

Building Resilient Industry by Competency Augmentation

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Abstract- *The basic purpose of this paper is to develop and validate a brawny method of skill development with employee engagement which will make any organization resilient in terms of delivering their deliverables in much more effective manner in scarce of time. This model basically speaks about developing a common skill out of majority stations of working and then training and assessing them with SQPDCME parameters. This model is been tested to one of the assembly line and the results have been validated with substantially good performance through qualitative and quantitative methods.*

Index Terms—skill development, validation, training, resilient, burgeoning skills, brawny method, skill matrix, competency mapping, augmentation.

I. INTRODUCTION

There is a great saying by Steve Jobs that “Innovation is the ability to see change as an opportunity – not as threat”. When the entire globe was confined in their vicinity and yearning at the time of pandemic the situation became just opposite of that before. There came light in the darkness when the business started but with limited skillset. This opportunity restricted a boundary for only green and orange zone skillset which was not at all enough to execute the complete process with desired deliverables. The real challenge of managing available skills Vs required skills had to be faced under this resilient pillar. This had to be taken care with high precision and care, so to develop a resilient atmosphere, we needed an approach towards psychological resilience in a very organized and methodological manner. Every employee in working environment develops some or the other skills which helps them complete their work daily in effective manner. Now every employee if repeats the same work daily develops the habit of enhancing the same skills, even if not asked for they find some or the other improvements in the process either to make it simpler, faster, better. This is the reason if the change is anticipated from them, they feel reluctant and we face repugnant. This paper will reveal the effective and brawny method of skill burgeoning of employees to develop resilient organization towards any type of disruption in future.

II. LITERATURE REVIEW

A. Skill Mapping

Several measurements tools are used to assess the skill level and performance of employees in the manufacturing organizations, such as performance appraisal and skill mapping method. Skill mapping is a tool used to assess the skill of the employees. On the basis of skill mapping, the employees are required to acquire new skill sets or improve in key areas if needed, on the other hand this movement will influence the engagement level of any employee and hence employee performance. Each employee's performances contribute towards the success of any organization, Busaibe et al. (2017).

The identification of skill requirements give rise to training and development needs that benefit the workers to develop and learn in order to meet the objectives of an organization. Such training and development programs also help those who already possess the relevant skills as they may also be pleased about the results of training. This will provide a knowledge-based impetus for striving to attain superior performance

level in an organization.

The continuous efforts of the business managers on the skill mapping will definitely have an impact over the organizational performance.

B. Organizational Performance

Skill mapping is one of the most important elements in any industry's performance. A well-framed and planned skill mapping process has the ability to identify the trends in the performance. Hayes et al. (1988) described that the appraisal is to accelerate the direction and speed of improvements made over a period of time. Hence, both appraisal and skill assessment should focus on continuous improvement, control and compliance. Keeping this in mind, the skill mapping and enhanced production capacity of an organization may be regarded as core competency factors and are included in this present study.

C. Blue-collar employees

A blue-collar employee means an employee whose employment requires him to do manual labour for a good amount of time and also includes working on machines and line, which involve a good amount of skill to operate the machines (Melamed et al., 1995). Blue collar workers are classified as skilled or non-skilled manual labours in manufacturing set-ups (Berman et al., 1994). The role of blue-collar employees is very important as they are the main drivers of production.

Generally, these jobs are highly specialized in nature and require skilled workers to perform such tasks. However, a minimum education of ITI is required and specific knowledge and skills are gained by virtue of their experience.

D. Performance Management System

Performance Management System is a contemporary notion and is the need of the hour due to increasing competition. Performance Management System is very vital for a manufacturing organization to achieve higher organizational performance. Performance Management System is a set of parameters that are used to quantify the efficiency of an organization. Performance Management System can be measured using various tools such as performance appraisals, skill charting etc. The incorporation of such tools ensures an organization to reach higher levels of engagement among the workers, which as a result will assist to ensure higher organizational performance.

Organizations put Performance Management System into action to administer and evaluate their business processes. Performance Management System is a set of criterion that is utilized to calculate the effectiveness of an organization's performance (Neely et al., 1995). The purpose of introduction of Performance Management System is to satisfy a definite represented goal. A strong Performance Management System in an organization offers the essential information to check, control, assess, and provide feedback functions to the business managers. Additionally, This Performance Management System can also turn out to be a driver for motivating employees, ensuring management action, an improvement on a regular basis, and also the accomplishment of planned goals (Kaplan and Norton, 1996; De Waal, 2003).

