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Benefits of Last Planner System and Asana Integration in Improving Finish Planning in Multi-Family Buildings

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Abstract - The article "Benefits of Last Planner System and Asana Integration in Improving Finishing Planning in Multifamily Buildings" addresses the shortcomings in finishing planning in multifamily buildings. The authors propose a methodology that combines the Last Planner System (LPS) with the Asana management tool to improve communication and collaborative work between teams. Through simulations and surveys of experts, communication problems and lack of adequate tools in current planning were identified. The integration of LPS and Asana is presented as an effective solution, offering a more efficient planning structure, access to real-time updates, and a clear assignment of responsibilities. The results suggest that this methodology can optimize project planning, reduce errors, and improve alignment in the execution of finishing tasks.

Keywords**:** Poor planning, Last Planner System, Asana, Multi-family buildings, Collaborative work.

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1. Introduction

Deficiencies in planning of finishes in construction projects is a persistent and widespread problem worldwide, significantly affecting the success of multi-family building projects. In the Latin American context, and particularly in Peru, this deficiency in planning negatively impacts compliance with agreed delivery times, generating significant delays. One of the main causes of this problem lies in the lack of communication and collaborative work between the different actors involved in the project, which hinders the continuous flow of activities in the critical phases of the work. This situation raises the need to research and develop methodologies that promote more collaborative and structured planning, in order to optimize processes and mitigate the consequences of these delays on the construction industry.

Research has been reviewed that supports this problem; poor planning is one of the main reasons for construction problems in Peru [1]. This is because activity control has particular deficiencies such as poor communication between stakeholders and ignorance of those involved about the advances and improvements that have been made in planning from the construction sector. Likewise, the main concerns in the Cambodian construction industry are delays [2]. Therefore, we seek to understand the key causes that can affect project delays and generate delays, among which poor planning and scheduling in construction projects stands out. The lack of complete representation of construction flows in current models makes it difficult to develop effective planning [3]. Likewise, poor planning of activities on the construction site during the preparation of the Lookahead can result in schedule delays due to the limitations of traditional methods [4]. On the other hand, the challenges of poor planning in construction project management are highlighted, specifically in the optimization of schedules and the reduction of completion times [5]. A new study of critical paths, such as Critical Chain Project Management (CCPM), is provided, which positively influences the reduction of project completion times.

With the analysis of the literature, this research proposes an innovative solution to improve the planning of finishes in building projects by integrating the Last Planner System (LPS) with Asana, a collaborative management software. The LPS methodology, based on Lean Construction principles, allows the involvement of professionals responsible for the final stages of construction, giving them greater control over planning and decision-making, which improves predictability and coordination in workflows [6]. The integration with Asana, on the other hand, optimizes communication and task tracking, allowing an accessible and real-time visualization of the activities planned with LPS. This reduces communication barriers

between project stakeholders, facilitating effective collaboration and ensuring that all collaborators are informed about the progress and necessary adjustments. By promoting a more collaborative and transparent work environment, this methodology seeks to minimize schedule delays, improving efficiency in finishing management and offering a solution tailored to the specific challenges of construction in contexts such as Lima, Peru [7].

2. Materials and Tools

This research used the Lean Construction Last Planner System methodology, which facilitates collaborative planning and project progress control, improving PPC and reducing schedule deviations by involving the "last planners" in decision making. Its five phases follow the stages "Should" – "Can" – "Will" – "Done" [6]. Asana, on the other hand, strengthens collaboration between subcontractors and contractors by managing, coordinating and tracking team tasks, which enhances the effectiveness of the Last Planner System in planning [7].

In addition, surveys were conducted to assess the current situation of finishing planning in multi-family buildings in Metropolitan Lima, along with questionnaires to validate the benefits of integrating the Last Planner System with Asana. Direct interviews were also conducted with construction engineers to obtain a detailed view of their perspectives and experiences in the field.

3. Method and/or Methodology

This research implements a methodology structured in five stages to improve the planning of finishes in multi-family buildings in Metropolitan Lima.

The first stage involves identifying the causes of poor planning of finishes. A literature review is conducted to examine the common factors contributing to inefficient planning. Additionally, surveys are administered to professionals in the construction sector to collect insights into the challenges they face. Complementary to this, interviews with construction engineers provide a deeper understanding of their experiences and perspectives regarding planning deficiencies.

