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RAPID OPERATIONAL EXCELLENCE ANALYSIS WITH A MATURITY MODEL TOOL

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Abstract:
The paper addresses a very relevant topic in today's business life: how to succeed in fierce global competition by improving operational excellence. The research is based on the maturity model theories and with constructive research a model and a tool is developed to analyse the operational excellence of any production organisations. The aim was to develop a method which not time or resources consuming but can be utilized with very small efforts. A method and tool was developed and tested in two phases. The results show that the method and tool is very operational and can be used even with small and medium size companies with production processes.

Keywords: maturity model, capability, excellence, business process

1. INTRODUCTION

Global competition continues to be tougher and tougher. This applies not only to global operating companies but also even the very local businesses. A local coffee shop competes with global McDonald's and Subways. There is now place to hide the competition, and the competitive advantages are continuously challenged. When the product is not different enough or the competition is able to provide close enough product or service, the game becomes in many instances a price game. The effectiveness like the internal efficiency of operations to satisfy customer needs is a challenge that companies are facing continuously. The drive for operational excellence to secure competitive advantage is in many cases strongly linked to cost saving, reducing the cost of goods sold, and also the promise to investors and shareholders of predictable return for their money, i.e. solid revenues year after year, puts all the managers looking for approaches to win in this cost driven competition. Continuous improvement and re-engineering are seen as possibilities by many business leaders as the way to unlock the potentials of their organizations to deliver more with less resources, and ultimately thus lower their operational costs and keep product margins alive and companies profitable. (Isoherranen et al 2015).

1.1. Background

Maturity models provide a framework to create momentum and a roadmap for continual improvement. Maturity approaches have their roots in the field of quality management. For continual improvement agenda to get wind behind its sails, the organization needs to know its current status. To achieve this, it needs to do analytical and transparent evaluation. (Isoherranen, et al 2015). Organizations both private and public have different capabilities to utilize various management methods and concepts. The size and the life cycle position have an influence on the capability of the organizations. There are several tools and technics available for large companies with sufficient resources, but there is a need to have practical tools for small companies as well. Small manufacturing companies many times operate in networks with large companies and there is a need to upgrade those small companies to the operational levels of the larger companies. A tool for small companies is needed to analyse the operational excellence as well as to help the companies to improve their capabilities.

1.2. Research question

The research question is articulated as follows:

> Is it possible to develop for production evaluation a rapid Operational Excellence Maturity Model? Model will be used to define current status of operations for the company with a minimum amount of interaction between the analyser and the management of the company.

The research will be conducted using the constructive research paradigm. (Kasanen, et al.1991, 1993, Lukka 2003)

2. OERATIONAL EXCELLENCE

Operational excellence defines the excellence of company's operation. Companies can utilize operational excellence to estimate in which level their operations are. In that way they are able to develop their operations and organization in a better way. Continuous improvement is easier when companies estimate their actions, in that way they find out the most important parts of development. Companies utilize maturity models to estimate the operational excellence. Operational excellence affects to everyone in the organization. Every employee should have good understanding of company's key processes and flow of product or information. This way when any problems occur in the production flow employees are capable to fix them in time. (Duggan, 2007)

Picture 1 presents the main areas which are the most important when evaluating the company's actions and continuous improvement at the common level. Continuous improvements help the company to improve its operations and prevent failures. These main areas are slightly different depending on which of actions the company is focused to improve.

Picture 1: Operational excellence framework

Most of the successful companies utilize production philosophies like the Lean- philosophy in their production to achieve higher level in operational excellence. By applying Lean concept the company can improve all of their competitive factors.

