The Tps is the Key to the Refreshment of the Craft Sector in Morocco

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Abstract

The Toyota Production System is an approach which was a great success thanks to the efforts of Toyota who summed up his carrier in two rules: -Continuous improvement and respect from people. Toyota has developed its production system based on handicraft production which ensures the adaptability and durability. The Toyotism concept sought to move from a handicraft production to a varied production based on quality, performance, reduction of cost and delays, and the facility of work. The inclusion of TPS in the Moroccan handicraft sector is a very good step in order to increase the productivity and performance of this company.

Keywords
Tps, Handicraft Sector, Continuous Improvement, Craft production, Performance.

1. Introduction
Handicrafts is a very important point in the Moroccan economy, moreover Morocco is known by its various craft occupations, citing as an example: leatherwork, zellige, decoration, brassware, pottery and traditional tannery ..., all these activities and others are considered essential and fundamental pillars of the economic, cultural, educational and collective structure of the country Handicraft is like any industrial practice that allows the transformation of a raw material into a finished product, thanks to several tools and techniques, most of the handicraft products are combined manually by the know-how of the different craftsmen. The craftsman is a person whose main mission is to make handicrafts in an artistic, decorative and customary way based on tradition. The Toyota production system is a Japanese system based on the elimination of all types of waste, The profit of the Tps within the Moroccan handicrafts is exercised in improving the productivity of the sector by using techniques quite advanced in order to increase the quality of handicrafts and reduce costs and delays of the sector. All this to improve the performance of the Moroccan craft,

1.1 Objectives
The main objective of this research is to improve the productivity as well as the performance of the craft company in Morocco, since the latter is a very important point in the Moroccan economy, the application of the Toyota Production System within this organization is the only solution in order to refresh the Moroccan craft sector.

2. Literature Review
The Moroccan handicraft represents a turnover of 19.1 billion, so the number of employees in the sector is about 20% of the Moroccan population, without forgetting that it symbolizes 8% of the Moroccan GDP, Thanks to "Vision 2015" which was achieved by the efforts, willingness and dedication of professional people in the sector, the handicraft in Morocco has been able to benefit from an increase in the level of turnover or even that it has benefited from an international visibility. However, the craft field still suffers at the level of production management, for this it is necessary to think of tools developed enough to improve the performance of the sector. According to the "11th edition of the observatory of the craft", the craft activity is based on several trades, each profession means a percentage in the sector, indicating some figure: Clothing: 26.7%, traditional Building: 23.7%, wood: 15%, leather goods: 6.9%, pottery: 1.9%, brassware: 0.8%, and basketry: 0.2% ...,

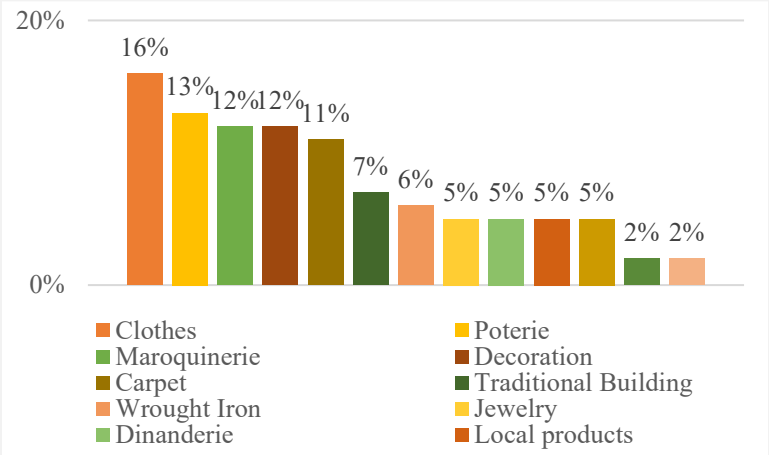

Figure 1: representation by occupation

Thanks also to a survey that was done at the "Salon Marrakech 2020", each country has a craft force(See Figure 2): Fez -Meknes: 22%, Marrakech -Safi: 21%, Tangier -Tetouan -Al Hoceima: 9%, Rabat -Salé -Kenitra: 8%, Casablanca-Settat: 7%, and others: 33%,

