ADAPTING OPERATIONS AND PROJECT MANAGEMENT FOR A PROTOTYPE IN PRODUCTION LINES ACCORDING TO THE ORGANIZATIONAL CULTURE SITES LOCATION

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ABSTRACT
In recent decades, in relation to the industry development through technology the production system, production efficiency and mass number increased proportionally and considerably. Each company is unique specifically when the company has a international manufacture sites all over the world even if the company belong to the same "mother company". First it is presented the current management style recommended by the "mother company" for the new product in relation to the previously developed product on the production lines according to the organizational culture sites location. The new product is a turbocharger which has double purpose, like producing green electrical energy for the consumers and/or battery and to compress the air for the engine.
Therefore the manufacture which have produced so far only mechanical products must assemble mechanical parts with electrical parts in series production, consequently the production lines must be adapted to the new assembly technology flow design.
The aim of this paper is to analyze and present the basic parameters for the adaptation of changes regarding the operations and project management for a prototype with efficient results.

KEYWORDS: *Design Flow, Management, Production System, Organizational Culture, Turbocharger.*

1. INTRODUCTION

1.1 Production system

The production system, production efficiency and mass number has increased considerably in direct relation with the expansion of the industry and many companies have developed their own production system, especially for their products, and implemented it in the worldwide companies but the deployment of production units outside their country didn't bring the desired results because of the problems that occur namely: motivation problems and mentality. (see Figure 1)
A prim definition should sound like: "A system is an assembly of parts connected in an organized way, that has been identified by a human being as of certain aim and that behaves in some way." (Ohno, 2009)
Bullinger (2003) accurately describes a production system as a serial and parallel connected machine tools and combination of these basic types.
Eversheim (1990) defines a production system based on the structural aspect, and it includes hereafter all elements necessary to carry out the preparation of a required product.
Systems that have developed and appear to have objectives that emerge from the evolutionary process. We can call these evolved systems and not that all through biological systems are leading examples, social systems might, in some respects, fall in this type as well.

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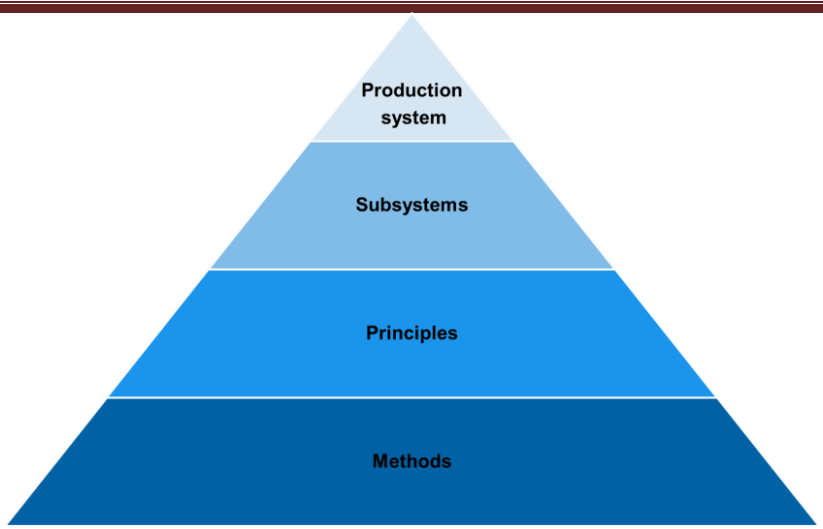

Figure 1. The structure of a production system
Source: König, C. 2009, P. 32

A production system is a system that treats with the company's production aims or targets and with their accomplishment.
Therefore a production system may consist of principles, together with tools and methods but also for considerable planning, particularly in ensuring that the aims are fulfilled.

1.2 Leadership styles

Leadership styles are classified as authoritarian, patriarchal, advisory, consultative, participatory, delegative. (see Figure 2)