3. MATURITY MODELS

Maturity approaches have their roots in the field of quality management. One of the earliest of the maturity models is Crosby's *Quality Management Maturity Grid* or *QMMG*, which describes the typical behaviour exhibited by an organisation at five levels of 'maturity', for each of six aspects of quality management (Crosby, 1979):

1. Management understanding and attitude (towards quality management)
2. Quality organisation status
3. Problem-handling experience
4. Cost of quality as a percentage of sales
5. Quality improvement actions
6. Summation of company quality posture

In general maturity models consist of several maturity levels which can be described as follows (Harmon 2004):

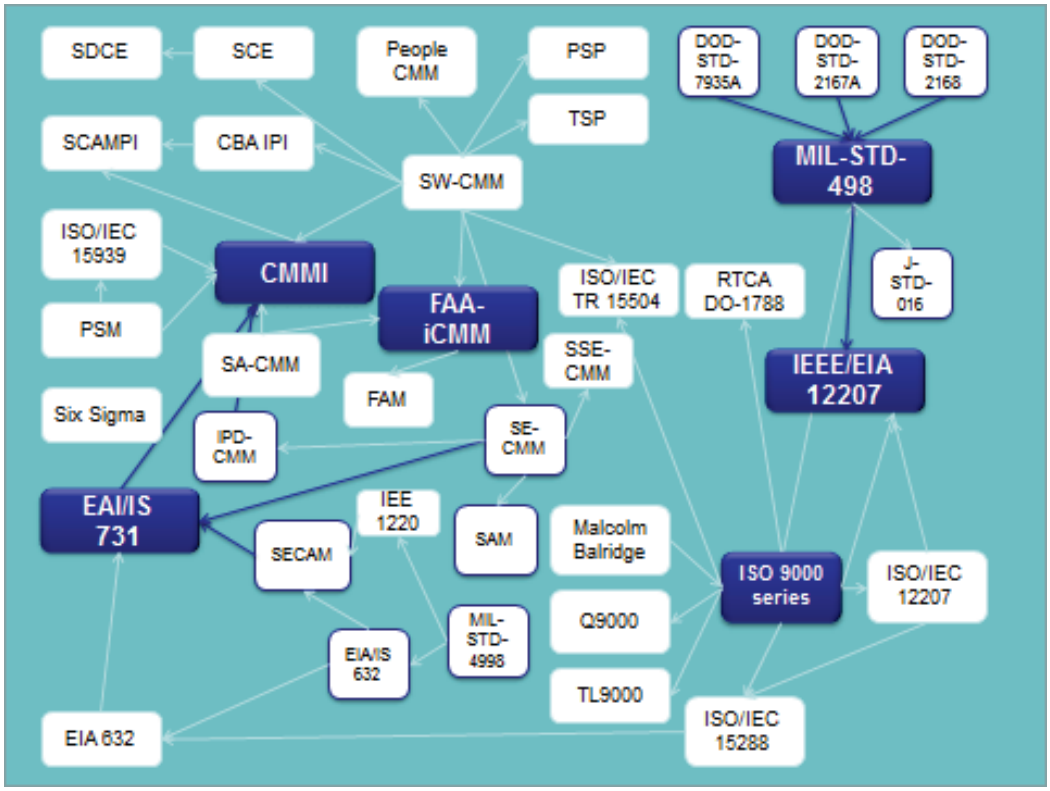
- Initial:
  - Organizations or processes are not defined and the success of projects is not predictable.
- Repeatable:
  - The focus is in processes and some major processes have been defined. Some processes are repeatable with predictable results.
- Defined:
  - All the basic processes have been defined and there is some degree of control over them. The data collection and measurement have begun for helping managing different processes.
- Managed:

- There is much effort in management of processes. Processes have good measures and data has been gathered consistently. Managers can rely on measured data when creating goals or projects.

- Optimized:
- Employees have been taught about processes and how to continuously refine and improve those processes.

Sheard (2001) has presented a frameworks quagmire representing some of the maturity models developed. This is presented in picture 2.