In the second stage, the current situation of finish planning is analyzed through case studies. Three representative multi-family housing projects in Metropolitan Lima are selected, each consisting of buildings ranging from 8 to 10 floors with an approximate area of 400 m². Documents related to planning are collected, and field visits are conducted to assess current practices, identify deficiencies, and highlight potential areas for improvement.

The third stage focuses on integrating the Last Planner System (LPS) with Asana functionalities for tracking finishing batches. A project portfolio is structured in Asana, aligning each key phase of LPS—including the Master Plan, Phased Planning, Intermediate Planning, Weekly Planning, and Learning—into specific tasks with assigned responsibilities. Visualization tools such as Timeline and Kanban are utilized to schedule activities, monitor progress, and document constraints and learnings.

Following this, the fourth stage evaluates the impact of integrating LPS with Asana on the efficiency of finish batch planning. A structured questionnaire is developed to gather expert opinions on the clarity, applicability, and potential benefits of this methodology. These surveys are distributed to professionals involved in representative projects, and the collected responses are analyzed using both statistical and qualitative techniques. Identifying patterns in the data allows for an assessment of how this integration enhances planning efficiency.

Finally, the fifth stage demonstrates the benefits of integrating LPS with Asana in planning finishes. The findings from the study are synthesized to highlight the advantages of this integration, providing practical recommendations aimed at optimizing future construction project planning in Metropolitan Lima.

4. Results

4.1. Identify the causes that generate poor planning of finishes

Through surveys developed on the frequent causes of poor planning in multi-family buildings, it was learned that the root cause was the lack of communication and collaborative work since it is the biggest problem in the projects with 25% of the total votes by the professionals involved in the planning of finishes, seen in Table 1.

Table 1: Causes of poor planning in finishes that generate delays, in order of priority for those involved

Causes of poor planning in finishes	Priority			Total	%
	1°	2°	3°		
Lack of communication and collaborative work	21	12	3	36	25%
Constant modifications in the building design	9	9	10	28	19%
Poorly defined scope and feasibility	8	9	5	22	15%
Poor quality of work (unskilled labor)	4	5	8	17	12%
Poor management of resources (materials, equipment, etc.)	5	9	11	25	17%
Little use of planning software	1	1	8	10	7%
Not constantly training professionals and workers	0	3	3	6	4%

Within the finishing items, several items were identified that tend to cause delays, the most problematic being painting (24.8%), interior wall plastering (10.6%) and ceiling plastering (10.6%). These results, seen in Fig. 1, reflect areas where delays are recurrent and where improvement efforts can be more effective.

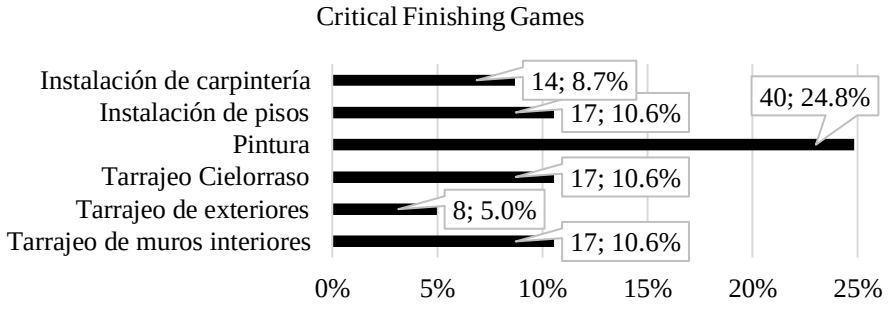


Fig. 1. Finishing batches tend to experience the longest delays

4.2. Analyze the current situation in finishing planning

To diagnose the current situation in finishing planning, the same 3 case studies mentioned above were analyzed. These 3 cases present common deficiencies in finishing planning: lack of continuous coordination between those involved, limited use of collaborative tools, low adoption of Lean methodologies and poor identification of restrictions and risks. These limitations affect efficiency and compliance with deadlines in projects, reflecting the need to improve planning and control in the finishing stage.

Table 2: Comparative table of the 3 case studies

Aspect evaluated	Case A	Case B	Case C
Planning methodology	Partial use of LPS	Traditional planning	Traditional planning
Digital tools	MS Project and Excel	MS Project and Excel	MS Project and Excel
Frequency of meetings	Weekly meetings	Weekly meetings	No regular meetings
Planners	Resident engineer and production	Production engineering	Resident and assistant engineer
Identified disadvantages	Lack of integration of collaborative software to update the lookahead; limitations in	Reliance on weekly planning without long-term forecasting or formal methodology;	Absence of advanced methodology, no integration of collaborative tools or team meetings.

	intermediate planning.	centralized decisions.	

