and size:

- A fresher quota for each project, irrespective of complexity, to hold down costs in fixed price bids;
- An 18 month roll-off for experienced resources as they are needed to seed other engagements, where they can be paired with freshers.

These rules, together with the need to deal with attrition, create a situation in IT services companies where resources are treated as interchangeable parts, leading to two fundamental issues:

- Lack of differentiation to customers (every IT services company has similar training programs, and all hire from the same talent pool)
- Lack of employee engagement as organisation priorities are chosen over their individual career aspirations. This sets up a cycle of attrition leading to an increase in focus on processes, further worsening the level of engagement.

This sets up a race to the generic; all IT services firms begin to look similar as 'Defined, Predictable, Repeatable' becomes the mantra and cost becomes the basis of competition, not differentiation.

The standardized process in major IT firms can be inimical to differentiated talent. A consulting group this author worked with experienced nearly 80% attrition, when it was integrated with the larger 50,000 + organisation. This niche group used to contribute specialised consulting offerings and thought leadership, but had low revenue; the IT major chose to shut the group down as volumes were not large enough.

I argue that this focus on scale is misplaced; while other high volume offerings may be developed, they can be copied relatively easily as each firm starts with the same baseline and has access to common talent pools. Specialist skills reside in pockets that must be nurtured and consulting skills such as sense making need time and crucibles to develop.

The Race to the Generic is driven by the Services Supply Chain

This race to the generic is driven by the Services supply chains of the IT Services firms. A typical Services supply chain is illustrated in Fig 1.

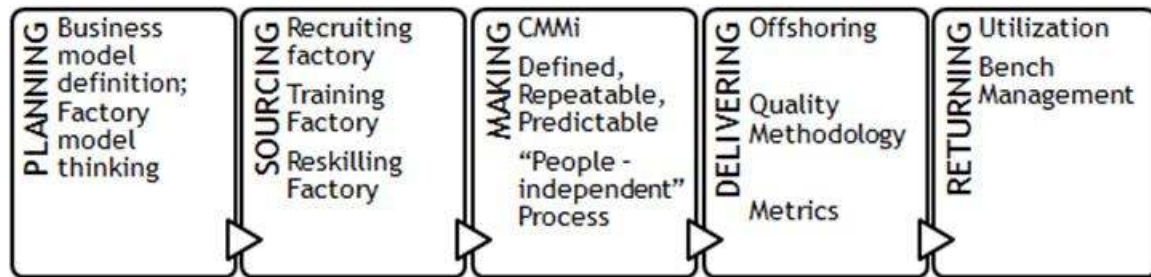


Figure 1: A typical Services supply chain

In a human intensive industry like IT services, the sourcing and returning portions of the services chain are most different from the batch manufacturing factory. Once a factory mindset is set up in the planning phase, to achieve volumes and efficiencies, IT services companies follow these practices in sourcing and returning:

- Aggregate sourcing: Most IT services companies hire to a pool in order to reduce the leadtime to get resources onto a project. This means that there can be a wide variation in the type and quality of people available for a given project requirement. While a mechanical part can be specified within a given tolerance, programmer productivity and quality can vary as much as 10:1 among a given batch (Sackman, Erikson and Grant, 1968; Mills, 1983)
- IT services companies continue to believe that (like mechanical parts) programmers can be graded and sorted on hard parameters. Standardised output tests rate fresh graduates; consultants are graded from 1-5 on communication and business analysis skills.
- If all skills can be codified and measured, it follows in the worldview of the IT services companies that these can then be used for assignment and promotion decisions; exams have become part of the defined criteria for promotions in many organisations.

There are a set of underlying factory or batch manufacturing assumptions that are part of this supply chain design:

- Resources, like parts of the same grade, are inter-replaceable. One person with Level 4 C++ programming skills left? Replace with another Level 4 programmer, and there will be no impact. Process drives the business.
- Need to be as efficient as possible. Since this is a low margin, high volume industry, spending must be justified by hard ROI returns. While this logic is irrefutable, it may be (<http://www.innovationmetrics.gov>) that all skills and results required for innovation are not straightforward to measure.