E. Gaps in previous study

It is evident from the past studies that all skill mapping and skill development process has a great impact on organization performance. In present scenario many large, medium and small industries have established skill mapping or skill matrix based on particular station or area based on their work profiles. Even we do this for white collars also but the need of an hour is that each employee should be multi-talented and should keep on developing skills throughout the journey. From the past literatures there is nowhere mentioned about the method of burgeoning skills in short period of time especially after the phase like pandemic. Nowhere is it mentioned about enhancing the skillset of employees for working in entire horizon with a vision of all employees with all skills.

F. Objectives

This study was carried out to fill the gap by developing a brawny method of burgeoning skills of the employees in short span of time with maximum efficiency.

On the basis of the requirements and research gap, the primary objectives of the study was

1. To develop a process of burgeoning employee skills in short span of time
2. To determine the percentage effectiveness of the skill development
3. To Validate the skill matrix evaluation process and competency mapping
4. To create a motivation process for burgeoning skills

G. Overview of the Study Procedure and Purpose

In this study, the main objective is to develop resilient organization by burgeoning skills of employees. This is an empirical study by nature in which the design is a mix of exploratory as well as descriptive study. Therefore initially a qualitative approach for getting the consent from the senior leadership with the formulation of the questionnaires regarding development of the skill setting.

The descriptive research design will help in quantification of the evaluation result on the basis of which the suitable suggestions were made.

H. Approach and Design

The research is having case based approach in Tata Motors, Axle division located at Pimpri, Pune. The nature of research objectives requires qualitative as well as quantitative tools. Therefore a mixed methodology was used. The study was considered qualitative because many of the senior leaders were interviewed through questionnaires. A separate survey and quantitative analysis based on the evaluation process of the employees were considered for percentage evaluation of the skill developed.

TABLE 1

Skill mapping description





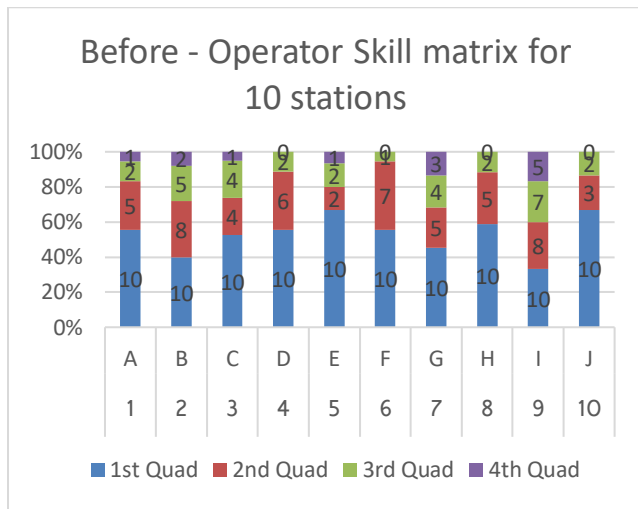
LEVEL1	Operator is Qualified and standards are known	
LEVEL 2	Operator can perform job with assistance	
LEVEL 3	Operator can perform task independently	
LEVEL 4	Operator is expert and can train others	

TABLE 2

10 Operator skill w.r.t 10 stations



The above figure explains the before scenario where 10 operators were having 10 stations to work in which all 10 operators have developed quad 1 for all 10 stations each, similarly for quad 2,3 & 4, none of the operator is having skill level as quad 2,3,4 for all 10 stations. This has a strong reference that Operator A can only perform task in 3 stations individually, can only enhance skill of 1 station, require assistance for 5 stations and rest 2 stations he requires training even if he is experienced and old. As manager also don't want to remove the level 4 employee from their respective station to avoid losses in productivity and quality nor the employees want to go to any other station where they again need to apply their brains and restart improvement process.