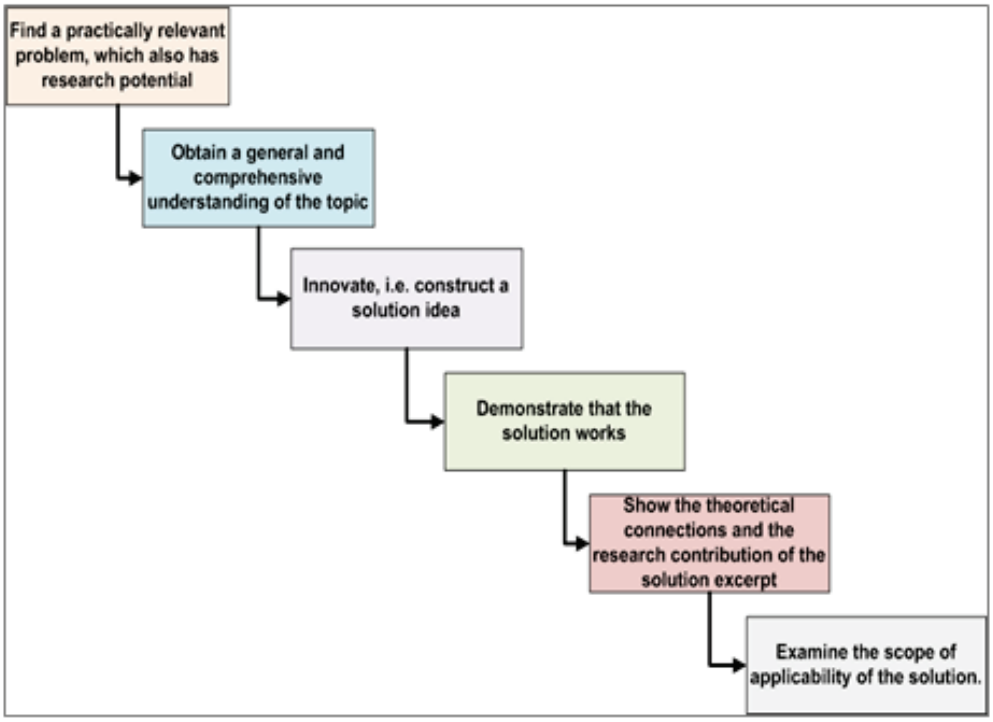
Picture 2: Maturity model frameworks and their relations (modified from Sheard, 2001)



4. EXCELLENCCE MODEL DEVELOPMENT

The research was carried using the constructive research principles and the progress was as described in picture 3. :

Picture 3: Constructive research process



The literature research resulted the factors for the Operational Excellence Model as described in the Table 1.

Table 1: The Process Factors and their literature sources

Process factors	Source
Status of the processes	CMM-I(2009), Hammer (2007), Harmon (2004), OMG BPMM (Weber e tal. 2008)
Employee skills	Fisher (2004), Hammer (2007)
Team work	Fisher (2004), Hammer (2007)
Process management	CMM-I(2009), OMG BPMM (Weber e tal. 2008), Harmon (2004)
Process performance management	CMM-I(2009), OMG BPMM (Weber e tal. 2008), Harmon (2004), Hammer (2007), Fisher (2004)
Process optimization	CMM-I(2009), OMG BPMM, Harmon (2004)
IT systems	Harmon (2004), Fisher (2004), Hammer (2007), OMG BPMM (Weber e tal. 2008)

The model utilizes a 4 level maturity framework following closely the model presented in chapter 3 in all process factors.

The model was first tested with five companies:

Table 2: Case companies of the first model testing

Industry	Level of operational excellence	Level of production	Number of employees
Construction industry		2,2	40
Recycling	3,11	3,2	22
Food	2,89	3,2	17
Food		3	
Food	2,2	2,3	70

After the first test some changes were made to add the user friendliness of the tool.

