Regional Joint Doctoral Programme in Entrepreneurship and SME Management

DIGITAL PERFORMANCE OF CLUSTRED FIRMS

Doctoral thesis

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Contents

Abstract

This research explores the power of digital functions in meat processing companies, as a reflection of innovation and cluster models in 21 century.

These days, it is rather difficult to manage large manufacturing businesses, especially in transition countries, without utilization of technology, and further sophisticated technology.

Running a successful processing industry is a huge challenge; one needs to cope with other competitors, respond to customer demands, trying to fill in the gaps in the field, with hurdles arriving at an alarming rate. Technological progress is required to benefit from the productivity of resources, which is what sustains a longer term improvement in living standards.

By using digital models, companies try to reduce their costs. They utilize their infrastructure, technology and resources in order to switch gears quickly with present processes as well as future plans. Digitization makes entities connectable, and economies of scale decrease the marginal cost for the customer, and implementing entities generate concrete new values, eliminate errors and omissions by identifying issues.

Businesses are focused on sales, revenue and profit, thereby making swift access and path to the market critical components of their strategy. All these elements are studied and analyzed through the thesis, and the results are rather amazing.

Key words: cluster, digital models, innovation, performance, human resource.

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Abbreviations

BYOD – Bring Your Own Device

STI – Science, Technology and Innovation

HRM – Human Resource Management

RBV – Resource Based View

SE - Strategic Entrepreneurship

MAFRD - Ministry of Agriculture Forestry and Rural Development

FVA– Food and Veterinary Agency

R&D – Research and Development

MI – Meat industry

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Introduction

The effect of cluster performance in digital business has received considerable attention. In recent years, there have been some papers addressing a few of the topics related to this thesis, however less attention has been paid to meat processing industry worldwide.

Knowledge of clusters and digital models is ofgreat importance for business that focus on production, specially businesses involved in meat processing. The general future of clusters with innovation and their performance is well known. Economists have always been concerned with economic growth. Besides analyzing mechanisms of allocation of scarce resources, economists have also elaborated on what in modern literature is known as growth theory. The growth theory is directly connected with all business activities and interconnected with all other institutions that set forth any procedures for national and international business.

A digital business model describes how each of the activities in your business enterprise will interact digitally with its customers and generate values. A great digital business model will often challenge the status quo in the enterprise (e.g. who can entice customers). Digital models provide valuable support to planning and visualization of the manufacturing system. (Dangelmaier, W., Fischer, M., Gausemeier, J., Grafe, M., Matysczok, C., Mueck, B., 2005).

We have created a framework to help companies determine how they should compete digitally via three capabilities: content, experience and platform (Weill, 2011). However a few challenges, such as limited implementationof such models in many countries, especially in transition countries like Kosovo, remain.

A question arises: will businesses benefit from these studies?

The purpose of this paper is to present the data before and after utilization of technology in production. Based on such findings, one would need to analyze data to find the best technological solutionfor low cost production. The remainder of this paper is divided into 3 chapters. Chapter 1 includesa literature review. Chapter 2 describes the methodology, while Chapter 3 presents the data we obtained from our surveys.

Limitations of research

While our study is a significant contributor in terms of theory and practice, on the other hand it should be acknowledged that there are also several limitations that should be considered.

Firstly, within our study we have used cross-sectional data to empirically investigate the proposed hypothetic models. This requires us to posit that our conclusions are related and valid at one point in time. Indeed, cross-sectional data are criticized for their inability to accept analytical insights.

Secondly, another limitation in data analysis is found in the age of employees, since the engagement of youth in labor processes involving use of technology is rather simpler and more compact when compared to training of older employees in technological processes and equipment.

In this regard, future research that replicates this study and tests the same conceptual model is advised. Additionally, futures longitudinal studies could cross-validate the current findings and provide additional support regarding the causality of the above hypothesis proposed.

Regarding the sample size, our study had 7 cases in Meat industry; while guidelines on minimum sample size for representative results have not been determined, suggestions are that a sample size of at least 40 meat industries is preferred.

Fourthly, within the main objective of this study, we investigated several relationships for the first time, which constitutes a novelty of this study. However, the need for further researches that consider similar investigation in other countries and different periods would be a contribution. In this regard, a future research that replicates this study and test the same conceptual model is advised.

Even though in our study, selection of most significant factors (digital models, innovation, clusters, HR, etc) that affect the cluster (in our case the meat industry cluster) performance was referred from theoretical backgrounds, future efforts in searching for more significant factors affecting cluster performance are advised. This comes as a result of the fact that performance, as a multidisciplinary concept, is determined by large and complex factors.

Statement of originality

I Ermira SHEHU, with ID number 3049, enrolled in academic year 2013/2014 in Faculty of Economy in study programme Entrepreneurship and SMES management developed in cooperation with: University of Bologna, Italy; Universitat Autonoma de Barcelona, Spain; University of Nice, France; South East European University, Republic of Macedonia; University of Tirana, Albania; Agricultural University of Tirana, Albania and Dardania University, Prishtina, Kosovo.

I hereby declare that: dissertation titled: DIGITAL PERFORMANCE OF CLUSTERED FIRMES

Is the result of my own work and includes nothing which is the outcome of work done in collaboration except where specifically indicated in the text and bibliography except by way of background information and duly acknowledged in the thesis, and to the best of my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, or does the thesis contain any material that infringes copyright."

My dissertation is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at other universities or similar institution. I further state that no substantial part of my dissertation has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at any other university of similar institution.

Contibutions of doctoral thesis

The focus of this study was theoretical and practically oriented on SMEs management in digital business models. Addressing the relationships between innovation, human resources practices, customer orientation and their interplay effects on SMEs business performance, undoubtedly contributes to the actual and future researches on this field. Additionally, conclusions on most important factors that influence the success or performance constitutes a contribution in the context of business digital models of MIs. In this line, with managers being more specific about the factors influencing performance, business development plans will inevitably be more concrete and bring increased probability for success.

Apart from the fact that the focus of this study was on MIs and their internal oraganization, results have implications for regional economic development as well. MIs generatesocietal growth in terms of revenues and new jobs, and as a result, well-being of people living in the area.

CHAPTER 1

1. Entrepreneurship

1.1 Definition of entrepreneurship

The contribution of entrepreneurship to regional economic growth, particularly to employment, is well documented in the literature (Acs, Z.J. & Armington, C., 2004) (Braunerhjelm, P. & Borgman, B. , 2004) (Foelster, 2000) (Callejon, M. & Segarra, A., 2000) (Ashcroft, B. & Love, J.H. , 1996) (Keeble, 1990) (Karlsson, C. & Dalherg, R., 2003) suggested that the most important context for entrepreneurship in recent years is the region. According to (Friar, J.H & Meyer, M.H., 2003) a country's economic growth is the sum of the growth of its local economies or regions rather than the local economies being dependant on the national economy. Regions do not contribute equally to national economic growth.

The field of entrepreneurship spans several disciplinary areas. Definitions of entrepreneurship therefore tend to be disciplinary-based (Gartner, 2001) (Herron, L., Sapienza, H.J. & Smith-Cook, D., 1991) each capturing only an aspect of the concept (Low, 2001). Traditionally, the field of entrepreneurship focused on the individual, the entrepreneur, who took the risks associated with transforming opportunities into successful businesses. This school of thought, referred to as the psychological school (Gartner, 1985) failed to identify a set of traits that differentiate entrepreneurs from the rest of the population. Consequently, (Gartner W. , 1990) called for a focus on what entrepreneurs do rather than who they are. Current definitions of entrepreneurship emphasise the processes involved in identifying, evaluating and exploiting opportunities to create new businesses (Schaper, M. & Volery, T., 2004) (Kotey, 2006).[1]

The word entrepreneur dates from the 12th century, and is related to the French word "entrepreneur" who means "Doing something different, undertaken, and act a little differently."

Herron, L., Sapienza, H.J. & Smith-Cook, D. (1991). Entrepreneurship Theory from An Interdisciplinary Perspective. *Entrepreneurship Theory and Practice* , 7-12.

Kotey, B. (2006). Entrepreneurship and Regional Development: A Theoretical Framework . *Small Enterprise Research* , 20-45.

By many definitions will be mentioned: Richard Cantillon, see entrepreneurship as an economic activity under conditions of uncertainty (Cantillon, 1755/1931). Peter Dracker presents entrepreneurship as a business that is organized and carried out in a systematic and effective way (Dracker, 1996)[2]. Treats entrepreneurship as part of their business activities and tasks leading, entrepreneurial management part. According Dracker entrepreneurial economy is cultural and psychological phenomenon, as much as it is economic and technological phenomenon; entrepreneurs see as rule changes as something acceptable welcome and necessary. Harvard Professor Jeff Timmons thinks that entrepreneurs must have "helicopter tune" and should have the ability to deal with everything in detail. Briefly, entrepreneurial culture and economic thinking concept presented as a rare resource, as an agent of social change (and political). Entrepreneur trying to organize tools differently. Entrepreneurship is the main weapon (destruction creative) and systematic innovation. It then connects with the idea and creativity. Creativity and innovation consists in: to see (seeing) something they have seen and done the others; to think (thinking) something that has not thought anybody, and make doing something that has not yet dared to make no one!

Business success will depend on 10% vision, 25% of passion, and 65 percent from sweating. A statistic is a scientifically proven? Definitely not! However, these three critical elements exist not just in the right proportions, failure warning lights start to ignore us. You could start your own business, you may have a vision to get started, but without the passion and dedication to the work necessary to make it active, it drops rapidly. A strong vision is very important, but it is not the only element that is necessary to the success of your business (Goldstein,J. S., Pevehouse, J. C., 2007)

Following the Oxford Handbook of Innovation (Fagerberg. J, Mowery. D.C and Nelson, R.R., 2006), the concept of innovation refers to the putting into practice of inventions. As in the early Schumpeterian tradition, the difference between entrepreneurial behavior and innovation is

[2] Dracker, P. (1996). *Inovacije i Preduzentnishtvo.* Beograd.

Fagerberg. J, Mowery. D.C and Nelson, R.R. (2006). *The Oxford Handbook of Innovation.* Oxford: Oxford University Press.

Goldstein,J. S., Pevehouse, J. C. (2007). *International Relations.* MyPoliSciLab Series

blurred: entrepreneurial behavior is innovative behavior. If one is not innovative, one is not entrepreneurial. There is by now a large literature on firm-level behavior in developing countries, examining firm characteristics, including their economic performance, their innovative performance, their capabilities and their business strategies (e.g. Goedhuys et al. 2008; (Goedhuys, M. & Sleuwaegen, L., 2010). In the Schumpeterian tradition, the entrepreneur is the hero of dynamic capitalism. The entrepreneur typically creates new combinations: new products, new markets, new materials, and new forms of organization (Schumpeter J.A., 1934).[3] Entrepreneurship and innovation are almost synonymous. Along with the traditional factors such as costs, technological product, and process, innovations have become the key to competitiveness and business success. Competition in the global economy has increasingly become knowledge-based.

J.A. Davis (1982) gave a very significant role of innovation to stimulate the family business, developed later by Poutziouris, & Steier ; Sharma & Nordqvist (2008), continuing with theory of the comprising of three system elements, overlapping, interacting, and interdependent subsystems of family, managers, and owners by Hek (et al 2008). Resources play a vital role in the development of an entrepreneurial venture (Desa and Basu, 2013), however due to resource constraints entrepreneurs need to creatively solve the resource shortage issue throughout the entrepreneurial process (Senyard et al., 2011a). Creativity can be defined as an ability that enables the production of novel (i.e. original, unexpected) and appropriate (i.e. useful, adaptive to task constraints) solutions (Sternberg, 1988, Sternberg et al., 2005, Sternberg and Lubart, 1999). Sternberg (Sternberg, 2006) identified several mainstream approaches to interpret creativity in social sciences, including personality or traits, environment or context, motivation, and cognitive ability (e.g. creative problem solving). The determinants of national prosperity remain the subject of lively debate among management and economics scholars (Spencer et al. 2005; Koeller and Lecher 2006; Phelps 2006). Recognizing that growth and national prosperity vary widely across countries, researchers have examined a variety of possible explanations for persistent disparities in national economic performance including differences in resource endowments (Sachs and Warner 1999), geography and climate (Sachs 2000), history (Northand Thomas 1973; David 1985, 1994), government type and political institutions (Weingast 1993;

[3] Schumpeter J.A. (1934). *The Theory of Economic Development.* Cambridge: Harvard University Press.

Borner et al. 1995; Olson 1996), and ethnic cleavages (Alesina et al. 2003), among others. Growth theorists (e.g., Grossman and Helpman 1991) have argued that advances in technology are the primary drivers of growth because technological progress is needed to augment the productivity of resources, which is what sustains long-term increases in living standards. National prosperity can thus be viewed as the by-product of well-directed innovation and the productivity improvements emanating there from. We argue that innovation is a two-stage process, whereby economic creativity precedes innovation implementation. The thrust of our argument is that culture affects innovation and national prosperity because it shapes the way members of a national group think about and behave in regard to risk, opportunities, and rewards as seen in figure below.

Figure 1 – The correlation of culture with creativity and innovation

An entrepreneurial culture develops in an organization where the leaders employ an entrepreneurial mindset. People with an entrepreneurial mindset search for entrepreneurial opportunities existing in uncertain business environments and then determine the capabilities needed to successfully exploit them (Covin & Slevin, 2002; McGrath &MacMillan, 2000). Thus, entrepreneurial culture and entrepreneurial mindset are inextricably interwoven. Some early writers took the view that scientific discoveries were the primary, stimulating force behind innovation. However, because the scientific research community operates to a large extent outside the profit sector of the economy, it is difficult to link industrial innovation to productivity growth and economic outcomes (Grossman and Helpman 1991). (Schumpeter, 1942) Argued analytically and Schmookler (1966) empirically that market forces drive industrial innovation. They argued that it is the expected profitability of inventive activity, reflecting opportunities in the relevant factor and product markets, that determine the pace and direction of innovation. Dosi (1988) and Mowery and Rosenberg (1989) offered a moderating view in which technological

opportunities are created by scientific discoveries and incentives for applied research emerge from market opportunities.[4]

1.2 Entrepreneurship and innovation

Creativity and innovation become a very significant factor of entrepreneurship development of any country. The aim of this chapter is to shed light step further on the phenomena of the innovation based on the construction of clear mindset in creating of the new values as a hope and perspective of new generations. The chapter is based on the early Schumpeter's theory on classic work (1934, 1942), highlighted the importance of creativity and innovation within the context of market dynamics.

Additionally, this chapter highlights the role of the innovation process and creativity in small business development as key factor of development of transition countries as of Schumpeter's arguments that the creative destruction process is a principal agent of change in a society (Morris, 1998).

Over these past 10 years a lot of revolutionary changes happened on the ways of doing business due to information technology advantages. The scientists are trying to find the new modalities to adopt these changes. Big changes of information technology lunched necessity of changing method of doing business. It is a time for creation of new mindset of entrepreneurship development especially in the transition countries. Transition countries should create their own modality of entrepreneurship development and increase their own creativity based on specific needs of theirs costumers. This will be reached throw very advanced education system which includes entrepreneurship education as a priority field. Accordingly, we have witnessed a reassessment of educational methods and approaches used in entrepreneurship education at higher educational institutions (Gibb, 2002) (Kuratko, 2005). As (Boyle, 2007) explains there have been multiple calls for educators at all levels to recognize the challenges and opportunities in today's economy and make the necessary changes to educational programs to ensure that students develop "21st century "skills and abilities including: capabilities in problem solving, innovation and creativity, self-direction and initiative, flexibility and adaptability, critical

[4] Schumpeter, J. (1942). *Capitalism, Socialism and Democracy* . London: George Allen & Unwin.

thinking, and communication and collaboration skills. The content of the chapter is mostly based on an overview of the concept of innovation, creativity and strategic entrepreneurship.

Creativity is multifaceted and multidimensional. It was identifying three interrelated types of creativity:

(1) Technological creativity or innovation,

(2) Economic creativity or entrepreneurship, and

(3) Artistic and cultural creativity.

It was argue that these three types of creativity are mutually dependent. In order to generate entrepreneurship (evident in higher rates of new business formation), a region must create conditions that stimulate innovation, arts, and culture. The three types of creativity stimulate and reinforce one another. The first empirical studies on innovation have taken as a point of departure the investment in R&D by industry or at the country level as a percentage of the GDP and as output the number of patents. These studies hypothesize a positive relationship between investment in R&D and economic growth. For instance, Lichtenberg (1992) and Eaton & Kortum (1993) found that the level of R&D expenditure and the number of scientists and engineers were significant factors for explaining the income level of a country. (Veciana, 2008).[5]

Another process is increasingly seen as important determinate of organizational creativity and innovation. This process is known as knowledge management. Along with knowledge workers, knowledge management can be important competitive advantage (Henard and McFadyen, 2008). Knowledge can be divided among three main domains:

1) Acquired knowledge,
2) Unique knowledge, and
3) Creative knowledge. (Henard and McFadyen, 2008).

It is notorious that we live in the knowledge society. The deep technological changes that have taken place in the last decades have produced a qualitative change in the economic structure of

[5] Veciana, J. M. (2008). Creativity, Innovation and Entrepreneurship: its interrelations and impact on economic growth and development in the knowledge society. *Universitat Autònoma de Barcelona* , 1-16.

the industrialized countries. In the economic scene we witness both a globalization and a localization or regionalization of the economy.

An extension of Schumpeter's arguments is that the creative destruction process is a principal agent of change in a society (Morris, 1998). It thus emerges localization or regionalization as a cross-current to globalization. Innovation, creativity, and new firm formation are closely interrelated.

Joseph Schumpeter in his Theory of Economic Development (1912) considered the entrepreneur's task and capacity to realize new combinations of the production factors, i.e. innovation, as the basis of his theory. And Arrow (1962) pointed to the relationship between economic welfare and the resources as-signed to innovation.

On the other hand, Jewkes and his colleagues (1958) concluded that in the XIX century the relationship between science and invention was much closer than generally believed.

Since Solow (1956) based his model of economic growth on the neoclassical production function with its key factors of production, capital and labor, this model has served as a basis for explaining the determinants of economic growth. Romer (1986) and Lucas (1988) criticized Solow's model arguing that in his model an important factor of production was missing, i.e. knowledge.

The first empirical studies on innovation have taken as a point of departure the investment in R&D by industry or at the country level as a percentage of the GDP and as output the number of patents. (Shane, 1992)[6], (Shane, 1993) found that power distance was negatively related to patents (a measure of economic creativity) and trademarks (a measure of innovation implementation) across nations. We used three items to capture the concept of economic creativity: patents, scientific publications, and R&D spending. We follow the prior economics literature (Hausman, J., Hall, B., & Griliches, Z., 1984) and define Patents as the number of successful patent applications made in a given year. Patents are widely used in the empirical literature as a proxy for economic creativity (Levin, R., Klevorick, A., Nelson, R., & Winter, S. , 1987), (Acs, Z., & Audretsch, D., 1989), (Mazzoleni, R., & Nelson, R., 1998), (Acs, Z., Anselin,

[6] Shane, S. (1993). Cultural influences on national rates of innovation. *Journal of Business Venturing* , 59–73.

L., & Varga, A. , 2002), (Cohen, W., Goto, A., Nagata, A., Nelson, R., & Walsh, J., 2002). Because patents codify the creation, retention, and transfer of knowledge (Jaffe, A., & Trajtenberg, M., 2002), (Argote, L., McEvily, R., & Reagans, R., 2003) they allow myriad theories of innovation and technology management to be tested.[7]

The pace of researches regarding the innovation increased in this century. The meaning of concepts evolved up to the general changes of society and technological development as we can see from the definitions on table below:

Table 1 – Definition of Innovation

DEFINITION OF INNOVATION	
(Camagni, 2002)	The innovation environment is, however, facing remarkable challenges where regions have to maintain and develop their well-being in global competition under the rules of absolute competitiveness
(Rogers E. M., 2003)	Innovation is defined as an idea, practice or object perceived as new by an individual or other unit of adoption
(Saviotti, P. P., Pyka, A., 2004)	Fundamentals of the innovation theory covered the technological, economic and socio-cultural innovations.
(Goswami, S. & Mathew, M., 2005)	Innovation is regarded as a major source of an organization's competitive advantage.
(Borins, 2006)	The idea that innovation could be the solution to the challenges that the public sector faces is relatively new and only goes back a few decades
(Uzor, 2009)	Innovation refers to the process of bringing new ideas into use
(Piperopoulos P. G., 2011)	We are now in a Third Industrial Revolution, characterized by rapid advances in robotics, computers, software, biotechnology; new materials and microelectronics … in the Third Revolution markets are global, rather than national.
(Ozusaglam, 2012)	Innovation has been long been considered as a subject of the utmost importance in the managerial and economic literature. At

[7] Argote, L., McEvily, R., & Reagans, R. (2003). Managing knowledge in organizations: An integrative framework and review of emerging themes. *Management Science* , 571–582.

	the level of an economy, innovation is considered as one of the most important factors leading to development, growth and competitiveness. At the firm level, innovation, because its focus is on change and on the creation and/or commercialization of novelty, requires specific, flexible forms of management.
(Aghion, P., Van Reenen, J. and Zingales, L., 2013)	Higher institutional ownership leads to greater innovation
(Talukder, 2014)[8]	Innovation offers the potential for substantially improving the performance of organizations, such as businesses in the global economy.

Our third measure of economic creativity is research and development spending (R&D). Innovation and technology management researchers often use R&D expenditure as a proxy for innovation.

The management systems also include the human resources policy, specially the recruiting, training and motivation of the employees that is considered nowadays as the most important factor in the re-source based view of the firm.

Much often we find cases of truly creative ideas that had never arisen because they were choked due to lack of funds. Because of firm's policies of annual budget distribution, acquiring funds on time is often seen as almost impossible endeavor. (Andrews, 2006).

Creativity is increasingly important, especially for companies operating in markets with multiple opportunities to differentiate goods and services (Barney & Arikan, 2001). Defined as ". . . an approach to work that leads to the generation of novel and appropriate ideas, processes, or solutions" (Perry-Smith & Shalley, 2003: 90), creativity is a continuous process rather than the outcome of single acts. Creativity skills include the ability to manage diverse matrices of information, to suspend judgment as complexity increases, to recall accurately and to recognize

[8] Talukder, M. (2014). *Managing Innovation Adoption : From Innovation to Implementation.* Surrey, England: Gower Applied Research .

patterns of opportunities (Smith & Di Gregorio, 2002).Creativity is the basis for innovations and is supported when resources are managed strategically.

