Lean techniques in remote working

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Manufacturing competitiveness

Abstract

The actual situation (COVID-19) had forced a lot of people and companies to acquire remote working as their new work style. The objectives purposed of this project are make working from home a comfortable way of work to people, reduce the different types of wastes , ensure quality and safety during working from home and help people to adapt more faster to this new work environment by introducing lean techniques. In order to achieve objectives in this research was used a mixed method methodology to combine the best of both qualitative and quantitative methodologies with the purpose of get and analyze the data the best way possible. This research showed that using 5s lean technique is an effective way to eliminate the common wastes, and by using it makes the implementation and the manage of this type of working more comfortable and more/equal efficient than when working normally.

Introduction

During this year (2020-2021) all the world it's affected by Covid-19, all types of work has been affected including the manufacturing world. Lean principles are a tool to improve and make much better different process when doing something. Work from home right now is a daily situation, in which people face a lot of wastes/problems, like working more than when they were not remotely, internet issues, home problems etc…Applying lean techniques during working from home will help a lot of people life and sole problems during this new working environment, by using them wastes are reduced making more comfortable, simple and equal or more effective than when working normal. Remote working has a lot of benefits that all can take advantage and being honest this work environment comes to stay for a lot of time. 5s is one of the most popular lean techniques and have the advantage that is very easy to introduce in all types of environments and with a lot of effectiveness. This simple method is a huge waste reducer.

Background

The most common wastes founded between this research about remote working are over- processing, waiting, movement, inventory, transportation, overproduction, defects, network and motivation. When working from home, over-processing can be in the form of approval layers for minor decisions or brief reports. A common problem encountered by remote workers is the need to enter the same data in several systems. This is an over treatment which can often be resolved through systems integration and organization. Waiting is another example of problems that appears when we work remotely. The waste of waiting occurs whenever a process is waiting for inputs or information from another source. When remote working, this waste appears so much more because you don't have the resources close, when talking of resources, we refer about people (for a signature, help, approval, etc…), tools and other It can take the form of waiting for decisions, approvals, or work from a peer. The usual flow of information and work that you experience in the office is probably quite different when working from home. On other hand we have movement, depending on the size of your house when you are working from home you would have to move through it to search for things and even go to the bathroom. Then we have defects, they take many forms. Defects can be bad data entry, spreadsheets that contain errors, software errors, and information that isn't effectively communicated or well understood. Network is a crucial thing that affect remote workers, establish a good network in home is definitively one of the most important things. Otherwise, motivation of the worker it's important because this influence in its production and how performs its job.

Problem

During this year (2020) all the world it's affected by Covid-19, all types of work has been affected including the manufacturing world. Lean principles are a tool to improve and make much better different process when doing something. Work from home right now is a daily situation, in which people have a lot of problems, like working more than when they were not remotely, internet issues, home problems etc…Applying lean techniques during working from home will help a lot of people life and sole problems during this new working environment, by using lean techniques we expect that working from home become more comfortable, simple and make working remotely equal or more effective than when working normal by increasing its efficiency using lean techniques.

Methodology

In order to achieve objectives in this research we will be using a mixed method methodology to combine the best of both qualitative and quantitative methodologies with the purpose get and analyze the data the best way possible. At first, we collect literature/information about the theme with the use articles/studies that focus on prioritizing lean techniques, how to use them and that show us the world of remote working. Then we got survey method for collecting data, the first part is about collecting data using surveys which contains specific questions that will let us identify the different types wastes when working remotely . This will be divided in two parts (two surveys) pre and post survey questions, the pre survey purpose is to get data about the wastes that people are facing and the knowledge that they have about lean techniques, after that the surveyed will implement lean techniques "5s" during a period of two weeks for then answer the post survey in which it's going to be measured the difference between working remotely before and after using lean techniques. This data will be analyzed through graphics and statistics which are going to show us the numerical data, and understand what wastes affect more than others, see if lean techniques are a good way to eliminate them and how lean techniques affects remote working environment.

