# Plan Grid in the Process of Purchasing Services in the Construction Site Nuevo Santa Clara Stage 4,5,6, Lima

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## ABSTRACT

The present research aims to propose using the Grid Plan to optimize the flow of services in the New Santa Clara Construction stage 4 - 5 - 6, Lima 2020. It is worth mentioning that the main problem is implementing new and unknown technology, as in this case, the Grid Plan. Similarly, the optimization of the flow of contracting of the service within the area of costs and the most important, reducing time generates a purchase of services. The methodology used in this context is the application of the Grid Plan App to track all purchases of the services required in this project, which allows us to manage the purchases of the services in the shortest time that has been used today, obtaining that the reduction in the time taken to purchase services within the project, with the result that the process of purchasing services was successfully reduced to 47 % of the usual, restoring the process completely to avoid delays that would harm the work in the purchase of traditional services.

## INTRODUCTION

The construction sector worldwide is experiencing one of its best historical moments when applying the new technology, which increases productivity in large, medium, or small construction companies. Several factors influence the slow pace of adoption of new technological developments in our environment [1]. Among these factors, we find: construction companies are highly conservative and risk-averse; so far, they have not seen the need to improve their processes since the profitability they have obtained has satisfied them; its competitors are also highly conservative [2]. Other current challenges for the introduction of information technologies in organizations include de-alignment and complexity existing between IT infrastructures and business policies caused by multiple weak benchmarking frameworks for their unification, the heterogeneity and existing between IT infrastructures and business policies caused by multiple reference frames with weaknesses for unification, the heterogeneity and dispersion in the elements to be managed and the standardized management models with little integration between them and inaccuracy in the impact assessment solutions.

Therefore, it is important to promote technological innovation in the construction industry by incorporating the philosophy of innovation among students, professionals, and entrepreneurs in the construction sector. [3]. This process includes recognizing opportunities for innovation,

creating a good climate for innovation, developing the necessary capabilities, providing new construction technologies, experimenting and perfecting and implementing. [4].

Fortunately, in recent years, in our country is being perceived the digitization of many of the processes that take place day by day in the construction sector and fills us with hope taking the initiative to create, optimize and most importantly, promote automation by leaps and bounds, and if there are already some automated processes then let's risk others more as over time it is very likely that technology will replace man.

It is important to mention that technology today is desirable due to various circumstances that have brought, as well as, sustained growth of the country's economy, technological advances in communications that facilitate the location and uptake of new technologies, greater competitiveness at a local and international level and the development that has been achieved at the local level in the field of research. It also discusses the factors that favor the introduction of technological innovations in construction and the relationships that such innovations have with the rest of a project [5,6].

Procurement management is any procurement activity of goods and services based on the organization, forecasting, and control of the activity [7]. In the purchase management, there must be primarily important points such as the planning in elaborating the purchase orders' requirements [8].

The present investigation shows the automation of several processes using the technological platform Plan Grid, which digitalizes the monitoring to optimize the purchase of services with a successful result, which will be of great contribution not also for the application case but to promote other areas within the organization processes and in other cases digitize formats [9].

## METHODOLOGY

*2.1 Area of study*

In Lima's province, a sample study was carried out for the Nuevo Santa Clara Stage 4-5-6 project, located in the district of Ate, which comprises three stages made up of 120 apartments. It is an urbanized area with all the necessary services. Next, we will see the location of the work in the following figure:



**Figure 1.**Location of the research case **"New Santa Clara Project Stage 4-5-6."**

According to Figure 1, we visualize the investigation case's location, which is in the District of Santa Clara. The work in execution is named "Nuevo Santa Clara Stage 4-5-6", as its name says, comprises three stages with a total of 120 departments and a Sum (Multiple Use Service) as a common area. In the same way, it is important to highlight that there are already stages built before that, so the people of the place know all the land as CondominioKampu[10].