Barney and Arikan (2001) suggested that there is a close, although not fully specified relationship between theories of competitive advantage and theories of creativity and entrepreneurship. Understanding the complementarily between entrepreneurship and strategic management provides promising avenues for researchers examining how organizations create wealth. Although, both entrepreneurship and strategic management are concerned with wealth creation, their foci differ slightly. Herein, we extend previous work on the recently proposed strategic entrepreneurship (SE) construct (Hitt, Ireland, Camp, et al., 2001, 2002; Ireland et al., 2001) to contribute to our understanding of how firms can use SE to create wealth. We first review the scope of the entrepreneurship and strategic management disciplines and emphasize the value of integrating areas within them. Secondly, we examine the four distinctive dimensions of SE—an entrepreneurial mindset, an entrepreneurial culture and entrepreneurial leadership, the strategic management of resources and applying creativity and developing innovation.

(Ireland, 2003)[9]

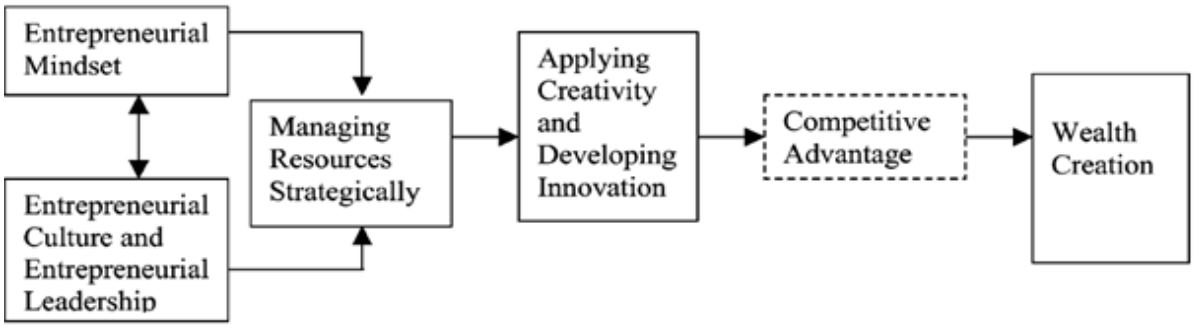

Figure 2 – Model of strategic entrepreneurship

This integrationist important because it addresses how combining and synthesizing opportunity seeking behaviour and advantage-seeking behaviour leads to wealth creation. The framework of

[9] Ireland, R. D. (2003). A Model of Strategic Entrepreneurship: The Construct and its Dimensions. *Journal of Management* , 963–989.

(Man, T.W.Y., T. Lau & K.F. Chan, 2002)[10] is founded upon a multi-dimensional conceptualization of the competitiveness of SMEs, including the performance dimension, potential dimension and process dimension, developed from earlier studies of competitiveness (Oral, 1986) (Feurer, R. & K. Chaharbaghi, 1994) (Buckley, P.J., C.L. Pass & K. Prescott. , 1988). In particular, the influence of the entrepreneur is considered as critical and this is addressed through the competency approach. Entrepreneurial competencies are related to managerial competencies, articulated in the works of (Boyatzis, 1982). The competency approach has become an increasingly popular means of studying entrepreneurial characteristics (For example, (Baum, 1994) (Bird, 1995) (Baron, R.A. & Markman, G.D. , 2003) (Chandler, G.N. and E. Jansen. , 1992) (Lau, T., K.F. Chan & Man T.W.Y., 1999) (Martin, G. & Staines, H., 1994) (McGregor, J., D. Tweed, D. Kolb & Henley-King, J., 2000) (Schmitt-Rodermund, 2004). According to (Bird, 1995), competencies are seen as behavioural and observable, and therefore are more closely linked to performance than are other entrepreneurial characteristics such as personality traits, intentions or motivations (Herron, L. & Robinson, R.B., 1993) (Gartner, W.B. &. Starr, J.A, 1993). Moreover, as with attitudes (Robinson, R.B., D.V. Stimpson, J.C. Huefner and H.K. Hunt, 1991), competencies are changeable and so the development of entrepreneurship becomes more feasible. In (Man, T.W.Y., T. Lau & K.F. Chan, 2002), six major areas of entrepreneurial competencies are categorized as relating to an SME context:

1) Including opportunity,
2) Relationship,
3) Conceptual,
4) Organizing,
5) Strategic, and
6) Commitment competencies.

They are supposed to play different roles in affecting an SME's performance with their direct and indirect effects. In fact, central to the framework are the relationships between these

[10] Man, T.W.Y., T. Lau & K.F. Chan. (2002). The Competitiveness of Small and Medium Enterprises: A Conceptualization with Focus on Entrepreneurial Competencies. *Journal of Business Venturing 17, no. 2* , 123–142.

entrepreneurial competencies and other constructs of competitiveness, including competitive scope, organizational capabilities and the performance of the firm, which together address different dimensions of SME competitiveness.

These relationships are conceptualized as three principal "entrepreneurial tasks," including

(1) Forming the competitive scope of the firm;
(2) Creating the organizational capabilities; and
(3) Setting goals and taking action.

In other words, by making appropriate use of his or her competencies, an entrepreneur can perceive a widened competitive scope such as more opportunities for innovation, business growth, and the provision of new services or products. From available resources, he or she can also develop better organizational capabilities such as the firm's innovative capability, cost-saving ability, quality and flexibility. Finally, he or she can plan and work towards a firm's long-term performance, along with the available competitive scope and organizational capabilities. (Man, Th.W.Y., Lau, Th., & Snape, E, 2008).[11]

1.3 The influence of clusters in entrepreneurship

For many years, academic papers explained the entrepreneurial activities abstracting completely the spatial factors. Recently, the consideration of environmental factors in a broad sense, including spatial proximity and features of the regional environment, is becoming more and more widespread and popular. The totality of individual entrepreneurial activities in a particular region determines the entrepreneurial activity of the region. Not only intraregional environmental factors influence entrepreneurial activities. (Reveiu, A. & Dardala, M., 2012)

According to (Feldman, M.P., Francis, J., Bercovitz, J. , 2005), the factors that determine the start-up decision of an individual (entrepreneurial activity) are not identical to those that determine the start-up success and that this success of start-ups is dependent also on the characteristics of its regionally bound determinants. Because entrepreneurs are essential agents

[11] Man, Th.W.Y., Lau, Th., & Snape, E. (2008). Entrepreneurial Competencies and the Performance of Small and Medium Enterprises: An Investigation through a Framework of Competitiveness. *Journal of Small Business and Entrepreneurship 21, no. 3* , 257–276.

of innovation, a strong cluster environment should foster entrepreneurial activity (Delgado, M., Porter, M.E., Stern, S., 2010).[12]

Entrepreneurship is defined as the creation of new ventures (Ireland D R, Reutzel C R, Webb J W,, 2005). In a Schumpeterian perspective, entrepreneurs are viewed as innovators combining in idiosyncratic ways heterogeneous production factors (e.g. capital, workforce, technological knowledge) and, by so doing, creating a new product, a new production method, a new market or a new supply chain (Schumpeter J.A., 1934).

1. Identify goods or services customers want.
2. Perceive unmet consumer needs.
3. Actively look for products or services that provide real benefit to customers.
4. Seize high-quality business opportunities
5. Develop long-term trusting relationships with others.
6. Negotiate with others.
7. Interact with others.
8. Maintain a personal network of work contacts.
9. Understand what others mean by their words and actions.
10. Communicate with others effectively.
11. Apply ideas, issues, and observations to alternative contexts.
12. Integrate ideas, issues, and observations into more general contexts.
13. Take reasonable job-related risks.
14. Monitor progress toward objectives in risky actions.
15. Look at old problems in new ways.
16. Explore new ideas.
17. Treat new problems as opportunities.
18. Plan the operations of the business.
19. Plan the organisation of different resources.
20. Keep the organization run smoothly.
21. Organize resources.

[12] Delgado, M., M.E. Porter, & S. Stern. (2010). Clusters and entrepreneurship. *Journal of Economic Geography* , 495-518.

22. Coordinate tasks.
23. Supervise subordinates.
24. Lead subordinates.
25. Organize people.
26. Motivate people.
27. Delegate effectively.
28. Determine long-term issues, problems, or opportunities.
29. Aware of the projected directions of the industry and how changes might impact the firm.
30. Prioritize work in alignment with business goals.
31. Redesign the department and/or organization to better meet long-term objectives and changes
32. Align current actions with strategic goals.
33. Assess and link short-term, day-to-day tasks in the context of long-term direction.
34. Monitor progress toward strategic goals.
35. Evaluate results against strategic goals.
36. Determine strategic actions by weighing costs and benefits.
37. Dedicate to make the venture work whenever possible.
38. Refuse to let the venture fail whenever appropriate.
39. Possess an extremely strong internal drive.
40. Commit to long-term business goals.
41. Learn from a variety of means.
42. Learn proactively.
43. Learn as much as I can in my field.
44. Keep up to date in my field.
45. Apply learned skills and knowledge into actual practices.
46. Maintain a high energy level.
47. Motivate self to function at optimum level of performance.
48. Respond to constructive criticism.
49. Maintain a positive attitude.
50. Prioritize tasks to manage my time.
51. Identify my own strengths and weaknesses and match them with opportunities and threats.
52. Manage my own career development.

53. Recognize and work on my own shortcomings.

2. Clusters

2.1 Definition and concept of clusters

The cluster's influence on competition depends on the maturity of the economy -- the more advanced the economy, the larger role of clusters in shaping competitive advantage and the larger number of clusters.

Clusters' activities contribute to improvement of the competitive position of a region by:

- Increasing productivity of participating firms and/or industries;
- Enhancing their capacity for innovation and this way sustaining productivity growth;
- Mobilizing new business formation, innovation and cluster expansion (Porter M. E., 1998)[13]

Clusters are a natural manifestation of the specialised knowledge, skills, infrastructure and supporting industries in enhancing productivity as the key determinant of sustaining high levels of prosperity in a location. A combination of supplier relations, common labour markets, rivalry, knowledge spillovers and learning effects, affect the economic environment that companies face in clusters. (Ketels, C.H.M. & Memedovic, O., 2008).

The definition of clusters builds on three key pillars. The first pillar is *geography*. Clusters are driven by proximity and are often concentrated in a region within a larger nation, and sometimes in one town. The second pillar is *value creation*. Clusters include companies in different industries that are related to each other in the production of goods and services valued by customers. The third pillar is the *business environment*. Clusters are affected by cluster-specific business environment conditions resulting from individual actions as well as cooperation of companies, government agencies, universities and other institutions in the national and regional innovation system (Lundvall, 1988) (Lundvall B. , 1993) (Freeman, 1995) (Edquist, 1997) (Cooke, P. & Morgan, K. , 1998) (Cooke, P., Boekholt, P. & Tödtling, F. , 2000) (Cooke, 2001).

[13] Porter, M. E. (1998). Clusters and the new economics of competition. *Harward Business* , 77-90.

In addition, clusters are important dimensions of strong business environments. (Ketels, C.H.M. & Memedovic, O., 2008).[14]

Improved productivity within clusters is taking place in the following ways:

- by providing high quality, reliable and low-cost inputs ("local" versus "distance" outsourcing)
- by easy, trustful and relatively cheap access to information (proximity, face-to-face communication)
- by facilitating complementarities between activities of cluster members (e.g. driving up the quality standards, sharing educational, R & D, marketing and PR capacities)
- by providing access to public or quasi public goods (below the full costs, e.g. trained labor)
- by providing stronger incentives and better performance measures than vertically integrated firms by reducing operational and transaction costs (local rivalry, peer pressure, accumulated knowledge in local financial institutions)

A cluster is 'a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities' (Porter M. E., 1998).

Several directions are outlined in the studies – clusters are examined as the drivers of competition, innovation, and regional development (Garanti, Z.& Zvirbule-Berzina, A., 2013). Clusters enable companies to easily access important resources, reduce transportation costs, and access consumers and labour (Marshall, 2009), (Porter E. M., 2000) (Krugman, 1991), which, according to several authors (Dumais, G.; Ellison, G.; Glaeser, E. L., 2002), is the dominant factor nowadays, as well as to reduce transaction costs and access specialized services (Scott, 1988) (Scott, A. J., 1994) (Scott, A. J.; Angel, D. P., 1987), infrastructures, and a competitive business environment (Lin, C. H.; Tung, C. M.; Huang, C. T., 2006), which leads to increases in efficiency and productivity. A company's wish to operate in a cluster may be associated with easier access to information and lower business start-up barriers (Lin, C. H.; Tung, C. M.; Huang, C. T., 2006) and with the existing cooperation links with suppliers and buyers, which

[14]Ketels, C.H.M. & Memedovic, O. (2008). From clusters to cluster-based economic development. *Technological Learning, Innovation and Development* , 375-392.

facilitates the commercialization of products (Ketels, 2003) (Garanti, Z., Zvirbule-Berzina, A & Yesilada, T., 2014).[15]

The term business cluster, also known as an industry cluster or competitive cluster, was introduced and popularized by Michael Porter, a professor at Harvard Business School. "Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs such as components, machinery, and services, and providers of specialized infrastructure. Clusters also often extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies, or common inputs. Finally, many clusters include governmental and other institutions – such as universities, standards setting agencies, think tanks, vocational training providers, and trade associations – that provide specialized training, education, information, research, and technical support." (Porter M. E., 1998)

2.2 The role and importance of the clusters

During this chapter we will try to present different approaches about the cluster and their role in economy development. Basically in this paragraph we are trying to count some important facts that influence cluster development and show to us the role and importance and impact of this managing model in economy development lifecycles.

Cluster-based development approach is not a generic approach that can just be implemented; it requires many fact-driven decisions on where to focus and what to focus, and that can only be made with proper local data; in addition a country needs to define a cluster development action agenda. First, creating a sound fact and knowledge base to guide cluster-based policies is the priority.

Among the concrete activities in this area, the following are important:

• *Mapping of existing clusters*: It is important to understand revealed regional patterns of specialisation, how deep they are, what profile they have, and what role they play in the regional

[15] Garanti, Z. & Zvirbule- Berzina, A. (2014). Regional cluster identification in food manufacturing industry in Latvia . *Journal of Business Management* , 135-145.

economy. The mapping can be done using internationally validated cluster definitions and detailed regional and industry-specific data on employment, productivity and the like. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Evaluation of regional business environments*: Especially in a context where few clusters exist, it is critical to understand the profile of strength and weaknesses that individual regions in the country can provide. This enables the identification of clusters that could emerge in a specific region and it makes it possible to guide targeted business environment upgrading efforts. Survey and hard-data-based methods for such business environment assessments are available and have been used in many parts of the world, including the Arab region. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Creation of a 'Competitiveness Observatory' to track competitiveness and cluster development over time*: Early on there should be a focus on the regular and neutral assessment of how the business environment and the clusters in the specific country are developing. Such information will provide discipline to sustain efforts, will inform about remaining or new priorities, and will be a contribution to upgrading the institutional capacity of a country. (Ketels, C.H.M. & Memedovic, O., 2008).[16]

• *Financial and technical support for cluster initiative administration (not their activities):* Funding should be made available for the provision of a cluster initiative tool box, for diagnostic and impact assessment tools, for office space and cluster initiative manager and for the training of cluster facilitators. These investments will be moderate in size but are critical to reach a high level of effectiveness in cluster efforts. Second, a cluster development action agenda should set demanding but realistic objectives to be achieved in different parts of the economy. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Analyses of the present clusters*: Is strong base of activities present in the cluster and are the cluster-specific business environment conditions generally positive? The aim of cluster development in the specific area should be to raise economic returns. As an action step public–private cluster groups (national plus regional in top locations) should be launched to develop

[16] Ketels, C.H.M. & Memedovic, O. (2008). From clusters to cluster-based economic development. *Technological Learning, Innovation and Development* , 375-392.

region-specific action priorities to raise productivity and enhance value-creation beyond sole export of the existing activity. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Emerging export-oriented clusters with existing base*: In these clusters, there is a base of activities and some cluster-specific business environment advantages. The aim is to strengthen through triggering positive cluster effects, leading to higher economic returns in the medium-term. Projects should be launched to map specific regional clusters and their cluster-specific business environments in detail to see what is missing in the cluster and which business environment aspects can be leveraged better. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Clusters serving the local market (retail, finance, construction, health)*: In these clusters, there is also a base of activities serving local demand. The objective here is to raise productivity, enhance job creation and lead to new company formation. As a first step, projects should be launched to map key barriers to growth in these areas (including market power by existing business groups dominating such markets). (Ketels, C.H.M. & Memedovic, O., 2008).

• *Other emerging/potential clusters*: Here the base will be small or non-existent. A realistic aim will be to launch initiatives for portfolio of regional cluster to develop that might lead to some economic results and will provide experience in private–public collaboration.

A competition should be launched for potential cluster initiatives (needs to have a clear cluster focus and cover at least two of the following three groups: companies, universities, regional government agencies) so that the best (not all!) development plans get funding. Four areas have significant potential for improving economic policy programmes through a cluster focus, and every developing country can draw on other country experience in these fields. (Ketels, C.H.M. & Memedovic, O., 2008).

• *FDI attraction*: By marketing specific regional clusters to foreign investors the likelihood of success is higher. Attracting foreign investors seeking complementary clusters is especially important in the GVC context. Foreign investors can be invited into partnership programmes to develop clusters of supporting and related industries around them. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Economic cities/industrial zones/technology zones*: Designating specific locations for specific clusters provides these clusters with a clear profile and sets detailed demands for their business environment qualities. These qualities can then be marketed to the relevant group of companies, leading over time to the cluster being the attraction, not the specific infrastructure in the economic city or zone. Already in the conception phase, work needs to be done with companies in such clusters to identify their needs beyond a physical infrastructure. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Skill upgrading*: Organising cluster-specific working groups with companies and cluster-relevant educational organisations to launch targeted skill upgrading programmes has proved powerful in many locations. It should be used in a country to supplement the current policies for increasing job opportunities. (Ketels, C.H.M. & Memedovic, O., 2008).

• *Small and Medium-sized Enterprises (SME) support (finance, technical assistance):* Support programmes for companies can be focused on those that are part of a regional cluster to raise impact. Clusters can be used as a platform to reach groups of companies more efficiently. Existing anchor companies can be enlisted in programmes to develop SMEs and create better linkages towards them. (Ketels, C.H.M. & Memedovic, O., 2008).

Finally, a country will only reach its ambitions of economic progress if it creates an overall business environment that is more supportive to cluster development. The following policy areas are example for the changes that need to occur over time. It will be important to sequence these reforms in line with improving institutional capabilities to implement them. (Ketels, C.H.M. & Memedovic, O., 2008).

Inductively, like all other local production systems, clusters consist of multiple juridical independent inter-related agents forming groups and coalitions and various hybrid coordination forms. To tell clusters from other local systems, they are inductively ascribed a set of features typical of more successful economic systems of the given period (as a rule, of the most competitive economies of capitalist type). In our opinion, the better part of research (starting from Porter) demonstrates the approach that could be summed up in five major principles :

Firstly, the geographical concentration of the institutions forming the cluster profile;

Secondly, the competitive basis for the general type of economic activity and competition between companies (creation of a dynamic network of interior suppliers);

Thirdly, cooperation between companies going both vertically and horizontally, alongside the formation of specialized economic and market infrastructure;

Fourthly, common communication policy (information and advertising strategy) aimed at popularization of the brand;

Fifthly, competence of human resources in a specialized cluster in a given geographical area. In other words, the concept of cluster should embrace a local production system enjoying all the above mentioned characteristics. (Gareev, 2012)[17]

2.3 Theoretical treatment of cluster development

Clusters provide a vehicle to bring companies, government, and local institutions together in a constructive dialogue about upgrading, offering a new mechanism for business-government collaboration. Initiatives to organize cluster participants, assess cluster advantages and disadvantages, and catalyze public and private action have become numerous at the national, state, and city levels. Cluster initiatives provide a new way of organizing economic development efforts that go beyond traditional efforts to reduce the cost of doing business and enhance the overall business environment. By focusing on clusters, firms often are much more interested and engaged than they are in broad efforts that must necessarily gravitate to general issues such as tax policy and export promotion. Business-government-university dialogue moves to a more concrete level at which action can be taken. Cluster initiatives not only can bring focus to questions of government policy but also can reveal and help to address these issues within the private sector. (Porter E. M., 2000)

Successful cluster initiatives have a number of common characteristics:

° A shared understanding of competitiveness and the role of clusters in competitive advantage. Productivity and innovation--not low wages, low taxes, or a devalued currency--are the

[17] Gareev, T. R. (2012). Theoretical and Methodological aspects of Innovative economic development. *Immanuel Kant Baltic Federal University* , 4-24

definition of competitiveness. Participants understand the influences on productivity as well as the role and importance of clusters in productivity enhancement. Early and ongoing communication and discussion educate cluster participants about competitiveness and help to shift mind-sets. (Porter E. M., 2000)[18]

° A focus on removing obstacles and easing constraints to cluster upgrading. Explicit upfront discussion of goals at the beginning of a cluster initiative, followed by regular reinforcement of these goals, helps to overcome the urge to seek subsidies or limit competition. The presence of suppliers and customers in the cluster process provides a natural check on these tendencies. Some participants might cling to the status quo and join the cluster initiative only to influence its efforts in that direction. Successful cluster initiatives remain alert against these tendencies. (Porter E. M., 2000)

° A structure that embraces all clusters in a nation or state. Setting priorities not only is bad economics, it disenfranchises large parts of the private sector. Successful cluster initiatives include traditional clusters (e.g., agriculture, tourism) and even declining clusters. They include both emerging clusters and established ones. To avoid misguided attempts at creating clusters that have no assets on which to build, emerging clusters should have demonstrable local foundations and bases of firms that have met market tests. Practical considerations might require the sequencing of cluster projects, but early clusters where work is undertaken should involve a representative spectrum of the types of clusters present (e.g., a traditional cluster, an emerging cluster, and a declining cluster) and should strive to demonstrate the value of the cluster approach. Careful choices early on help to disseminate the concepts and processes to clusters that will be included in the later initiatives. (Porter E. M., 2000)

° Appropriate cluster boundaries. By definition, clusters include industries and institutions with important linkages or spillovers rather than broad sectors (e.g., manufacturing, high tech) or individual industries (e.g., plastic machinery, Italian restaurants). Cluster boundaries should reflect economic reality, not necessarily political boundaries. In the Atlantic provinces of

[18] Porter, E. M. (2000). Location, competition, and economic development: local clusters in global economy. *Sage: Economic Development Quarterly* , 15-34.

Canada, for example, several clusters cross provincial borders, and the cluster initiative there was structured accordingly. (Porter E. M., 2000)

° Wide involvement of cluster participants and associated institutions. Cluster initiatives should include firms of all sizes as well as representatives of all the important constituencies. Excluding individuals, even (or especially) difficult ones, invites opposition. Although any effort might have its share of skeptical, parochial, self-serving, and opportunistic individuals, the most successful cluster initiatives make an effort to reach out and educate them. Individuals who then choose not to participate have fewer grounds for criticizing or opposing recommendations. Ultimately, cluster initiatives must carry on with those who are willing to work to improve conditions for all. (Porter E. M., 2000).

