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Visual Standardization as Successful 5R Implementation Strategy: A Managerial Empiricism Study in PT Tresno Jamu Indonesia, Cilacap

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Abstract

Objective of Research: The objectives of the research are to describe how standardizing can give value added to any 5R (Ringkas, Rapi, Resik, Rawat and Rajin) implementation by integrating it as a standardized operational control system not just organization's culture movement.

Design/methodology/approach: A case study of PT Tresno Jamu Indonesia, a labour-intensive herbal medicine manufacturing company in Indonesia is presented. Qualitative data were garnered through on-site observation, attendance in daily management routines and semi-structured interviews, while quantitative data consisted of longitudinal operational performance records (defect rates / inventory accuracy).

Practical Implications: The Result showed that the applications of image-based visual standards are giving a significant decrease in packaging material defect up to 0.9% to 0.25% and Improvement of Stock Opname Accuracy from 75% to100%. The visual standards decreased the cognitive burden, reduced interpretation variation and facilitated immediate identification and pan-correction of deviated operating behavior.

Theoretical Contributions/Originality: The study provides an empirical evidence for the relationship between visual management and cognitive learning theories with observable operational performance measurements in an emerging economy context. The novelty of this study is to conceptualize visual standardization as an implicit management control device that moves 5R beyond a cultural initiative into a sustained, businesslike operation.

Keywords: 5R, Visual Standardization, Operational Control, Defect Reduction, Inventory Accuracy

1. Introduction

In a challenging manufacturing landscape companies must strive for operational excellence through structured and sustainable improvement programmes. One of the most well-accepted philosophies in lean operations is the 5S which has become a cornerstone for it, and within organisational perspectives it has been adapted as the 5R (in Indonesia context) consists of Ringkas (Sort), Rapi (Set in Order), Resik (Shine), Rawat (Standardize), along with Rajin (Sustain). Although it is so simple, many companies cannot see a long-term improvement in their performance by 5R, because they handle it as management slogan instead of standard working(operator) system.

PT Tresno Jamu Indonesia (PT TJI), a medium company for herbal medicine which located in Cilacap, have the problem about the packaging not accordance with requirement and inventory discrepancy always occurring before they implementing 5R. The initial internal audits indicated a packing defect was at 0.9% and accuracy of stock opname was only 75%, that cause the lost on material, delay production and overhead cost. Management understood that they needed to have more than just the usual 5R socialization, primarily by word of mouth instructions and written procedures to create uniform shop-floor behaviour.

This research confirms that visual standardization in the form of pinned up images, photographs and stickers is a critical success factor to make 5R operational as a controlled and measurable system. The main research question is: *Why and how does visual standardization contribute to the effectiveness of 5R implementation in manufacturing?*

2. Review of Literature

2.1 5R/5S and Operating Performance

The 5S methodology, which was born in Japan, as part of the Toyota Production System is also the key component of lean

manufacturing and operational excellence. It has been widely studied for its positive association with work organization, safety, quality and productivity. In the context of Indonesia 5S is often translated as "5R" to accommodate local linguistic and cultural fit but preserve comparable meaning.

Despite being widespread, research suggests that many 5S/5R initiatives are not successful in bringing sustainable performance improvements. One of the reasons for why is that 5S often is seen as a cultural or behavioural effort with little respect to how it can be structured as an operation system.

Standardization and countermeasures are not apparent This leads to the deterioration of what was improved over a period of time, considering an unstable workforce and production pressures.

2.2 Visual Control and Learning Style

Visual management system is one of the most basic lean principles: it refers to ensuring standards and exceptions are visible at first glance. Cognitive and organizational learning research indicates, as well, that humans absorb visual information more rapidly and remember it longer than text-based or oral instruction. The use of visual cues in shop floor environments, that are inhabited with people from various educational backgrounds, demystifies an ambiguity and thus avoids confusion.