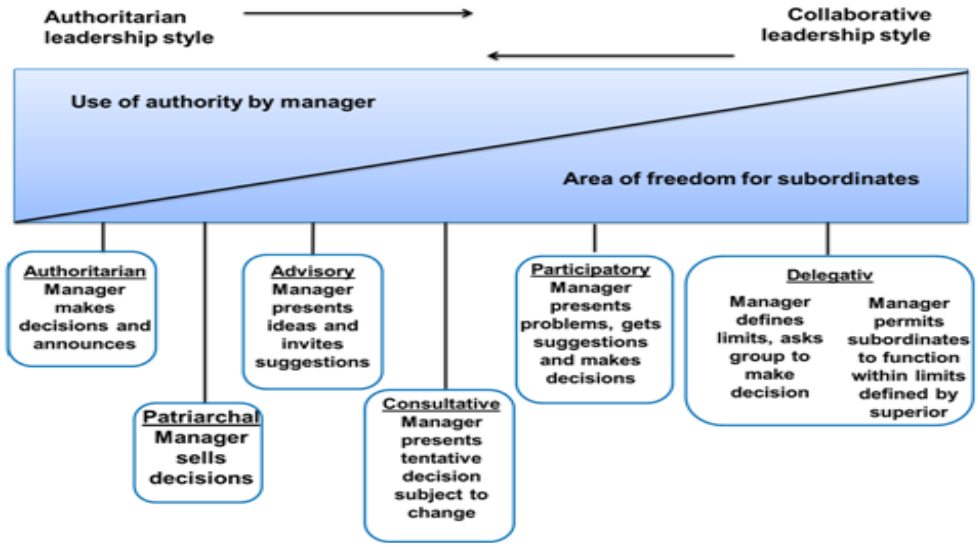

Figure 2. Leadership Styles
Source: Tannenbaum and Schmidt, R. 1958, P. 95

An authoritarian leadership style is defined when a leader dictates policies and procedures, decides what goals are to be accomplished; leads and checks all activities without any significant contribution by the subordinates. Authoritarian leaders take resolution apart with small or no input from the rest of the team. Authoritarian leaders uphold rigorous check over their followers by directly regulating rules, methodologies, and actions. Through these features the authoritarian leaders build gaps and distance between themselves and their followers.
A patriarchal leadership style is characterized when a supervisor decides and tries to convince the

subordinates of his decisions before he directs. Also a patriarchal leadership style is defined when a leader presents the policies and procedures, the goals that are to be accomplished and tries to convince the subordinates of his decisions before he directs. Patriarchal leaders make resolution based on a subjective criterion.

An advisory leadership style is exemplified when the boss decides; he does allow questions about his decisions to achieve their acceptance by the answers. An advisory leadership style is exemplified when a leader decides the policies and procedures also the goals that are to be accomplished but it is open to questions about the decisions.

A consultative leadership style is featured when the supervisor informed his subordinates of his decisions; the subjects have the opportunity to express their views before the supervisor makes the final decision.

A consultative leadership style is exemplified when the boss informs the subordinates and the subordinates have the opportunity to manifest their opinion and also to speak about the facts before the supervisor makes the final decision, therefore a culture of speaking up is created in the team.

A participatory leadership style is recognized when the group is developing proposals, from the number of common and found acceptable possible solutions to be decided by the supervisor for the solution favored by him. Also a participatory leadership style is exemplified when the leader is in the middle of the subordinates of the team and all the ways of the problem/ solution or task are discussed and the final decision is made from the idea of a team member but acknowledged and propelled from the leader.

A delegative leadership style is accredited when the group will decide, after the supervisor previously identified the problem and define the limits of the discretion. Then the group decides, the manager acts as coordinator. The team is directly involved in the solution/ problem resolution, the opinions are discussed and the team decides all in the defined frames of the leader who is also a coordinator in this case.

The leadership styles are separated from each other in two big categories: authoritarian leadership style and collaborative leadership style. The authoritarian leadership style is inversely proportional in relation to the collaborative leadership style (Hackman & Johnson, 2009).

1.3 The organizational structure

It can be also classified as: single-line organization, multi-line organization, bar-line organization, matrix organization (Shaw, 1955). The single-line organization has a characteristic that in any point or any organizational unit has exactly one direct parent of power position. Thus, the supervisor provides the employees only with the relevant tasks and instructions.

The multi-line organization has another characteristic in which the employee is the subject of several supervisors or manager who are responsible for a particular branch of his work. It must be clearly defined within multiple assumptions, to avoid leading to overlapping responsibilities and/or unclear responsibilities.

The bar-line organization is a widening of the line organization through staff positions, which serve the professional support and relief of personal instances and includes simple task range.

The matrix organization and the multi-line organization are very alike but the matrix organization has superior classification structure. There are superposed together two rating criteria with an organizational unit of a specialized body (e.g.: sales, manufacturing) but simultaneously attribute to a project or product. Because of these characteristics, the matrix organization is a very flexible organization structure that can be quickly adapted to new tasks by short communication and decision making processes.