° Private sector leadership. Active government participation in a privately led effort, rather than an initiative controlled by government, will have a better chance of success. Companies usually can better identify the obstacles and constraints (as well as the opportunities) in their paths than can government. Letting the private sector lead also reduces the initiative's political content while taking advantage of the private sector's often superior implementation ability. Cluster initiatives should be as nonpartisan as possible and should remain independent of any party or administration's political agenda. Legislators and the executive branch, the opposition parties, and those in power all must be involved. Ideally, the cluster initiative will take place through an entity independent of government. Otherwise, promising efforts might be dropped when a new government takes office (d'Andorra, 1993). [19]

° Close attention to personal relationships. In itself, the presence of an established or emerging cluster does not guarantee functioning cluster linkages. Many of the benefits of clusters flow from the personal relationships that facilitate linkages, foster open communication, and build trust. Information is essential to productivity, and relationships that improve its flow will endure and even strengthen after a cluster project ends. Instigating communications is the essence of successful cluster initiatives. Neutral facilitators often help with this where trust is lacking and relationships are undeveloped. From the outset, major efforts will be required to ensure efficient and regular communication, both internal and external. Successes should be widely publicized.

[19] d'Andorra, G. (1993). *Andorra pla estrategic.* Andorra: la Vella.

° A bias toward action. Cluster initiatives must be motivated by the desire to achieve results. Academic institutions, think tanks, or government agencies that see research as an end in itself should not drive them. Diagnosis and a broad vision for the future must be combined with concrete action steps. Strong senior champions are needed in both government and the private sector. Entrepreneurial leadership and the involvement of opinion leaders characterize virtually all successful initiatives. (Porter E. M., 2000)

° Institutionalization. Cluster upgrading is a long-term process that must have a life beyond a one-shot effort. It requires institutionalization of concepts, relationships, and linkages among constituencies. In the private sector, new or revitalized trade associations often take leading roles in the continuing upgrading of clusters. In government, cluster upgrading can be institutionalized by appropriately organizing government agencies, by gathering and disseminating economic statistics, and by controlling the structure and membership of business advisory groups. (Porter E. M., 2000).

Appropriate criteria for characterizing a (potential) cluster can include: (Ministry of Economy, Labour and Entrepreneurship Croatia, 2012).[20]

1) **Stage of development**. The idea here is that clusters undergo a 'life-cycle', for example from embryonic to emergent, to high growth stage, to maturity and eventually to obsolescence. At the very least there should be some recognition that different clusters may be at quite different stages of development, and hence raise different policy issues and challenges: *embryonic* – small, not yet operating as a cluster but with apparent potential for long-term growth; *developing* – a significant agglomeration operating as a cluster or with the potential to do so, opportunities exist for new entries and further development; *mature* – probably has developed as far as it can go and new companies could find entry difficult or unattractive.

2) **Depth**. Cluster depth is a key variable in the assessment of cluster strength. A deep cluster will have a comparatively large number of existing industrial linkages, with other potential linkages identified: *deep* – large number and variety of interlinked members, including

[20] Ministry of Economy, Labour and Entrepreneurship Croatia. (2012). *Guidelines for Cluster Development: A Handbook for Practitioners.* Croatia: Maxwell Stamp PLC.

institutions; *shallow* – smaller number of members, confined to core manufacturers and service providers.

3) **Employment**. Cluster employment dynamics are based on the history of total numbers employed. The possibilities are: growing, declining; stable.

4) **Significance**. Here the intention is to suggest the geographic significance of the cluster:

- Local concentration
- Regionally significant
- Nationally significant but concerned almost entirely with domestic market
- Internationally significant and competitive

5) **Nature of linkages**. Involves identification and classification of the types of linkages existing in the cluster:

- Input-output
- Markets
- Shared knowledge (Ministry of Economy, Labour and Entrepreneurship Croatia, 2012).

The development of clusters or cluster initiatives or economic clusters is an economic development of business clusters. The concept of clusters rapidly grows attention of governments, consultants and academics since it first was proposed by Michael Porter in 1990. Many government and industrial organizations around the world have made significant turnaround in recent years, on behalf of the cluster making urban stimulation and regional economic growth. As a result a large number of cluster organizations were launched starting from the 1990s, where trends continued further development. The first comprehensive study of the cluster initiative across the world was reported in "Cluster Initiative Greenbook" published by Orjan Sölvell, Christian Ketels and Göran Lindqvist, with a Foreword by Michael Porter. This report was presented at the annual meeting of The Competitiveness Institute, TCI, in Gothenburg in 2003. Further studies show that in 2005 there were 1,400 reported cluster initiatives across the globe. Since the goal of an organization that promoted clusters economic development through increasing competitiveness clusters of one or more specific business sectors, it is important to distinguish these public-private organizations for policy organizations at various levels.

More specifically, cluster initiatives are organizations or projects that are organized as

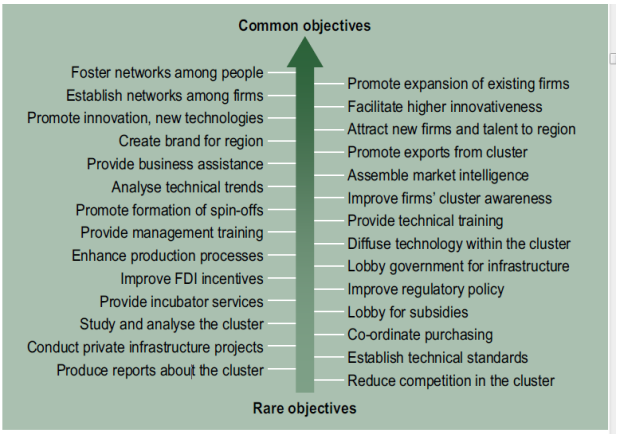

Figure 2
Cluster initative objectives
Listed in order of frequency
Source: GCIS 2003

Figure 3 - Cluster initative objectives

collaboration between a number of different actors, public and private sector, such as companies, government agencies and academic institutions. We can say that policymakers often cluster can be an initiator of these activities, where cluster initiatives are generally involved in a very large mesh activities.

In June 2007, launched European Cluster Observatory. Funded by the European Commission, the institution provides information about clusters and cluster initiatives and cluster policies in 32 European countries.[21]

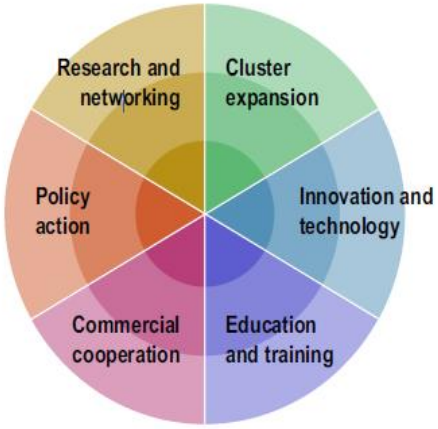

Figure 4 - Cluster initiative target

Being familiar with some of the characteristics of the clusters listed above then we can create an obedience which leads us on a path to develop and implement this model in our country. To do so promising for the economic growth of a country on one hand and also to be introduced in such a process which is complex in nature itself, we must have in mind the objectives to which the international community anticipated and standards which are necessary to achieve in order to create unique and suitable models for the economy in

[21] http://en.wikipedia.org/wiki/Cluster_development

Solvel, O., G. Lindquist, & C. Ketels. (2003). *The Cluster Initiative Greenbook.* Gothenburg: The Competitiveness Institute (TCI)/Vinnova.

general, and in particular industrial sectors in particular. Objectives which are provided by The Global Cluster Initiative Survey (GCIS) are presented in the figure 2 and 3. (Solvel, O., G. Lindquist, & C. Ketels, 2003)

Where to have an easier access to these objectives can be grouped into six segments which are presented in The Cluster Initiative Target Board. Clusters provide a way to change the way constructive dialogue between the public and private sector.

Having information that states clusters fund about 54% of the necessary funds, and funding industries is only 18%, it can be concluded that this is the first investment priority by various governments, which increases its value greatly cluster models, as well as ideas for such funding are growing continuously being looked at as a model of overall economic development.

The effect of cluster has been studied extensively recent years. Many companies adapt this managing model and use it to succeed in international market. The study of cluster has become an important aspect of economy development in many countries, and we believed that this model will play fundamental role in Kosovo economy growth.

The general futures of clusters are well known. It is generally accepted that many huge companies had use this model in order to create the production circle and to offer high quality products with lower cost. The company specialization is very attractive because this model can offer very attractive products, and can motivate in higher level innovation.

(Porter M. E., Clusters and the new economics of competition, 1998) concluded that clusters have possibility to affect in competition in three ways: increasing productivity, innovation and stimulations start ups. However limited researches are done in Kosovo. Despite the importance of topic, few researchers have studied and present results in this field. Hence, additional study of cluster models, production companies and relation with rural tourism needed. It is a national interest to compare and study deeply these two sectors, because Kosovo have great opportunity in these fields.

The aim of this chapter is to show positive relations between rural tourism and production companies. By explaining the importance of cluster model we attempt to develop a strategic cluster model, to increase the productivity in our county. This approach provides attractive

results, because cooperation of these two sectors, the national market will have: 100% national products, food security system, innovative products and specialized members in different fields.

Cluster development has since become a focus for many government programs globally. Mr. Porter claims that clusters have the potential to affect competition in three ways: By increasing the productivity of the companies in a cluster, by driving innovation, and by stimulating new businesses formation. According to Porter, in the modern global economy, comparative advantages like how certain locations have special endowments such as a port or low-cost labor to overcome heavy input cost are less relevant. Now, competitive advantages or how companies make productive and innovative use of inputs is more important. Business clusters are geographical concentrations of business types where resources and competencies exceed a critical threshold, giving them a key position in a given branch of economic activity, with a decisive sustainable competitive advantage over other places in a particular field. (Dunn, 2014)[22]

2.4 Industrial cluster

There is a growing literature linking the dynamism of SMEs to their location within industrial clusters. Industrial clusters are thought to promote innovation through frequent interactions and information flows (Antonelli, 1999). Clusters provide stimulus for public and private investments and resource commitments. The geographic concentration of suppliers and customers provides firms with shorter feedback loops for innovations. These advantages stimulate the growth and persistence of localized clusters of firms. Spatial proximity brings competitive advantage if the firm has to manage a complex set of interdependencies with clients, suppliers and other institutions (Porter M. E., 1990) (Porter M. E., 1998).

Other researchers analyze industrial clusters as relevant in terms of knowledge creation. Firms of the cluster exchange and create knowledge through face-to-face interactions and with the creation of common languages and institutions. This is particularly important if uncertainty is high, and trial and error is required in the process of new product development (Solvell, O., & Zander, I., 1998). Geographers suggest developing geography of organizational knowledge

[22] Dunn, B. (2014). Why clusters aid competitiveness. *Canadian Sailings* , 10-14.

Antonelli, C. (1999). The Evolution of the Industrial Organization of the Production of Knowledge. *Cambridge Economic Journal* , 243–260.

rather than a geography of transportation costs (Spender, 1998). The followers of this last perspective emphasize in particular the impact of industrial clusters on innovation. Innovation processes involve transfer of both explicit and tacit knowledge. Though explicit knowledge is easily transferable through old and new technologies, the transfer of tacit knowledge, strongly embedded in practice and often incommunicable, is typically accomplished by repeated interaction among individuals belonging to different organizations (Nonaka, I. & Takeuchi, H., 1995). Geographic proximity might greatly support interactions and foster innovation any time it involves a large share of tacit knowledge. We argue that within this framework we might be able to explain the role of collocation for most clusters, particularly for those clusters that have been able to sustain their competitive advantage over time. Clusters also have disadvantages. Geographers emphasize the negative impact of agglomeration on congestion and competition both in the output and in the input market. There is a positive feedback from cluster strength and entry of new firms, but this diminishes as the cluster gets larger and older (Swann, 1998)[23]. More recently researchers warn of the negative implications of cultural homogeneity in the cluster (Lazerson, M. & Lorenzoni, G., 1999), contrasting the positive emphasis on homogeneity by previous researchers of industrial clusters (Piore, M. & Sabel, C., 1984) (Boari, 2011).

Table 2 – Industrial Cluster classification

INDUSTRIAL CLUSTER CLASSIFICATION	
Key terms	Key references
The social community	Amin and Thrift (1992),
relatively homogeneous system of values and views	Becattini (1990),
The system of values and viewpoints encourages initiative and technique vary	Gordon and McCann (2000), Ingley (1999), Porter (1998),
System institutions ted value system within the cluster	Pyke et al. (1990), Rabellotti (1995), Saxenian (1994)
Economic agents	
Relative number of individuals with specialized skills and relevant knowledge	Arni (1999), Brusco (1999),
Relative number of firms in geographic proximity	Czamanski and Ablas (1979),

[23] Swann, P. (1998). *Towards a Model of Clustering in High-Technology Industries.* Oxford: Oxford University Press.

□ Relative number of firms which are economically linked to each other **□ A relatively multinational and international firms** **□ Relative number of middle-level institutions** **□ The diversity of secondary level institutions** **□ Quality of secondary level institutions**	Feser and Bergman (2000), Gordon and McCann (2000), Hudson (1998), Meyer-Stamer (1999), Muller-Glodde (1991), Piore and Sabel (1984), Ramos Campos, Nicolau, and Ferraz Cario (1999)
I. GEOGRAPHICAL ABILITY **□ Internal economies of scale advantages** **□ Specialized advantages at work** **□ Knowledge sharing and networking advantages related firms** **□ Transfer of technological advantages in related firms** **□ Market share based on intellectual priorities** **□ innovative advantages in products, technology, and management**	Berardi and Romagnoli (1984), Camagni (1991), Cheshire and Gordon (1995), European Commission (1999), Keeble and Wilkinson (1999), Lazerson (1990), Marshall (1925), Piore and Sabel (1984), Porter (1998), Sabel (1982), Simmie and Sennett (1999), Swann and Prevezer (1996)
II. ECONOMIC TIES **□ Customers common (both firms and individuals)** **□ common suppliers, service providers** **□ common infrastructure such as transportation, communication and utilities** **□ common wealth of human resources** **common wealth of human resources talent as skilled professionals, or specialize in areas of need** **□ The similarities in the field of education, training, coaching and facilities for workers** **□ joint undergraduate, research centers, specialized institutions for technology** **□ common risk capital markets**	Amin and Thrift (1992), Arthur (1994), Becattini (1990), Becker (2000), Cheshire and Gordon (1995), Cooper and Folta (2000), Feser and Bergman (2000), Gordon (1996), Lazerson (1990)
III. Leadership **□ Head eksplicid cluster** **□ eksplicid leaders are accepted by all economic**	

agents clusters	Buck, Crookston, Gordon, and Hall (1997),
Eksplicid leadership role includes:	Evans (1993),
o Sharing and coordination of knowledge	Leonard and Swap (2000),
o Training future leaders of cluster firms	Meyer-Stamer (1999), Rabellotti (1999),
o The dispute arbitration	Rosenberg (2002)
o Change the vision and direction	
Building Blocks	
□ Strong links socio cultural across borders	
□ Code of conduct between economic agents cluster alliance firms should be the same	BRITE (2001), Dominguez-Villalobos and Grossman (1992),
□ Level of trust among economic agents of the same cluster	Humphrey and Schmitz (1998), Leon (1998),
□ Attitude of mutual cooperation between economic agents of a cluster	Leyshon and Thrift (1994), Lorenz (1996),
□ Common language	Meyer-Stamer (1999),
□ Joint industrial ntertainment	Morris and Lowder (1992),
□ Joint industrial atmosphere	Piore (1990),
□ Common approach on human capital development	Rabellotti (1995),
□ Understanding the business as a whole and opinions to be shared	Simmie and Sennett (1999), Zhang (2001)
□ Common approach to performance measurement and its competitive	
Rituals of communication	Pyke et al. (1990), Porter (1998),
□ Regular communication events	Schmitz and Nadvi (1994);
□ Interactions needed in communication	Amin and Thrift (1992),
□ Access to appropriate communication	Granovetter (1973), Magplane (2001)
Interactions in knowledge	Boston Consulting Group (1998), Saxenian (1994)
□ Compare all the forces of the firm in cluster	
□ The role of research centers, technological institutes and university involvement	
General IT education employees in firms cluster and initiation of mutual cooperation between these firms cluster.	

Technological transfer between these firms **Joint initiatives between firms manufacturing clusters** **Joint Initiative on the design of designs of products within firms cluster** **Joint Initiative on sales and marketing** **□ The role of secondary level institutions includes:** **Initiation of coordination mechanisms within the cluster** **Management and coordination mechanisms within the cluster**	Bagchi-Sen (2001), Brusco (1999), Christensen (1997), Keeble, Lawson, Moore, and Wilkinson (1999), Leon (1998), Lorenz (1996), Pedersen, Sverrisson, and van Dijk (1994), Porter (1998), Saxenian and Hsu (2001), Schmitz (2000) Amin and Thrift (1995), European Commission (2002), Keeble et al. (1999), Sanchez, del Castillo, Lacave, and Terras (2000)
Professional rotations **□ level of employment in the sector of self-firm clusters** **□ degree of mobility between firms cluster**	Athreye (2001), Becker (2000), Baptista and Swann (1998), Bortagaray and Tiffin (2000), Brusco (1999), Keeble et al. (1999), Leonard and Swap (2000), Lorenz(1996), Paija (2001)

As mentioned earlier, a second critical dimension to understand the business logic and competitive abilities of clusters is achieving the goals of economic activities carried out by affiliated firms (Porter M. E., 1998). These activities can be grouped according to the following three factors (Morosini 1998):

I. ***External factors*** **-** Persons who are largely outside the firm, customer, product markets, and macro-level demographic, the legal framework governing these movements in the markets;

II. ***Internal factors*** **-** factors that form the internal characteristics of the firm, eg resources, processes and skills;

III. ***Social factors*** **-** factors that govern social approaches to learning, articulate knowledge and creating a sense of identity and cultural behaviour;

Table 3 - Competition range of industrial clusters

COMPETITION RANGE OF INDUSTRIAL CLUSTERS	
Key terms	Key references
External factors	Brusco (1999), Feloy, Gordon,
Main Customers	Lloyd, and Roe (1997),
Main product services and markets services	Lazerson (1990), Mishan (1971),
Key demographic trends	Sanchez et al. (2000),
Legal and Regulatory Frameworks	Schmitz (1995)
Internal factors	
The main sources (eg human resources, financial capital)	
The main processes (eg product development, innovation, supply chain management)	Porter (1998), Simmie and Sennett (1999), Rabellotti (1995), Puri and Hellmann (2000), Saxenian (1994)
Competencies and key 'skills (eg key technology, the speed of innovation)	
Social factors	
Learning (products, customers, technology, managerial approach)	Brusco (1999), Keeble et al. (1999), Leonard and Swap (2000),
Creating knowledge	Rabellotti (1995)
Dissemination of knowledge	Sanchez et al. (2000)
Behavioural norms and ethics	*Source*: http://cluster.kso.org.tr/clusteronemli.pdf

Factors external to internal social and a conditional firm are clear promote change and influence of a series of environmental forces and competitive forces. (Rumelia 1984).

As note earlier, within an industrial cluster are undoubtedly some of the local leaders - or at least their areas of influence is mainly local.

Thus, external factors such as customers and markets could be geographically located close to a cluster. In these cases, relevant demographic trends and regulatory framework will tend to be local. In the same way, many of the main sources and core competencies that are internal factors may be largely driven by local forces. (Prahalad & Hamel, 1990). For example, firms in most industrial clusters based on local resources for human capital in the form of individuals with specialized knowledge or the knowledge to key customers. Similarly, innovative

processes by firms of the same industry clusters tend to be directed and stimulated by their competitors who are placed close to them.

Finally, certain social methods in a firm to learn and create knowledge, and cultural norms, behaviours and values adopted, could be influenced by socio-economic circle of local values and cultural and institutional structure of a cluster industrial. [24]

(Rongzhi, L. & Bei, H., 2010)

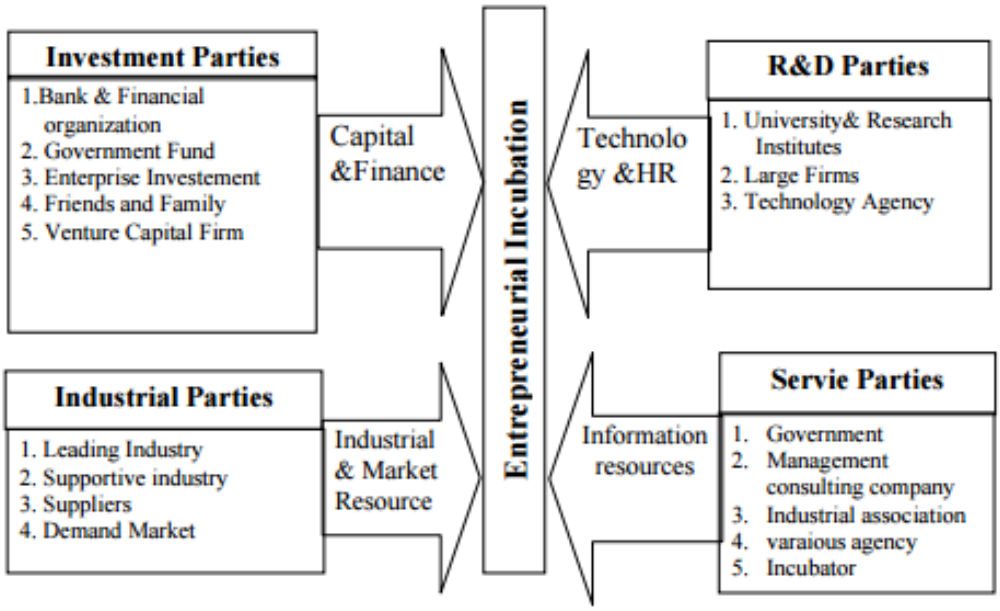

Figure 5 – Model of the industrial cluster incubation system

2.5 Clusters and competitive advantage

Clusters affect competition in three broad ways that both reflect and amplify the parts of the diamond: (a) increasing the current (static) productivity of constituent firms or industries, (b) increasing the capacity of cluster participants for innovation and productivity growth, and (c) stimulating new business formation that supports innovation and expands the cluster. Many cluster advantages rest on external economies or spillovers across firms, industries, and institutions of various sorts. Thus, a cluster is a system of interconnected firms and institutions whose whole is more than the sum of its parts. (Porter E. M., 2000).

[24] Rongzhi, L. & Bei, H. (2010). Research on the Industrial Cluster Incubation System for Entrepreneurial Activities: the Construction and Functions. *International Journal of Digital Content Technology and its Applications* , 89-93.

Each of the three broad influences of clusters on competition depends, to some extent, on personal relationships, face-to-face communication, and networks of individuals and institutions that interact. Although the existence of a cluster makes such relationships more likely to develop and become effective, they are far from automatic. Formal and informal organizing mechanisms and cultural norms often play a role in the functioning and development of clusters (Porter M. E., 1998).