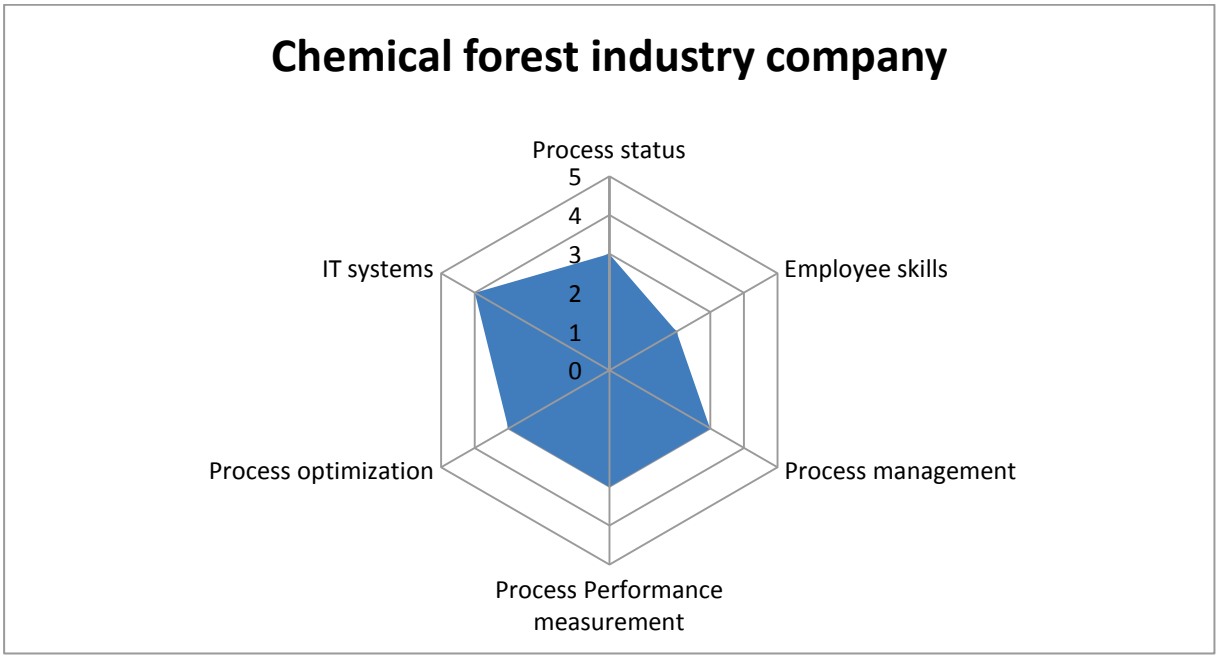
After modifications the model was tested in six different companies from different industries and of different sizes (Table 2). The data collection at each company took less than 2 hours and the results were immediately available.

Table 3: Case companies of the second model testing

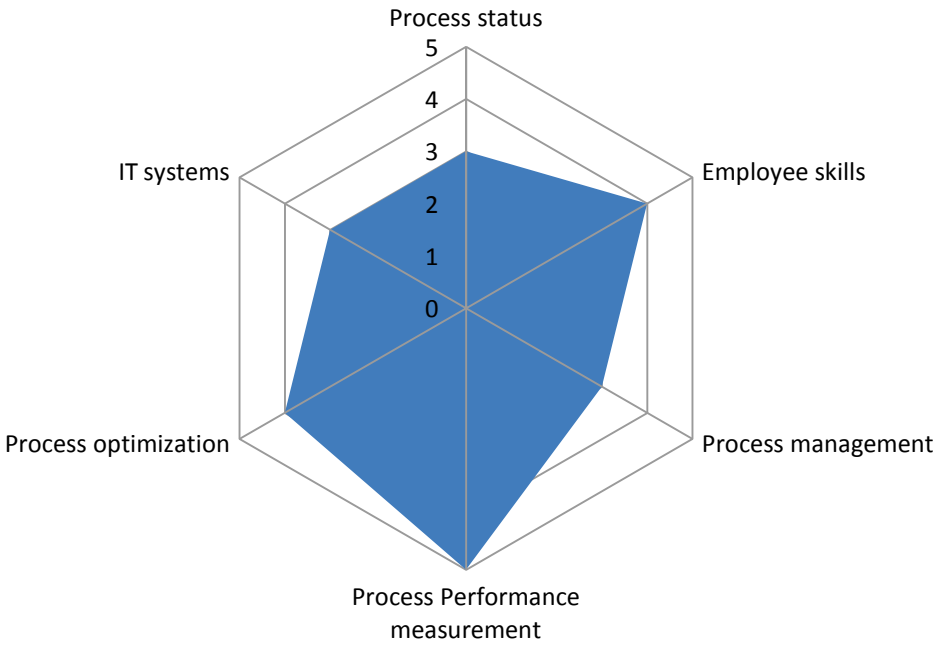
# of the case	Industry
1	Chemical forest industry
2	Mechanical forest industry
3	Small manufacturing company
4	Mid size manufacturing company
5	Large food company
6	Small food company

The result from the tests are presented in picture 4.