TABLE 3

10 Operator skill w.r.t 10 stations

		Levels of Operators (1-4)									
Sr No	Operators	st1	st2	st3	st4	st5	st6	st7	st8	st9	st10
1	A	1	1	4	3	2	3	2	2	2	2
2	B	3	4	3	2	4	3	3	2	2	3
3	C	4	3	3	3	1	2	1	2	2	2
4	D	1	1	2	2	2	3	3	2	2	2
5	E	1	1	1	1	2	3	3	1	1	4
6	F	1	2	2	2	2	1	2	3	2	2
7	G	2	2	2	4	2	4	4	3	3	2
8	H	1	1	2	1	1	2	1	1	1	1
9	I	3	4	4	3	3	3	3	4	4	4
10	J	1	1	1	2	2	3	3	1	1	1

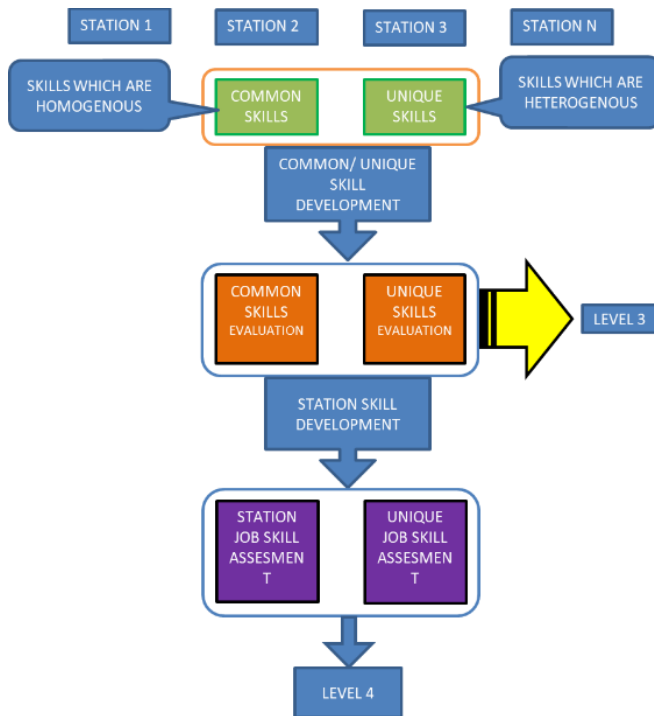
The above table demonstrates the before part of the paper in which all 10 operators levels have been marked in which blue colour represents Level-1, red colour represents Level-2, green colour represents Level-3 and purple colour represents Level- 4

Now if interpret this table then we will find that Operator A has a good command over Station 3 with Level 4 skills and less skill for station 1 and 2. Similarly we can also interpret that Operator I is the most flexible among all 10 operators as he can train others in 5 stations and can perform task individually in other stations.

I. Conceptual Framework

FIGURE 1

Conceptual Framework for Skill Development



The above figure shows the conceptual framework of the skill development process. At every organization when we recruit any employee we focus on result but somewhere we forget that without healthy ingredients we cannot make tasty food likewise if we do not give proper training of what they require we cannot get the expected result from the employees. This conceptual framework derives the common skills or the minimum mandatory skills required to perform the task and training and evaluation is done as per the requirement derived out from the Qualitative research. The skill level of the employee directly moves to Level 3 where assistance is totally eliminated. Now the only process left were to train the job specific skills and after evaluation level 4 will be achieved which gives the confidence that the employee is now ready to develop another employee within a short span of time. The same employee after attaining level 4 in one station moves to other adjacent to the working station and the whole cycle continues and the assessment keeps on with the help of online forms. This reproduction of leaders continues till every employee moves on to Level 4.

J. Rolling Station concept for skill development

TABLE 4
10 Operator skill development plan w.r.t rolling concept

ROLLING STATION CONCEPT (D0 & D1)												D0&D1	D2&D3	D4&D5	D6&D7	D8&D9
OPERATOR	LEVEL 4 STATION	st1	st2	st3	st4	st5	st6	st7	st8	st9	st10	LEADER	LEADER	LEADER	LEADER	LEADER
A	3	A	A		A	A				A		B	B	F	H	G
B	2,5	B		B	B		B			B		A	A	H	I	J
C	1		C	C	C			C			C	H	F	J	F	H
D	0			D		D	D		D	D		G	E	G	E	I
E	10					E	E	E	E	E		F	D	I	D	F
F	0		F	F				F	F		F	E	C	A	C	E
G	4,6,7		G			G			G	G	G	D	J	D	J	A
H	0	H	H	H	H						H	C	I	B	A	C
I	2,3,8,9,10	I			I	I	I	I				J	H	E	B	D
J	0	J					J	J	J		J	I	G	C	G	B

Rolling station concept is one of the best concept which has turned out to be magical in skill development of the employees. This concept will be imparted just after clearing common skill assessment which will be outside the line at skill development center. In this concept first the operator's skill level is mapped and then he is been deployed to the other stations in turns except the station he is having skill level of 4 with a leader assigned who is already having skill level 4 of that station. The employee will be trained on job along with supervision for two days until the employee goes with the assessment module designed with the help of qualitative analysis. After passing that module the employee will be certified as skill level 4.