Results and Discussion
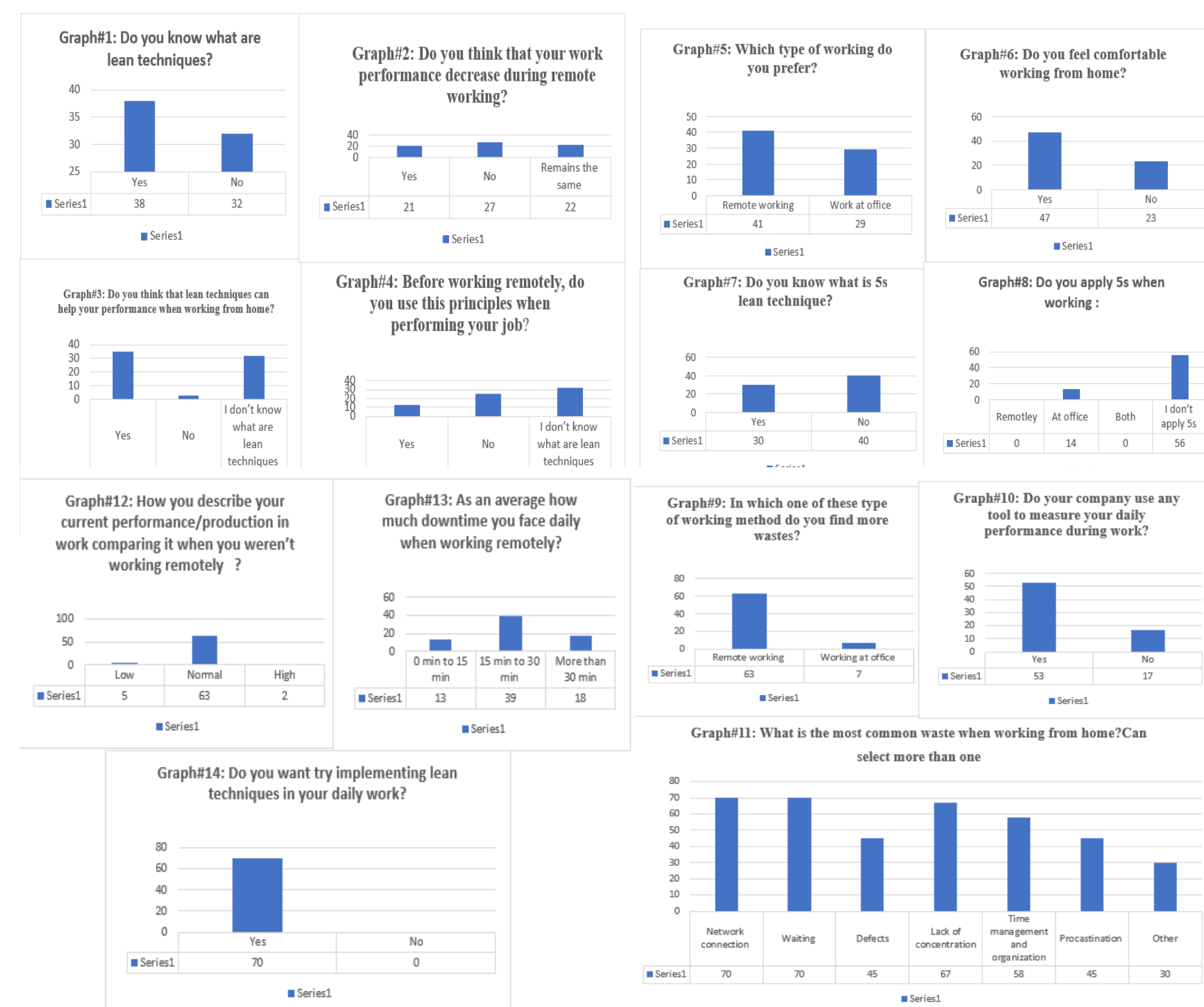
The four first graphed questions (Graph#1-4)was to measure the knowledge that the surveyed have about lean techniques and if they applied them in some point when they work. The first graph shows us that most of the interviewers knows what are lean techniques, but we can notice that a lot of the surveyed doesn't know about the techniques. With this result we can predict that most of them doesn't use lean techniques when working. The second question is focusing more on the actual work situation "remote work", we have a very variable results, 27 people said that their performance have not been affected, then we have that for 22 people remains the same performance as when working at office and finally 21 people see that their performance have decrease during new type of work .

