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Visual Management in Brazilian Construction Companies: Taxonomy and Guidelines for Implementation

Original Citation


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Table 5 – Cross-Case Comparison of the Implementation Process

<table>
<thead>
<tr>
<th>Case Study No</th>
<th>Purpose of VM</th>
<th>VM tools features</th>
<th>Capturing VM practices for Future Use</th>
<th>Suggestions for VM implementation</th>
<th>VM implementation issues</th>
<th>Measuring VM performance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Transparency • Simplification • Better communications between management and (poorly educated) workforce • Efficiency and discipline on sites • Positive impact on the company’s image • Easier site control • Increase productivity</td>
<td>Direct, simple, low-cost and colorful (attractive)</td>
<td>Informally, keeping VM records</td>
<td>• Awareness about production management and lean construction is essential • Concentrating not only in production</td>
<td>• Training workforce can be time consuming • Trained worker turnover • Some lack of consistency in using the tools • Some visual tools are costly</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>• Giving timely information • Raising consciousness about the construction environment • Demonstrating good practices • Enabling easier to control and more standardized construction sites • Reducing waste</td>
<td>-</td>
<td>Formally capturing and documenting different VM implementations (on CDs, catalogues etc), Share practices over the company intranet.</td>
<td>• A comprehensive training plan • Close supervision of new workers • Regularly updating and sustaining different visual tools</td>
<td>• Training workforce can be time consuming</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>• Simplification; reducing complexity on sites • Bonding management and workforce through visual communication • Giving information about the site to the (poorly educated) workforce • answering workforce questions; guiding the workforce • Coordination of the workforce • Enabling interaction between the management and the workforce. • Enabling orderly and more standardized construction sites. • Contributing to the positive image of the company.</td>
<td>Simple, concise, direct and low-cost</td>
<td>Formally capturing and documenting different VM implementations (on CDs, catalogues etc)</td>
<td>• Understanding the concept of transparency before application • Top managements' support of VM • Patience and persistence in training • Close supervision of the workforce • Demonstrating the practical benefits of different visual tools to the workforce • Paying close attention to the suggestions of the workforce • Maintaining the key personnel • Standardizing the production system • Experimentation with different tools</td>
<td>• Training workforce can be time consuming • Trained worker turnover</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>• Better site organization • Cleanness • Reducing waste • Fewer mistakes • Maintaining discipline on site • Easier, simplified and attractive communication for the workforce • Easier control of the site by the management • Stabilizing worker performance by displaying the information the worker needs. • Creating a better image of the company in clients’ and visitors’ perception</td>
<td>-</td>
<td>Formally capturing and documenting different VM implementations (on CDs, catalogues etc)</td>
<td>• Patience and persistence in training. • Demonstrating practical benefits of different visual tools to the workforce. • Receiving feedback from the workforce. • Getting the foreman’s consent</td>
<td>• Training workforce can be time consuming • Resistance to change</td>
<td>No</td>
</tr>
</tbody>
</table>
Table 5 – Cross-Case Comparison of the Implementation Process (continued)

<table>
<thead>
<tr>
<th>Case Study No</th>
<th>Purpose of VM Monitoring</th>
<th>VM tools features</th>
<th>Capturing VM practices for Future Use</th>
<th>Suggestions for VM implementation</th>
<th>VM implementation issues</th>
<th>Measuring VM performance?</th>
</tr>
</thead>
</table>
| 6             | • A tool for people to see the if the construction site works as intended and the deviations from the expected.  
                • Worker empowerment  
                • Answering workforce questions; guiding the workforce  
                • Creating a better image of the company in clients’ and visitors’ perception  
                • Reducing waste | Simple concise, direct, do not need to be low-cost | Formally capturing and documenting different VM implementations (on CDs, catalogues etc.) | • Provide suitable channels for the workforce to suggest new ideas and to express themselves (experimentation)  
                • Top managements’ support of VM  
                • Importance of communicating the vision of the company  
                • Training by showing  
                • Understanding the theory behind VM | • Training workforce can be time consuming  
                • Resistance to change at initial implementation  
                • Creating the ownership of the workforce for VM | No |
| 7             | • Facilitating construction tasks for workers and site control for management  
                • Answering workforce questions; guiding the workforce  
                • Creating a better image of the company in clients’ and visitors’ perception | Direct, simple, low-cost and colorful (attractive) durable | Formally capturing and documenting different VM implementations (on CDs, catalogues etc.) | • Training by showing (using videos) is important | • Training workforce can be time consuming  
                • Resistance to change at initial implementation  
                • Workers may be afraid of making mistakes | No |
| 8             | • Giving timely information  
                • Facilitating construction tasks for workers and site control for management  
                • Increasing the types of work the workers can do on their own  
                • Creating a better image of the company in clients’ and visitors’ perception | Direct, simple, low-cost and colorful (attractive) | Formally capturing and documenting different VM implementations (on CDs, catalogues etc.) | • Comprehensive training plan  
                • Persistence and regularity in training  
                • Care is needed not to create visual pollution (excess information) | • Training workforce can be time consuming  
                • Defining responsibilities for managing different VM tools / systems | No |