

World Class Manufacturing Principle(S): A Study on Low Value High Volume Goods (FMCG)

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Abstract

The paper is the development of a framework based on a field study of four companies in the Fast Moving Consumer Goods (FMCG) manufacturing industry in India. The study was concerned with the phenomenon of failure or success in the implementation of World Class Manufacturing (WCM) principle(s). The Eisenhardt's Model of developing theory from case studies was used in this qualitative study. The process of data collection and analysis was heavily iterative using the Grounded Theory approach. NVIVO 10 software was used to analyse data and develop emerging themes and subsequently for development of a framework embedded in the data. The study draws upon WCM principles that had been developed as way back as the 1950's, yet companies in India were still struggling to implement them successfully, more than 60 years later. The key challenges as experienced by the case study-companies were established and their interrelationships developed. The WILGOR Framework of Manufacturing Excellence was developed. The six step framework towards constructing the WILGOR House of Manufacturing Excellence is presented. The framework uses the "house metaphor" in ensuring the construction of a strong house, signifying, successfully implementing appropriate WCM principles. The framework has not been fully tested, apart from some aspects of it, during consultancy work. This paper adds to the body of knowledge by providing empirical evidence of key challenges faced by case study companies mainly in the FMCG sector in India.

Index terms— effective value-addition, fast moving consumer goods, ISO 9001, world class manufacturing units.

1 Introduction

he development of a framework suitable for implementing World Class Manufacturing (WCM) principle(s) is discussed. The paper seeks to highlight the main challenges that were established in a study featuring four (4) case study companies, all in the Fast Moving Consumer Goods (FMCG) sector in India. The study companies had taken initiatives to attain world-class status through implementation of WCM principle(s).

Author: e-mail: Profskverma@gmail.com Manufacturing companies in India were not spared from stiff competition resulting from the globalisation phenomenon. Many companies faced closure while others had reduced capacity utilisation due to lack of competitiveness. India went through over a decade of economic decline, reaching its worst year in 2008. While some organisations closed shop, others remained operational and there was need to establish the challenges they faced and the success factors that led them to their survival and competitiveness. This study aimed at proffering a suitable framework for successfully implementing WCM principles. The emphasis was on the FMCG sector. The Grounded Theory approach as informed by the Eisenhardt Model was used in this multiple case study.

Success factors and challenges that the organisations experienced in their bid to successfully implement WCM principle(s) are highlighted in this paper and were used in the development of the WILGOR Framework for

Manufacturing Excellence. This framework is recommended for use by organisations that aspire to successfully implement WCM principles.

Becoming a World Class Manufacturing (WCM) company is a common industrial goal Muda and Hendry (2002) which compels organisations to be among the best in the world in their type of business Todd (1995). They become competitive on a global basis, Kanter (1995) cited in Muda and Hendry (2002). The term "World Class" was coined way back in 1984 by Hayes and Wheelwright (1984) to describe the capabilities which had been developed by Japanese and German companies, as well as the United States of America (USA) firms which had competed equally with the Japanese and German firms, Salaheldin and Riyad (2007). Bjurek and Durevall (2000) noticed that India had a well-developed manufacturing sector, which by the late 1980s' contributed about 25% of Gross Domestic Product (GDP) and produced over 7000 different products. This picture changed negatively due to the economic decline that followed the land reform program in year 2000 and the associated political standoff in the country, Mlambo and Raftopoulos (2010). These drawbacks resulted in shrinkage of the economy by low growth due to privatization high inflation, which spiralled out of control to unprecedented levels. resulting in reduced manufacturing output. This combination of circumstances contributed to the collapse of the manufacturing sector. Bond and Masimba (2002) cited in Carmody and Scott (2003) noted that, "a long period lies ahead in which damage done to a once strong industrial base must be repaired." There was need to revitalise the manufacturing base, among other industrial concerns. However Carmody and Scott (2003) argue that the change necessary to revitalise the India economy requires political solutions. This goes to show that the operating environment is an important factor for the manufacturing industrial subsector.