TABLE 5
Operator's timelines for 100% Level 4

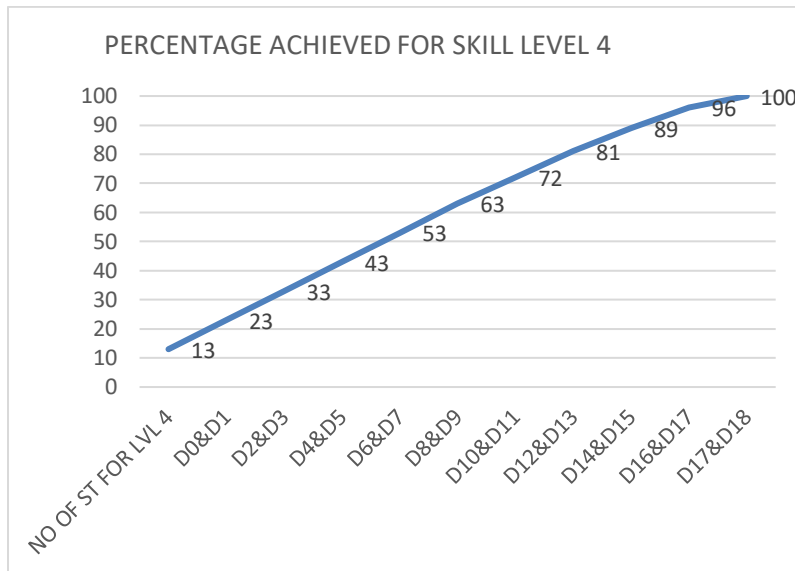
OPERATOR	NO OF ST FOR LVL 4	D0&D1	D2&D3	D4&D5	D6&D7	D8&D9	D10&D11	D12&D13	D14&D15	D16&D17	D17&D18
A	1	2	3	4	5	6	7	8	9	10	10
B	2	3	4	5	6	7	8	9	10	10	10
C	1	2	3	4	5	6	7	8	9	10	10
D	0	1	2	3	4	5	6	7	8	9	10
E	1	2	3	4	5	6	7	8	9	10	10
F	0	1	2	3	4	5	6	7	8	9	10
G	3	4	5	6	7	8	9	10	10	10	10
H	0	1	2	3	4	5	6	7	8	9	10
I	5	6	7	8	9	10	10	10	10	10	10
J	0	1	2	3	4	5	6	7	8	9	10
TOTAL	13	23	33	43	53	63	72	81	89	96	100

The above table shows that for converting skill level of 10 employees to Level 4 we require maximum 19 days initially. There after this process will be very simple and sturdy. This table is made to understand that

every 2 days the skill level of all the operators are increasing simultaneously and every 2nd day the number of operators having Skill level 4 is increasing substantially.