4.3. Integrate LPS with Asana features to track finished batches

Simulations were performed to demonstrate the feasibility of integrating Last Planner System (LPS) processes with Asana, from the Master Plan to the weekly planning and the learning phase. This integration showed a rapid intervention in the restrictions that may be in place and the ability to solve them in real time. It also achieved an increase in the Percentage Plan Fulfilled (PPC), a key indicator in project planning, which suggests that the synchronization of both systems is not only operationally functional, but also improves efficiency in progress control, as seen in Fig. 2.

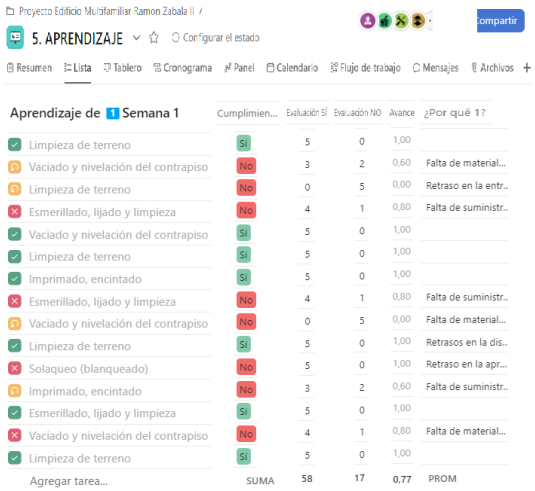
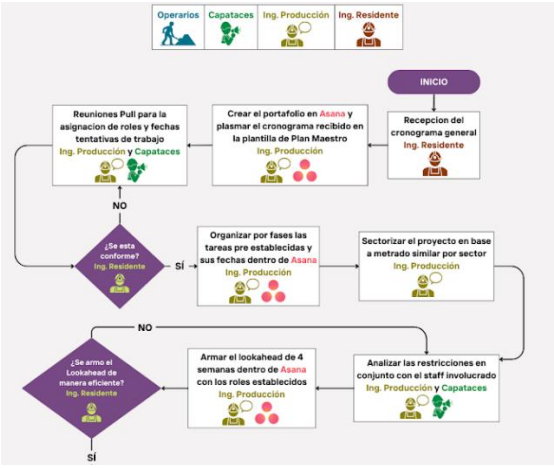


Fig. 2. PPC calculated in Asana List view

4.4. Demonstrate the benefits of integrating Last Planner System with Asana in finishing planning

The proposed methodology shows the interaction between the contractor and subcontractor. It is also precise and clear to understand so that subcontractors do not have problems when following the methodology. Therefore, a structured flowchart was developed with the activities to be carried out, as shown in Fig. 3.



