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INTERNATIONAL CONFERENCE of SCIENTIFIC PAPER  
AFASES 2014  
Brasov, 22-24 May 2014

## MANAGEMENT CONCEPTS TO SUPPORT FLEXIBLE MANUFACTURING SYSTEMS DEVELOPMENT IN ECONOMIC ENVIRONMENT

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**Abstract:** *Information and management concepts has focused on how available knowledge is exploited to improve organizational performance especially in flexible manufacturing systems or activities. There is limited information on how concepts acquired during flexible manufacturing systems development can be utilized the product life cycle to provide decision support. Existing management systems knowledge do not seem to provide information on well-known manufacturing constraints and product attributes identified during product development. Some flexible manufacturing systems do not provide the means of identify and utilise tacit knowledge which have a major impact on some flexible manufacturing systems development process. An organized transfer of knowledge from previous systems will no doubt enhance the management quality, efficiency, cost and time to market of new flexible manufacturing system in economical field. The study shows that has developed a knowledge management framework to support flexible manufacturing systems development in economic environment.*

**Keywords:** *Management concepts, Product development, Framework, flexible manufacturing system*

### 1. INTRODUCTION

To improve an effective knowledge management of flexible manufacturing systems the strategy is that realize the benefit in order to support decision-making process and thereby remain sustainable in economic field.

Management concept has increasingly become sought; however, many organisations are still unable to develop and improve knowledge to enhance economic performance.

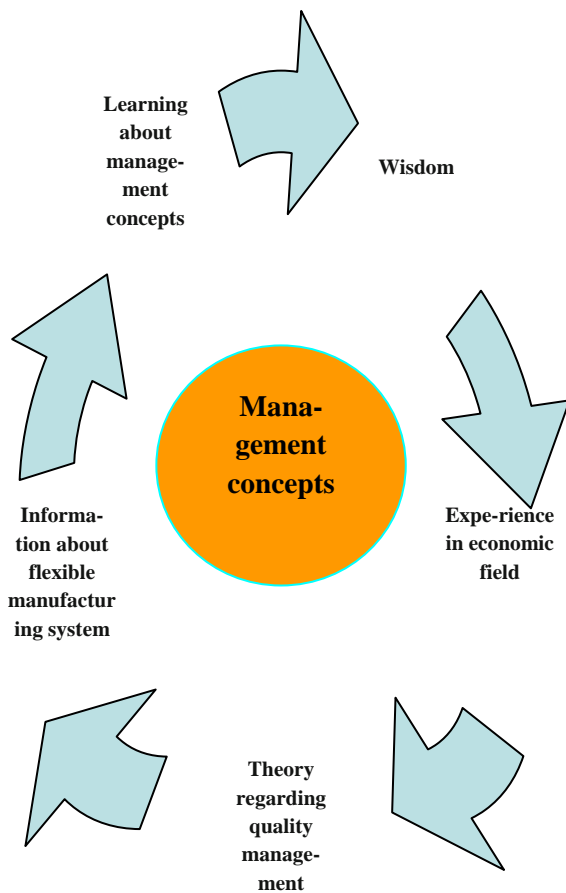
Knowledge is fragmented, sometimes difficult to locate and therefore to improve or to share. There is a need therefore to develop decision support systems to improve, store, share and capture data, information and knowledge. Decision support systems is enable the transformation of tacit to implicit knowledge to be shared and improved for decision making. They will also

enable the conversion of explicit to implicit knowledge a process of internalisation.[1]

### 2. ANALYSES

Consequently knowledge and experiences are sometimes poorly documented and therefore are not available for reinstate in future projects. In figure 1 shows the concept of knowledge regarding flexible maufacturing system derived from theory, information and experience and, which is important in nature and could be described as successfully applied knowledge.

When a company are checked flexible manufacturing systems are implemented available information theory and applied knowledge experience so lead to a guaranteed success.



**Figure 1.** Knowledge derived from theory, information and experience to develop economic field.

When experimental data are classified as premium items, they are shaped so that they become available.

When rules or heuristics are applied to information, knowledge is then created as actionable information for producing some benefit value. The knowledge that is created and shared amongst organisational members can be categorized into two typical forms of knowledge—tacit and explicit [1].

Knowledge in product development environment is considered to consist of four activities.[1]

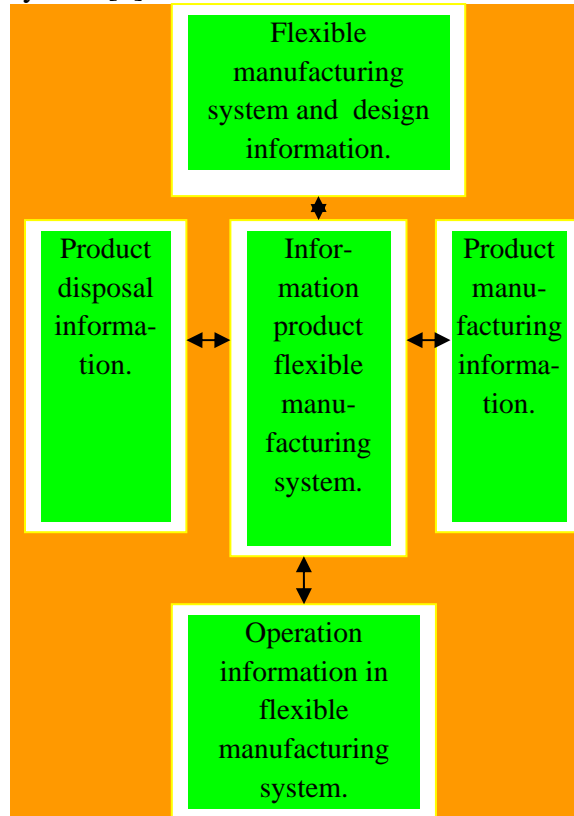
1. Identification; the identification of knowledge required to develop new flexible manufacturing systems, including product specifications, process, tooling and material capabilities.