## 2.1 Procedures

The present investigation is of an applicative and descriptive nature. It consists of monitoring the flow of purchase of services in digital form and will be carried out in the following way.
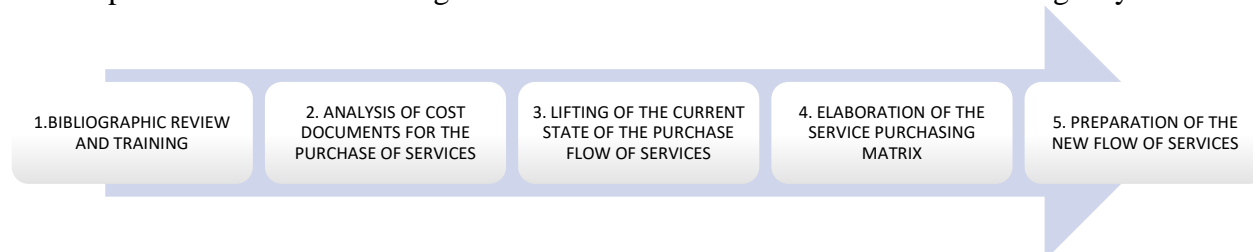
| 1.BIBLIOGRAPHIC REVIEW AND TRAINING | 2. ANALYSIS OF COST DOCUMENTS FOR THE PURCHASE OF SERVICES | 3. LIFTING OF THE CURRENT STATE OF THE PURCHASE FLOW OF SERVICES | 4. ELABORATION OF THE SERVICE PURCHASING MATRIX | 5. PREPARATION OF THE NEW FLOW OF SERVICES |
|---|---|---|---|---|

**Figure 2:** Methodology of this investigation.

Accordingto Figure 2, thesteps of thedevelopment of thepresentinvestigation are showed. First, wereviewthebibliography, and we are trainedconcerningthe use of theGrid Plan App stepfollowedweanalyzethedocumentsreceived in thearea of costsforthepurchases of servicestocontinuationismadethe lifting of thecurrentstate of thepurchaseflow of serviceswiththeirrespective times (Nª de days) therefore be madeanelaboration of thematrix of purchases of existingservicesuntilOctober. Finally, a renewedflowwill be obtainedbyapplyingthe App Plan Gridwithevidentlyreducedtimes[11].

## RESULTS

Below, we show theresultsobtainedfromthesurvey of thecurrentstate of thepurchaseflow of services in the New Santa Clara Project Stage 4-5-6 withthenumber of daysbetweenoneactivity and another. Afteranexhaustiveanalysis of 3 servicepurchases, wearrive at thenextservicepurchaseflow [12].

Figure 3 shows the current flow of services' purchase with maximum days between one activity and another. Weseethatifwe do notfollow up fromtheclose-up, itwilltake up to 30 daystogeneratethepayment. With a closerfollow-up, wecould reduce up to 50% of the time usedtogeneratefromstarttoendthepurchase of services and contributetothework'sprogress.
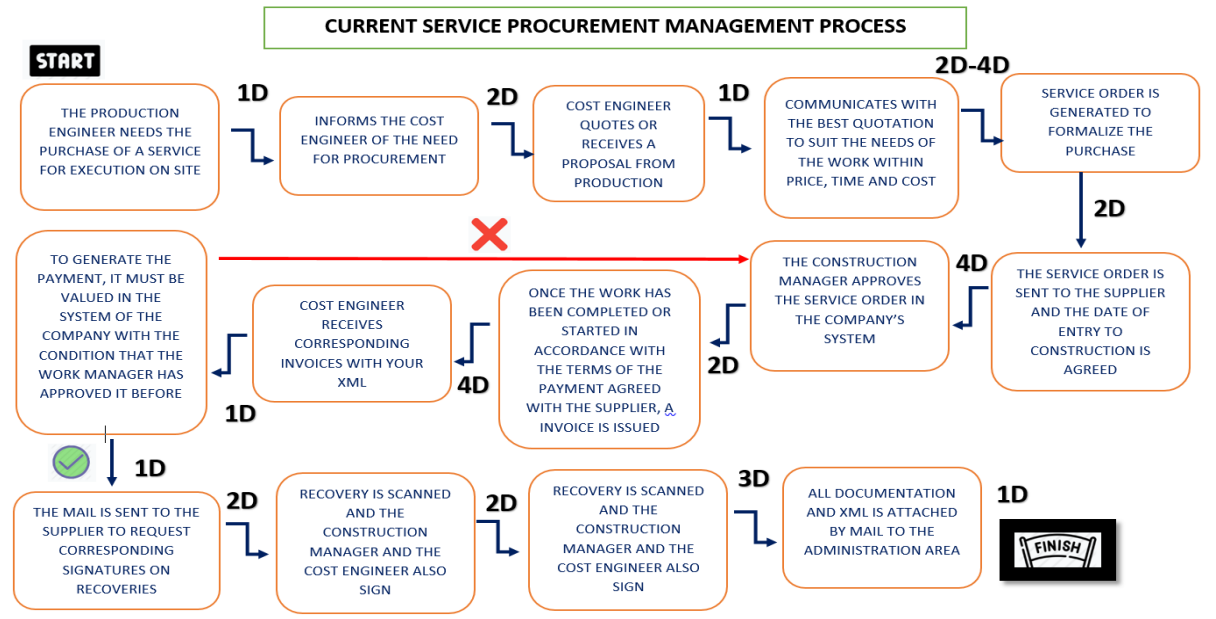
**Figure 3:** CurrentServicePurchaseFlow

