Taiichi Ohno and the Toyota Production System

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# Introduction

**Purpose:** The primary intention of this assignment is to critically evaluate the motive behind TPS as developed by Taiichi Ohno and the reasons for not opting for the then most prevalent approach to Henry Ford's mass production. The study also identifies the benefits received by Toyota for considering employees as more important over its technical systems. Finally, the study not only differentiates between industrial culture prevalent in Japan and the West but also delineates issues associated with deployment and advantages of TPS as a whole.

**Background:** The Toyota Production System, popularly known as the TPS is the brainchild of Taiichi Ohno. Though Ohno has been associated with Toyota since 1932 in the loom unit he is recognised internationally for his contributions in Toyota Motor. He was made the Vice President of the manufacturing segment of the Toyota Motor Corporation in the year 1943.the TPS approach which was initiated after the World War II on a small scale within Toyota Motors is now adopted across the world irrespective of scale and field of operations.

**Findings**: The primary findings of this study are:

* TPS system was adopted over Henry Ford’s approach to support small scale production of Toyota
* Under TPS people are given more importance of technical systems as they are valuable, rare, non-imitable and non-substitutable
* There is a huge difference between Japanese and West industrial culture
* TPS application is both challenging and rewarding.

# Review of Literature

## VRIN Model

VRIN stands for valuable, rare, inimitable and non-substitutable. As per Warnier et al. (2013) It basically comprises of organisational resources that assist the company is achieving its strategic goals in a sustainable manner by gaining a competitive advantage on others. VRIN model supports an organisation in conducting its internal analysis and thus categorise the microenvironmental aspects into for heads for which VRIN stands. Talaja (2012) in a study highlighted that with the help of VRIN model a company is in a position to determine the competency level of its strategic resources and thereby take actions to deploy the same for its benefits. The model further aid companies in determining areas which need attention and improvement. Valuable resources are those which endow the firm with capabilities to take maximum advantage of opportunities and at the same time minimise negative implications of threats. Resources are considered to be rare only when they can be acquired by only a handful of companies operating within the industry. Inimitable resources are those which cannot be easily copied and require huge investments. Companies having non-imitable and unique resources have higher chances of gaining competitive advantages within the industry. Finally, non-substitutable resources are the ones that cannot be compensated by the company through any other resource.

## Hard and Soft Innovation Skills

Innovation is a key to organisational success as denoted by Ireland & Webb, (2007). Innovation helps companies to be adaptive and proactively deal with environmental and competitive pressures. This agility of firms establishes a specific performance level which makes it difficult for other players to match and thus makes the innovative company an industry leader. Innovation is categorised under two heads namely hard innovative skills and soft innovation skills. In words of Cheung (2014, p: 24) “*Hard innovation capabilities are input and infrastructure factors intended to advance technological and product development*. *Soft innovation capabilities are broader in scope than the hard factors and cover political, institutional, relational, social, ideational and other factors that shape nontechnological and process-related innovative activity*”.

Thus the hard skills mainly comprise of research and developmental and infrastructural facilities that support innovation. These comprise of laboratories, set-up for research, educational institutions, technologies, resources and fund to name a few (Perdomo-Ortiz et al., 2009). The soft skills, on the other hand, signifies abilities of people to innovate and execute their entrepreneurial skills like decision making. Companies deploying a combination of both the skills generally emerge as market leaders for being pioneers in their fields (Bryson & Rusten, 2010). The innovations by these companies are deep as they are designed based on their enlarged knowledge and facilities. This gives them a competitive advantage over others.

# Analysis

## Factors responsible for not Adopting Henry Ford’s Mass Production System

Though the concept and approach of TPS as designed by Ohno and Toyoda has been inspired by the Henry Ford's Mass Production Systems yet it is significantly different from it. During the Word War II, both Toyota and Ford were asked to supply wartime vehicles but post the war it was found that Ford was a flourishing company whereas Toyota was exposed to losses. However, upon close scrutiny by the Toyota duo, it was identified that Ford’s system of mass production was not suitable for Toyota considering its conditions then (Holweg, 2007). Also, Ford’ system was a complete mismatch with Toyota’s objectives.

One of the major reasons for not subscribing to Ford’s system was the difference in scale of operations between both the companies. Ford was able to operate on a large scale owing to large scale demand prevailing in the USA which was not the case for Toyota. It was basically post-war Japan was devastated and purchasing power of people was curbed which restricted their demand for luxury items like cars (Schlichting, 2009). Secondly, Toyota has always been dedicated to designing and developing products based on the concept of large-scale customisation. This principle was completely opposite to the approach of Ford which believed it making and selling approach rather than being concerned towards customer demands (Becker, 2013). It was owing to this principle of Ford it was able to produce in large scale and thus derive benefits.

Thirdly, large-scale production resulted in the higher blocking of funds in form of inventories and other capital requirements like infrastructure to store materials (raw, work in progress and finished products). It also resulted in higher number of defects added to overall organisational costs (Holweg, 2007). Toyota always aimed at producing cost effectively thus making it reasonable for its customers to opt for their products.