Scholars have sought to explain concentrations of firms in terms of economies of "agglomeration." (Harrison, B., Kelley, M., & Gant, J., 1996)[25]. These normally have been seen to arise at either the industry level or for a diversified urban economy. Many treatments of agglomeration economies rest on cost minimization due to proximity to inputs or proximity to markets. These explanations, however, have been undercut by the globalization of markets, technology, and supply sources; easier mobility; and lower transportation and communication costs. Today, the nature of economies of agglomeration has shifted toward the cluster level and away from either narrower industries or urban areas. Location within a cluster can provide superior or lower cost access to specialized inputs such as components, machinery, business services, and personnel compared to vertical integration, formal alliances with outside entities, or "importing" inputs from distant locations (Porter M. E., 1998). The cluster, then, is a spatial organizational form that can be an inherently more efficient or effective means of assembling inputs than the alternatives, provided that competitive local suppliers are available. Sourcing outside the cluster might be necessary if competent local suppliers are unavailable, but it is not the ideal (first best) outcome. Given the inherent benefits of clusters, however, forces encouraging local supplier development and upgrading are strong, and constituent firms have an incentive to encourage entry of new suppliers or local investments by distant suppliers.

Countervailing the advantages of clusters in assembling inputs and labor is the possibility that the concentration of cluster participants bids up the cost of scarce specialized inputs and personnel. Yet the ability to outsource many inputs limits any such cost penalty relative to other locations. More important, however, the presence of a cluster not only increases the demand for

[25] Harrison, B., Kelley, M., & Gant, J. (1996). Innovative firm behavior and local milieu: Exploring the intersection of agglomeration, firm effects, industrial organization, and technological change. *Economic Geography* , 233-258.

specialized inputs but also increases their supply. The availability of specialized personnel, services, and components, and the number of entities creating them, often is far greater at clusters than elsewhere despite the greater competition.

Access to information. Extensive market, technical, and other specialized information accumulates in the firms and local institutions within a cluster that can be accessed better or at lower cost, allowing firms to raise current productivity by getting closer to the productivity frontier. This also applies to the flow of information between units of the same company (Adams, J., & Jaffe, A., 1996).[26] Proximity, supply and technological linkages, and the existence of repeated personal relationships and community ties fostering trust facilitate the information flow within clusters. Obtaining information about current buyer needs is an important special case of the informational benefits of clusters. Sophisticated buyers often are part of clusters, and other cluster participants have information about buyer needs that often is shared.

Complementarities. A cluster enhances productivity not only through the acquisition and assembly of inputs but also through facilitating complementarities between the activities of cluster participants. Some of the most important types of complementarities are the following (Porter M. E., 1998):

- *Complementary products for the buyer*. In tourism, for example, the visitor's experience is affected not only by the appeal and quality of the attraction (e.g., beach, historical site) but also by the quality of the hotels, restaurants, souvenirs, airport facilities, and transportation, making the different parts of the cluster mutually dependent. Such complementarities across products in creating buyer value are common, being present not only in service delivery but also in product design, logistics, and after-sales service.(n18) The ***co***-location of firms and industries within a cluster makes it easier to achieve product-service coordination and creates internal pressures for improvement among parts of a cluster in ways that can substantially improve overall quality and/or efficiency.
- *Marketing complementarities*. The presence of a group of related firms and industries in a location offers efficiencies in joint marketing (e.g., firm referrals, trade fairs, trade

[26] Adams, J., & Jaffe, A. (1996). Bounding the effects of R&D: An investigation using matched establishment-firm data. *Rand Journal of Economics* , 700-721.

magazines, marketing delegations). It also can enhance the reputation of a location in a particular field and makes it more likely that buyers will consider a vendor or manufacturer based there. Buyers can see multiple firms in a single visit. The presence of multiple sources for a product or service in a location also can reduce perceived buying risk by offering buyers the potential to multisource or switch vendors if the need arises.

- *Complementarities due to a better alignment of activities among cluster participants*. Linkages with suppliers, channels, and downstream industries are recognized and captured more easily within clusters than among dispersed participants. Substantial improvements in productivity also sometimes are possible when several parts of a cluster change simultaneously (e.g., coordination to develop cluster standards and measures).

Access to institutions and public goods. Clusters make many inputs that otherwise would be costly into public or quasi-public goods. The ability to recruit employees already trained in local training programs, for example, eliminates or lowers the cost of internal training. Firms often can access specialized infrastructure, advice from experts in local institutions, and the like at very low cost. Indeed, the information built up at a cluster can be seen as a quasi-public good.

Some of the public or quasi-public goods available in clusters are similar to conventional public goods in the sense that they are closely linked to government and public institutions (e.g., public investment in specialized infrastructure, educational programs, information and trade fairs). However, other quasi-public goods available to cluster participants are created as a natural byproduct of competition. These include information and pools of technology, the reputation of the cluster location, and some of the marketing and sourcing advantages described earlier.

In addition, public or quasi-public goods at cluster locations often are the result of private investments in training programs, private infrastructure, quality centers, and other forms that benefit a cluster. Private investments in cluster-specific public goods or quasi-public goods are common because of the collective benefits perceived by cluster participants. Often, such private investments in public goods take place through trade associations or other collective mechanisms.

Incentives and performance measurement. Clusters help to solve or mitigate some agency problems that arise in more isolated locations and in more vertically integrated firms. Clusters

improve the incentives within companies for achieving high productivity for several reasons. The first is competitive pressure. Rivalry with locally based competitors has particularly strong incentive effects because of the ease of constant comparison and because local rivals have similar general circumstances (e.g., labor costs, local market access, utility costs), so that competition must take place on other dimensions. Second, the competitive pressure in a cluster is amplified by peer pressure, even among indirect or noncompeting firms. Pride and the desire to look good in the local community motivate firms to attempt to outdo each other.

Clusters also make it easier to measure the performance of in-house activities because there often are local firms that perform similar functions. Managers, then, have wider opportunities to compare internal costs with arm's-length transactions as well as lower monitoring costs in comparing employee performance to that of others locally. The accumulation of knowledge in financial institutions should make lending and other financing choices better informed and should improve monitoring. Clusters also offer advantages in terms of limiting opportunistic behavior in which one participant takes advantage of another or provides shoddy products or services (Enright, 1990).[27] Because of repeated interaction, easy spread of information and reputation, and desire for standing in the local community, interactions among cluster participants are more prone to be constructive and reflect long-term interests.

2.6 Clusters and Innovation

As important as, or more important than, their benefits in current productivity is the role of clusters in innovation and productivity growth. Cluster participation offers many potential advantages in innovation and upgrading (although it involves some risks as well) compared to an isolated location. Some of the cluster characteristics that enhance current productivity are even more important to innovation.

Firms within a cluster often are able to more clearly and rapidly perceive new buyer needs. Just as with current buyer needs, firms in a cluster benefit from the concentration of firms with buyer knowledge and relationships, the juxtaposition of firms in related industries, the concentration of specialized information-generating entities, and buyer sophistication. Cluster firms often can

[27] Enright, M. (1990). Geographical concentration and industrial organization. Unpublished doctoral dissertation. *Harvard Business School* .

discern buyer trends faster than can isolated competitors. Silicon Valley and Texas-based computer companies, for example, plug into customer needs and trends quickly and effectively and with an ease impossible to match elsewhere.

Cluster participation also offers advantages in perceiving new technological, operating, or delivery possibilities. Participants can be exposed to richer insights into evolving technology, component and machinery availability, service and marketing concepts, and the like. Ongoing relationships with other entities within the cluster (including universities) facilitate such learning, as do the ease of site visits and face-to-face contact. Direct observation of other firms is facilitated. The isolated firm, by contrast, faces higher costs and steeper impediments to assembling insights as well as a greater need to create knowledge in-house (Audretsch, D., & Feldman, M., 1996), (Harrison, B., Kelley, M., & Gant, J., 1996), (Jaffe, A., Trajtenberg, M., & Henderson, R. , 1993). [28]

The potential advantages of clusters in perceiving both the need and the opportunity for innovation are significant, but of equal importance can be the flexibility and capacity to act on them quickly. A firm within a cluster often can more rapidly source the new components, services, machinery, and other elements needed to implement innovations, whether in the form of a new product line, a new process, or a new logistical model. Local suppliers/partners can and do get closely involved in the innovation process, so that the inputs they supply better meet the firm's requirements. New specialized personnel often can be recruited locally to fill gaps required for new approaches. Complementarities involved in innovation are more easily achieved.

Firms within a cluster can experiment at lower cost or delay large commitments until there is greater assurance that a new product, process, or service will pan out. By contrast, a firm relying on distant outsourcing faces greater challenges of contracting, securing delivery, obtaining associated technical and service support, and coordinating across complementary entities. The firm relying on vertical integration faces inertia, difficult trade-offs if the innovation erodes the value of in-house assets, and constraints if current products or processes must be maintained while new ones are developed.

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[28] Audretsch, D., & Feldman, M. (1996). R&D spillovers and the geography of innovation and production. *American Economic Review* , 630-640.

Reinforcing these other advantages for innovation is the sheer pressure--competitive pressure, peer pressure, and constant comparison--occurring in geographically concentrated clusters. The similarity of basic circumstances (e.g., labor costs, utility costs), combined with the presence of multiple rivals, forces firms to seek creative ways in which to distinguish themselves. Pressure to innovate is elevated. Individual firms in the cluster have difficulty in staying ahead for long, but many firms often are able to progress much faster than those based at other locations.

Under certain circumstances, however, cluster participation can retard innovation. When a cluster shares a uniform approach to competing, a sort of groupthink often reinforces old behaviors, suppresses new ideas, and creates rigidities that prevent adoption of improvements. (Glasmeier, 1991).[29] Clusters also might not support truly radical innovation, which tends to invalidate the existing pools of talent, information, suppliers, and infrastructure. In these circumstances, a cluster participant might be no worse off, in principle, than an isolated firm (because both can outsource), but the firm in an established cluster might suffer from greater barriers to perceiving the need to change and from inertia against severing past relationships that no longer contribute to competitive advantage.

2.7 Clusters and New Business Formation

Many, if not most, new businesses are formed in existing clusters rather than in isolated locations (here I am referring to headquarters, not branch offices or ancillary facilities). This occurs for a variety of reasons. First, the inducement to entry often is greater within the cluster because there is better information about opportunities. The existence of a cluster signals an opportunity. Individuals working somewhere in or near the cluster more easily perceive new gaps in products, services, or suppliers to fill. Having had these insights, these individuals more readily leave established firms to start new ones aimed at filling the perceived gaps.

The opportunity perceived at a cluster location is pursued there because the barriers to entry are lower than they are elsewhere. Needed assets, skills, inputs, and staff often are readily available at the cluster location and are assembled more easily there. Local financial institutions and

[29] Glasmeier, A. (1991). Technological discontinuities and flexible production networks: The case of Switzerland and the world watch industry. *Research Policy* , 469-485.

investors with industry familiarity might require a lower risk premium on capital. A significant local market also often is present. The entrepreneur has established relationships and often prefers to stay in the same community. Lower entry barriers, the existence of multiple potential local customers, established relationships, and the presence of other local firms that have "made it" can reduce the perceived risks of entry. Note that barriers to exit at a cluster also can be lower due to less need for specialized investment, deeper markets for specialized assets, and other factors (Caves, R., & Porter, M. , 1977)[30].

Although local entrepreneurs are likely entrants to a cluster, entrepreneurs based elsewhere frequently relocate sooner or later to a cluster location. The same lower entry barriers attract them, as does the potential to create more economic value from their ideas and skills or to raise the productivity of their emerging companies.

Established companies based in other locations (both foreign and domestic) also are drawn to establish subsidiaries in cluster locations, seeking the productivity benefits and innovation advantages discussed previously. The presence of an established cluster not only lowers the barriers to entry to a location facing outside firms but also reduces the perceived risk (particularly if other "foreign" cluster participants already are present). There also are numerous examples of firms that have relocated entire business units to cluster locations or designated their subsidiaries located there as the regional or world headquarters for lines of business.

The advantages of a cluster in new business formation can play a major role in speeding up the process of cluster innovation. Large companies often face various sorts of constraints and impediments to innovating. Spin-off companies often pick up the slack, sometimes with the blessing of the former companies. It is not uncommon to see larger companies in a cluster develop close relationships with innovative smaller ones, help establish them, and even acquire them if they become successful.

Because of new business formation, the depth and breadth of clusters often grow over time, enhancing cluster advantages. The intense competition within a cluster, together with lower entry and exit barriers, sometimes leads to both more entry and more exit at these locations. However,

[30] Caves, R., & Porter, M. . (1977). From entry barriers to mobility barriers: Conjectural decisions and contrived deterrence to new competition . *Quarterly Journal of Economics* , 241-261.

the net result is that many of the surviving firms in the cluster can gain position vis-a-vis rivals at other locations (Porter M. E., 1998).

2.8 Clusters and Competition

These influences of clusters amplify the parts of the diamond and the feedbacks among them. Proximity amplifies rivalry, for example, while elevating the benefits of locally available factors or suppliers. Co-location shortens the process by which rivalry spills over to encourage local supplier development and the speed with which related industries give rise to new competitors.

It should be clear that clusters represent a combination of competition and cooperation. Vigorous competition occurs in winning customers and retaining them. Because of the presence of multiple rivals and strong incentives, the intensity of competition among clusters often is accentuated. Yet cooperation must occur in a variety of areas I have identified. Much of it is vertical (buyer-supplier), with related industries, and with local institutions. Competition and cooperation can coexist because they are on different dimensions or because cooperation at some levels is part of winning the competition at other levels.

A geographically proximate cluster of independent and informally linked firms and institutions represents a robust organizational form in the continuum between markets and hierarchies, but one that still is little explored in the management field. Location is a powerful variable shaping the trade-offs between markets and hierarchies. Clusters offer obvious transaction cost advantages over other forms and seem to ameliorate many incentive problems. Repeated interaction and informality of contracts within the structure resulting from living and working in a geographic area foster trust and open communication while reducing the costs of severing and recombining market relationships.

The advantages of clusters will not be equally great for all fields, although clusters appear to occur quite broadly in economies. The stronger the advantages of clusters and the more tradable the field, the fewer viable cluster locations there tend to be. The importance of clusters rises with the sophistication of competition and the concomitant rise in knowledge and innovation intensity, meaning that the incidence of clusters tends to increase with economic development.

The connection between clusters and competition carries important implications for the economic geography of cities, states, nations, and groups of neighboring countries (Porter M. E., 1998). Internal trade within nations is a powerful force for improving productivity, as is trade with immediately neighboring countries (Porter M. E., 1998). The formation of clusters is an important part of economic development. The process by which clusters emerge, develop, and decline is beginning to be understood and is a topic I explore elsewhere (Porter M. E., 1998)

Based on the many studies, a cluster includes: business services, industrial cluster, collaborative institutions, clients, consultants, government, and research institutes. Basically the role of all this participants is unique. If we take a look briefly, for examples business services can offer professional treatment for all cluster business. Industrial cluster can create supplier network, and can mange effective with all cluster companies involved. We will suggest collaborative institutions, in order to help business in financial form for examples. Clients are the most important participant in cluster, because they will determinate if this collaboration is in good condition and if they are offering good products. To analyze the situation and to create benefit strategies we will suggest consultant which were will be experts in different field, in order to cover the whole business cluster. Government can stimulate cluster models with grants and subventions. And in the end the research institute can investigate and develop the market needs. There are many elements that the company should consider, especially internal and external factors need to analyze deeply. (Porter E. M., 2000).

It is very sensitive field and collaboration between eco tourism and production companies was unimagined. Our county has a great physical infrastructure to establish cluster model, in terms of: have land and professional farmer, and modern processing factories. When we realize this model, the consumer can have products "From farm to table".

By developing first cluster model, will be easier than to establish new idea and new collaboration, but nowadays our community didn't create sustainable model for increasing national product reputations, increasing incomes, increasing exports, increasing company values, motivating stuff and specializing in different unique department.

Clusters have long been a feature of economic geography, but their influence on competition has grown with the shifting nature of competition and the restructuring of how companies operate.

Competition in advanced economies is increasingly driven by knowledge and skill, with low cost labour and other resources accessed in cheaper locations. Clusters are important because they play a fundamental role in knowledge creation, innovation, the accumulation of skills, and the development of pools of employees with specialized expertise. Clusters also gain in importance as firms migrate from vertically integrated structures, in which they perform most activities internally, to structures involving the outsourcing of many activities and functions to outside entities. Outsourcing includes not only traditional parts production, support services, and the like, but also contract manufacturing, managing IT systems, training, and even research and development. Outsourcing takes place not only to other firms but to non-business entities such as technical schools, university research institutions, and industry association programs. Finally, globalization has made clusters more, not less, important. Falling barriers to trade and investment have exposed more and more locations to competition, allowing strong clusters to grow stronger while ineffective locations lose position. Globalization neutralizes many sources of competitive advantage that can be sourced or accessed by any firm from a distance, such as cheap labour, raw materials, or generic technology. Paradoxically, then, this means that the advantages of clusters are more important in global competition, not less so. As firms depend more on outside firms, support services, and local institutions, it becomes more important to locate within a strong cluster to access benefits that are difficult for outsiders to tap. Clusters consist not only of large firms, but have proliferated the opportunities for small and medium sized firms to fill important needs and niches in the cluster. Large firms continue to grow and internationalize, but the preponderance of job creation has been in smaller firms for the last several decades. Increasingly small and medium-size firms compete internationally, not just large ones. Cluster networks span groups of tightly connected industries linked by supplier-buyer relationships, common technologies or skills, and other forms of externalities. Biopharmaceutical and skin care producers often co-locate in the same cluster locations, for example, because they draw on common skills, research programs, manufacturing needs, and packaging. Cluster externalities often extend across political boundaries to neighbouring regions, which recent empirical evidence has verified. (Delgado, M., M.E. Porter, & S. Stern, 2010)[31]

[31] Delgado, M., Porter, M.E., Stern, S. (2010). Clusters and entrepreneurship. *Journal of Economic Geography* , 1-2

Cluster can overlap with other clusters. For example, biopharmaceutical clusters, chemical clusters, and medical device clusters tend to locate in the same regions because of externalities in technology, sourcing, and other areas. Regions with a presence in overlapping clusters are more competitive, as new statistical research has demonstrated. (Delgado, M., M.E. Porter, & S. Stern, 2010) Also, the diversification of regional economies often occurs as new clusters emerge that are related to the clusters already present. Clusters are key drivers of job growth, wage growth, new business formation, and innovation. In any region, there is a mix of traded and local economic activity. (Porter M. , 2003)[32]

Local industries, such as eating establishments and public utilities, are present in every region. They account for a large part of employment, but serve almost exclusively the local market and the population living there. Traded clusters, which produce products and services that compete with those produced by other regions and other countries, are the underlying drivers of prosperity. Traded clusters, because they serve broader markets, can grow employment and exports well beyond local needs. Traded clusters, which have far higher average wages than local industries, create the income to afford sophisticated local services and the demand for local industries to grow beyond the size of the local population per se. Clusters normally arise at the level of regions or economic areas, not entire nations, because of the importance of proximity to cluster benefits. This is why regional economies specialize, and why regional economies are a crucial unit in understanding economic performance. Economic policy, then, must not just focus on the national level but the regional and local levels. (Porter M. , 2007)

2.9 Stages of the Cluster Life Cycle

The crucial aspect for the transition between the stages is the heterogeneity of competencies, as direct qualitative dimension, and the utilisation of the heterogeneity, as systemic qualitative dimension. The larger absorptive capacity between the firms within a cluster and the subsequent adjustment processes have the following effects on the cluster life cycle: during the emergence of the cluster, the larger absorptive capacity between the clustered firms enables them to exploit technological distances earlier and utilise more synergies compared to the non-clustered firms. In doing so, they create the actual cluster. During the growth of the cluster, the firms further adjust

[32] Porter, M. (2003). The Economic Performance of Regions. *Regional Studies* , 549-578.

to each other and generate optimal technological distances. The implicit tendency to adjust to each other would lead to a suboptimal and to small technological distance with a subsequent decline of the cluster. An optimal technological distance can only be balanced in the sustaining cluster by steady implementation of external knowledge or firm formations that always deviate from the existing knowledge (Almeida, P. and Kogut, B., 1997). [33]

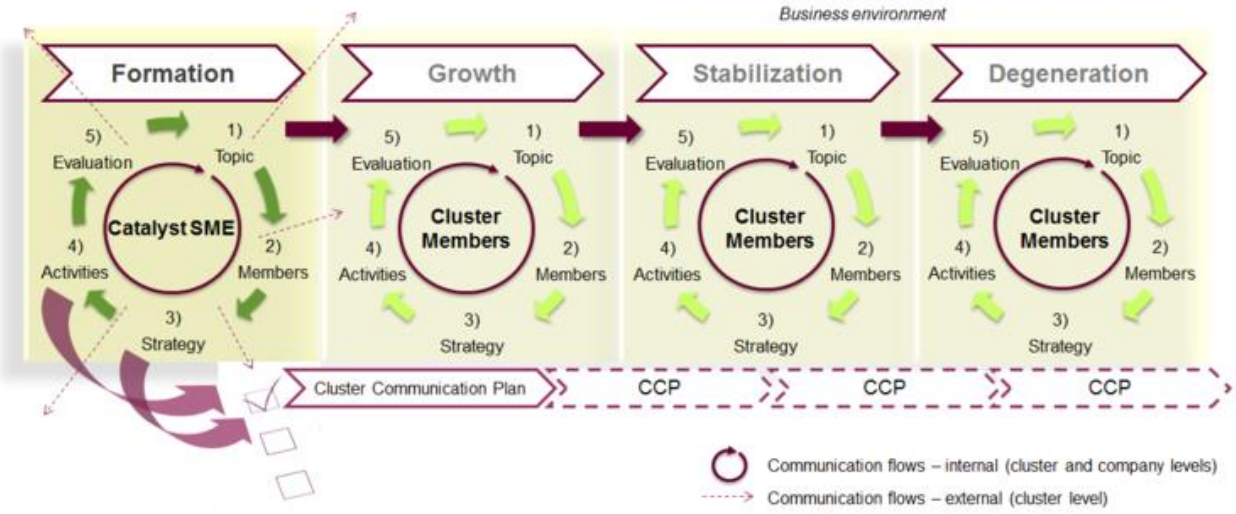


Figure 6 – Cluster life cycle

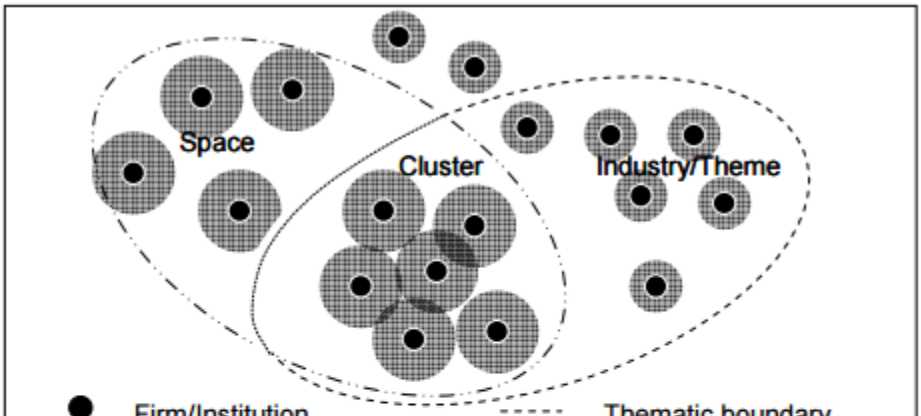
If the clustered firms cannot achieve this balance, they develop worse than the non-clustered firms and the cluster declines. This balance effect by external knowledge is not necessary for non-clustered firms as they always rely on external knowledge sources. It can be difficult to assign a cluster to a concrete stage if it is in a transition. A cluster consists of many diverse protagonists who develop differently. Only the sum of all these independent developments represents the development of the cluster. However, this heterogeneity also implicates that the cluster does not develop evenly and as a whole. Parts of the cluster can stay in an earlier stage while others already are in a later one. We assume, however, that the cluster as a whole will enter in a new stage after this transitional phase.