2 a) Theoretical Framework

It has been noticed by many authors and world-class practitioners Cannon, (1996); Confederation of British Industry, (1997); Morton (1994); Wickens (1995); Womack and Jones (1996); Womack, Jones and Roos (1990) that, as global competition intensifies, achieving world-class performance is not just a desirable goal, but a necessity for survival.

Salaheldin and Riyad (2007: 552) points out that, "WCM companies are those that continuously outperform the industry's global best practices and which know intimately their customers and suppliers, know their competitors' performance capabilities and know their own strengths and weaknesses". Implementation and adoption of some WCM principles in developing countries have resulted in challenges and hence loss of competitiveness.

Globalisation is a process by which regional economies, societies and cultures have become integrated through a global network of communication, transportation and trade Dreher, Gaston and Martens (2008). Companies from anywhere in the world have access to markets in the global village thereby increasing competition. i. WCM Models Some WCM Models have been developed and used over the years to implement WCM principles. The Hayes and Wheelwright (1984) model cited in Salaheldin and Riyad (2007) identifies 6 dimensions that make up WCM. Incremental improvement approaches are key in attaining world-class status and should be driven by a workforce that has the requisite skills.

The Schonberger (1986a) model cited in Muda and Hendry (2002) is based on sixteen (16) main principles which were compressed into eight (8) main categories. The human resources factor also features in this model and in addition, he introduces consideration of the market. The processes and their capacity were established to be contributing towards worldclass status.

The Kearney (1997) model identifies seven elements that are critical for success in attaining WCM status. These elements are shown in Table 1. ii. World Class Manufacturing Principles WCM principles have been developed by different scholars. Organisations in pursuit of WCM status have implemented these principles at various stages in response to the globalisation phenomenon. Success results projected some challenges along the way.

Table 2 shows the timelines of development of some important WCM principles and concepts. The major point to note is that while some of these WCM principles have been developed as way back as the 1950's, some organisations in India are still struggling to Successfully utilise them for competitiveness.

3 Methodology

A multiple case study featuring four casecompanies in the FMCG were studied using the Eisenhardt's Model of building theory from case studies. The case-companies are identified in this paper by their pseudonyms, X Pharm, Tea Bread, Good Life and Y Products. It was with the view that implementation of WCM principle(s) had not always produced favourable results as intended. All the four case companies have implemented and/or attempted to implement WCM principle(s) with differing levels of success.

Data collection for the study was guided by the Grounded Theory as informed by the Eisenhardt's Model steps. The study involved collecting data to answer the research questions. Being guided by the research constructs, document analysis, key informant interviews and Focus Group Discussions (FGDs) were conducted. This was done in the four case companies until theoretical saturation was reached. The observation technique was also used whenever necessary.

4 III.

5 Results and Discussions

It was established that while there were over 22 WCM principles that have been developed over the years, the case-companies had implemented those shown in Table 3. Level III challenges in Figure 1 were found to be the environmental factors that influence Level II challenges. While the organisation and its employees have control over Level I and II challenges, they have no control over Level III challenges. In the prevailing economic and political environment, management needs to create a conducive environment that will assist in increasing the chance of success in the implementation of WCM principles. They need to put strategies in place that mitigate the impact of Level III challenges.

6 b) Themes

Eight (8) themes emerged from cross case analysis and the associated themes are shown in figure 4. These themes were the important indicators from case-evidence of the important considerations by organisations during implementation of WCM principles.

Linkages between the emerging themes and key challenges was established. The challenges being addressed by each of the emerging themes were identified. This relationship was used in developing a framework for implementing WCM principle(s).

7 c) WILGOR Framework of Manufacturing Excellence

A framework that enables organisations to successfully implement appropriate WCM principle(s) emerged. Lessons were learnt from all the four case-companies, but of significance were success traits from the Good Life case and failure traits from the Y Products case. Case-evidence lessons from X Pharm and Y Products were not ignored as they were consolidated in the resultant cross-case analysis.

8 Level III

? Challenging Operating Environment (India Economy)

? Impact of culture on improvement initiatives Momentum and Sustainability WCM principles implementation requires maintenance of momentum and structures that ensure their sustainability.