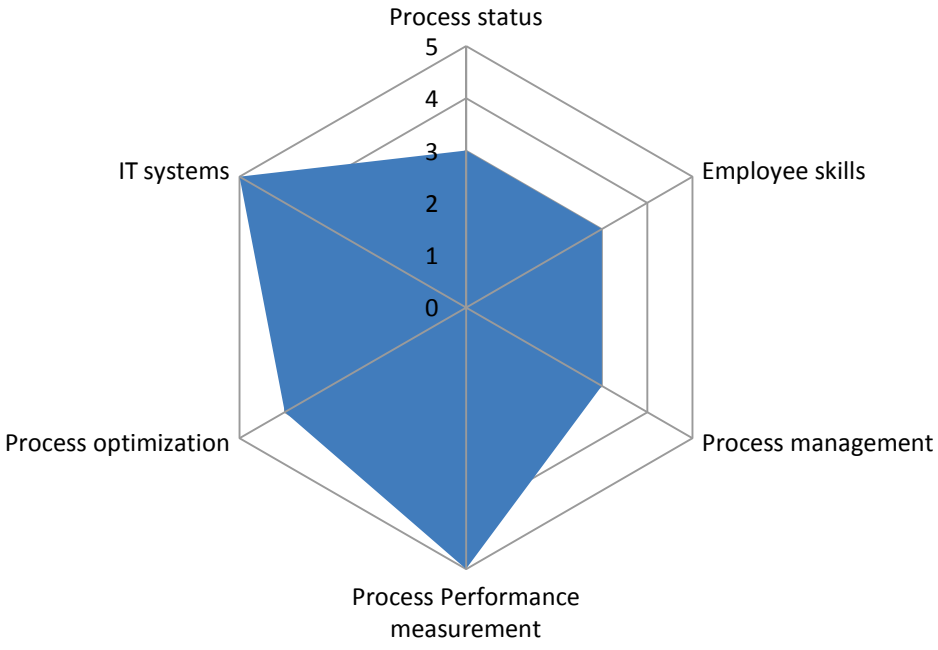
Picture 4: Production excellence results from the case companies