Emerging clusters. It is difficult to exactly define the phase in which a cluster arises. The main reason for this is that the emerging cluster is not a cluster actually. A spatial concentration of

[33] Almeida, P. and Kogut, B. (1997). The Exploration of Technological Diversity and Geographic Localization in Innovation: Start-up Firms in the Semiconductor Industry. *Small Business Economics* , 921-931.

firms of a specific economic sector hardly exists. A specific institutional environment of the cluster misses, too. The corresponding economic activity in regions with an emerging cluster can almost not be distinguished from regions without an emerging cluster. Therefore, it is very probable that an emerging cluster is not perceived at all. The stage of emergence can often only be described ex post (for example in (Bresnahan, T., Gambardella, A. & Saxenian, A., 2001).

(Menzel, M.P. & Fornahl, D., 2007).[34]



	Quantitative	Qualitative
Direct	few firms and employees	Quite heterogeneous
Systemic	hardly perceivable, few possibilities for collective actions	Scarce possibilities for interaction

Figure 7 – Emerging cluster

The few firms of the cluster are scattered technologically over wide areas. Although these firms can already represent the future technological orientation of the cluster, the cluster is very heterogeneous due to the low number of firms. This heterogeneity aggravates exchange processes between the firms. Therefore, networks and customer-supplier relations only exist in parts of the emerging cluster. Co-operations between firms within the emerging cluster take place only partially because of the high variability of the few firms. For that reason, mainly

[34] Menzel, M.P. & Fornahl, D. (2007). Cluster Life Cycles - Dimensions and Rationales of Cluster Development. *Geography, Innovation and Industrial Dynamics.* Skoerping (Denmark): DRUID - DIME Academy Winter 2007 PhD Conference.

synergies between firms and the scientific infrastructure are relevant in this stage (Shohet, 1998). There are, however, two aspects in which a region with an emerging cluster differs from regions without clusters. Firstly, there exist one or several firms which offer a lasting vision for a new local technology path. Secondly, certain conditions are given in the location, for example a strong scientific base or political support, by which the emerging cluster has a potential to reach a critical mass. There are two different possibilities for the end of this phase. The first possibility is the transition into a growing cluster when the firms manage to exploit synergies between them and create network externalities. This can occur due to shifts of existing firms towards the centre of the cluster or a closure of competence gaps by further firm formations. The growth of the first formations and subsequent spin-off processes, often from one single firm, are regarded as responsible for the first growth of a cluster (Klepper, 2001). One explanation for this is that the superior routines of the successful firms are inherited to its spin-offs that thus also grow above average. But it is not only the inheritance of successful routines that makes spinoffs crucial for the emerging cluster to reach a critical mass. When the spinoffs stem from the same origin, they are not only technologically close, but also connected by various social networks that further decrease the cognitive distance. The same origin enables collaboration and synergies between the firms that would not count for firms from different origins. Because of their ability to generate synergies, "incubator networks" (Menzel, 2005) that are formed by firms that base upon the same origin are crucial for the emergent cluster to reach a critical mass to reach the growing stage. Although an endogenous and continual transition from the emerging stage to the growing stage is possible, mainly during the growth of markets in which the incumbent firms are well positioned, often the crucial push stems from single events and a sudden change in some exogenous factors. The second possibility to end the stage of emergence is when the emerging cluster loses its potential to become a functioning one. This happens when the possibilities for exploiting synergies between the firms vanish. Decisive for this are two reasons. One is the loss of the common focal point of the emerging cluster. The firms develop in different technological directions and the technological distance between them extends. (Orsenigo, 2011)[35], for example, describes a case in which the biotechnology firms in the analysed region in fact tended to cluster, but this (emerging) cluster failed to reach a critical mass because, among other reasons, of its

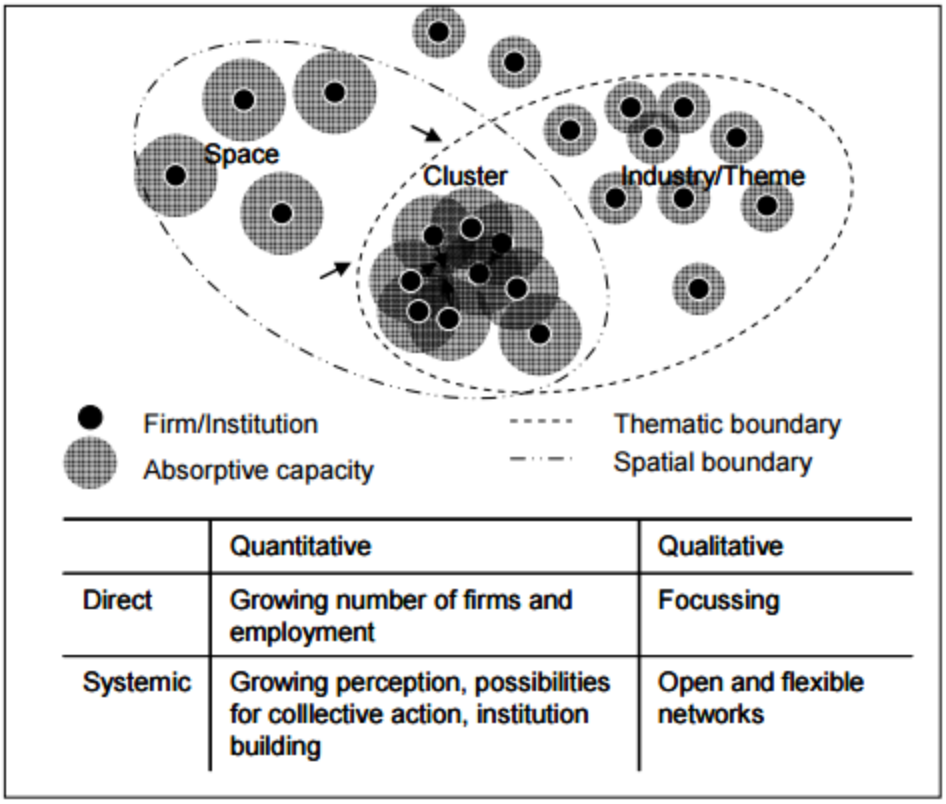
[35] Orsenigo, L. (2011). The (Failed) Development of a Biotechnology Cluster: The Case of Lombardy. *Small Business Economics* , 77-92.

heterogeneity. The second reason is the disappearance of existing firms from the emerging cluster. These 'lost' firms leave competence gaps in the emerging cluster and this also diminishes possibilities for regional co-operation. In the end the firms of the formerly emerging cluster might completely disappear.

Growing clusters. A strong increase in employment resulting from the strong growth of incumbent firms and a high number of new firm formations indicates a growing cluster. Unlike in the case of the emerging cluster the boundaries are now definable. Both the incumbent firms and the firm formations orient themselves at the growth centres of the cluster. This movement narrows the boundaries of the cluster and the cluster becomes more focussed. The arrows in figure illustrate the move of the thematic boundary. The growing density of firms and institutions within the boundaries of the cluster increasingly creates possibilities for innovation networks and customer-supplier relations. The continuous arising of new potential network partners avoids an isolation of single networks. An economic utilization of these possibilities leads to further growth of the firms. The growth of the cluster generates a milieu, which has a positive effect on existing firms and firm formations. The growing stage ends when the quantitative development of cluster's firms adjust to the development of the rest of the respective industry (Pouder, R. & St. John, C. H. , 1996)[36] and the cluster gets, at least for a short time, to the sustaining stage. The main reason for this adjustment is the exploitation of the diversity and a more focussed orientation of the cluster that led to a distinct manifestation of a kind of "dominant cluster design".

(Menzel, M.P. & Fornahl, D., 2007).

[36] Pouder, R. & St. John, C. H. . (1996). Hot Spots and Blind Spots: Geographical Clusters of Firms and Innovation. *Academy of Management Review* , 1192-1225.



	Quantitative	Qualitative
Direct	Growing number of firms and employment	Focussing
Systemic	Growing perception, possibilities for colllective action, institution building	Open and flexible networks

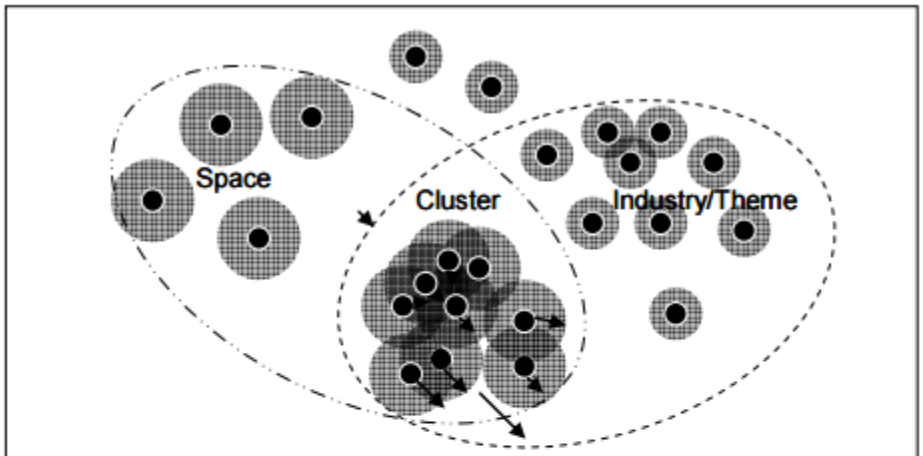
Figure 8 – Growing clusters

Sustaining clusters. The sustaining cluster is a deviation in the typology. This stage describes a kind of equilibrium state. A sustaining cluster shows neither large growth nor a remarkable decrease in the number of firms or employees. Fluctuations are rather of a more cyclical than structural nature. Nevertheless, the transition from a growing to a sustaining cluster can be accompanied by a decreasing number of firms (Klepper, 2001) [37]. The various competencies of the firms are exploited by dense and established networks. The connections of the firms of the cluster to the outside firms and institutions bring new knowledge inside the cluster and keep the networks open. The thematic boundaries of the cluster incrementally move, as new technologies are integrated into the cluster. During its development, the cluster has shaped its regional environment. The development of the region is even equated with the development of the cluster if one cluster is very dominating (Bresnahan, T., Gambardella, A. & Saxenian, A., 2001). There are two factors that end the sustaining stage. The first follows the cluster cycle. A decreasing

[37] Klepper, S. (2001). The Evolution of the U.S. Automobile Industry and Detroit as Its Capital. *Carnegie Mellon University* , 53.

diversity and a too narrowly focussed cluster in an exhausted trajectory leads to the decline of the cluster. The second possibility is a step back in the cluster life cycle and a new growth phase. This new growth can result from the generation of new diversity that is also accompanied with the entering of new markets. A threatening decline of the semiconductor industry due to increasing rigidity of the large chipmakers and fierce competition from Japanese manufacturers resulted in a new wave of firm formations in the form of spin-offs from engineers discontented with the prevailing conditions. These new firms extended the variety of the cluster and led to new growth (Saxenian A. , 1990). Yet, the altering and renewal of the development path often takes place in the cause of a substantial crisis and therefore follows subsequently after a stage of decline (Martin, R. and Sunley, P., 2006) (Meyer-Stamer, 1998).

(Menzel, M.P. & Fornahl, D., 2007).



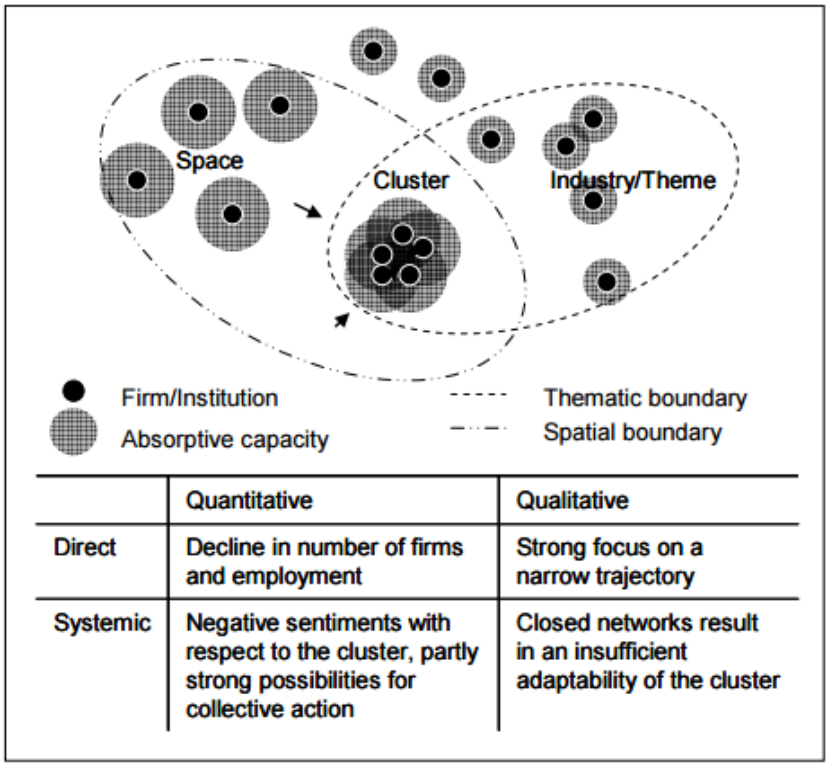
	Quantitative	Qualitative
Direct	Stagnating number of firms and employment on a high level	Focussed competencies, strong regional bias
Systemic	Cluster shapes the region	Open networks contribute to utilise existing synergies and external knowledge

Figure 9 – Sustaining clusters

Declinig clusters. A declining cluster is defined by a decrease in the number of firms and employees due to firm exits, mergers and rationalizations. Hardly any new firms are set up at the

same time. A region containing a shrinking cluster is labelled by a strong cluster oriented bias of economic activities. This bias works by a specific knowledge base, highly qualified and specialised employees and firms strongly focussed on specific markets and technologies. The competencies of such a cluster are contained only in a few firms. Despite the decline, competitive pressure can lead to high innovation rates (e.g. in (Granovetter, 1973)[38] (Graham, 1956). These innovations, however, arise within the existing and exhausted development path. Due to the former success, the cluster is aligned with the further development of the formerly successful development path. A reason for this lies in the long existing, closed and homogeneous networks in which uniform knowledge flows (Granovetter, 1973). A declining cluster has therefore lost the ability to sustain its diversity of competencies and to adjust to changing environmental conditions as well as the potential for an independent renewal.

(Menzel, M.P. & Fornahl, D., 2007).



	Quantitative	Qualitative
Direct	Decline in number of firms and employment	Strong focus on a narrow trajectory
Systemic	Negative sentiments with respect to the cluster, partly strong possibilities for collective action	Closed networks result in an insufficient adaptability of the cluster

Figure 10 – Declining clusters

[38] Granovetter, M. S. (1973). Strength of Weak Ties. *American Journal of Sociology* , 1360-1380.

There are three possibilities to end the declining stage of the cluster. The first, again, follows the cluster cycle and the cluster simply diminishes. The other two possibilities sign a new growth phase. One of them is a qualitative change of the existing development path through the implementation of new and different technologies. An example for this is the accordion cluster in Marche that transformed from traditional towards electronic music instruments (Tappi, 2005). The other possibility to end the declining stage is structural change towards completely different fields. Such a shift took place in the declining coal and steel industry of the Ruhr area towards environmental technologies. The firms of the steel and coal complex acquired the respective competencies during the correction of environmental damages that even originated from that industry (Grabher, 1993) (Menzel, M.P. & Fornahl, D., 2007).[39]

(Martin, R. & Sunley, P., 2011)

Evolutionary Trajectory	Phases of Evolution and Typical Characteristics	Possible Mechanisms
1. Cluster full adaptive cycle	Emergence, growth, maturation, decline, and eventual replacement by new cluster. Follows the archetypal adaptive cycle. Replacement cluster likely to draw upon resources and capabilities inherited from old cluster.	Resilience rises and then falls as cluster passes through phases of cycle. Cluster atrophies either because of internal rigidities or exhaustion of increasing returns effects, or is unable to withstand major external competitive shock. But sufficient resources, inherited capabilities and competencies are left to provide basis for emergence of new cluster based on related or cognate specialism.
2. Constant cluster mutation	Emergence, growth and constant structural and technological change. Cluster continually adapts and evolves, possibly by successive development of new branches of related activity. Particularly likely where basic technology has generic or general purpose characteristics.	Cluster firms are able to innovate more or less continuously and cluster constantly mutates or widens in terms of industrial specialisation and technological regime. High rates of spin-offs from existing firms and spin-outs from local research institutes or Universities. Cluster has high degree of resilience.
3. Cluster stabilisation	Emergence, growth and maturation, followed by stabilisation, though possibly in a much reduced and restricted form. Cluster might remain in this state for extended period of time.	Though cluster possibly experiences a phase of decline in scale, remaining firms survive by upgrading products and/or focusing on niche or prestige market segments. Cluster retains a modest degree of resilience, but remains potentially vulnerable to (further) decline.
4. Cluster re-orientation	Upon reaching or nearing maturation, or upon onset of early cluster decline, firms re-orientate their industrial and technological specialisms, and new cluster emerges.	Cluster in effect branches into new form without going through long period of decline. The more innovative and externally connected lead firms may play key role in this process, for example reacting to market saturation or rise of major competitors, or a technological breakthrough may activate re-orientation.
5. Cluster failure	Emergent cluster fails to take off and grow. Any remaining firms do not constitute a functioning cluster.	Cluster fails to achieve sufficient critical mass, externalities, or market share. Strategies of 'anchor firms' may weaken the cluster and innovation may also falter. New firm formation low and/or firm failure rate high, which deters new entrants.
6. Cluster disappearance	Emergence, growth, maturation, decline and elimination. No conversion into or replacement by a new cluster. Classic life-cycle trajectory.	Cluster experiences same eventual atrophy and decline as in the full adaptive cycle pattern (1. Above), but inherited resources and competences not sufficient or ill-suited to form basis of new cluster formation leading to a deep 'poverty trap' and disappearance

Figure 11 - Some alternative cluster evolutionary trajectories

[39] Martin, R. & Sunley, P. (2011). Conceptualising Cluster Evolution: Beyond the Life-Cycle Model? *Evolutionary Economic Geography*

2.10 Cluster regional policy

The effect of policy cluster in economy development has been studied extensively in recent years. There have been many papers describing the important of making adequate cluster policy, depend on the country/region needs. The general futures of cluster are well known globally, but in our country we need to create a meaningful strategy for clusters.

Several factors and policy tools can stimulate cluster synergy. For example, (Porter M. E., Competitive advantage: Creating and sustaining superior performance, 1998) proposes factor input conditions; local demand conditions; related and supported industries; and firm structure, strategy, and rivalry in the diamond model. (Sun, C.C., Lin, T.R., Tzeng, G.H., 2009)[40] and government support and culture as two other important factors. (Chen, Ch.P., Chien, Ch.F., Lai,

Ch.T., 2013) include now ledge producing institutions, innovative enterprise, supporting

[40] Sun, C.C., Lin, T.R., Tzeng, G.H. (2009). The evaluation of cluster policy by fuzzy MCDM: Empirical evidence from HsinChu Science Park. *Expert Systems with Applications, 36* , 11895–11906.

endowments, bridging intermediaries, customer of innovation, cluster network dynamics, and international linkages in a cluster network interactive model.

Cluster policy directly involved some other policies which are broker policy, demand site policy, training policy, promotion of international linkages policy, broader framework policy, BCG matrix, venture capitals, angel's investment, vesting which have strong impact to create national cluster policy.

The data of the European Innovation Scoreboard (ProInno Europe, 2009)[41] confirm that there is a strong link between national innovation systems and innovation indicators. This provides evidence that state support is important for cluster development and promotion of innovation using the cluster approach. Cluster support instruments differ in various European countries and regions, due to factors such as differences in economic development levels and co-operative traditions between the state and private sectors. Cluster support policy could be one of the indicators of state or regional competitiveness, reflecting the ability of the state to mobilize and invite main economic players to cooperate in promoting growth and developing innovation. (Boronenko, V., Zeibote, Z., 2011)

Table 4 – Policy trends supporting clusters and regional innovation system

Policy stream	Old approach	New approach	Cluster programme focus
Regional policy	Redistribution from leading to lagging regions.	Building competitive regions by bringing local actors and assets together.	Target or often include lagging regions. Focus on smaller firms as opposed to larger firms, if not explicitly then de facto. Broad approach to sector and innovation targets. Emphasis on engagement of actors.
Science and techno-logy policy	Financing of individual, single-sector projects in basic research.	Financing of collaborative research involving networks with industry and links with commercial-lization.	Both take advantage of and reinforce the spatial impacts of R&D investment. Promote collaborative R&D instruments to support commercialization. Include both large and small firms (often spin-off and start-up firms). Usually high-technology focus.
Industrial and enterprise policy	Subsidies to firms; national champions.	Supporting common needs of firm groups and technology absorption (especially SMEs).	Programmes often adopt one of the following approaches: • Target the drivers of national growth. • Support industries undergoing transition and thus shedding jobs. • Help small firms overcome obstacles to technology absorption and growth. • Create competitive advantages to attract inward investment and brand for exports.

Source: OECD, 2007, Competitive Regional Clusters: National Policy Approaches, Policy Brief, May 2007, OECD: Paris, p. 3.

[41] ProInno Europe. (2009). European Cluster Memorandum. *www.proinno-europe* .

Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or region. Clusters arise because they increase the productivity with which companies can compete. The development and upgrading of clusters is an important agenda for governments, companies, and other institutions. Cluster development initiatives are an important new direction in economic policy, building on earlier efforts in macroeconomic stabilization, privatization, the opening of markets, and reducing the costs of doing business. (Harvard Strategic Centre, 2004).