Based on empirical studies in manufacturing, visual work instructions increase task compliance, decrease defect rates and shorten learning curves generation time for repetitive manual processes. These results are particularly pertinent in developing economy environments, where preference for visual modes of learning is a characteristic of many telecentre operators.

2.3 Standardization, Control, and Sustainability

Standardization is the missing chain between continuous improvement and sustainable performance. Among the 5R framework customarily seen to be less developed in most organisations are Rawat (Standardize) and Rajin (Sustain); as several organisation fail to progress beyond implementing change improvements into a regular routine.

Standards serve, in an operations management sense, not just as work instructions but also as control references. With visual standards, any divergence from expectation can be identified and addressed at the point of origin. Visual standards act thus as implicit control devices, limiting execution variety and maintaining consistency between different shifts and operators.

2.4 Operational situated learning (visual, aural, kinesthetics)

Cognitive psychology and learning sciences research form a sound theoretical basis for the use of visual-based standards in operational settings. The Cognitive Theory of Multimedia Learning claims that people have two ways of processing information: one through visualization and another through language, and that learning is better when both channels are used alongside each other in a systematic way. Visual images accompanied with brief verbal explanations can decrease the cognitive load and increase understanding and memorization.

According to Dual Coding Theory, information represented visually and verbally leads to superior mental representations than if the information is communicated only through a single modality. On the other hand, verbal or text instructions only can be more abstract (more demanding actualisation level) and lead to misunderstandings in high-tempo operational environments.

Empirical studies comparing visual, verbal and kinesthetics modalities suggest that visual-based learning frequently leads to better performance outcomes especially for procedural and repetitive tasks. Hands-on learning (kinesthetic understanding) is obviously important, but visual standards are the constant there to guide correct executions and prevent drift. This is particularly pertinent to manufacturing environments where an operator has to return, several times, to a specified standard condition.

In the Indonesian manufacturing sector, where educational attainment and reading ability differ widely, visual standards are an enabling form of communication with inherent economy. By reducing dependence on wordy descriptions and verbal reminders, visual standardization encourages faster learning, more consistent execution, and higher adherence to operations. Theoretical and empirical evidence deeply supports imagery-based visual standards as the primary means of communication and control in 5R program.

3. Research Methodology

3.1 Research Design

This research follows an empirical, managerial case study approach that combines qualitative information with quantitative operational performance indicators. The approach adheres to the old tradition of operations management research focusing on in-depth contextual study, theory development and practical relevance.

3.2 Case Background

PT Tresno Jamu Indonesia (PT TJI) is a mid-scale herbal medicine industry in Cilacap, central Java, Indonesia. The company is involved with a regulated product and uses labor-intensive packaging techniques. Background Before the commencement of the trial, PT TJI was experiencing in-process packages of defective packaging material as well as discrepancies between inventory levels that influenced cost, service level, and production stability.

3.3 Data Collection and Validity

Data collection Data was collected through direct shop floor observation, participation in daily management rituals and semi-structured interviews primarily with operators, supervisors and managers. Quantitative data were derived from internal quality reports, defect logs and stock opname records for 12 months before and after 5R implementation.

To increase the construct validity and reliability of data, triangulation was used to confirm observational findings through documentary evidence in terms of performance records and interviewees' accounts. This method conforms to established guidelines for case study research in relation to quality.

3.4 Development of Visual Standards

Visual standards being worked out in cooperation between the improvement team and operators to insure practicality and acceptance. All images were a representation of real-time operation in the plant as opposed to generic drawings. The standard was implemented in the form of print out

photos, colour coded stickers, graphical barriers and iconography-based instructions that superseded any text-heavy SOPs as far as possible. There was created visual standards in the following way:

- Photographic "before–after" comparisons
- Storage, identification and layout of Images under normal conditions.
- Package material identification by color-coded visual aids
- Iconographic and easy to understand instructions over the bulky text SOPs

4. Results

4.1 Lowering Package Material Defect Rate

After implementing visual based 5R standards for the next packaging material defects dropped from 0.9% to be only 0.25% within six months as shown in figure one below. For well-recorded instances, the major problem reduction has been in material contaminated reports, wrong package selection and physical damage from excessive stacking on cassettes. Before visual standardization, workers tended to use memory and verbal directions when handling parts which was causing some inconsistencies between the shifts.