1.4 Process organization

The main feature of the process organization is based on the standardized rules of the process system in relation with the organizational culture. The process organization is based on the following design parameters flow: personal assignment, temporal structuring and spatial

arrangement.
There are many advantages of the process organization, namely: a higher control of the operational order, efficient process thinking and quick problem solution identification, the high flexibility considering continually and rapidly changing environment, in particular for new products.
Experience shows that it can react very quickly with optimized changing requirements of the market and also customer orientated process on the process organization.

2. OBJECTIVE

The general objective is to adapt operations and project management for a prototype in production lines according to the organizational culture sites location.
Therefore in the paper it is analyzed and presented production system of overseas manufacturing plants organizational culture parameters like: leadership, organizational structure (before and after the implementation of the new management parameters) and process organization.

3. METHODOLOGY

For adapting the operations and project management to the prototype in production lines according to the organizational culture sites location the production system, leadership styles and organizational structure must be flexible and modified.
The production system before and after like design flow remains the same: the input step, conversion process and output. In to the input step contain raw-materials, machine, the conversion process (manual or mechanical operations) and out (finished goods).

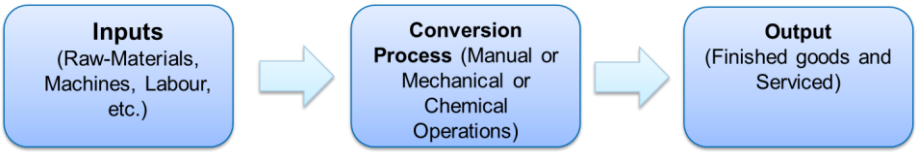

Figure 3. Production system (Input- Output)
Source: Warnecke, H.-J. 1993, P. 20

Also, Warnecke (1993) defined in agreement with a system-theoretical accordance, a multi-stage production system as an elaborate and connect production system, resulting in the value-added parts of simple parts.

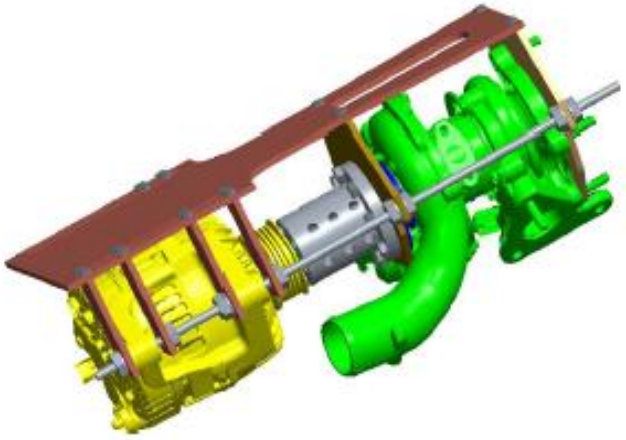

Figure 4. Turbocharger prototype
Source: own prototype

The classic product, the turbocharger without the electrical generator had a single-line organization (see Figure. 5a). The new product is composed from a mechanical part (turbine, compressor, shaft and other parts) and also from electrical parts, and those must be assembled through a new production line therefore the only immediate change regarding the process in the first stage of the adaptation of the line organization. It can be seen in figure 5a at the beginning and after (see Figure. 5b).

4. RESULTS

After a study case it can be seen in table 1 a typology for adapting production systems at overseas manufacturing plants (see Table 1):

Table 1. A typology for adapting production systems at overseas manufacturing plants

	before	**after**
Leadership	Participatory	Authoritarian / Participatory
Organizational structure	Linear system	Matrix system
Process organization	Standardized rules	

Source: own results

It can be seen that the leadership is to switch from participatory leadership to authoritarian leadership and for this phase of the new product implementation it is used the authoritarian leadership and after the task achievement.
Also as a standard measure independent of the organizational structure and culture organization for the first phase of implementation it is automatically switch from the single-line organization to a matrix organization to adapt the prototype in production lines. The matrix organization is the most indicated because of the very flexible organization structure that can be quickly adapt to new products.