## People over Technical Systems in TPS

One of the most significant approaches to the TPS model is the prioritisation of people or manpower within an organisational culture over any other technical systems. It is mainly because Toyota's work culture is developed on the notion wherein manpower is considered to be human assets. These human assets as per TPS principles if groomed appropriately and continuously improved would become a core competency of the company as per the VRIN model (Takeuchi et al., 2008). It is mainly because these resources are valuable, rare, inimitable and non-substitutable (Warnier et al., 2013; Barney & Clark, 2007). This would, in turn, bestow the company with competitive advantages and related benefits. Human resources are rare to be copied thus making the company unique which further makes it difficult for Toyota’s counterparts to compete with the former.

For supporting continual improvement of people within Toyota they are subjected to challenging activities which support development of soft skills amongst its employees (Marksberry, 2012; Takeuchi et al., 2008). This is the Kaizen approach of TPS as seen in the figure below.



Figure 1 People as Topmost priority for TPS

Source: (Marksberry, 2012)

These soft skills foster innovation within the organisational culture. These innovative ideas when clubbed with organisational hard innovation (process and research and development) triggers Toyota's success. Thus, in accordance to TPS, it is through the synergy of hard and soft innovative that the company derives exponential benefits.

In accordance with principles of Toyota, it is the people that are primarily responsible for executing differing processes and strategies at Toyota. Thus, the company undertook expansive training and development programs to equip its people with the knowledge necessary to do so. Through TPS, Toyota imparts training to its employees who develop expertise in problem identification and analysis thus assisting the company in overcoming these issues as and when they occur. This approach also helps Toyota to eradicate the primary causes of these problems thereby assisting the company to step forwards towards the development of an error-free business framework.

## Differences in Industrial Culture (Japanese vs. West)

With the evolution and mass adoption of TPS is has been evident that there is a huge difference between Japanese and Western industrial culture. One of the major differences is taking responsibilities for organisational success and failures. In Western culture, employees have the freedom to avoid their responsibilities by keeping their work imperfect and unfinished to a certain extent which is not the case in Japanese (Miller, 2013). Within the Japanese culture perfection and waste, elimination rules the culture. This culture each employee is held responsible in circumstances of failure. But in the Western culture, the employees have liberties to blame their supervisor and managers (Miller, 2013).

Another significant difference between both the industrial cultures is that related to problem-solving and decision making. The Western culture is more oriented towards objective decision-making that is based upon investigative, intellectual, and careful approach. However, in the Japanese culture, the problem solving is more subjective. The decisions are taken on the basis of expressive and individualistic thinking (Martinsons & Davison, 2007).

The differences in culture are one of the major factors that shape the working culture of the industry or business. This, in turn, has a strong impact on organisational working and thinking process.

## Advantages and Challenges related to Adoption and Implementation of the TPS

Companies resort to TPS owing to a large number of benefits withdrawn by them from the same. Some of the most significant benefits of TPS are a minimisation of wastages through just-in-time (JIT) inventory management. This approach also assists in overcoming cost related to issues. JIT also helps optimisation utilisation of infrastructural facilities like warehouses. Through the TPS mechanism, Toyota identified 7 major wastages named as TIMWOOD which can be controlled through JIT as depicted in the figure below:



Figure 2 Benefits of TPS

Source: (Modi, 2017)

These wastages are common to all business organisations irrespective of their industry of origin. Thus, JIT has universal application and the benefits can be reaped by all business units.

However, implementation of JIT in particular and TPS, in general, is very challenging. One of the major issues that are faced by companies to resort this mechanism is dealing with demand volatility (Bhamu & Sangwan, 2014). In circumstances of sudden rise or fall in demand, the JIT might fail to deliver efficient consequences thereby generating wastages and resulting in organisational losses. The demand of consumers though can be forecasted through effective techniques but none of these techniques delivers absolute accurate results. For example, with issues like Brexit, the demand proposition is expected to change which will have negative implications of overall production events (Bailey, 2017; Monaghan, 2016). These sudden events make it difficult for companies to manage their inventory mechanisms which influence organisational productivity as well as profitability.

# Conclusion

The paper is a compilation of differing aspects related to TPS as adopted by Toyota Motors. Though the mechanism has proved itself as a successful one but in modern day dynamic business environment it is critical to ensure long run success as a sole player. It can be understood that like Toyota many other companies to a larger extent have benefited from the application of strategic approaches as highlighted under TPS. But a sole application of TPS is questionable. It is mainly because with the advancement of technology it is critically essential for companies to make the right strategic choices and ensure appropriate technology is adopted to support TPS.

Japanese and West individual culture have resulted in the creation of both successful and failed business ventures. Thus, considering one culture superior to the other is not possible. However, modern-day companies can design a hybrid organisational culture by picking up best from both the worlds. The significance of people within the organisation cannot be negated and thus companies need to make dedicated efforts for developing human assets.

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