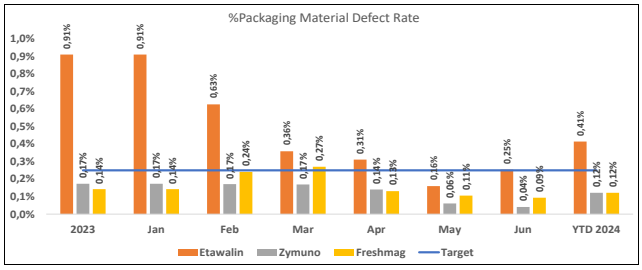

Fig 1: Packaging material defect rate semester I

Visual standards (introduced in 1957) made it possible to see instantly whether right or wrong conditions prevailed. A visual board of companies own business process was then added to each packaging workstation, clearly illustrating the standard using real photographs taken from the shopfloor, in terms of what it should look like. This meant that any variations were instantly apparent, permitting the operators to correct themselves without the need for managerial input.

4.2 Description of the Stock Opname Accuracy Reduction

Stock opname accuracy increased significantly from 75% to 100% after the visual standard applied as presented on Table 1 below. Stocktaking was simplified by visual location markers, universal rack labeling and colour coding of materials to take out guess work. Towards end-users, the counting cycle was faster and reconciliation time shorter for operators while supervisors reported a reduction in variance reports.

Table 1: Progres stock opname level semester 1

Material	Material	UoM	Jan	Feb	Mar	Apr	May	Jun	Total
Standart of Qty Material	PM	box	87	87	87	87	87	87	522
	RM	box	27	27	27	27	27	27	162
	FG	box	6	6	6	6	6	6	36
	Total	box	120	120	120	120	120	120	720
accurate material during stock	PM	box	21	9	5	1	0	0	36
	RM	box	8	5	3	0	0	0	16
	FG	box	1	0	0	0	0	0	1
	Total	box	30	14	8	1	0	0	53
% Stock opname accuracy	PM	%	75,9%	89,7%	94,3%	98,9%	100,0%	100,0%	93,1%
	RM	%	70,4%	81,5%	88,9%	100,0%	100,0%	100,0%	90,1%
	FG	%	83,3%	100,0%	100,0%	100,0%	100,0%	100,0%	97,2%
% Total	% Total	%	75,0%	88,3%	93,3%	99,2%	100,0%	100,0%	92,6%

Managerially, visual standardization operated as an embedded control system that was in place to ensure that inventory was counted correctly across counting teams and auditing periods.

4.3 Behavioral and Managerial Impact

Based on interviews, operators found visual standards to be simpler and more intuitive than text-based SOPs. Reduction in reliance on verbal prompting and corrective action, as targets were constantly visible on the shop floor, said supervisors. An important finding was a transition in management focus from minimal oversight of reactive responses to proactive monitoring of performance with the aid of visual conditions.

5. Visual Standardization Framework in 5R Implementation

5.1 Visual design principles of interface standards Interface standards are/should be based on the following visual design principles

There were three principles used to develop visual standards in PT Tresno Jamu Indonesia which are clarity, simplicity and contextual relevancy. No generic symbols were used, in fact all graphics were from the actual field experience within the plant. Such method enhanced the acceptance among operators and facilitated changes.

Every visual standard directly depicted the ideal standard condition as illustrated in Fig 2 below, not written procedures alone. This differentiation was made to safeguard the common practice of 5R and prevent it from becoming a behaviour norm.

Fig 2: Visual Standart

5.2 Sample Visual Standard Applications

After successfully implementing 5R with visual management method, the factory area became better as seen in the picture below.