Economic theoreticians suggest considering also other indicators when defining a cluster: cooperation links, geographic aspects, product assortments, sizes of companies, etc. According to (Knorringa, P. & Meyer-Stamer, J, 1998),[42] a cluster is one of the types of cooperation. Horizontal and vertical cooperation are specific to a cluster (Pachura, 2010); (Cook, 2010). A cluster is a group of geographically close companies (Saxenian, 1994) that often produce the same product (Sorenson, O.; Audia, P. G, 2010) and the companies share the same development vision and supportive infrastructure (Cooke, P.; Huggins, R., 2003). However this view isn't present in the right form in our county. The Kosovo government didn't create the policy infrastructure and support the cluster initiatives, so maybe this is the reasons why we don't find any cluster model in our country. Despite the importance of this topic for national and regional development few researches have studied and proposed relative policies and strategies for our county. Its desirable to carry our survey of creating and implementing cluster strategies between many sectors, and the main point will be starting communication between companies and government to have stable connection for this sensitive topic

Based on relative European strategies that we consider during our work, we argue that it is very important now to create and implement cluster models in our country, in order to increase the innovation, country development, to stabilized export and import, and to offer new products that will development based on market needs. *(Timpano, 2005)*

[42] Knorringa, P. & Meyer-Stamer, J. (1998). New dimensions in local enterprise co-operation and development: from clusters to industrial districts. *ATAS Bulletin XI* , 26.

Table 5 – Cluster policy objectives and indicators of impact

Objectives	Indicators of impact (examples)
Economic development and structural	Economic performance
Enhancing innovation	Rate of growth of innovation at the cluster level
Supporting research and training	Rate of growth of scientific production, patents and specialized skills
Infrastructure investment	Economic performance
Supporting entrepreneurship	Improvement of economic environment
Promoting networking	Rate of growth of connections and links between firms
Supporting cluster organization	Increase in the quality of cluster management

Source: Timpano2005:11

Europe 2020 Strategy, which aims to create the framework for a smart, sustainable and inclusive growth includes among others the initiative entitled "An industrial policy for the globalization era". In the next programming period 2014 - 2020 the European policymakers will direct the EU budget firstly for supporting the competitiveness of industry and in particular SMEs, in order to correct market failures such as access to finance, and to strengthen and diversify the domain - so that the European industry could compete on a global scale.

Also, the participation of small and medium enterprises to financing programs will be a priority objective of the European Strategy for industrial competitiveness and SMEs, which aims at:

-A simplification of the rules

-To reduce the cost of participation

-To accelerate the evaluation, selection and contracting

-To provide single points of contact, e.g.

Specifically, the European Commission proposes the establishment of a special program called "Competitiveness and SMEs", as the successor of the current Competitiveness and Innovation Framework Programme (CIP). Also, all support measures for SMEs, including the innovative component of the CIP, would be included in the Common Strategic Framework for Research and Innovation. The "Competitiveness and SMEs" program will focus mainly on measures to promote dynamic, competitive SMEs internationally. In other words, the financial perspective 2014-2020 attaches a great importance to supporting SMEs as a factor in industrial competitiveness and economic growth. Regarding this new strategy, the European Commission (COM, 2014) mentions that" the EU industry is in shape and has the potential to restore the European economy back on the path of growth." Developing an EU industrial base requires

industry to be "modern, innovative, competitive, based on low-carbon emissions, resource and energy efficient."

Communication identified the following main areas where the competitiveness of the EU economy could be further strengthened in order to achieve significant progress in meeting the objectives of Europe 2020 Strategy:

- Orientation of structural changes in the economy towards more innovative and knowledge-based sectors
- Supporting innovation in industry, in particular by further concentration of
- Research projects in areas such as nanotechnology, advanced materials, industrial biotechnology;
- Promoting innovation and use of clean technologies
- Improving the business environment
- Supporting innovative, full implementation of the Single Market regulations, in particular Directive Services
- Facilitate professional and market interconnection, internationalization and market access of SMEs. (Pauna, 2014)[43]

Region development. Cluster-based entrepreneurship plays an important role in the economy of the 21st century. A regional cluster can be defined as a combination of 5 dimensions – single sector enterprises that cooperate and compete; supportive enterprises from a wide range of sectors; public and government institutions interested in economic development of the sector and region; other institutions, like research, education, finance and others and the fifth is regional dimension, which combines all four previously mentioned dimensions into one region. *(Garanti, Z., Zvirbule-Berzina, A & Yesilada, T., 2014)*

Based on literature, there are many elements that need to revised, in order to establish new regional development, based on cluster model. There are many factors that influence in clusters results. Basically the human resource and their potential are most important factor that companies need to analyze in very beginning period. In these contexts, in this paper we present many tools that affect directly in human resource performance such as broker policy, training

[43] Pauna, C. (2014). Cluster policy relevance on regional development. *Internal Auditing & Risk Management* , 179-187.

policy, vesting, e.g. but other very important parts of cluster are finance department, R&D department and sales department. All these departments have the unique ability to promote and to succeed in regional market.

Science parks. Science parks are widely seen as an effective tool to promote industry cluster, to realize larger and more visible returns on the R&D investment of a nation, and to bring about national/regional economic development. As a community concept, a science park encourages relevant firms within a value chain to move in, provide constructive competition, and stimulate collaboration among firms to form cluster synergy, an important driver in a national innovation system. Therefore, the success of a science park depends on its ability to stimulate industry cluster synergy, which is a dynamic network created by a geographically proximate group of interconnected companies, associated institutions, and the environment. By pooling infrastructure, human resources, capital, technology, and product markets, companies can facilitate interaction, dialog, collaboration, and competition along the value chain to stimulate competitiveness. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013).[44]

A science park often comprises the partnership between public and private institutions to create knowledge innovation and interaction through infrastructure and environment shaping. Although the public sector plays a more important role than the other actors in the early stages of the cluster life cycle in cluster initiation, infrastructure buildup, and public fund provision. (Andersson, T., Serger, S. S., Sörvik, J., Hansson, E.W., 2004), the private sector lead may be crucial for the effective performance of the economy (Porter M. , 2001).

Furthermore, innovation within a science park is different from enterprise innovation. It must create cluster synergy to raise competiveness in the value-added process for an individual enterprise and for the entire cluster; otherwise it will only be a grouping of enterprises. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013)

Broker policy. A broker has the role of pushing for system interaction and integration within a network. It stimulates linkages to external resources, and acts as an adhesive among state-of-the-art technology, manufacturing, and market. A broker policy aims to strengthen the mechanism

[44] Chen, Ch.P., Chien, Ch.F., Lai, Ch.T. (2013). Innovation: Management, Policy & Practice. *eContent Management Pty Ltd* , 416-436

for value-adding dialog and cooperation among various stakeholders. These policies include the creation of platforms for dialog, university–industry interaction system, public–private partnership to support knowledge enhancing linkage, or venture capital. Science parks and business incubators are additional tools often used and supported by government policies. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013).

Demand site policy. Aside from releasing data and market information, public procurement has a strong potential for developing and strengthening clusters. Along with subsidies and R&D financing, it can stimulate demand, long-term development, and buffer market variance. Even though the market often dictates demand, public support is important in strengthening industry cluster development, especially in its early stages. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013).

Training policy. Formal educational systems usually cannot provide the exact skill competence for most firms. Employees need on-the-job and vocational training programs. Consequently, most economies have created extensive public and private training programs for their labor pool. Training policies upgrade skills and competencies of human resources that are essential for effective clustering. Public training policy is especially crucial for SMEs, as they generally have fewer resources to recruit and train competent workers. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013).

Promotion of internacional linkages policy. This policy facilitates the interplay among foreign and domestic markets, manufacturing, and technology actors. In addition, this policy includes elimination of trade barriers, strengthening of transport and communication systems, and harmonization of market regulations, among others. These measures can greatly improve cluster conditions of information and resource flows, and enhance specialization in value chains across national borders. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013).

Broader framework policy. This policy covers an overriding playing field marked by effective and consistent rules for interaction transactions. This policy includes macroeconomic stability, product, labor and financial markets, education, government, physical and judicial systems, communications, and transport infrastructure. It may also include social capital and measures that support trust in transactions. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013).

BCG matrix. Products, industries, and clusters all have lifecycles. The BCG framework is a tool that examines the development of product or industry lifecycle. Despite its limitations, the BCG matrix is widely cited in academic and popular discussions on strategies. The BCG matrix consists of two dimensions, namely, market growth and market share position, with high and low levels. Market growth is an indicator of potential economic impact in a particular industry. Market share reflects competitive position in relation to its competitors. Together, products/industries are divided into four categories, namely, Star, Cash Cow, Problem Child, and Dog.

1) Star. These products or industries have relatively high shares in markets with a promising future. They have the potential to continue growing and generating profits. Thus, more resources and support should be provided to sustain Star development.

2) Cash Cow. These products or industries have relatively high market shares in mature markets. They should be maintained, kept alive, and milked. The focus is in maximizing the generation of cash and directing that cash to support newer and higher growth industries, such as supporting Stars or helping a Problem Child.

3) Problem Child. These products or industries have relatively low market shares in attractive yet uncertain markets. It has the potential to increase its market share or turn into a Dog. The strategy in dealing with a Problem Child is to help it develop into a Star or phase it out.

4) Dog. These products or industries have relatively low market shares in unattractive markets. If they could not find ways to teach the old Dog new tricks, they should probably get out, unless its existence is needed to support or complement other industries. (Chen, Ch.P., Chien, Ch.F., Lai, Ch.T., 2013).[45]

Venture capitals. Venture capital investing can be defined broadly as "investment by professional investors of long-term, risky equity finance where the primary reward is an eventual capital gain, rather than interest income or dividend yield" (Wright and Robbie 1997,

[45] Chen, Ch.P., Chien, Ch.F., Lai, Ch.T. (2013). Innovation: Management, Policy & Practice. *eContent Management Pty Ltd* , 416-436

XIII). This capital gain is realized when the venture capitalist or investing partners sell or otherwise liquidate their equity stake in the venture.

A diverse group of investors join venture capital partnerships. These investors include pension funds, endowments, foundations, bank holding companies, insurance companies, wealthy individuals, investment banks, and nonfinancial corporations.

Venture capitalists may be categorized by either the sources of investment capital--whether captive or independent--or the stage of business development on which they focus their investments. Captive venture capitalists are generally subsidiaries of banks or insurance companies and are funded through the mother institution; independent firms must seek funding through third parties.

Independent firms are primarily organized as limited partnerships. The venture capitalists are general partners, and the third-party investors are limited partners. As general partners, venture capitalists have considerable control over the firm and its management. Venture capitalists set certain developmental targets for enterprises and may release additional funds only as each goal is met. This sequential financing arrangement results in the release of enough capital to get the firm to the next level of maturity and no more.

Limited partners, on the other hand, use the venture capitalists as investment intermediaries and play a much more restricted role in management of the firm(s). Even though limited partners have little involvement in day-to-day management, the contractually specified relationship between general and limited partners helps ensure that the interests of the latter are not overlooked, as is discussed further below. (Parker, E., Parker, Ph., 1998).[46]

Venture capital investments are made in companies not quoted on stock markets, where the investor trades-off the short term illiquidity in the shares held for the prospects of a greater future return. (Wright, M., Robbie, K., 1998).

Angels investment. Business angles (Bas) are usually cashed-out entrepreneurs or retired senior executives who own investable assets of more than US-$1m, so-called ‘high-net worth individuals’. Along with time and expertise, they invest their money in high-risk, high return ventures, almost exclusively in seed and early stage financing rounds (Freear, J., Sohl, J.E., Wetzel, W.E., 1994). Since they invest their private money, they are called ‘informal’ investors.

[46] Parker, E., Parker, Ph. (1998). Venture capital investment: Emerging force in the Southeast. *Economic Review* , 36

The investment amounts typically range from US-$50.000 to $100.000, but sums of US-$10.000 and more than US-$100.000 are also common. The exit type is normally unplanned and highly depends on a venture's development. Mostly, BAs invest in start-ups in geographical proximity to their hometown. Due to their knowledge and experience in a special field, they invest in ventures in the same industry they worked in or founded companies before. The provision of mere capital and equity growth is often not the only reason why BAs support new ventures. Many of them are also interested in tapping into an exciting venture, to leverage their business contacts and also to protect their investment by active involvement (Lumme, A., Mason, C.M., & Suomi, M., 1998)[47]. As BAs provide equity for the new venture, they can demand a position as mentor or advisor and the entrepreneur is forced to coordinate decisions with them if he intends to retain the BA money (De Clercq, D., Fried, V.H., Lehtonen, O. & Sapienza, H. , 2006).

Vesting. There are two common forms of vesting schedules: time-based and performance-based. With time-based vesting, shares subject to the option become available for the employee to purchase at a stated frequency after the grant date. For example, 25 percent of shares granted will vest on the anniversary of the grant date over four years, or 100 percent at the end of year four. Shares subject to options with performance-based vesting become purchasable when the performance metrics are met, such as when the company reaches specific revenue or earnings-per-share targets. In some cases, a stock option will have both time- and performance-based criteria, with the vesting occurring at the earlier of the time-based schedule or the performance goals being met. (Longnecker, B. & Van Gordon, P., 2008).

2.11 Cluster analyse

Cluster analysis in most cases is a descriptive tool that provides interesting anecdotal history for how some regions have developed. Economic geographers, who after all developed the modelling and tools associated with cluster analysis, and perhaps feeling left out with all of the

[47] Lumme, A., Mason, C.M., & Suomi, M. (1998). *Informal venture capital: Investors, investments and policy issues in Finland.* Dordrecht, Netherlands: Kluwer Academic Publishers.

Longnecker, B. & Van Gordon, P. (2008). *Administering Stock Option Plans : How-To Series for the HR Professional.* Scottsdale, Arizona: WorldatWork Press.

accolades thrown to Porter, ask if the theory is not really new or different, and why is it so popular in practice? (Motoyama, 2008) [48]provides three reasons.

Cluster analysis provides:

1) An easy explanation;
2) A clear direction; and
3) A political justification.

However the method provides almost no guidance on how to actually develop a successful cluster. Once the cluster has naturally (organically) developed it is interesting and useful to investigate it. There is value in taking snap shots of the economy. Analyzing the interconnectedness of businesses to each other, to educational institutions, natural geography and so forth provides useful information. For example, it is useful to analyze the role of backward and forward linkages in industrial location decisions in order to answer the question whether firms actually consider these linkages. Cluster analysis in too many cases has become a justification for questionable government intervention. To the extent that cluster initiatives become organizations that promote and advertise communities using private resources, community boosterish or cheerleaders for the local economy, they certainly serve a useful purpose. The objection arises when cluster initiatives go beyond and become advocates for specialized government treatment in the form of subsidies and preferential taxes. (Hefner).

[48] Motoyama, Y. (2008). *What was New About the Cluster Theory? What Could it Answer and What Could it Not Answer?* Economic Development Quarterly

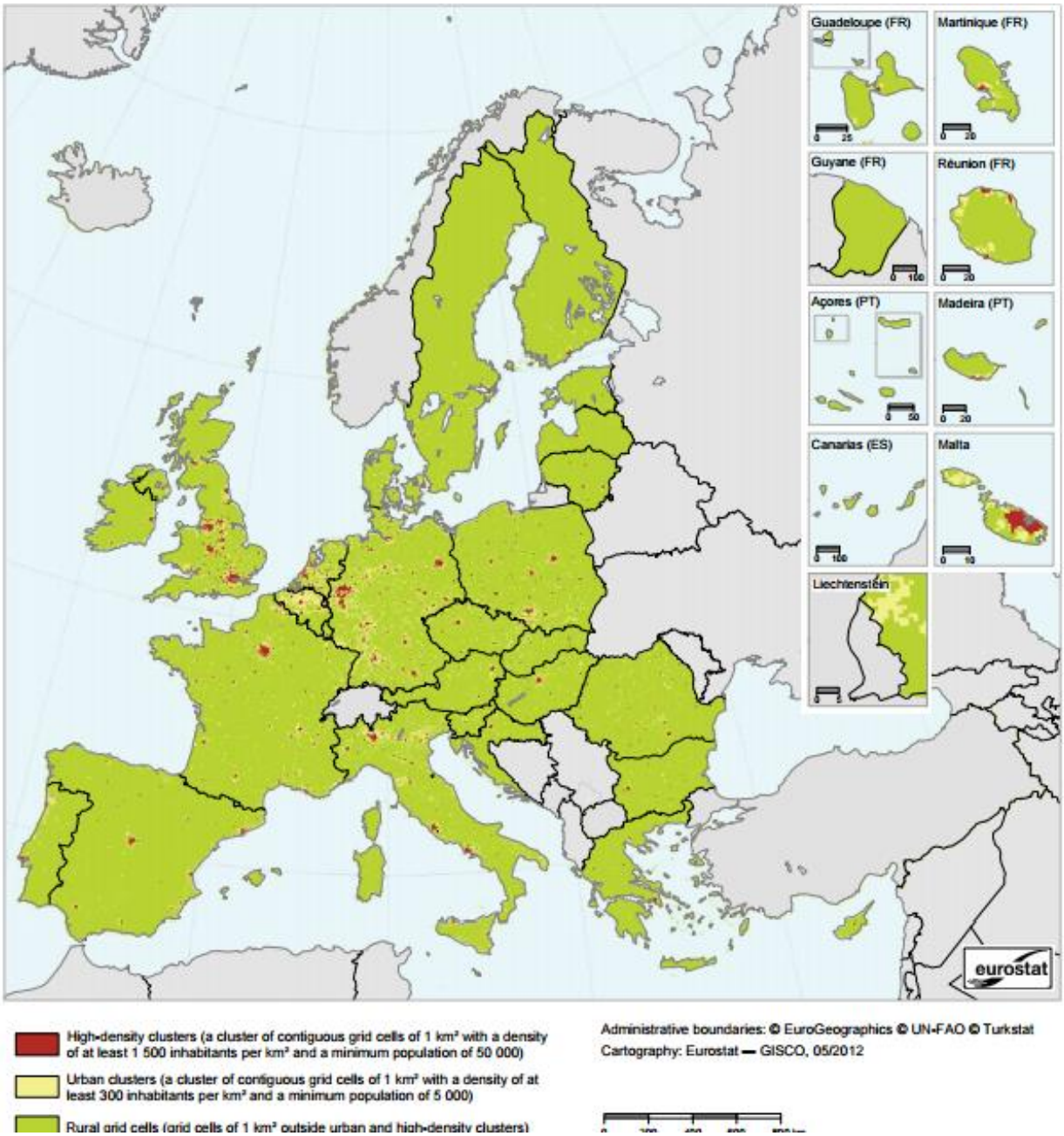
2.12 Evidence of clusters in Europe

Based on the evidence of Eurostat 2006, in Europe there was a lack of companies that used cluster managing model. Basically Malta with 64 high density clusters and United Kingdom with 54, had the highest cluster initiatives in that time. But over years the management of the companies evaluate the benefits of the clusters model and in 2012, number of the cluster initiatives in different industries were increase in higher level. The largest company worldwide now are using cluster models to succeed and to developed many managing models throw the different counties.

	Type of cluster (contiguous grid cells of 1 km²)			Degree of urbanisation (LAU level 2 areas)			Urban–rural typology (NUTS level 3 regions)		
	High-density clusters	Urban clusters	Rural grid cells	Densely populated areas	Intermediate density areas	Thinly populated areas	Predominantly urban regions	Intermediate regions	Predominantly rural regions
EU-27	35	32	33	40	32	28	40	36	24
Belgium	25	53	22	27	57	16	67	24	9
Bulgaria	35	26	39	43	23	34	15	45	40
Czech Republic	22	36	42	30	33	37	22	44	34
Denmark	24	31	45	34	21	45	21	36	43
Germany	31	41	28	34	42	24	42	40	18
Estonia	32	29	39	40	17	43	0	52	48
Ireland	27	20	53	35	21	44	30	0	70
Greece	46	15	39	38	25	37	46	10	44
Spain	43	25	32	48	25	27	48	38	14
France	35	27	38	46	21	33	35	36	29
Italy	31	38	31	33	42	25	35	44	21
Cyprus	44	27	29	52	22	26	0	100	0
Latvia	35	25	40	42	20	38	47	14	39
Lithuania	32	12	56	41	5	54	25	31	44
Luxembourg	16	44	40	18	37	45	0	100	0
Hungary	24	33	43	29	35	36	17	35	48
Malta	64	25	11	50	43	7	100	0	0
Netherlands	42	36	22	43	42	15	71	28	1
Austria	29	28	43	30	29	41	33	27	40
Poland	28	28	44	34	25	41	28	34	38
Portugal	28	33	39	44	30	26	48	13	39
Romania	30	21	49	33	22	45	10	44	46
Slovenia	15	25	60	18	32	50	25	31	44
Slovakia	17	35	48	21	36	43	12	38	50
Finland	17	35	48	33	31	36	25	31	44
Sweden	23	30	47	38	31	31	21	56	23
United Kingdom	54	30	16	57	30	13	71	26	3

(¹) Estimation based on 2006 density grid.
Source: Eurostat, JRC, EFGS, REGIO-GIS

In figure below it was present clearly the Europe cluster map, and all the cluster initiative in all the counties. This is very diversity presentation of clusters because we see that all the countries have the different density of clusters and of course in different zones. Unfortunately in Mediterranean area there isn't any initiative registered in 2012, but nowadays there are positive movements in this context.



3. Digital business

The role of information technology and its relationship to the business has shifted over the last 20 years. We have progressively transitioned from a focus on the design of information systems, to the design of IT-enabled business processes, and more recently to the design of business models for services provided through digital platforms. While this attention to business models for digital platforms initially started in the networked digital industry (telecom, media,

entertainment, gaming. software, etc.) it is increasingly being propagated to all industries whether healthcare, energy, retail, or financial services. As more customers consume products and services offered through digital platforms, the managerial stakes in understanding those models is becoming much higher, especially when these products and services have to be offered to and priced for consumers. Thus, digital business ecosystems are new and different. Companies operate in a technology-enabled and digitally interconnected environment characterized by new affordances, structures, and rules (El Sawy et al. 1999). The information systems discipline has explored and explicated many of these differences. One of its most important conclusions is that technology and business are effectively fused into one fabric—it no longer makes sense to talk about information technology as a tool or environment that is kept at arm's length from business activities (El Sawy 2003). To theorize about new business models and by adding a few ''digital'' features to the theory would lead to what we call the ''horseless carriage'' fallacy. That term for the first automobiles constrained the imagination and blinded inventors to the fact that the new design challenge was fundamentally different than the old. We realize that a theory of digital business models and digital service must integrate the distinct attributes of digital business ecosystems from the get-go (Yoo et al. 2010). There are at least three such attributes: time compression, turbulence, and new architectures. (El Sawy, O. A. and Pereira, F. , 2013)[49]

3.1 The economics of digital business models

The history of economic development around the world teaches us that clustering is a key driver of growth. Europe is looking for new sources of growth. Among the places to look, there is a growing interest in situations where industries, technologies, and value chains link up in new ways. Understanding where and how these new linkages emerge is critical for effective policy support to this process. Clusters as regional concentrations of economic activities in related industries provide a natural starting point for tracking these cross-industry linkages. (ECO, 2014).