Results and Discussion Cont.

Although the results shows that the majority have not been affected, we have a considerable amount of people that thinks they performance decrease during remote working. Knowing this we can notice that remote working cause a huge change in their daily work. In the other two graph (3-4) shows the lack of knowledge about lean techniques. Graphs 5-8 (figures 5-8),measured specifically two things that are, how the interviewers feel working remotely and if they know about one of the most common' and important lean techniques "5s". We can know with these results, that the people interviewed feels better working from home, and that they don't use 5s technique before or during this new work environment. Remote working has a lot of good aspects and more when it's about to spend quality time, because working from home gives the opportunity to spend more time with family and manage so much things better than working at an office. The zero knowledge about 5s means that common wastes should be there, and a great use of this technique will be very helpful. Lean techniques are an essential tool for eliminating wastes. Graphs # 9-10 (figures 9-10) measure how interviewers feel about wastes when working remotely compared when working at office. Viewing the graphs, we can notice with a drastically difference that 63 of 70 surveyed answer that find more wastes when working remotely. This means that this have to be reduced and give an excellent opportunity for lean techniques to eliminate wastes. On other hand according with the graph we can see that the interviewers are daily measured during work, so this means that the performance is very valuable for them. Wastes are a daily thing when working, this graph want to define the most common type of wastes that our interviewers face daily. As results in Graph #11 (Figure 11) we get that all the interviewers face wastes with network connection and waiting, then we have lack of concentration followed by time management and organization, then defects and procrastination and the one with less results that is others. All these wastes can be managed with lean tools, but like we see previously they doesn't use lean when working remotely or at office.: In graphs # 12-14, we get that the majority of the surveyed told that their performance is normal compared when they work at office, only 5 says that is lower and 2 said that is higher. Then in case of downtime we get that the majority pass through a downtime of 15-30 min during working, followed by more than 30 min and only 13 said that their downtime is in the interval of 0-15. This means that 57 of our surveyed face a downtime of more than 15 min when working. As part of this project, we want to introduce lean techniques our surveyed, the graph shows us that all people surveyed accepts to introduce lean technique.