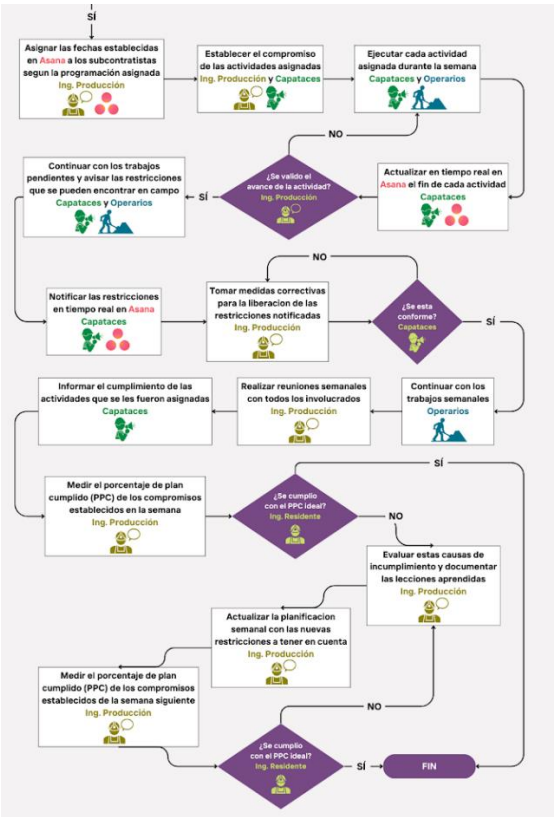


Fig. 3. Flujograma de procesos mejorados de la planificación de acabados

4.5. Evaluate the impact of LPS integration with Asana on planning efficiency in the finishing batch

Integrating the Last Planner System (LPS) with Asana presents a promising approach to improving planning efficiency in construction projects. By simulating this methodology in a case study, several key benefits emerge, highlighting its potential for optimizing coordination and execution in finishing activities. One of the most notable improvements is the **increase in the Percentage Plan Completed (PPC)**, as Asana enhances communication by enabling real-time monitoring and continuous collaboration, fostering better adherence to planned tasks. The simulations suggest that this optimized structure could lead to a 5% rise in weekly compliance rates, reinforcing the advantages of tighter coordination.

Another significant benefit is the **reduction of delays**. The methodology prioritizes a proactive approach to identifying constraints before execution, coupled with continuous schedule reviews through LPS. This systematic oversight facilitates early problem detection, which, when applied in real scenarios, could mitigate common setbacks in finishing processes. Additionally, the integration fosters **better team alignment**, as structured Pull and weekly meetings clarify roles and expectations, strengthening team cohesion and effectiveness. With Asana providing real-time task visualization and updates, teams maintain alignment beyond formal meetings, ensuring consistent progress.

The methodology also **facilitates collaborative work and continuous communication**, with Asana acting as a centralized platform where teams fluidly exchange information and access task statuses at any time. This transparency reduces misunderstandings and enhances coordination, reinforcing a more connected workflow. Lastly, the proposed methodology offers **a reproducible model** for finishing projects in multifamily buildings. Its structured sequence of steps allows for seamless adaptation in future projects, promoting standardization and continuous improvement in construction project management. By leveraging LPS with Asana, construction teams can achieve more predictable, efficient, and collaborative planning processes.

5. Analysis of Results

The surveys carried out identified the lack of communication and poor collaborative work as the root cause of delays in finishing, which directly affects the compliance with deadlines and the quality of the work. This underlying problem manifests itself in critical items such as painting, plastering and carpentry, where delays are more recurrent and represent a significant opportunity for improvement.

In addition, the comparative analysis between the case studies reveals other common problems in the planning process, such as the dependence on traditional planning methods and the lack of integration of collaborative tools. These deficiencies result in a limited capacity for adaptation and dynamic adjustment to the needs of the projects. This is aggravated by the lack of regular meetings and the dependence of those responsible on weekly planning without long-term planning, as observed in cases that lack a formal methodology such as the Last Planner System (LPS).

In a new survey, 81.3% of experts in planning in the finishing stage believe that the benefits of this methodological proposal would improve the planning of their projects since it demonstrates effectiveness in simulations, providing a clear method for the control and monitoring of tasks in real time, from master planning to weekly review, which allows for rapid intervention in identified restrictions and promotes an improvement in the Percentage Plan Fulfilled (PPC). Likewise, 75.1% of respondents believe that this proposal would counteract communication and collaborative work problems.

Finally, the methodological proposal establishes a reproducible model for multi-family projects in the finishing stage, creating an adaptable framework that, when implemented, could improve standardization and quality in the planning of similar projects in the future. The results of the analysis suggest that this methodology not only offers specific solutions to the identified problems but also constitutes a structural advance in finishing planning. Increases in PPC, reduction in delays, and enhanced collaboration and communication within the team highlight how a well-designed integration of LPS and Asana can bring sustainable and replicable value to the construction industry, generating improvements in both operational efficiency and deadline compliance.

5. Validation

The validation method was carried out through expert judgment using questionnaires that were sent to previously selected professionals, who must have a minimum of 3 years of experience in planning and executing finishes in multi-family buildings since they must have a deep knowledge of the processes and challenges associated with planning finishes in construction projects, as well as an understanding of the critical items that can cause delays. The questionnaires and interviews allowed the experts to provide a critical analysis that covered both the feasibility of implementing the proposal and its potential benefits, with special emphasis on its ability to improve communication and collaboration in construction projects.

The results of the questionnaire and interviews indicate a favorable perception towards the methodology. The experts see the combination of LPS and Asana as a viable tool to address deficiencies in communication and collaboration, potentially improving the PPC (Percentage of Plan Completed) and reducing deviations in the execution schedule. Fig. 4 shows the acceptance range where 5 is very good and 1 is very low.