2. Capture; how the knowledge is captured stored and retrieved.

3. Formalise and present; how knowledge can be formalized and presented to

ensure its use in existing and future flexible manufacturing system.

4. Utilisation; how the knowledge identified, captured and formalised can be integrated into products and decisions, and applied in other flexible manufacturing system.[2]



**Figure 2 .** Information and knowledge framework in product life cycle

In figure 2 shows the concepts about information and knowledge management framework for a flexible manufacturing system life cycle by showing all the sources and information about the product can be derived.

Each of the phases has data and knowledge that describe the characteristics of that stage in the product life cycle.

Such information are useful to the product and manufacture flexible manufacturing system and also to the customer who would need a full understanding of product attributes to enable optimal design, manufacture and guaranteed production performance.

Also an flexible manufacturing system would be made aware of all relevant information including data on product functionality, durability, efficiency, energy



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requirement, while the industries will product specification and requirements, mode of operation, value added, cost price, delivery due date, maintenance requirements. The sales department working in collaboration with the design and production department will also establish that they can deliver what has been promised to the institution within the due date. This will involve material requirement planning, supplier management, production scheduling and planning, outsourcing requirement, quality assurance. An order is confirmed only when there is an contract established between customer and the enterprise.

All the product information or discerned elements, are patterned in a certain way, that data is transformed into information. As rules or heuristics are applied to product, knowledge is then created as actionable information for producing some benefit value.

All the process involves the identification, capture, formalisation and presentation of knowledge and its utilization, support effective decision making within a flexible manufacturing system and product development environment.

Extraordinarily, however, the development of project to support flexible manufacturing system, has barely intersected with studies on commercial new product development, which consider the comparable problem of achieving efficiency whilst attaining consumer satisfaction.

Engineers engaging in new product development bring to their work the formal and articulated expertise of their disciplines that have been socially constructed through time by particular professional or academic communities. [3] Mohrman et al., explains that an organisation striving to derive competitive advantage from knowledge management needs

to understand which elements of the organisation's processes affects its ability to acquire, create and apply knowledge.[3] Knowledge helps to achieve improved business performance through product and process, and in this sense knowledge can be classified not only from the knowledge type (tacit and explicit) but also from the knowledge domain (product related and process related) [4].

Using this definition, knowledge has four classifications:

- Tacit-product related; know-how (human brain)
- Tacit-process related; human capability (human brain and culture),
- Explicit-product related; knowledge base (knowledge repository),
- Explicit-process related; workflow (workflow system).

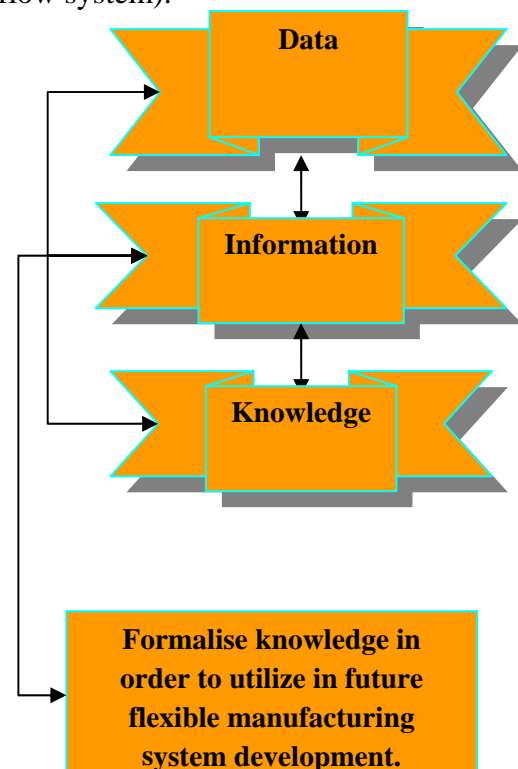


Figure 3. Formalise interactions

### **3. CONCLUSIONS & ACKNOWLEDGMENT**

In this paper has developed a knowledge-based management in flexible manufacturing system that adapts knowledge management concepts into product development where the major objectives were to provide decision support to help economic field, according the utilisation of best-know knowledge, minimise costs, achieve quality assurance and shorten time to product. Product development activities must be structured in such a way that any engineering decisions taken are based on proven knowledge and experience. Any failure to apply knowledge and experience could result in product and process redesign, which would be seen as non-value process and waste of valuable resource. There is a need for a knowledge-based framework to support flexible manufacturing system development, which includes a knowledge-based system developed from an organisation's knowledge and past experience captured in a database. This process involves the identification, capture, formalisation and presentation of knowledge and its utilisation to support effective decision making within a product development environment.

### **ACKNOWLEDGMENT**

This paper is supported by the Sectoral Operational Programme Human Resources Development (SOP HRD), financed from the European Social Fund and by the Romanian Government under the contract number POSDRU/ID134378.

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