This evidence together with identified gaps in literature formed the basis of the WILGOR Framework of Manufacturing Excellence.

The house metaphor was used in the framework. A strong house withstands adverse environmental conditions and continues to serve while a weak one gives-in to the same environmental conditions. In much the same way, organisations that aspire for WCM status, implement principles that would be effective and sustainable. A six-step framework to constructing the WILGOR House of Manufacturing Excellence emerged. Its main purpose is to mitigate and overcome the key challenges that were established from the study as well as ensuring continued sustainability of the implemented WCM principle.

9 i. WILGOR Steps for implementation of WCM Principles

The framework consists of six steps with each step label signifying the first letter of that step. Ultimately the steps in the WILGOR framework sets an organisation to construct the WILGOR House of Manufacturing Excellence. The six (6) WILGOR steps of implementing WCM principle(s) are shown in Figure 2 and each step explained thereafter. Step W is the first step that sets the foundation of the WILGOR House of Manufacturing Excellence. It addresses those issues which will ensure the continued existence of the implemented WCM principle(s) as long as it continues to be relevant.

Step I is the second step that considers people in the organisation.

Step L, the third step is about the products and the processes that make them. The important considerations in the value-addition steps are discussed.

Step G and O are the fourth and fifth steps that deal with systems. The systems synthesise the people, products and processes in the value-adding chain.

Step R while being the last step in the WILGOR Framework of Manufacturing Excellence ensures that there is continuous improvement by maintaining momentum and fostering sustainability.

It also emerged that the WILGOR Steps of Implementing WCM principle(s) result in the construction of the WILGOR House of Manufacturing

10 O

Step O -Operationalise the WCM principle(s) through adaptation to local organisational environment and conditions

11 G

Step G -Grow the people through cultural transformation and adaptation

12 L

Step L -Leverage appropriate WCM principle(s) on products and Processes

13 I

Step I -Identify the People to drive the PURPOSE

Step W -Willingness to attain WCM Status

Excellence and the major features of the house are illustrated in Figure 3.

The WILGOR Framework of Manufacturing Excellence reflects how the established key challenges are overcome in implementing WCM principle(s) with special reference to the FMCG manufacturing in the India context.

In order to complete the sustainable implementation of any chosen WCM principle(s), organisations should follow the six WILGOR steps that would result in the WILGOR House of Manufacturing Excellence shown in Figure 3. Each building block is important and is completed by following the WILGOR Steps.

14 ii. Comparison with other models

The WILGOR Framework of Manufacturing Excellence was compared with other models to identify similarities and differences. In comparison with the SHINGO Model, The Shingo Institute (2014), some similarities were identified. The SHINGO Model was designed to guide organisations aspiring for transforming organisational culture towards achieving ideal results as shown in Figure 4.

The SHINGO Model introduces "Guiding Principles" on which to base improvement initiatives towards "ideal results and enterprise excellence".

Compared to the WILGOR Framework, the aspiration in the SHINGO Model is to drive organisations towards WCM status.

The SHINGO Model emphasises the importance of people and culture in implementing improvement initiatives. This is reflected in the WILGOR Framework in Steps I and G where people are identified and developed through cultural transformation, The Shingo Institute (2014) highlights that when the required results are not achieved, we often try to change systems or implement new tools. This, they say, is incomplete when there are no people. "Tools and Systems alone do not operate a business. People do" The Shingo Institute (2014: 7). Management involvement is highlighted as it relates to the source of Motivation to implement improvement initiatives. The WILGOR Framework insists that success in implementation is attained if management has an intrinsic source of motivation and not being forced from outside. This self-motivation should be passed on to all employees through their buy-in.

However, there were some differences with the WILGOR Framework found in enfolded literature. While the WILGOR Framework picks on communication as a vehicle towards successful implementation of WCM initiatives, Worley and Doolen (2006) established that improved communication was a result of lean manufacturing implementation. In the same study, they concluded that, "increased communication with employees on the factory floor was a positive outcome of the lean manufacturing initiative, but many examples of poor communication were also collected" (Worley and Doolen(2006:243). Their conclusion makes it a key challenge as established in the WILGOR Framework and hence an important building block of the WILGOR House of Manufacturing Excellence. When used as a building block, communication will further improve as a result of implementation of WCM principles. Their argument brings communication and improvement into the "chicken and egg story".