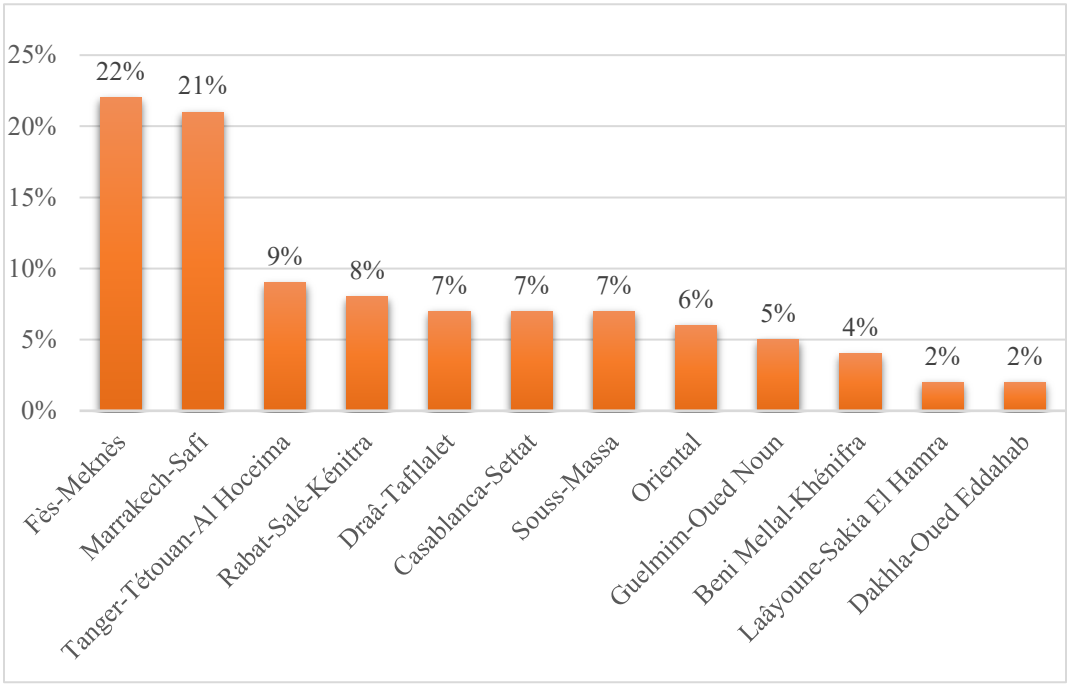

Figure 2: Weight of the regions in the craft sector

The study of the suffering of the craft company is based on the analysis of the weaknesses of the sector, for this it is necessary to advance a strengthened assessment based on the 5M:Craft environment, Method of work, Material used, Manpower (Artisan), Material used for the manufacture of handicrafts, Generally, the work environments in the craft company are poorly structured, small in area and the grounds are often very dirty, not to mention that some

environments have limited accessibility and traffic spaces are in poor condition.The craftsmen participate in the manufacture of a craft good as well as the distribution and the marketing, most of these craftsmen are men, these last ones must be well qualified and accredited, they must assure the conformation, the good functioning as well as the control and the best supervision of the work, The materials used that allows the manufacture of a craft article in the sector differ from one craft to another, generally the quality of these materials is good, the manufacturing process in the sector is often manual and flexible, the working time is globally slow and there is not a hierarchy and a well precise organization of execution.This company exercises a unitary and diversified production with tools and materials rather traditional and classic even that it uses a little machine in certain trade.

3. Methods

The Tps is a theory based on the elimination of waste that can also be called Mudas, we can count several types of waste: Overproduction, the displacement, the transport and the useless movements, The lack of skills, Over-stocking and waiting time, Errors and defects. This system is based on several principles that are considered as an essential basis within an industrial field, these are based on coordination, respect, good work flow, good decision making and continuous improvement. According to Toyota, the Toyota Production System can be implemented using several tools:

3.1 Kanban

An approach allowing to produce the quantity wanted and fundamental at the time and the place wished with the requested quality, this method is elaborated by Mr OHNO at Toyota is also called the pulled flow allowing to produce following a request customer as well as the upstream station manufactures just what requires the downstream station.In a constitution based on Kanban, the most important thing is to look for how to relax a production system to combine a minimum number of Kanbans. To have a minimum number of Kanbans it is necessary to reduce the production deadlines as well as the useless exchanges, to reduce to the maximum the SMED (Time of change of the tools), without forgetting to eliminate the minimum stock and to know the correlation between the ruptures of the stocks and their costs SHIGEO SHINGO (Engineer at Toyota) explained the Kanban by his famous expression: "you think that Toyota Motor wears a beautiful suit and would like to buy the same one: you would then buy a suit called Kanban System, but could not wear it because you would be too overweight. It would therefore be necessary to improve your shape (improvement of the production system). On the other hand, it is absolutely essential that you understand the concept of good health (effort to eliminate everything that is useless).

3.2 Approach 5S:

This method is called "Remove, Tidy, Keep Clean, Standardize, and Involve" and in Japanese it means "Seiri, Seiton, Seiso, Seiki's, Shitsuke". This method is quite effective in getting rid of all unnecessary things, freeing up space to make the environment cleaner, identifying objects and making all materials visual. The 5S has a great benefit in an industrial company, At the Quantitative Level: Increase in productivity and output, Elimination and suppression of all that is useless, Increase of the efficiency. At the qualitative level: Improvement of the quality of the finished products, Improvement of the working methods, Improvement of actions, Optimization of work.