FIGURE 2

Operator's timelines for 100% Level 4



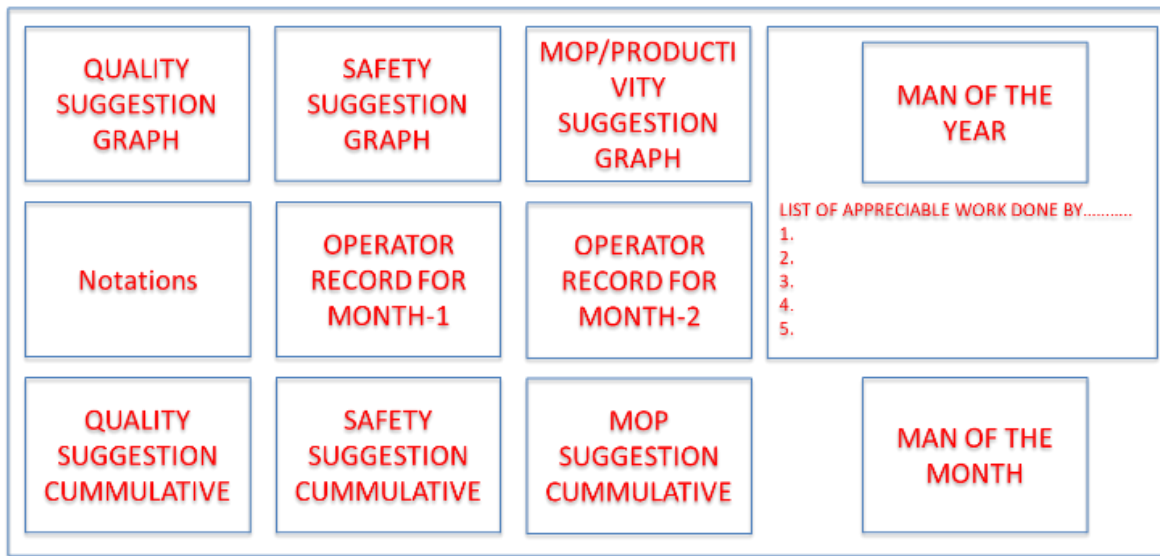
As you can find the percentage change of Level 4 employees from 13% to 100% requires only 19 days. It's always beneficial to empower the employees and enhance their skills as per the organizational requirements, to have success over quality and productivity. Here in this case only 10 random operators were taken as the sample space for the research and then they have gone through all the process mentioned in the conceptual framework right from the common skill training and evaluation till they qualify level 4 skill. Here the hypothesis suggested for number of days for training and qualifying Level 4 skill was changed from 1 day to 2 as the minimum time required for their skill to enhance with respect to S,Q,P,D,M&E requires 2 days after research conclusion for ITI holders(min qualification).

K. Motivation and Operator Performance Management

It's always observed that any change requires motivation, either motivation towards work, motivation towards money, motivation towards attitude etc. It's also said that motivated work force reduces 80% effort of their managers. Motivated workforce creates an opportunity to think the same work in different perspective to excel in it. To continue the above practice and vision of the new skill development module, there has been some addition to the Man of the month awards criteria which can be stated in below figure.

FIGURE 3

Operator Performance Management



The figure above is the format of the board being displayed at the shop floor where the tracking of all the suggestions and good work done will be noted and upon their good work and good suggestions or any good work will be registered by allotting points for each good work and each bad work or rework generation, rejection generation deduction of points will be done and displayed on the board setup in shop floor against their names.

TABLE 6

Notation for Operator Points system

Notations:-

Good Work	-	Green Dot	-	+ve point (+1)	
Bad Work	-	Red Dot	-	-ve point (- 1)	
Implemented Suggestion	-	Blue dot	-	+ve point (+5)	

Calculation then remains simple i.e

Step 1:- Eligibility for participating in Man of the month award will be “Employee should be at Skill Level 4”

Step 2:- Employee should score at least 80% marks in Safety, Quality and Productivity pillar of Job Skill Assessment.

Step 3:- Maximum points accumulated in the corresponding month through Performance management system.

TABLE 7

Operator Point tracking Mechanism

OPERATOR	Atten dance	No of Sugge stions	5S	JH	IMPROVEMENTS IN							TOTAL POINTS
					SAFET Y	QUALI TY	PROD UCTIVI TY	DELIV ERY	COST	MORA LE	ENVIR ONME NT	
A												
B												
C												
D												
E												
F												
G												
H												
I												
J												

The above mentioned table has a great significance and effect if it is displayed open in the shop floor. The main purpose of this table being displayed open is to create a healthy competition and creating a visual pressure on the employees who are not active and are reluctant towards showing up an extra care on performing outstanding among their peers. This healthy competition criteria was also a part of qualitative research analysis for this research project.

III. RESULTS AND CONCLUSION

1. Employees having ITI degree can be trained to Skill level 4 in 2 days of continuous work on same station after giving training of Common skills
2. Performance management board with points monitoring system increases 55.56% of competition among employees.
3. Rigid structure of skill development (Course work + Practical) increases 28% of skill enhancement
4. Assessment of common skills and Job Skills creates 92% of awareness about safety, Quality, Productivity, Delivery, Morale and Environment issues

IV. ACKNOWLEDGMENT

This is to acknowledge Mr. Sunil Barman and Mr. Krishna Chaudhari for helping in the conduct of these management based tryouts on original set of permanent operators and getting the reports of the tryout.

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