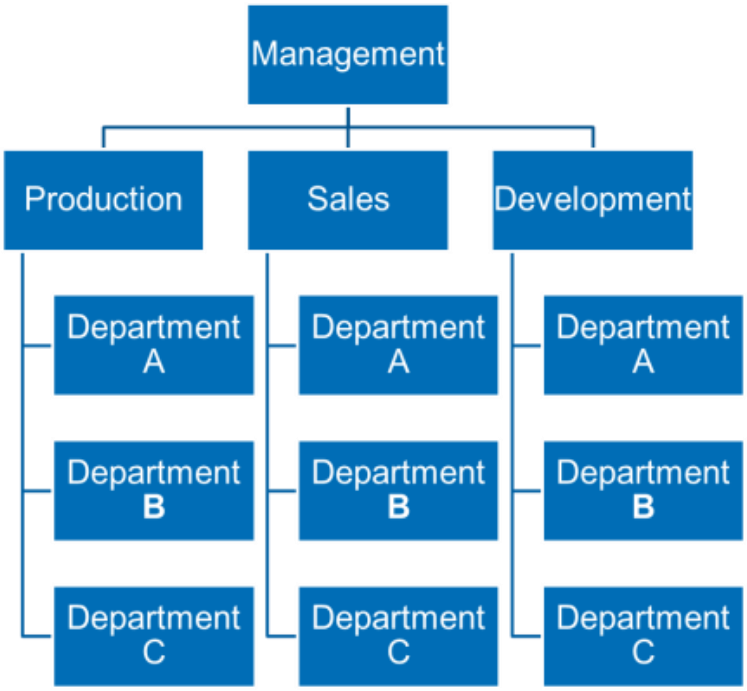

Figure 5a. The single-line organization
Source: Luczak, H. 1998, P. 497

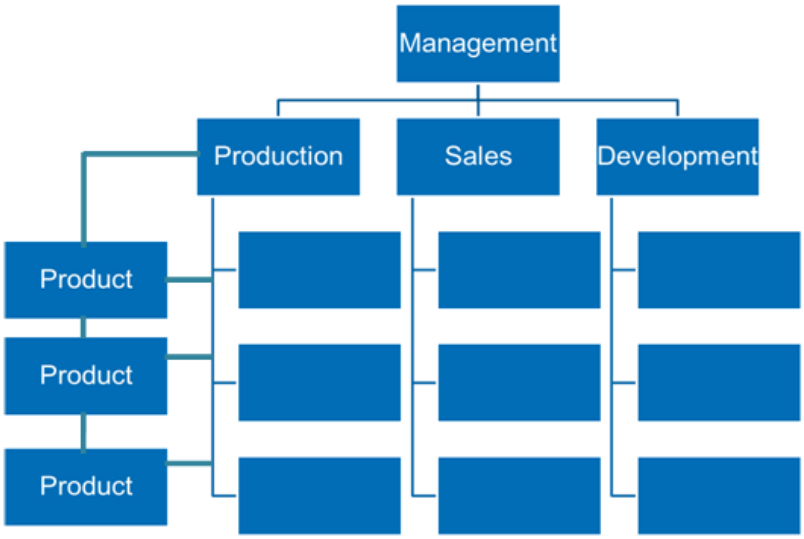

Figure 5b. A matrix organization
Source: Luczak, H. 1998, P. 497

5. DISCUSSION

The experience shows that the matrix organization is a very flexible organization structure that can be quickly adapted with low implementation costs as well as the process organization. Also it can be achieved all the targets that are planned for a successful implementation considering the requirements of the market and also the customer orientated process on the process organization.
For future studies it can be more analyzed the organization structure, leadership and process organization in relation with the marketing strategy approach of the new products on the market.

6. ACADEMIC IMPLICATIONS

This research offers a basic perspective with standardized rules and procedure for the adaptation of the operations and project management. It is also taken in consideration the parameters of the implementation for a prototype in production lines according to the organizational culture sites location.
In research it is presented the difference between the before and after stage of the leadership, organizational structure, process organization which can have a positive impact for new perspective in field of research for other studies and also companies.

7. CONCLUSIONS

Through this paper it is analyzed the initial situation before and after the production systems, operations and project management for a prototype in production lines according to the organizational culture sites location.
It was analyzed the production system of overseas manufacturing plants organizational culture parameters like leadership, organizational structure (before and after the implementation of the new management parameters) and process organization and it resulted that the changers of the leadership and organizational structure are minimal and the process organization remained the same, based on standardized rules, therefore of the advantage that the process organization is very flexible and adaptable to changes.
Before the implementation of the new product the leadership was participatory and after the implementation for a first phase it changers to authoritarian / participatory. Before the

implementation of the new product the organizational structure was based on a linear system and after the implementation it advanced to a matrix system.

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