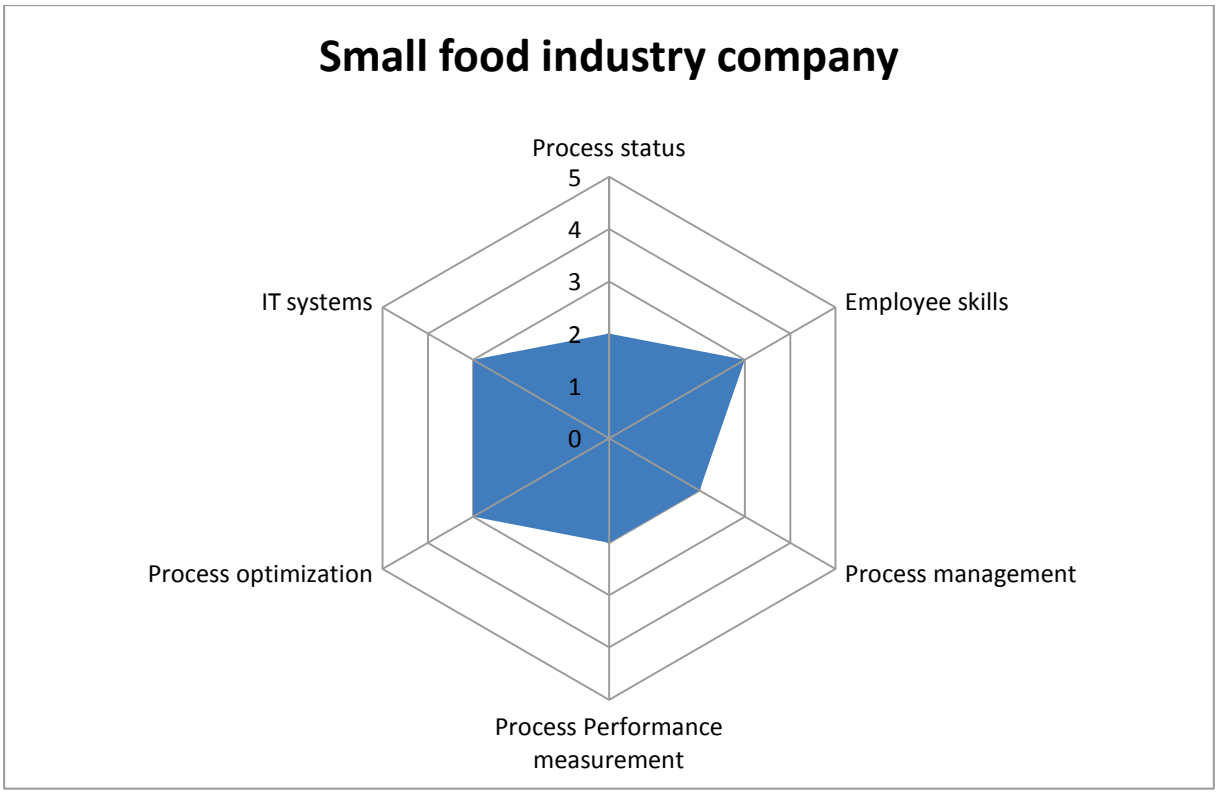


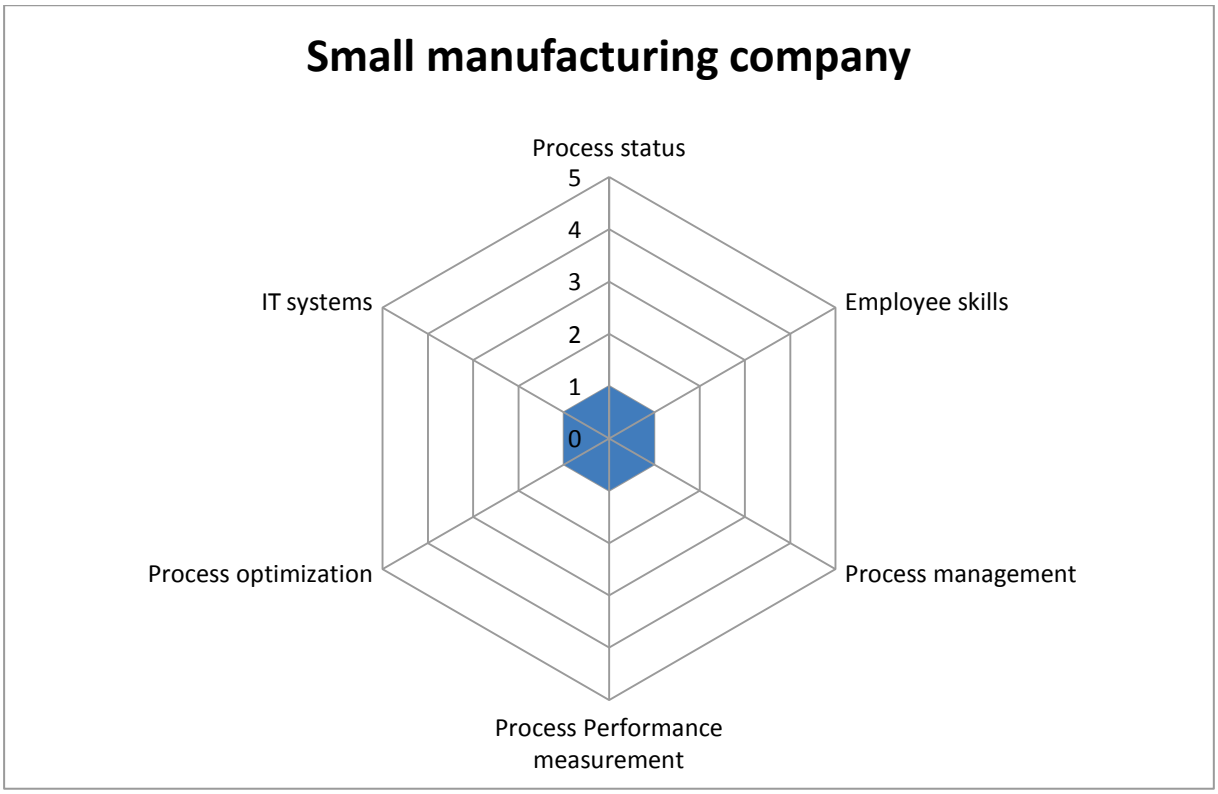
Mechanical forest industry company

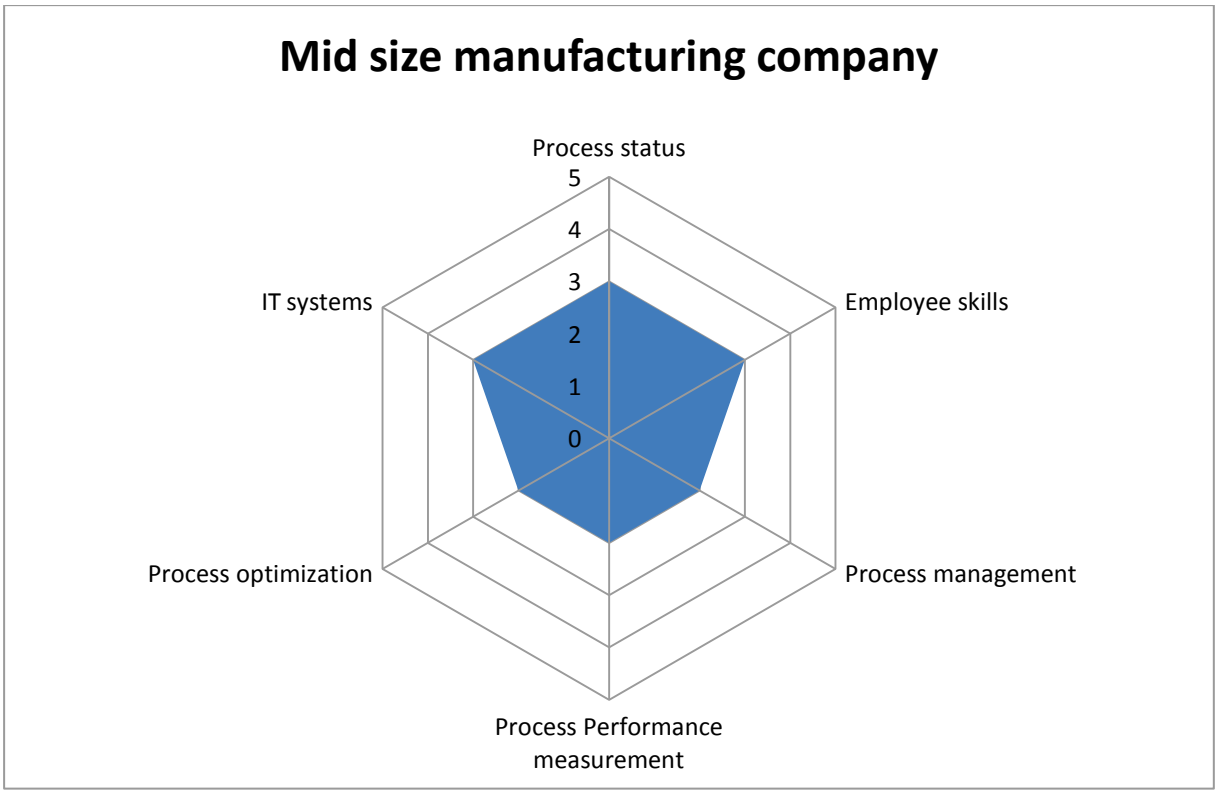


Large food industry company




Small food industry company
Process status
5
4
3
2
1
0
Employee skills
Process management
Process Performance measurement
Process optimization
IT systems


Small manufacturing company
Process status
5
4
3
2
1
0
Employee skills
Process management
Process Performance measurement
Process optimization
IT systems



5. DISCUSSION

In the research an operational excellence model was developed and a tool was created based on the model. The tool was tested in six companies from different industries with different size by number of employees.

The model gives different results based on the maturity of the production operations and at the same time some ideas which way the organization should develop its processes and practices.

Further research is needed to validate the results statistically as well.

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