A business model is a sustainable way of doing business. Here sustainability stresses the ambition to survive over time and create a successful, perhaps even profitable, entity in the long

[49] El Sawy, O. A. and Pereira, F. . (2013). Digital Business Models: Review and Synthesis. *Business Modelling in the Dynamic Digital Space* , 13-20.

term. The reason for this apparent ambiguity around the concept of profitability is, of course, that business models apply to many different settings that the profit-oriented company. The application of business models apply is much broader and is a meaningful concept both in relation to public-sector administration, NGO's, schools and universities and us, as individuals. (Clark, T., Osterwalder, A., & Pigneur, Y., 2012) (Nielsen, Ch. & Lund, M. Eds., 2012)[50]

Kosovo economy has yet to see their manufacturing sector develop and thereby contribute to sustained growth. The main field that Kosovo can offer in international market are agriculture products and information technology services.

Growth of the Republic of Kosovo trade deficit since 1999 is owed by the factors such as war, liberalization of trade regimes, insufficient investment in the real sector of economy and long-term isolation of the national economy from the impact of international market.
Country economy lags behind the regional and world developments in terms of applied production technology. The consequence is dropped in product competitiveness on foreign markets. Insufficient investment impedes structural changes of domestic production and export as preconditions for long-term sustainable growth. The differences between export and import are in alarming rate. Kosovo export only 324,543,000 € and import 2,538,337,000€ (KAS, 2014).
In Kosovo there are registered more than 130,000 companies, where 129,220 agricultural households and agricultural legal entities, 357 are specialized in information technology and communication, and 534 are trade and distribution companies. Only in 2014 in Ministry of Trade and Industry were registered 9404 new companies (KAS, 2014).

This information didn't say that the manufacturing sector in Kosovo is absent, but the problem is that after the war in 1999, Kosovo face with many problems, and for many years the government didn't create useful development strategies, and in these terms all the financial aids that came in our county are distribute in many forms. Based on this facts the Kosovo's entrepreneurs weren't able to invest in zone potential, because of financial barriers, so they start investing in very small, non certificate, manufactories. Many years later the situation change, now the national

[50] Clark, T., Osterwalder, A., & Pigneur, Y. (2012). *Business Model You: A One - Page Method For Reinventing Your Career*. Wiley.

focus is to move from consummator to food producer. The potential source of employment, skills development and poverty reduction is in our hand.

Now the Republic of Kosovo sign Stabilization and Association Agreement, that is very good news for national industries to work hard and to improve their production line in order to utilize this opportunity for export.

3.2 Digital capabilities

Today, almost nothing can be imagined without the application of advanced information technology that is just a consequence of the proper use of knowledge in process research and development. Information technology is a tool that allows us to better locate and use existing or create new knowledge. Access to information is a prerequisite for survival in the modern world that is characterised by global economic and political dynamics relevant for each and everybody. Making adequate use of information, transforming it and creating knowledge out of it requires competence and opportunity (Kovacevic, D. & Djurickovic, T., 2011).[51]

These changes can be grouped into several trends that characterized the modern business in a turbulent environment:

- Knowledge as a critical success factor for company - linking the use of specific skills and knowledge of individuals and organizations in order to achieve a better competitive position in the market become imperative to contemporary managers;
- The time for decision making is getting shorter - decisions that are made in real time have far-reaching consequences, so it is often necessary to react proactively. The focus is on the analytic attitude and conceptual knowledge;
- Relationships between employees are becoming more complex - using networked form of communication on the one hand allows the dissemination of knowledge, and the other reduces the physical contact and the ability to control and measure productivity of employees. The focus is on individuality, creativity, independence, a possibility of encouraging new ideas;

[51] Kovacevic, D. & Djurickovic, T. (2011). Knowledge management as critical issue for successful performance in digital environment. *International Journal of Management Cases* , 181-189.

- Information technology literacy is a requirement - with a new pre-condition of work and life and so far known pattern of consumer behaviour is changing. More demanding and more aware of consumer demand, changing its philosophy, its requirements are more sophisticated, and the company in a position to have to respond to individual customer requirements and anticipate a strategy that will respond to their needs in the future. (Kovacevic, D. & Djurickovic, T., 2011)

The organization and individuals often collect more information than they need to make a decision, and some information that may be of great benefit to the organization (such as the number and cause of lost consumer who are not satisfied with poor service or poor quality) is usually not collected because they are difficult to come.

If we analyze 3 indicators (effectiveness, efficiency and innovation) than we can have this impact as follow:

Indicators	Impact
Effectiveness	✓ Reducing production cost relative to sales volume ✓ Shorter preparation of operations ✓ Faster decision making process ✓ Faster delivery of products
Efficiency	✓ Improving quality of services and products ✓ Increase customer satisfaction
Innovation	✓ New products and services ✓ Larger number of employees ✓ New ideas came from all levels ✓ Encourage innovation by having sustainable information data

In the last few decades it has become universally accepted that innovations of any kind are important sources of productivity growth. They are considered as major means through which not only organizations, but also countries can gain and sustain competitive advantages in globally competitive marketplaces: at the beginning of the twenty-first century, for example, the European Council called for a challenging programme for building knowledge infrastructures,

enhancing innovation and economic reform and for modernizing social welfare and education systems (European Communities 2000). (Piperopoulos P. G., 2011).[52]

Regional clusters are widely used tool to promote growth of local businesses that leads towards the growth of the region and the nation. Regional clusters offer a platform for cooperation, collaboration and interaction between enterprises working in the same industry, supplementary industries, research, science and other institutions. Collaborative ties between cluster members ensure business growth in terms of efficiency, innovation capacity and competitiveness. (Garanti, Z. & Zvirbule- Berzina, A., 2014).

Emerging industries that thrive on cross - sectoral linkages; they combine narrow activities in new ways, and it is this combination rather than the individual activity that generates economic value. Emerging industries are perceived to have a disproportional importance for future growth, both in the medium- and long-term. (Ketels, Ch. & Protsiv, S., 2014).

3.3 Electronic business

Business in the digital economy integrates information technologies and communications within its activities and may be partially or totally electronic. Business electronic involve a complete change in how the customer is viewed in relation to the organization; requirements "e-customer" are larger and increasingly sophisticated, and the organization must be able to offer services of a quality that in the largest communities of a multinational partners and customers. (Constantin, L., Budacia, G., & Budacia, E.A., 2008).

Electronic Business may be characterized in three views: conceptual, organizational and practical.

In terms of conceptual, so that a business will be promoted to the status of e-business is taken into consideration the following aspects:

- ***Customer orientation*** - personalizing the largest possible extent and offers products based on preferences, field of interest and typology clients; obtaining and maintaining an image complete 360 on their way in providing services during and quantity expected;

[52] Piperopoulos, P. G. (2011). *Entrepreneurship, Innovation and Business Clusters.* Farnham, England: Gower applied research

- ***Targeting process*** - addressing information and operational activities of the organization's along process and not along rigid boundaries imposed by organizational structure (divisions, departments, territorial distributed locations, etc.);
- O***pening*** - a date with the transformation in "e"-business organization is opening a series of opportunities such as the possibility of integrating information and informatics business partners, with banking institutions, customs, government, in order to tax automation economic transactions;
- ***New forms of work, retraining staff*** - the deployment of most modern forms of work based on intensive use of means IT & C (tele - work, tele - centers etc.). The staff is trained for the purpose of the use of computer, the transition from performing simple operations to complex works. This can be considered as staff move from the stage qualifying at education;
- ***Information security*** - the most since the property price of a business (whether electronic or traditional) is information, e-business require "a fundamentally different approach regarding security informatics. In the past the only people who accessed networks were certain employees and partners. These were people you knew and they had confidence. In e-business, do not know who accessed the information and I'll know if you cannot trust them. So it is necessary a different set of principles, processes and technologies to ensure that networks remain protected". (Constantin, L., Budacia, G., & Budacia, E.A., 2008).[53]

3.4 Digital enterprise transformation

Current and future technologies allow companies to create competitive advantages. Their success depends on early movement and a clear strategy of how the company can profit most from these technologies. Companies must be able to transform themselves digitally. Digital transformation uses the latest technology in response to social behavioural changes, to establish a culture of agility, innovation, empowerment and engagement. . (Uhl, A. & Gollenia, L.A., 2014).[54]

Digital transformation is a specialized type of business transformation where IT plays dominant role. Companies need to understand and evaluate several factors to determine the best way to

[53] Constantin, L., Budacia, G., & Budacia, E.A. (2008). Electronic business in business . *Romanian Economic and Business Review* , 42-47.

[54] Uhl, A. & Gollenia, L.A. (2014). *Digital Enterprise Transformation.* England : Gower Applied Research.

transform. Every transformation is a complex and time-consuming process and is influenced by its environment, such as customers, competitors, government and regulators, as well as other stakeholders. It is therefore a complex and risky undertaking. Less than 40% of transformation efforts are successful and sometimes it takes several attempts to succeed. This is not simply about implementing the latest technology. Instead, it is more about adapting corporate culture in order to benefit from the opportunities provided by the latest technology. The latest research studies show that digital transformation radically improves corporate and financial performance (Bonnet, D., Ferraris, P., Westerman, G., & McAfee, A., 2012)[55] (Uhl, A. & Gollenia, L.A., 2014).

Digital Transformation is a specialized type of business transformation where IT plays a dominant role. In the digital age, new business opportunities arise and enterprises transform their strategy structure, culture and processes using the potential and power of digital media and the internet. . (Uhl, A. & Gollenia, L.A., 2014)

The recent economic crisis confirmed yet again that there is no business to big to fail. At the same time, there are many small start-up businesses, which proved to be successful, with exceptional growth rates. According to a study by MIT research (Westerman, G., Tannou, M., Bonnet, D., Ferraris, P., & McAfee,A. , 2012) 78% of respondents said that achieving digital transformation will become critical to their organization within the next two years, however 63% said that the pace of technology change in their organization to slow (Fitzgerald, M., Kruschwitz, N. Bonnet, D. & Welch, M., 2013)(Uhl, A. & Gollenia, L.A., 2014).

Companies which have the right instruments to monitor technological and socio-political trends and make the right strategic adjustment are more likely to survive in the future. In short, companies that transform themselves digitally are able to stay competitive in a rapidly-changing market. We refer to such companies as Digital Enterprises.

Digital Enterprise: The term designates a company – irrespective of its history or its industry – shoes IT plays a dominant role in the corporate strategy, i.e. where IT is used in internal and external operations to create competitive advantages. (Uhl, A. & Gollenia, L.A., 2014)

[55] Bonnet, D., Ferraris, P., Westerman, G., & McAfee, A. (2012). *Digital Transormation Review.*

Even if a company can rapidly sense and respond to new technologies, it must also create business value from the technology investment. Digital Enterprises know how to make money by leveraging digital technologies and they can use them in a way that is beneficial for all parties involved in their business chain. The transformation to a digital enterprise depends on a variety of criteria and plenty of organizations have failed to transform. (Uhl, A. & Gollenia, L.A., 2014)

A digital enterprise excels in innovation and figures out how to derive a real financial benefit out of it. It also has excellent transformation ability. Digital enterprises even develop entirely new business models based on new technology. Companies that are successful in the long term have the ability to rapidly identify the changing environment and can quickly respond to new situations. A digital enterprise excellently exploits the potential of new technologies and as a consequence the business. This leads us to another characteristic of Digital enterprises, namely the closer connection to customers. Social media and other technologies alike enable entirely different forms of communication between and with customers. (Uhl, A. & Gollenia, L.A., 2014)

The digital capability framework encompasses four parts:

- Digital Capabilities – The key skills and capabilities a company requires transforming itself into a sustainable and successful business by considering digital technology as the enabling component.
- Digital Capabilities Maturity Models – structured assessment to evaluate the digital maturity of an organization.
- Digital Use Cases – ways of showing how to enhance the digital capabilities within a specific industry.
- Digital Transformation Roadmap – we presents the six steps of how to proceed to a digital enterprise transformation, which are: 1. Business as usual, 2. Test and learn (New technology sparks imagination and experimentation), 3. Systemize and strategize (sense of urgency accelerates), 4. Adapt or die (strive for relevance escalates), 5. Transformed and transforming (digital transformation in necessity), 6. Innovate or die (culture of innovation becomes a priority). (Uhl, A. & Gollenia, L.A., 2014).

The management of a business in the digital economy is based on a management process called digital management. Business in the digital economy integrates information technologies and communications within its activities and may be partially or totally electronic. Management of the business is carried out using information systems that support for the substantiation and decisions. (Constantin, L., Budacia, G., & Budacia, E.A., 2008)[56].

In the figure below we present visually the three stages of Digital evolution, which has fundamental impact in company performance.

(Magazine, 2015)

The Three Stages of Digital Evolution

	EARLY	DEVELOPING	MATURING
Barriers	*Lack of strategy* More than half cite "lack of strategy" as a top-three barrier	*Managing distractions* Nearly half indicate "too many competing priorities" is a top-three barrier, "lack of strategy" still a challenge for one-third	*Security focus* Nearly 30% cite security as a top-three barrier; managing too many competing priorities remains a top concern for 38%
Strategy	*Customer and productivity driven* Approximately 80% cite focus on customer experience (CX) and efficiency growth	*Growing vision* CX and efficiency growth; over 70% cite focus on transformation, innovation and decision making	*Transformative vision* Over 87% cite focus on transformation, innovation and decision making
Culture	*Siloed* 34% collaborative; 26% innovative compared to competitors	*Integrating* 57% collaborative; 54% innovative compared to competitors	*Integrated and innovative* 81% collaborative; 83% innovative compared to competitors
Talent Development	*Tepid interest* 19% say their company provides resources to obtain digital skills	*Investing* 43% say their company provides resources to obtain digital skills	*Committed* 76% say their company provides resources to obtain digital skills
Leadership	*Lacking skills* 15% say leadership has sufficient digital skills	*Learning* 39% say leadership has sufficient digital skills	*Sophisticated* 76% say leadership has sufficient digital skills

Figure 12 – The three stages of Digital Evolution

3.5 Digital business strategies

In this chapter we are going to present some international digital transformation cases, and to revise their success and their fails during this process.

[56] Constantin, L., Budacia, G., & Budacia, E.A. (2008). Electronic business in business . *Romanian Economic and Business Review* , 42-47.

Companies like Scott Paper, Zenith, Rubbermaid, Chrysler, Teledyne, Warner Lambert or Bethlehem Steel were among the most celebrated companies in history. Today, they have disappeared from the list and other business like Intel, Microsoft, Apple, Dell and Google grew from zero to market leaders using entirely new technologies (Collins 2008).

Just consider Apple's iPad as one example, introduced to the market in 2010. Restaurants capture orders and payments electronically, doctors offer virtual magazines in their waiting rooms instead of traditional paper-based magazines, sales forces use it to present products or services to customers in a more enjoyable and flexible way; the transformation possibilities are endless. However companies which had established long term IT strategies before 2010 did not consider the opportunities of such devices. Consequently, those departments, which still stick to the initial plan, are not able to react appropriately to the new market requirements. (Uhl, A. & Gollenia, L.A., 2014).

An example of a failed digital transformation is Kodak, a company known as an innovator since 1888 and whose laboratories produced many innovations and techniques. Although Kodak owned most of the patents for digital-photography technology and invented the first digital camera in 1975, the company has struggled since and is currently trying to recover. Kodak's business in the 20th century was to sell firms, and they feared that digital products could reshape the market. Instead of marketing the new technology, the company aggressively kept promoting their traditional, lucrative, film business. By the time they realized that they were in a "memories business" rather than a "film business" they had been overtaken by their competitors and are still having a hard time recovering. Kodak was not able to come up with new, innovative concepts that convinced their customers. They did not understand how to transform digitally and commercialize their innovations.

In contrast, the Benetton Group successfully transformed to become a digital player. They implemented a holistic mobile strategy with Apple's iPad as a major device. The sales division uses the iPad to visualize the fashion catalogue, replacing the hardcopy catalogue that was costly to produce and difficult to change. The new IT solution enables last minute updates of the collection. Thus, changes can be realized faster and with significant time savings. The marketing division uses the iPad to allow people to share comments and to preview details of the collection through iPads installed stores. Consequently, the company provides confidence by making the

production transparent. Benetton also uses the iPad as a communication channel between employees. The employees can access the collection, all Benetton stores, mail, calendars or contacts anytime and at any place. A geographically distributed workforce is fully supported. Digital enterprises have the right toolset for the transformation and proactively react to new technologies instead of just considering transformation when revenues decline (for examples, due to a competitor's advantages).

Digital enterprises even develop entirely new business models based on new technology, like social media: Friendsurance, in co-operation with Facebook, developed cheap insurance products relating to liability, legal protection and Smartphone's. In the event of damage, minor claims are settled within the network itself (shared risk); the insurer is liable only for larger claims. The insurance premium is determined depending on the actual damage incurred. This model is based on the sharing of risk between the customer group and the insurer. As a result, a noticeable drop in insurance fraud, a positive risk selection, as well as lower marketing and administration costs could be reported. (Uhl, A. & Gollenia, L.A., 2014)

Companies that are successful in the long term have the ability to rapidly identify the changing environment and can quickly respond to new situations. Google, for instance, either acquires new application providers or the company builds its expertise from the ground up. Google's IT product portfolio is diversified and the most important point is that their productions are seamlessly integrated. Consequently, digital enterprises align new technologies seamlessly with the existing IT infrastructure. Another example is the global recruitment company Hays, which decided in 2008 to replace its entire IT landscape with the goal of establishing a flexible, scalable and adaptable IT platform. They took a step back and completely rethought their IT landscape. Their software selection was based on open standards and they also considered cloud-based solutions. The initial part of this IT transformation was completed in 2010 and the company established its basis for a stable and yet flexible infrastructure. The open standards-based architecture allowed them, for instance to connect to LinkedIn platform and provides them with new business opportunities. In addition, they use the Google Search Appliance and Oracle business intelligence tools, which provide additional value from growing mass of data.

Nowadays enterprises with a traditional supply chain, such as in the automotive industry, still tend to focus only on the next link to which they ship their products. BMW announced its new

electric car, the BMW i3, in July 2013. The rally interesting announcement with respect to digital transformation was the multi-channel sales model, including an online sales platform. For the first time, a car manufacturer sells its cars directly to its customers via an online shop. In the past, customers could configure their cars online sales occurred at the dealership. (Uhl, A. & Gollenia, L.A., 2014)

3.6 Digital business models

In these days it is very difficult to manage a huge manufacture, especially in transition countries. Running successful processing industry is a huge challenge; because you need to face up with competitors, making compliance with costumer, trying to fulfil the gaps in this field with hurdles arrive at an alarming rate. By using digital model companies try to reduce cost, by using their infrastructure, technology and resources in order to switch gears quickly with present processes as well as future plans. Digitization makes entities connectable, and scaling decreases the marginal cost for the customer, the provider to concrete new values, eliminate errors and omissions by identifying issues.

The effect of digital models in producing companies has been studied extensively in the recent years. The general futures of digital models are well known. They have a highly valuable support for planning and visualizing the manufacturing system. (Dangelmaier, W., Fischer, M., Gausemeier, J., Grafe, M., Matysczok, C., Mueck, B., 2005).[57]

A digital business model describes how each of the businesses in your enterprise will interact digitally with its customers and generate values. A great digital business model will often challenge the status quo in the enterprise (e.g. who owns the customer). We have createed a framework to help companies determine how they should compete digitally via three capabilities: content, experience and platform. (Weill, 2011). However few challenges, limited implementing, of these models in many countries, especially in transition countries like Kosovo. The main problem seems to be traning stuff to create, use and modify this model. A considerable

[57] Dangelmaier, W., Fischer, M., Gausemeier, J., Grafe, M., Matysczok, C., Mueck, B. (2005). Virtual and augmented reality support for discrete manufacturing system simulation. *Elsevier Science* , 371-383.

amount of researches has been done for this topic, however, less attantion has been paid to meat processing industry worldwide.

3.7 Audit in digital business

From an internal audit perspective, successful mitigation of the risks posed by employee use of virtual technologies—which is essential to the organization's ability to maximize their benefits—begins with knowing exactly which technologies employees are using. And that may be a tougher challenge than many auditors imagine, because what's officially allowed may not even be close to what's actually going on. (Jackson, 2013).[58]

Mobility and the concept of "bring your own device" (BYOD) are used to increase employee productivity and customer engagement. Mobile technology "allows us to sustain effective communications internally and externally," says Frederic Brown, IT audit manager at Hewlett-Packard Co. "In addition, we employ voice-over-IP with collaboration—desktop sharing—which is extremely stable, cost effective, and well-received by the user base." Social media is used across HP's business and is a key marketing strategy because of its speed and ability to reach millions of potential customers, he adds. While that data mobility can be key to modern marketing and business processes, those actions can create reputational, competitive, and strategic risks that internal audit needs to address. She says organizations need acceptable use protocols about what kind of information needs to be strictly held and what kind can be made public. (Jackson, 2013).

Any effort to mitigate the risk of inappropriate technology use is going to be hampered by one unavoidable factor: people. "Any time you're looking at a risk or a control, you have to think about process, technology, and people," DuBray a Houston-based IT audit manager and security analyst who has worked with three large energy companies comments. "Technologically, a company can restrict what employees can and cannot do, but there's still the, people element. So you must try to ensure that your policies are well understood and well-communicated." One of the trickiest considerations is BYOD policies, because they often require a complete change in philosophy at both the employee and corporate levels— a change that may not be well received by some executives, she says.

[58] Jackson, R. A. (2013). *Audit in Digital business world.* California: Internal Auditor .

If it sounds as if virtual technologies, for all the benefits they can bestow, are difficult to corral, it's because that's precisely the problem internal audit department's face: These technologies create risks to an enterprise that are often hard to quantify, let alone fully assess and assist in mitigating. (Jackson, 2013).

Heavily regulated industries, such as banking, utilities, insurance, and health care, face much greater risks from inappropriate use of virtual technologies than do less-regulated industries, such as manufacturing. "They tend to have more sensitive data," such as personal health information and personal identity information, he says, "Hence the risk to them is higher due to potential penalties by the regulating authorities." notes Raj Chaudhary, leader of the security and privacy team at Crowe Horwath LLP in Chicago. (Jackson, 2013).

If the use of virtual technologies is left unmanaged, he adds, companies may end up at a competitive disadvantage as a result of technology misuse. Management scrutiny is usually drawn to projects and changes with a significant financial or operational impact on the business, but cloud computing often flies beneath management's radar.