Fig 3: Visual Basic For Material Storage Packaged (Ringkas & Rapi)

It is known to properly position packaging on standard racks. Product codes, maximum quantity limits, and visual barriers assist in proper placement. Conditions such as incorrect stacking, mixed substrates etc., should be deliberately avoided to maintain standard discipline.

Fig 4: Visual standard according to Cleanliness and Material Protection (Resik)

This figure demonstrates acceptable levels of cleanliness in the packaging zone and includes protective covers, floor marking and contamination free area. The picture provides cleanliness basics instead of using logic lists, so that operators can easily detect abnormal state at a moment.

Fig 5: Visual Basic for Standardization and Maintenance (Rawat & Rajin)

This visual audit board is a combination of standard images, daily checklist icons, and red-tag tagging signals. The board is a dynamic control device which connects visual standards with daily management and continuous improvement practices.

5.3 Relation with sunlight's daily management system

Visual standards were energized within daily management routines such as morning briefings, layered process audits and performance review meetings. During Gemba walks, team leaders reminded direct reports to adhere to standards with an aid such as a visual board reference; the focus was on adherence.

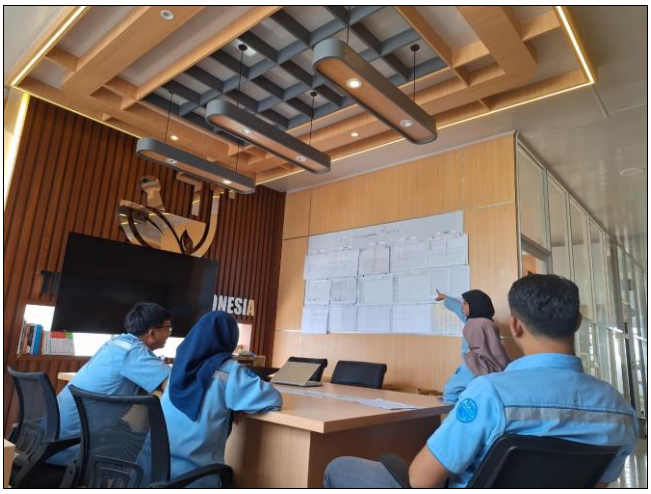

Fig 5: Performance review meeting

6. Discussion

The results show that visual management changes over conditions 5R from normative action into operations control system. Visual standards, by minimising mental fatigue and interpretation fluctuation contribute to consistent uniformity in execution across a spectrum of employee profiles. This is consistent with lean management theory and how it stresses the importance of making standards (and abnormalities) visible at a glance.

In a visually oriented Indonesian manufacturing context, pictorialized standards close the educational divide and hasten the internalization of new ways of doing work. The substantial reduction of defect rate and enhancement inventory accuracy at PT Tresno Jamu Indonesia offer empirical evidence for the role visual standardization (VS) as a success key factor in 5R implementation.

In addition, the current study contributes to literature by empirically linking visual management practices and measurables operational performance results which is under researched especially in an emerging economy context.

7. Managerial Implications

Implications for practice: For the field, this study demonstrates that successful implementation of 5R depends on:

1. It begins with repurposing 5R as a common operational system, rather than a cultural sound bite.
2. Developing visual standards from the shop floor reality.
3. Embedding visual standards into daily management systems to be used as control devices.
4. Tethering 5R results to tangible KPIs like defect rate and inventory accuracy.

These implications are of particular interest for small and medium-sized manufacturing companies, who want a low-cost, high-impact channel of improvement.

8. Conclusion

This empirical work in management shows that a unified design view critically supports 5R implementation effectiveness and sustainability. From the evidence of PT Tresno Jamu Indonesia, a research confirms significant benefit of quality and inventory performance. The findings further strengthen the argument that 5R needs to be standardized, made visually dependent and constantly monitored in order to bring about operational excellence.

This framework could be further tested in future research by adopting a multi-case quantitative design, or cross-industry settings to enhance the external validity of our model.

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