Post-survey
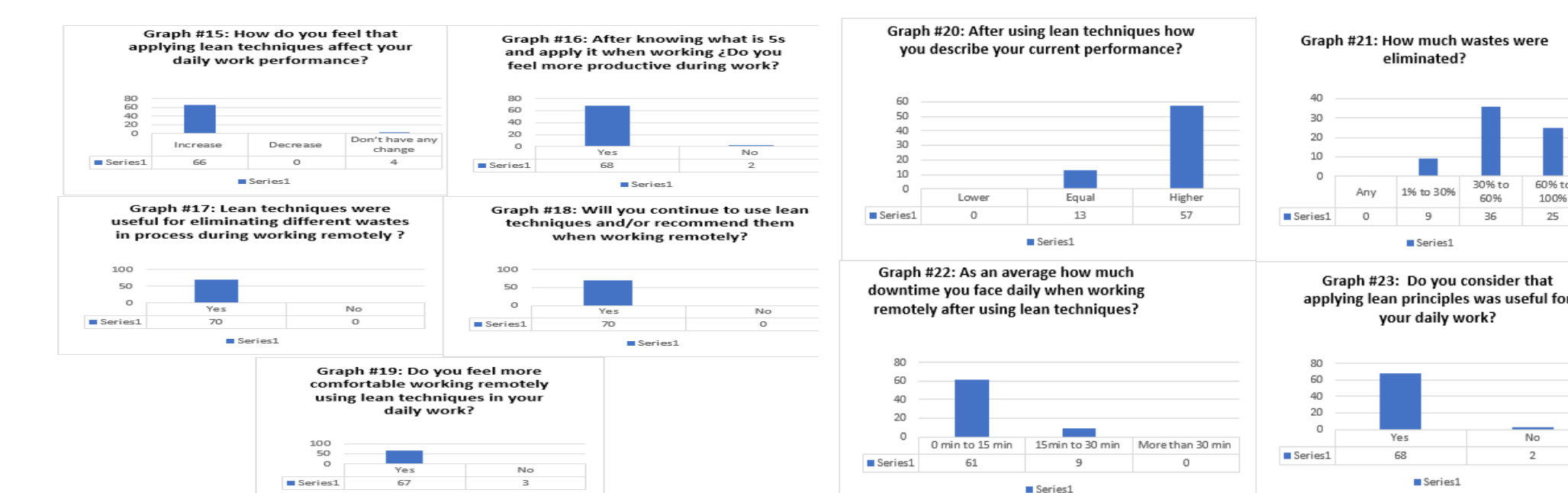
After using lean techniques during a two-week period, we get these results graphed, in the graph #15 we can see that 66-person said that their performance increase, that show that lean technique has a positive effect. On other hand the graph #16 we have that 68 feels more productive when using lean techniques. This means that lean techniques implementation has visible good results. Then graph #17 shows that all surveyed told that lean techniques were useful for eliminating wastes. This is good because eliminate wastes is the principal purpose of lean and if all surveyed see waste elimination means that lean techniques were useful. In the other graph (graph#18) we get that all participants told that will continue to use lean techniques when working. The he results in the #19 graph shows that 67 of the surveyed feels comfortable using lean techniques during working remotely. Although three persons don't feel comfortable using the techniques 96% of the surveyed told that feels comfortable which are excellent results that demonstrate the easy management of these techniques when working. Then the graph #20 is about the performance after using lean techniques, 57 surveyed describe their performance higher and 13 describe it equal and 0 told lower, these results show that in case of performance lean techniques had a 81% of effectiveness, causing an increase in their performance and only a 19% that doesn't feel difference. In case of waste elimination measure the graph #21 shows that all surveyed achieved to eliminate wastes, 9 of them told that eliminate 1% to 30% of their wastes, 25 a 60% to 100% and 36 a 30% to 60%. These results are very good because all of them achieve the purpose of using lean techniques and this means that lean techniques were useful for eliminate wastes when working remotely.The graphed results on graph #22 show us as first that the downtime was considerable reduced in almost of the participants to the interval of 0 min -15 min 61 and only 5 stayed in the interval of 15 min to 30, but the 30 or more interval was eliminated, which are excellent results . Then graph #23, we get that 68 of the 70 participants said that lean techniques were useful during work.

Conclusions

During research was found remote working common wastes following lean principles are over-processing, defects, waiting, network and human potential. As part of this research for prove the capability of lean techniques during remote working we put them on practice. First, we did a survey which purpose was to measure the people knowledge about lean techniques, if they apply them, how they feel about them and know if they have knowledge about 5s that is a principal lean technique and is the one that we implement for two weeks with our surveyed. Lean techniques are definitively useful for eliminating those common wastes mentioned before. Lean techniques were capable of eliminate wastes during remote working , making it a much efficient way of working. The principal mechanism used through research in the improvement of remote working efficiency was the 5s lean tool. This research contributes finding a way (using lean techniques) to eliminate the common wastes faced daily during remote working and avoid overworking in employees due to downtimes and making that the implementation and the manage of this type of working be more comfortable and more efficient or equal than when working normally Surveyed saw elimination of the wastes that they are facing daily making more comfortable and efficient their daily work. By eliminating this waste using lean techniques cause a decrease in downtime which is a very good results and prove that lean fits perfectly with making remote working more efficient and freer of wastes.

Future Work

Next steps will be, implement more lean techniques inside remote working. Create a full standardize method to introduce lean in remote workers and continue measuring the performance using lean techniques to know if they are been effective . Like when working normal, in remote working wee need to implement the continual improvement of process, to make this new situation the most efficient possible.

Acknowledgements

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