In Figure 3, a servicepurchaseregistrationmatrixisgenerated, taking as a samplethreeservicepurchasestoenterthem in theGrid Plan platform and givethem a constantfollow-up sincethe "Tasks" thatwill be createdwithintheappwillautomaticallynotifyafterthecreation of theservicepurchase.



**Figure 4:** Tasks in Platform Plan Grid



**Figure 5:** Example of taskcreation

Figures 4 and 5 show and validatethe 100% Grid Plan App duringtheresearchdevelopment. Forexample, whenenteringtheapplication and goingtothe "Tasks" section, as shown in Figure 5, allthe data forthe new taskisentered, which in this case would be thelastpurchase of services. Thedeadlineis set in ordertomeasurethe time and notleavetoomuch time tocreateorsendallthedocumentstotheadministration[13].
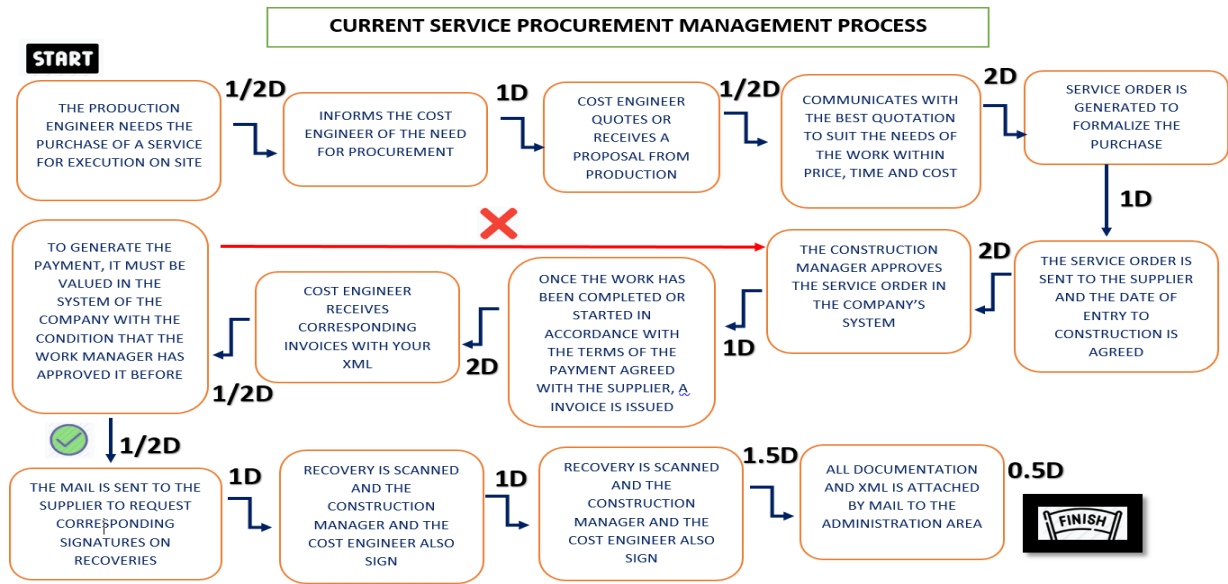
**Figure 6:** New ServicePurchaseFlow