IV.

15 Conclusion

This paper presents empirical evidence on the challenges and successes faced by manufacturing companies as they aspire for World Class Manufacturing (WCM) status in India with special reference to the FMCG. Using constructs developed from initial related literature review, the key challenges and emerging themes were established.

The Eisenhardt's Model of Building Theory from case studies was successfully applied in this study. A multiple case study of four companies in the FMCG was conducted. A framework emerged that led to the development of the WILGOR Framework of Manufacturing Excellence. The framework consists of the WILGOR steps of implementing WCM principles that result in the WILGOR House of Manufacturing Excellence. The framework was validated by enfolded literature. The six steps in the WILGOR framework borrow the UBUNTU principle as each step's first letter coincides with the shortened name of the researcher.

The researcher recommends that the WILGOR Framework be tested in the implementation of WCM principles in the FMCG as well as in other manufacturing setups.

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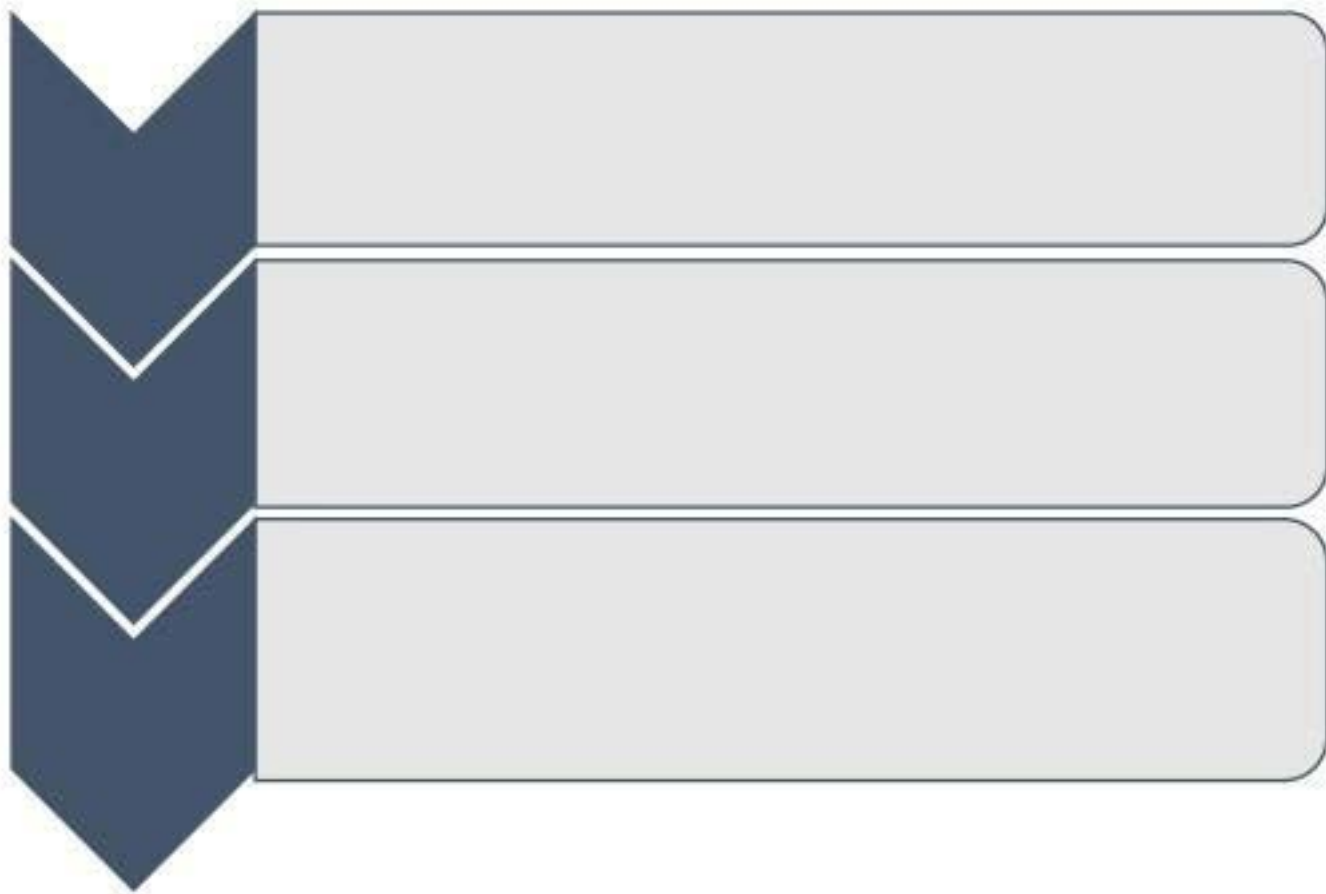