An additional dynamic in a high volume, supply constrained industry is that there is an option of bidding higher for good quality resources, or process different inputs for a consistent usable output that can then be used. IT services firms have, in their Services supply chains, chosen to deal with a higher variability in sourcing quality by designing processes that permit even the lowest common denominator to perform acceptably. This, however, means that a large percentage of employees are under-utilised; they must work in the same manner as the others.

Mechanical parts don't acquire domain skills

This standardized Services supply chain works against the development of deep domain skills. The head of education for a major services company says: “... *while today you might be programming in JAVA and tomorrow you will have to programme perhaps in DOT NET, and two years from now there might be a technology where neither of the two exists ...* “. This approach values flexibility and re-training above the development of indepth domain skills; these cannot be developed via classroom training.

A successful sourcing 'output' from this services supply chain has a skill profile as in Figure 2.



Figure 2: Typical standard skill profile

A truly differentiated skill profile has much higher variability in skills; there are some skills that they are very good at, and the skills have snowballed through years of experience. This can also be hard to quantify.

A client who was a leading player in the online space decided to architect some of their solutions from India. Their Indian IT services vendor staffing the ODC believed this to be a great opportunity to partner with the client on a higher value basis, and offered their premium priced, star architect – an IIT graduate with 8 years of programming and system architecture skills (C++, Level 5; Web Servers, Level 5; good knowledge of the internet space). The client architect had a Phd in high-performance computing, and had architected two complete online systems for other silicon valley players. In the event, another Indian IT services company broke into the account by offering the same skills offered for a non-premium price.

Recipe for differentiated growth for mid size Indian IT services firms

The discussion above raises the question for mid-sized IT services firms trying to break into the large revenue segment – what can a mid-size do differently? How should it define its supply chain so that it is able to differentiate, both externally with clients and internally, to attract talent?

Alternate models for scale

To understand the other possible models that will allow a company to scale successfully, the author looked if factories had faced similar problems and the models they used to overcome them. A key problem in manufacturing is the batch size, leading to inventory pileup; many of the Japanese kanban systems have evolved towards Just In Time (JIT) in order to decrease stock and increase responsiveness to customer demand (in the Indian IT industry, some companies have tried to staffing on demand, but given the skill constrained market, they haven't been very successful). Cell manufacturing has focused on responsiveness but have been used for relatively small units of work.

The Chinese – Taiwanese manufacturers like Foxconn and Flextronics are in a sense, the manufacturing counterparts of the Indian IT majors; they face similar challenges in going up the value chain.

Another set of manufacturers are a set of independent manufacturing units that together constitute the Mittelstand.. Businessweek in a special issue (Businessweek, Special Report, Sept 30, 2010) reported that these (typically) family owned, small (<100 employees) firms account for half of Germany's GDP (Euro 1.2 Trillion). The Mittelstand companies are characterised by deep skills in their areas of operation, and are frequently export driven (rather than serving only

the local market). How can such small players be so successful, and is there something that mid-sized Indian IT services firms can learn to differentiate themselves and succeed?

Lessons from the Mittelstand

There are several important lessons that can be learnt by a mid-size IT services company.

- There are many niches available that are unserved or underserved by large firms. By specialising in these niches, the companies of the Mittelstand have captured a large part of the high-value worldwide market for these offerings;
- The Mittelstand companies often operate a guild system; rather than look for standard skills, they take fewer people and train them intensively on specific skills that are often not as valuable outside this company;
- Even if they are valuable outside, these are not low value jobs; turnover is low as skills are specialised and employees work in smaller, more professionally intimate settings.