In Figure 6, the new flow for the purchase of service is visualized using the platform Grid Plan, obtaining a flow with reduction of days between activity and another updated within the monitoring practice through the App – Plan Grid obtaining satisfactory results. It is worth mentioning that the use of the paper used to monitor each activity was reduced by 100%.
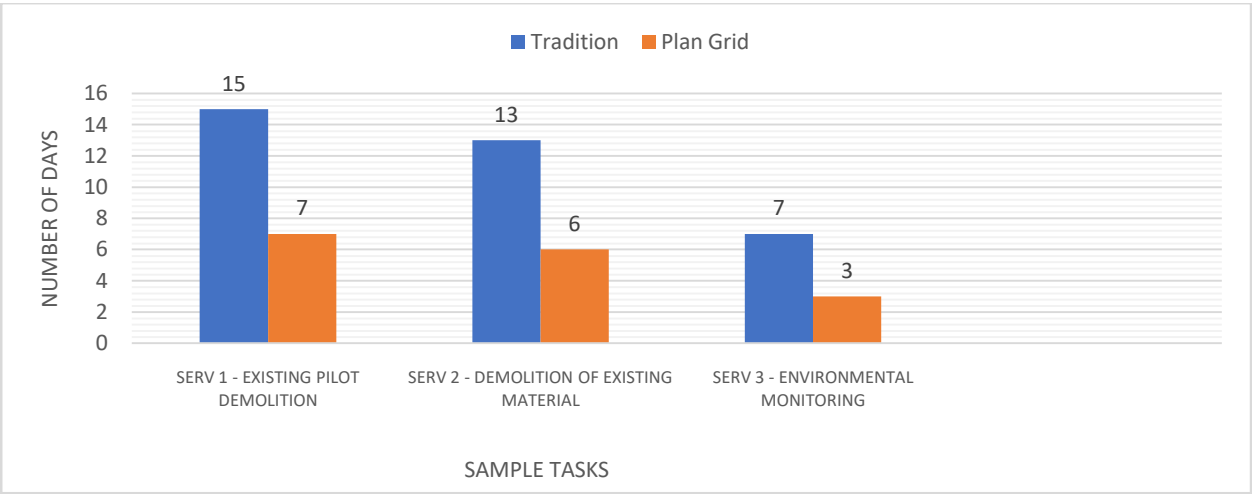


**Figura 7:** Optimización del proceso de compras de servicios

Figure 7 shows thethreeservicesused in thisresearch, and the total time used in theprocessisreduced (blue bar), and the new reduced time isshown (red bar). In addition, thesuccessfuldecrease in daysusedbymaking use of theapp - Plan Gridapplicationfortheprocess of purchasingservicesisshown.
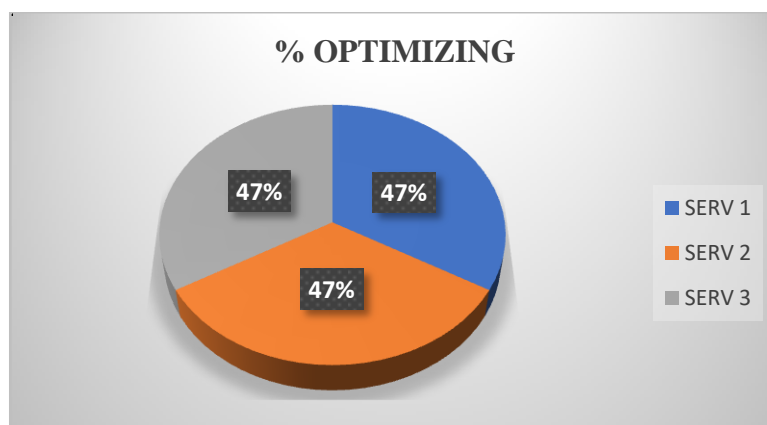
**Figure 8:** Optimizationpercentages in services.

Figure 8 shows the positive impact of usingthe Plan Grid App, whichoptimized 47% of the 100% in whichpurchasingserviceswered developed. Finally, achievingourobjective, we can visualizethat as a sample, wehad 3 of the actual purchases of services of thework Nuevo Santa Clara Stage 4,5,6.

## CONCLUSION

Itisconcluded as follows; theimplementation of thetechnologythatwasproposedforthementionedproject has obtained a reductionto 47% in the usual process of thepurchase of serviceswithwhichit shows promisingresults and processes of purchases of servicesworkedtolessthan 50% of whatwasaccustomedtotheprocess. Similarly[13]. the use of paperformonitoringeachservicepurchasewithintheprojectisreduced, and in thisway, wealsocontributetotheenvironment. Lastbutnotleast, thisresearch invites themtoimplement and trainstaff and make use of technology. Thismeanstoupdate as a company and professionalbecauseifwe do not, webecomeobsolete in knowledge, and we're done withdiscontinued and bankruptbusinesses. [14].

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