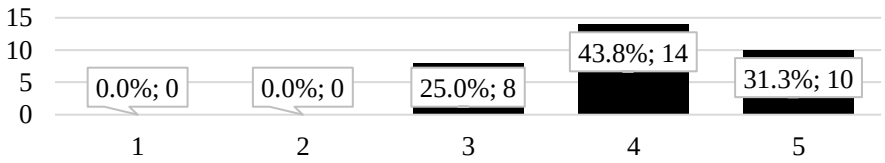


Fig. 4. ¿ Do you think that this methodological proposal can counteract the causes of lack of communication and collaborative work that contribute to poor planning in the finishing stage of multi-family housing projects?

The clarity of the documentation of this proposal is also noteworthy, making it easy for professionals involved in planning and executing finishes to understand and apply it. The methodology provides detailed instructions and a

structured flowchart that guide the process step by step, from initial planning to execution and task monitoring. This is evidenced by the validation by experts in Fig. 5.

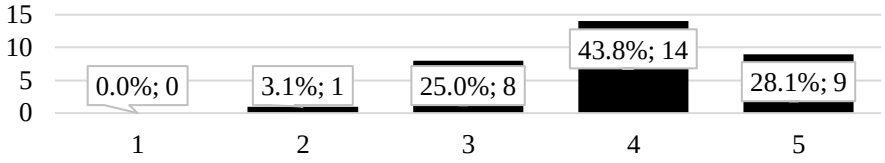


Fig. 5. Do you think that the proposed methodology is well explained and easy to understand?

The experts also mentioned qualitative data in order to obtain greater benefits from the proposal and thus enhance the scope of the study to other problems that multi-family building projects have.

This validation provides a solid basis to consider that the methodology can be successfully implemented in multi-family projects, although it is open to studies to receive additional adjustments to maximize its applicability and effectiveness in the construction sector.

6. Conclusion

The results of the surveys and interviews conducted show that the lack of communication and collaborative work is the main cause of delays in the planning of finishings in multi-family buildings in Metropolitan Lima. This deficit affects both decision-making and task monitoring, generating inefficient planning and contributing to significant delays in projects.

The analysis of the three case studies shows a partial and limited adoption of advanced methodologies such as the Last Planner System (LPS) in the planning of finishings. Although some projects attempt to apply Lean Construction principles, significant deficiencies persist, especially in the intermediate stages of planning, due to the dependence on traditional tools such as Excel and MS Project, which limits the effectiveness in the coordination and monitoring of tasks. This lack of a comprehensive methodology reflects a general weakness in the management of finishings, negatively impacting coordination and compliance with deadlines. The situation highlights the need to integrate collaborative and robust methodologies, such as LPS, together with collaborative software, to optimize efficiency and improve the ability to achieve the objectives and times established in finishing planning.

The integration of the Last Planner System with Asana has improved coordination and task tracking in finishing projects by establishing a structured and collaborative workflow. The use of templates with assigned roles and tasks facilitates visibility and real-time updates on progress, allowing subcontractors to coordinate effectively and reducing misunderstandings during execution. The phase structure of the LPS in Asana provides a solid foundation for improving finishing planning and management, encouraging greater communication and collaboration between project stakeholders. The ability to identify constraints and record learnings in the platform contributes to transparency and a culture of continuous improvement, allowing proactive adjustments that optimize processes and reinforce compliance with deadlines.

The evaluation of the Last Planner System integration with Asana has shown positive results in improving finishing planning in multi-family buildings, supported by the favorable opinion of consulted experts. Respondents consider the methodology clear and applicable, highlighting its potential to address communication and collaboration issues, essential to improve efficiency in projects. The use of a structured questionnaire to capture these opinions was key in validating the proposal, providing quantitative and qualitative data that show a positive perception of the integration of LPS with Asana. The analysis of the responses of experienced professionals identified patterns that support the effectiveness of the methodology, suggesting that its implementation can be decisive in improving efficiency and collaboration in future finishing planning projects.

The integration of the Last Planner System with Asana has been shown to significantly improve finishing planning in multi-family buildings by fostering more effective communication and collaborative work between subcontractors and contractors. This approach provides greater transparency in task tracking, reducing delays and errors, and optimizing the use of resources. Benefits include more structured and flexible planning that makes it easier to identify and manage constraints,

as well as meet deadlines. In addition, the use of collaborative tools promotes a teamwork environment that enhances operational efficiency and contributes to more successful results in construction projects in Metropolitan Lima.

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