An alternate model to scale in IT services

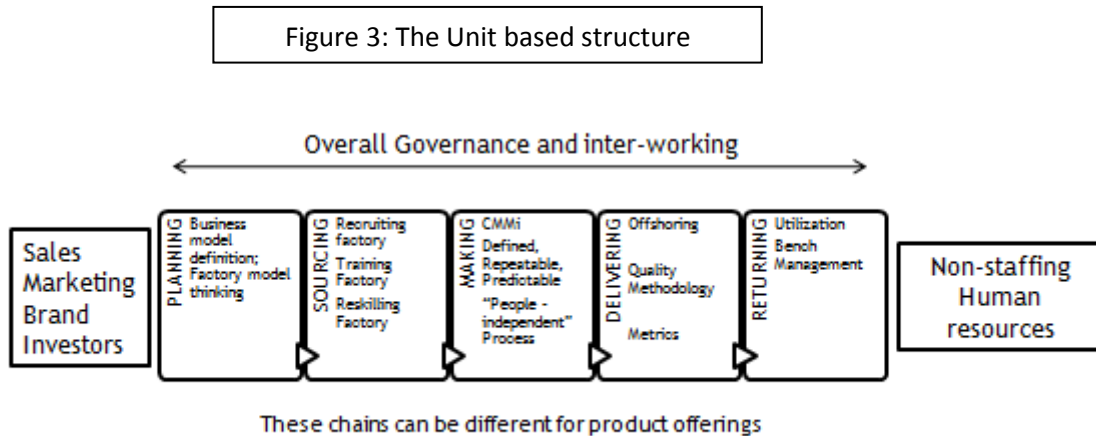
Given the structure described above, there is an opportunity for mid-sized IT services firms to scale by:

- Choosing niches where they can establish themselves as experts;
- Develop domain skills – instead of treating employees as inter-replaceable, allow them to grow while focussing deep into their respective areas.
- Move away from cost being the primary basis of competition.

This, by definition, will require that the unit be smaller than is defined today. A typical IT Services supply chain has one common supply chain for the entire company; a unit based

approach will be much smaller, and will involve the overall company providing governance and branding to the overall organisation, but each unit can choose the services supply chain that is most relevant to its business.

The structure of the company would look as in Fig 3.



Conclusion

As mid-tier IT services firms prepare to grow into a market that has several entrenched large IT services firms already, they will need to differentiate themselves both from an external market perspective (by building differentiating domain skills) as well as internally (to attract and retain talent). One way to achieve this is to use a unit-based structure that moves away from the standardised, homogenising services supply chain that the current leaders in IT services have built in India, and instead allow each unit to develop its respective services supply chain. This will allow each unit to focus on deep domain skills in the chosen area, while the overall organization provides governance and support for the cells to succeed.

References

Businessweek (2005) “Taking A Page From Toyota's Playbook”, August 22, 2005

Businessweek (2010) “Germany's Mittelstand Still Thrives”, September 30, 2005

HCL test factory, accessed from:

<http://www.hcltech.com/enterprise-transformation-services/independent-verification-and-validation/>

Infosys Global Validation Factory, accessed from:

<http://www.infosys.com/offerings/industries/communication-services/Documents/global-validation-factory.pdf>

Forrester Research Inc (2010) “Right and Wrong Reasons to Work with Tier Two Offshore Providers”, Forrester Research Inc., Aug 17, 2010

Forrester Research Inc (2008) “Surviving The Offshore Vendor Polarization Puzzle”, Forrester Research Inc., Aug 05, 2008

Forrester Research Inc (2009) “Why Do You Need Tier Two Providers? (And You Do Need Them!)”, Forrester Research Inc., Sept 08, 2009

Mills, Harlan D. (1983) Software Productivity. Boston, Mass: Little, Brown

Rediff interview with Infosys VP: <http://getahead.rediff.com/slide-show/2010/jun/14/slide-show-1-career-infosys-knowledge-not-certifications-will-get-you-jobs.htm>

Sackman, Erikson and Grant (1968) “Exploratory Experimental Studies Comparing Online and Offline Programming Performance” Communications of the ACM, Volume 11 , Issue 1 (January 1968)

“ Taking A Page From Toyota's Playbook” accessed from

<http://www.nytimes.com/2009/06/04/technology/companies/04compute.html>