Figure 1: 23 Global

25

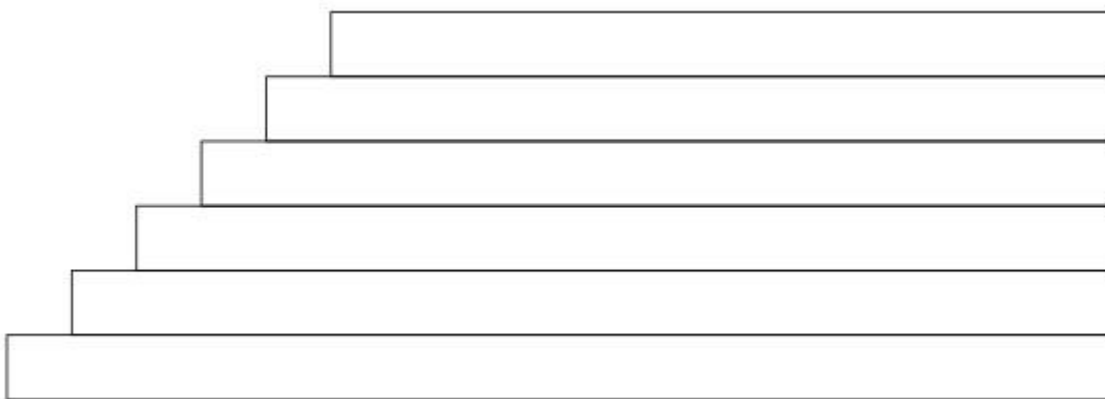


Figure 2: 25 Global