3.3 Value Stream Mapping:

The Value Stream Mapping or VSM is an approach to identify the sources of each type of waste, to take into account the existing state and to know the future function of the physical and IT flows. The VSM is based on three principles Mapping the existing state and setting up the current state, Characterize the future state and sources of improvement, Structure an action plan to move to the future state. The VSM approach allows to identify all the flows that accompany the input of the raw material until the output of the desired good.The study of the computerized flow of the value chain mapping is done based on the declarations, information and forecasts of the final customer to the information transmitted to suppliers. Through the analysis of this Flow, it is possible to rule out the way of diffusion and transmission of the information. The parties involved in the information and the rate of its circulation. The mode of movement and operation. In a company based on value stream mapping, the following characteristics must be determined: Cycle time, Time of rotation in the process, Time of flow, Time of change of series.

3.4 Kaizen:

Kaizen is considered as a fundamental and main pillar to apply TPS in an effective way, it allows the improvement of a continuous and correct way, even that Kaizen is a Japanese word Kai is to study, Zen is to improve. The main goal of this method is to reduce the variations, to approach the competition, to concentrate on the necessities and the

important activities, to carry out the work and finally to improve in a continuous way. The principles of Kaizen are based on the absolute elimination of defects and deterioration, reacting to problems and dangers before seeking perfection, working as a team with a high degree of responsibility and willingness, having an answer to all questions, always seeking to do good and finally improving continuously.

To start a Kaizen project, the following points must be followed, which are considered an essential basis for a real approach: The planning in order to identify the objectives, to define the needs and the commitments to improve and finally to specify the members and the rules of Kaizen. The pre-Kaizen which includes all the explanation, study, visit of the places, all that to have a clear image on the situation to be improved. The improvement is to try to implement everything that has been planned in the two previous phases in order to ensure a very good result. The implementing partners: they are the team that works to implement the Kaizen project. The team to specify the common targets, action plans and responsibilities assigned to each team member. Cells and waste to identify non-value-added actions and reduce all sources of waste the poka-yoke to avoid all errors, operations and repetitive tasks. Post-Kaizen is the implementation of all the results of improvements.

3.5 Poka-Yoke:

SHIGEO SHINGO the master of Poka Yoke set up this last one in 1961, this discipline is based on the reduction of defects, errors and deficiencies. The control of occupations and repetitive actions with no added value.To adopt Poka Yoke in an industrial environment, it is necessary to search and analyze the main causes of each problem and difficulty, classify them by order of danger and complexity, control the process and finally try to eliminate the error.

4. Data Collection

ANANTH V. IYER mentioned in his book "Toyota Supply Chain Management" that learning is a continuous process at all levels and tasks in Toyota and that the main principles are based on awareness, detection of problems to solve them, identification of the relationship between the action and the desired results, codification of knowledge, finally the ability to solve problems and knowledge of needs. The Toyotism concept is based on performance and the best productivity in order to increase quality and reduce costs, deadlines and waste time. According to JEFFERY LIKER, Toyota's thinking is based on continuous improvement and respect for people.The application of Toyota production system tools has a great benefit within the craft company in order to improve the working methods, minimize the costs as much as possible, increase the quality of the desired good and of course eliminate any source of waste.The favour of TPS within the craft in Morocco is mainly attributed to the improvement of productivity and performance of the sector.

5. Discussion

The Kanban discipline is a very important approach within craft workshops in order to Regulate the production of the area, Control the need, avoid any source of destabilization, reduce inventories which are considered a real problem in industrial sites. The inclusion of 5S within the craft sector in Morocco is a very important point in order to ensure the change of craft environments to more organized and better structured companies, the deployment of this approach also allows to meet all the needs in an efficient and powerful way.Value Stream Mapping will identify the sources of problems in all stages of production, determine the physical and computerized flow, collect non-value added actions, and finally combine a more efficient production system within the craft sector.The application of the kaizen discipline within the craft sector has a great benefit to improve the craft production system.Finally, the adaptation of the Poka yoke in the industrial handicraft units in Morocco will allow us to make the work in these environments more efficient, flexible and powerful.

6. Conclusion

Currently, the craft sector in Morocco suffers a lot at the level of conduct and management of production, there is still a real problem of deadlines, flexibility, quality and waste within this company, this sector is based on tools and manual means with a very low demand on the craft products, even that the competition in this company is very weak, however the organizations based on quality industry use means, production methods quite developed as well as flexible tools, finally the demand, the confrontation and competition are very strong and powerful .The application of the Toyota Production System in the craft organization is a very important, overwhelming and powerful project to improve the productivity and performance of the craft sector in Morocco. The next work will be devoted to the identification, study, analysis of the difference between the industrial production system of quality and the craft production system.

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Biography

Nejjari Nada, PHD Student is currently a doctoral student in the industrial engineering department at the University Sidi Mohammed Ben Abdellah, Faculty of Science and Technology of Fez, also holding a Master's degree in industrial engineering in 2020, a Bachelor's degree in industrial engineering in 2018 and a DEUST (Diploma of University Studies in Science and Technology) in 2017 in the same faculty.

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