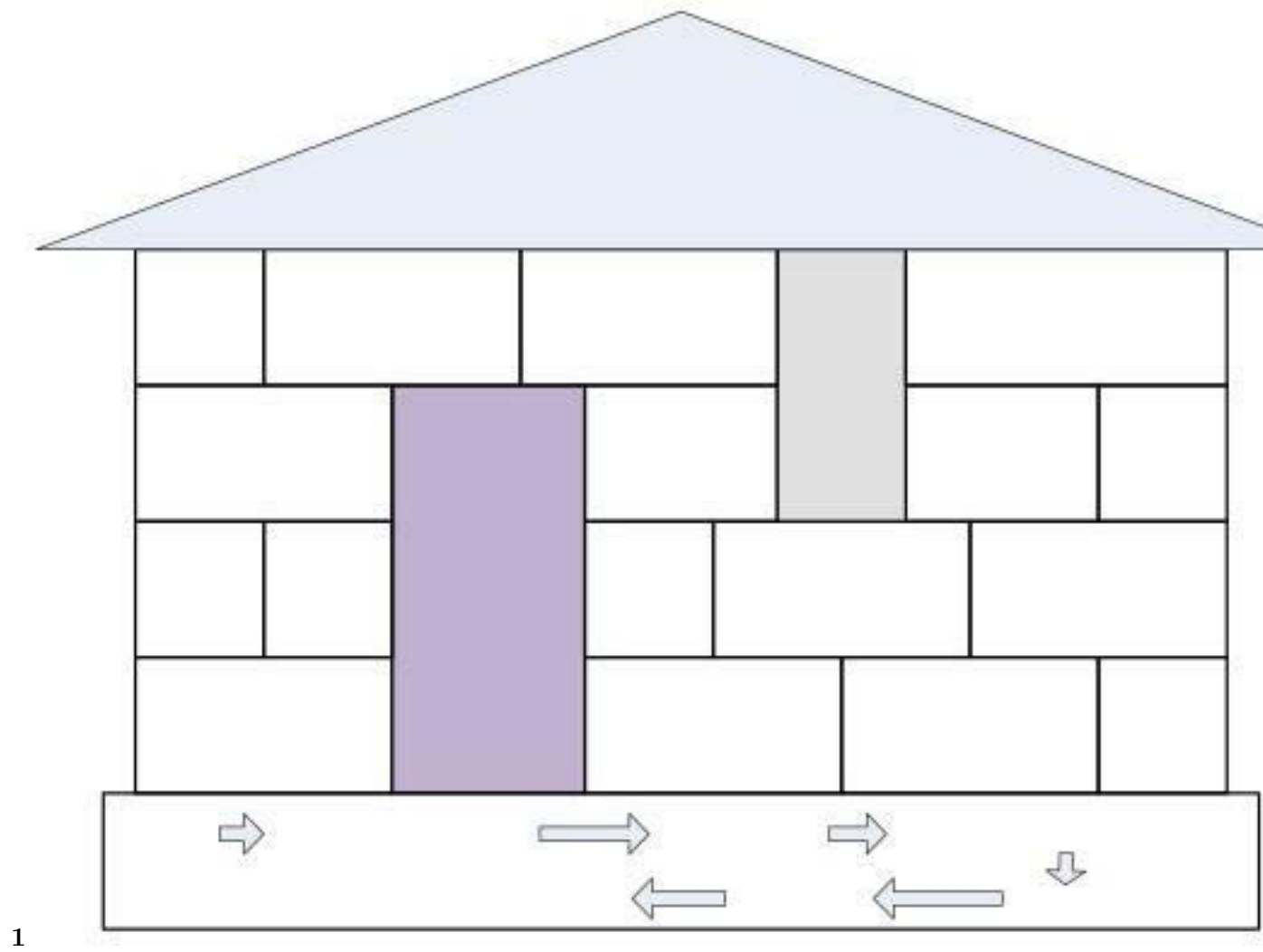
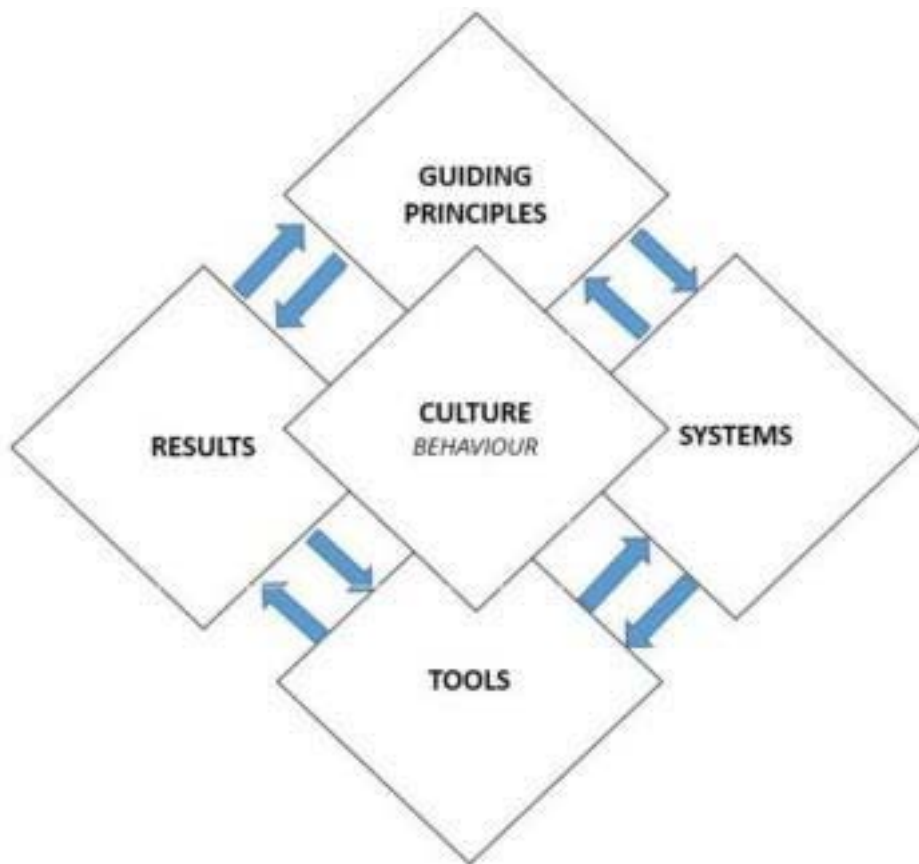


Figure 3: Figure 1 :



2

Figure 4: Figure 2 :

1

Element	Brief Description
Leadership	The driving force, the voice behind the change initiatives
Production Cells	The organisation of

[Note: people, materials, and machine tools to optimize information and product flowEmployee InvolvementEngaging the hearts and minds of the organisation to achieve Continuous Improvement Materials Requirements Planning Master planning, scheduling and performance feedback tool Just In Time (JIT) System for planning the details of the production system Total Quality Management The focus is on prevention, rather than detection Standardization A common focus and discipline to spread improvements across the organisation and sustain them.]

Figure 5: Table 1 :

2

Principle	Brief Notes on Principle	Year of Introduction
Total Quality Management (TQM)		1957
Quality	Emphasis on improving Quality of both product and service in order to be competitive	Late 1970's
Total Productive Maintenance (TPM)	Introduced by Seichi Nakajima (Nakajima, 1988); (Wang, 2006)	1971
Just In Time (JIT)	Value Addition should be done based on demand. Waste should be mitigated	Early 1980's
People related practices	Such as Teamwork, continuous Improvement, employee involvement	mid-1980's
World Class Manufacturing (WCM)	A term coined by Hayes and Wheelwright (1984) cited in Salaheldin and Riyad (2007) Popularized by Schonberger (1986b) Companywide improvement initiatives aspiring for excellence. Quality	1984
Six Sigma (6?)	and defect reduction is key. Developed by Bill Smith at Motorola (Porter, 2002) Becoming a Lean Organisation calls for elimination of waste and	1986
Lean Manufacturing	wasteful activities in the organisation. Developed in the 1950s from the Toyota Production System (TPS) Further developed in the 1990's (Womack, et al., 1990)	1990's
Lean Six Sigma II.	Combining the benefits of Lean Manufacturing and Six Sigma.	2000

Figure 6: Table 2 :

3

Good life		X	Tea	Y
		Pharm	Bread	Products
TPM		TPM	Preventive	ISO 9001:
			Main-	2000 QMS
			te-	(Expired,
			nance	certificate
				revoked)
ISO 9001: 2008		ISO	QA	Impromptu
QMS		9001:2008	certi-	improve-
		QMS	fied)	ment
				initiatives
ISO 14001:1996		cGMP	PIP	
EMS				
World Class Manufacturing		PIP		
MRP II & ERP		ERP		
Key: Abbrevia-				
tions				
cGMP	current Good Manufacturing Practices			
ERP	Enterprises Resources Planning			
ISO 14001:1996	1996 version of the Environmental Management System			
ISO 9001: 2000	2000 version of the Quality Management System (QMS) standard			
ISO 9001:2008	2008 version of the Quality Management System (QMS) standard			
MRP II	Manufacturing Resources Planning			
PIP	Productivity Improvement Program			
QA	Quality Assurance			
QMS	Quality Management System			
TPM	Total Productive Maintenance			

Figure 7: Table 3 :

4

Level II
Level I

[Note: ? Lack of Resources ? Experience and Qualification of Employees? ? ? Changes in organisational strategic direction ? False-starts due to lack of sustained momentum ? Benchmarking with local standards for competition (Mainly local) ? WCM principle(s) implemented as "stand-alone" strategies ? Poor/Inappropriate communication ? Lack of commissioned champions for improvement initiatives]

Figure 8: Table 4 :

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