The bottom line questions for internal audit departments are:

1.1 Whether the onslaught of new technologies and the imperative to assess the risks they impose actually change the internal audit process;

1.2 Whether they simply add new risks to assess and new mitigation strategies to suggest; and

1.3 Whether front-line internal auditors have the technological savvy to be credible experts on the topic. (Jackson, 2013). [59]

4. Corporate governance

Corporate governance is defined as the structures and processes by which companies are directed and controlled.

Good corporate governance helps companies operate more efficiently, improve access to capital, mitigate risk, and safeguard against mismanagement. It makes companies more accountable and transparent to investors and gives them the tools to respond to stakeholder

[59] Jackson, R. A. (2013). *Audit in Digital business world.* California: Internal Auditor .

concerns. Corporate governance also contributes to development. Increased access to capital encourages new investments, boosts economic growth, and provides employment opportunities. (IFC, 2015)[60]

Under Article 1 of the Convention signed in Paris on December 14, 1960, entered into force on September 30, 1961, the Organization for Economic Cooperation and Development (OECD) aims to promote policies designed to:

- Contributes to the healthy economic expansion in member and non-member states in the process of economic development;
- Assists member and non-member states in evaluating and improving their legal and institutional framework and that of corporate management regulations by providing suggestions for the Stock market, investors, corporations and other interested parties;
- Contributes to the expansion of global trade based on non-discriminatory foundations in accordance with international obligations.
- Acquire the highest level of economic sustainable growth and jobs undertaking as well as of an improving lifestyle. (Balc, L. B., Ilies, R., Cioban, B. & Cuza, B., 2013).

In 1997, the OECD Council met at ministerial level and proposed a set of standards and guidelines on corporate governance. Thus, in 1999, there were approved the OECD Principles of Corporate Governance, which are today the only set of management principles accepted at international level that applies to the whole corporate management framework - the legal, institutional and regulatory framework as well as to the practices that create the context in which the companies operate. (Balc, L. B., Ilies, R., Cioban, B. & Cuza, B., 2013).

The revised OECD Principles cover six main areas:
1. Ensuring a legal and institutional framework for effective corporate governance;
2. Protecting the interests and facilitating the exercise of rights for the shareholders;
3. Equal treatment to all shareholders including to small shareholders or to foreign shareholders;

[60]IFC,I.F.(2015,1113). *www.ifc.org*. Retrieved 11 13, 2015, from www.ifc.org: http://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+CG

Balc, L. B., Ilies, R., Cioban, B. & Cuza, B. (2013). Corporate governance. Conceptual approaches. *Managerial Challenges of the Contemporary Society* , 14-17.

4. The role of stakeholders;

5. Transparency and reporting;

6. The role of the boards of directors; (Cod, 1992).

4.1 Definition of corporate governance

The concept of corporate governance has emerged and developed ever since last century and it was influenced during its existence by economic environments based on family property, bank capital, institutional investors or anonymous companies, environments stimulated by notorious scandals which took place in time. But, all of these moments of crisis had a positive influence in terms of identifying ways to improve this concept and which corresponds to the new stage in the evolution of the economy. The term "governance" is derived from the Latin "gubernare" which means "to lead", suggesting rather that "the governance" (Corporate, in this case) implies more the steering function than the control one. In Romanian, the term "government" is synonymous with "administration" or with the one of "leadership", referring here to all activities within a company, within the scope of management. If the term of „governance" means leadership, than „the corporate governance" induces the idea of leading the entire organization, because the term „corporate" comes from the word „body", suggesting the idea of an ensemble, of the whole unit. (Balc, L. B., Ilies, R., Cioban, B. & Cuza, B., 2013).[61]

The characteristics of a corporation are:

- Being a public joint-stock company, it may issue shares.
- Its shareholders have limited liability; they are not liable for the debts or obligations of the company.
- Shareholders can transfer ownership of shares owned, which gives a longer life to the company.

Based on a study of long living organizations, (DeGeus, 1997) identified the following four characteristics that increase the longevity of organizations:

1. Sensitivity to the environment, representing a company's ability to learn and adapt.

2. Cohesion and identity, which are aspects of a company's innate ability to build a community and a persona for itself.

[61] Balc, L. B., Ilies, R., Cioban, B. & Cuza, B. (2013). Corporate governance. Conceptual approaches. *Managerial Challenges of the Contemporary Society* , 14-17.

3. Tolerance and its corollary, *decentralization that* are both symptoms of a company's awareness of ecology and its ability to build constructive relationships with other entities, within and outside itself.

4. Conservative financing as a key attribute that enables an organization to govern its own growth and evolution effectively. (Pande, S. & Ansari, V.A., 2014).[62]

The concept of strategic value incorporates the aims of all socially responsible investors and the stakeholders as well as the collective aims of all interest groups who are not stakeholders. But above all, it incorporates the objectives required to increase the longevity of the organization. Strategic value, while not easy to determine would require the directors to take actions on the basis of what's best, in a utilitarian sense, for the viability and continued well being of the organization and, it follows as a natural corollary, that any stakeholder objective that is not consistent with growth and longevity of the organization would not be adding to the strategic value of the organization and therefore would stand rejected, as a decision criterion, by the board member while taking the decision. (Pande, S. & Ansari, V.A., 2014).

In the figure below we present governance factors responsibility in financial and strategic controls (Filatotchev, I. & Nakajima, Ch., 2014).

[62] Pande, S. & Ansari, V.A. (2014). A Theoretical Framework for Corporate Governance. *Indian Journal of Corporate Governance* , 56-72.

Filatotchev, I. & Nakajima, Ch. (2014). Corporate governance, responsible managerial, behavior and corporate social responsibility: organizational efficiency versus organizational legitimacy? *The Academy of Management Perspectives* , 289-306.

Governance factors	Financial controls	Strategic controls
Ownership structure	• Dispersed ownership • "Transient" institutional owners	• Large-block shareholdings • Long-term institutional investors • SRIs
Accountability and reporting	Centralized systems of accountability and communications	• Non-hierarchical systems of communication • Accountability to external constituencies
Board monitoring focus	Financial performance of the firm (ROS, ROA)	Strategic objectives, including long-term sustainability of the firm
Managerial incentives	• Executive share options • Incentive schemes linked to financial performance	• Incentives include, alongside financial performance, broader indicators such as social performance • Focus on the "triple bottom line"
Risk management and control	Risks are mainly related to financial and economic factors	Risks include a wide range of economic and social factors
External governance	Developed market for corporate control	Consideration of reputation and trust
Relationships with external stakeholders	"Shareholder supremacy"	Formal consideration of stakeholders' interests within the context of long-term sustainability

Figure 13 - Financial vs. Strategic Controls and Their Underlying Governance Practices

4.2 Pillars of good corporative governance

Corporate governance refers to the structures and processes for the direction and control of companies. Corporate governance concerns the relationships among the management, board of directors, controlling shareholders, minority shareholders, and other stakeholders. Good corporate governance contributes to sustainable economic development by enhancing the performance of companies and increasing their access to outside capital.

This definition focuses on three key elements:

• Direction refers to all the decisions that relate to setting the overall strategic direction of the company such as: (i) long-term strategic decisions; (ii) large scale investment decisions; (iii) mergers and acquisitions; and (iv) succession planning and appointment of key senior managers, such as the CEO of the company.

• Control refers to all the actions necessary to oversee the management's performance and follow up on the implementation of the strategic decisions set above.

• Relationship among the main governing bodies of the firm refers to the interactions among the shareholders, the directors of the board, and the managers. An important element of any good

corporate governance structure is the clear definition of the role, duties, rights, and expectations of each of these governing bodies. (IFC, IFC Family Business Governance Handbook, 2011).[63]

Pillars of good corporate governance are:

Every company should be headed by an effective board which is collectively responsible for the long-term success of the company. There should be a clear division of responsibilities at the head of the company between the running of the board and the executive responsibility for the running of the company's business. No one individual should have unfettered powers of decision. The chairman is responsible for leadership of the board and ensuring its effectiveness on all aspects of its role. As part of their role as members of a unitary board, nonexecutive directors should constructively challenge and help develop proposals on strategy. The board and its committees should have the appropriate balance of skills, experience, independence and knowledge of the company to enable them to discharge their respective duties and responsibilities effectively. There should be a formal, rigorous and transparent procedure for the appointment of new directors to the board. All directors should be able to allocate sufficient time to the company to discharge their responsibilities effectively. All directors should receive induction on joining the board and should regularly update and refresh their skills and knowledge. The board should be supplied in a timely manner with information in a form and of a quality appropriate to enable it to discharge its duties.

The board should undertake a formal and rigorous annual evaluation of its own performance and that of its committees and individual directors. All directors should be submitted for re-election at regular intervals, subject to continued satisfactory performance.

Levels of remuneration should be sufficient to attract, retain and motivate directors of the quality required to run the company successfully, but a company should avoid paying more than is necessary for this purpose. A significant proportion of executive directors' remuneration should be structured so as to link rewards to corporate and individual performance. There should be a formal and transparent procedure for developing policy on executive remuneration and for fixing

[63] IFC, I. F. (2011). *IFC Family Business Governance Handbook.* Washington, DC: Word Bank Group.

the remuneration packages of individual directors. No director should be involved in deciding his or her own remuneration.

The board should present a fair, balanced and understandable assessment of the company's position and prospects. The board is responsible for determining the nature and extent of the significant risks it is willing to take in achieving its strategic objectives. The board should maintain sound risk management and internal control systems. The board should establish formal and transparent arrangements for considering how they should apply the corporate reporting, risk management and internal control principles and for maintaining an appropriate relationship with the company's auditors.

There should be a dialogue with shareholders based on the mutual understanding of objectives. The board as a whole has responsibility for ensuring that a satisfactory dialogue with shareholders takes place. The board should use the AGM to communicate with investors and to encourage their participation. (Rejchrt, P & Higgs, M., 2015)[64]

4.3 Importance of scorecard as a evaluation tool for clustered firms performance

A scorecard is a quantitative tool to measure the level of observance of a code and/or a standard of corporate governance. Scorecards compare governance practices to a benchmark. Typically the benchmark is a national code of corporate governance or an international code or standard.4 Scorecards are not used principally to measure regulatory compliance. Rather, scorecards measure the observance of a voluntary code of best practice. Scorecards are used to assess a company's governance practices, show progress over time, and compare different companies and even groups of companies within or across countries. (IFC, Corporate Governance Scorecards, 2014)

Scorecards are tools for the assessment of corporate governance practices. They measure the observance of corporate governance codes and encourage better governance practices without the intrusiveness of legislation.

[64] Rejchrt, P & Higgs, M. (2015). When in Rome: How non-domestic companies listed in the UK may not comply with accepted norms and principles of good corporate governance. Does home market culture explain these corporate behaviours and attitudes to compliance? *Springer Science+Business Media Dordrecht* , 131-159.

- *Scorecards generate important information on the quality of governance practices*. They can tell whether companies ignore codes or follow code recommendations. They provide information on the impact of governance codes. They can be used to compare practices between companies and between countries.
- *Scorecards encourage companies to improve their governance*. Comparisons to other companies provide an important indicator on how the company stacks up against a peer group and can motivate companies to improve their governance. Scorecards are particularly useful when a (new) code of corporate governance is introduced in a country.
- Companies want concrete and useful information. Most companies want quantifiable and comparable information on the quality of their governance practices. Companies want to know when and where they fall short so that they can act.
- *The main beneficiaries of scorecards are companies and their stakeholders*. Scorecards can help companies improve their strategy, decision making, risk management, control, and organization.
- *Anybody can initiate a scorecard project*. Scorecards are of interest to companies, regulators, stock exchanges, institutes of directors, chambers of commerce, investors, academics, and more. (IFC, Corporate Governance Scorecards, 2014).[65]

Scorecards have goals at both the market level and the company level.

At the market level, the overarching goal is the development of safer and more efficient capital markets. One way to strengthen capital markets is to improve the implementation of the governance framework. Governance codes and standards are an important part of this framework. Scorecards encourage implementation of codes and standards by benchmarking companies and countries over time. Scorecards set expectation levels, generate incentives for reform, help direct change, and can set in motion a process of continual improvement.

At the company level these goals begin with providing companies with a powerful analytical tool. Scorecards are a useful basis for companies to start an analysis of their governance practices. Scorecards help identify shortcomings against locally defined standards and/or

[65] IFC, I. F. (2014). *Corporate Governance Scorecards.* Washington, DC: World Bank Group.

generally accepted international standards of good practice. The findings of a scorecard can, in turn, be used to help the company develop a corporate governance improvement plan. The ultimate outcome should be better operational performance and lower risk as a result of better governance practices. (IFC, Corporate Governance Scorecards, 2014).

Below we present the sample of measurable outcomes, for companies, for chamber of commerce, institute of directors, stock exchange and regulators.

For a small listed company:

• Appointed personnel to improve and maintain good governance practices;
• Developed written policies and procedures;
• Enhanced transparency toward all shareholders and the markets;
• Created recognition of the company as a governance leader and a quality investment;
• Developed commitment to good governance at board and executive levels;
• Created better understanding of governance and how it affects company operations;
• Enhanced protection of minority shareholders;
• Provided a better understanding of governance strengths and weakness; and
• Led to a roadmap for future improvement.

For a chamber of commerce:

• Raised awareness of corporate governance issues;
• Generated real-time information that allowed comparison of any company to a peer group;
• Created a network of consultants to advise enterprises on their governance;
• Led to the development of numerous governance action plans developed at the company level;
• Plans led to actual changes in governance practices in numerous enterprises; and
• Allowed generation of aggregated data on governance practices—broken down by sector, size, region, and the quality of governance.

For an institute of directors:

• Raised awareness of corporate governance and maintained public attention over a number of years;
• Led to the development of governance action plans within listed companies;

• Led to measurable improvement in governance practices of companies over time;
• Created incentives for better governance through awards programs and disclosure;
• Led to the creation of institutions (clubs and discussion groups) to perpetuate good governance practices;
• Improved the reputation of the country for its corporate governance practices; and
• Generated information useful to policymakers on the governance practices of listed companies, state-owned enterprises, and banks.

For a stock exchange:

• Measured changes in governance practices among listed companies over time;
• Created collaborative relationships between the stock exchange and listed companies;
• Created incentives to improve governance through competition between companies;
• Improved public awareness of corporate governance;
• Generated useful information for the stock exchange, regulators, and policymakers; and
• Enhanced the reputation of the stock exchange and the country as an investment destination.

For a regulator:

• Permitted verification of levels of implementation of national code as well as legal compliance;
• Provided indications of the effectiveness of codes and the degree of implementation of company law;
• Permitted identification of governance practices where companies are relatively strong or weak;
• Generated data on governance practices over time, thus permitting the identification of trends; and
• Forced companies to conduct rigorous self-checking of their governance practices. (IFC, Corporate Governance Scorecards, 2014)[66]

[66] IFC, I. F. (2014). *Corporate Governance Scorecards.* Washington, DC: World Bank Group.

5. Innovation

The research on the relationship between innovation and firm performance has a long tradition. The earliest studies in the field have typically investigated the relationship between R&D expenditure and measures of firm performance (Griliches, 1986) (Lichtenberg, F. & Siegel, D., 1991) (Wakelin, 1998)[67]. Most studies following such approach have reported the existence of a positive relationship between innovation and productivity. This finding seems to hold across countries and across industries, regardless of the measure of firm performance used. However, in recent years such approach has been criticized on the grounds that R&D expenditure presents a measure of innovation input, while innovations influence productivity through innovation output. It has also been pointed out that R&D figures are subject to accounting biases, that is, they can be underreported in smaller firms or in situations when the costs of such an investment are shared by a firm and its associates such as universities, other firms or professional agencies. Finally it has been noted that not all investments in R&D transform themselves into successful innovations, which means that the benefits of such expenditure may not be exploited (Bessler, W. & Bittelmeyer, C., 2008). In recent years the research on the innovation activities of firms has focused on the complexity of the innovation process. This line of research has its origin in the CDM-model developed by (Crepon, B. Duguet, E. & Mairesse,J., 1998). This model typically portrays the innovation process as consisting of four stages: the decision to innovate; the decision on the amount of innovation expenditure; the relationship between innovation expenditure and innovation output; and, the impact of the innovation output on firm performance (Loof, H & Hesmati, A., 2002) (Loof, H & Hesmati, A., 2006) (Hashi, I & Stojcic, N., 2013). In this system, the first two stages of the innovation process (decision to innovate and innovation input) are estimated jointly while the second two stages are estimated as a system. The correlation between the two parts is established through the inclusion of residuals from the second stage (decision on innovation expenditure) into a third equation of the model (the innovation output equation). The findings from existing studies reveal a number of factors that influence different stages of the innovation process. One of the most commonly included factors

[67] Wakelin, K. (1998). Innovation and Export Behaviour at the Firm Level. *Research Policy , 26(7-8)* , 829-841.

Hashi, I & Stojcic, N. (2013). The Impact of Innovation Activities on Firm Performance Using a Multi-Stage Model: Evidence from the Community Innovation Survey 4. *Research Policy, 42(2)* , 353-366.

is firm size. As noted by (Cohen, W. & Klepper, S., 1996) the probability of a firm undertaking innovation increases with firm size, while, within an industry, innovation efforts and firm size are positively related across all firm size groups. Same authors note that R&D expenditure increases proportionately with firm size while innovation output per unit of innovation investment decreases with firm size. The findings from existing studies differ when it comes to firm size suggesting that the relationship between firm size and different stages of the innovation process can be positive, negative or even insignificant (Loof, H & Hesmati, A., 2002) (Loof, H & Hesmati, A., 2006) (Kemp, R. Folkeringa, M. Jong, J. & Wubben, E.F.M., 2003). An exception is the study by (Hashi, I & Stojcic, N., 2013) that reports findings of all four previously mentioned stylized facts introduced by (Cohen, W. & Klepper, S., 1996). Another group of factors influencing the innovation process are features of the socio-economic environment such as access to finance, institutional framework, industry- and country-specific factors. Among these, studies have identified access to finance and provision of public subsidies as particularly important (Kemp, R. Folkeringa, M. Jong, J. & Wubben, E.F.M., 2003)[68] (Hashi, I & Stojcic, N., 2013). In addition to these, evidence from some studies suggests that agglomeration externalities such as cooperation with rivals, customers and research institutes have a positive impact on the innovation process (Loof, H. Heshmati, A. Asplund, R. & Naas, S.O., 2003) (Kemp, R. Folkeringa, M. Jong, J. & Wubben, E.F.M., 2003). Contrary to theoretical predictions, only a few studies have reported a positive relationship between innovation input and innovation output (Loof, H & Hesmati, A., 2002) (Hashi, I & Stojcic, N., 2013). Yet, the existence of a positive relationship between innovation output and productivity has been reported by the majority of studies (Bloom, N & Van Reenen, J, 2002) (Bessler, W & Bittelmeyer, C, 2008). There has also been evidence of the relationship between a firm's productivity and its size as well as the quality of human capital (Loof, H. Heshmati, A. Asplund, R. & Naas, S.O., 2003). While in many ways being informative about the innovation process, the above literature suffers from two major shortcomings. First, most of these studies focus on product innovations as a measure of innovation output. This does not encompass fully the nature of innovation output that can manifest itself as either product or process innovations. Second, it is considered that only firms that have reported the introduction of new products and/or processes can be labelled

[68] Kemp, R. Folkeringa, M. Jong, J. & Wubben, E.F.M. (2003). *Innovation and Firm Performance.* Zoetermeer: EIM Business and Policy Research: Scales Research Reports, No. 200207.

as innovators. However, as noted by several authors, all firms engage in some degree of innovation (Griffith, R. Huergo, E. Mairesse, J. & Peters, B., 2006) (Masso, J. & Vahter, P., 2007) (Halpern, L & Murakozy, B., 2012). According to these sources, the intensity of innovation varies across firms. A part of their working time is always spent on thinking up new ways to improve the production process or products, yet in some instances, such efforts might be so incremental that firms decide not to report them. When identifying innovators, these models differ from other innovation literature by focusing on the question of whether the firm invested any resources in innovation instead of asking whether they introduced product or process innovations. Moreover, instead of focusing on product innovations, innovation output is modelled as consisting of both product and process innovations. This group of studies enables the inclusion of a larger number of firms into the analysis and also encompassing of different types of innovation, that is, product and process innovations. (Stojčić, N & Hashi, I., 2014)

Innovation is defined in a variety of ways by different authors. The existing definitions of innovation range from highly specific foci on technical innovation to very broad generalisations, too imprecise to enable operationlisation (Myers, S & DG Marquis, 1969), (Zaltman, G, R Duncan & H Jonny, 1973), (Drucker, 1985). Many definitions suggest that the value of innovation lies in its contribution to profit or addition to economic value. This represents both a value assumption (that the seeking of profits is in the best interest of all those affected by the innovation) and a mistake, since innovation may not be always valuable for an organisation (Kimberly, 1981). Most of the widely used definitions of innovation focus on novelty and newness.

Joseph Schumpeter in the 1930s defined five types of innovation. These were,

(i) introduction of a new product or a qualitative change in an existing product,
(ii) process innovation new to an industry,
(iii) opening of a new market,
(iv) development of new sources of supply for raw material and
(v) other inputs and changes in the industrial organisation.

Innovation is the degree to which changes are intentionally implemented that is new to the organisation (Mohr, 1969). (Zaltman, G, R Duncan & H Jonny, 1973) defined innovation as “any

idea, practice, or material artefact perceived to be new by the relevant unit of adoption". (Damanpour, 1991) defined innovation as "the generation, development, and adaptation of novel ideas on the part of the firm". (Nohria, N & R Gulati, 1996) defined innovation to include any policy, structure, method or process, or any product or market opportunity that the manager of an operating unit perceives to be new. The European Commission Green paper (1999) on innovation defines innovation as "the successful production, assimilation and exploitation of novelty in the economic and social spheres" (European Commission, 1999). Innovation is the creation of a new product–market–technology–organisation combination (Boer, H & WE During, 2001)[69]. In all these definitions new is the main focus of innovation. According to Mark Rogers, innovation can involve both the creation of entirely new knowledge, as well as the diffusion of existing knowledge (Rogers M. , 1998). The controversy begins when an organisation adopts something new, which has already been used by some other organisations and hence is not new to the industry, though new to the particular organisation. The controversy deepens when the different definitions becomes the basis for business activities. Comparisons across IT organisations require conceptualisation of innovation before such empirical research can be done. (Goswami, S & Mathew, M, 2005).

Product and process innovation are the most commonly considered types in innovation-related research. The concept of product innovation is clearly different from that of process innovation (Cohen, W. & Klepper, S., 1996) (Utterback, J. M., & Abernathy W. J. , 1975). Process innovations are intended to reduce the unit costs of production and to enhance productivity through significant changes in techniques, equipment, and/or software. Product innovations give firms a competitive advantage by introducing a good that is new or significantly improved, allowing the company to increase customer demand (Oecd, 2005). The application of product or process innovation depends on the stage of development (Utterback, J. M., & Abernathy W. J. , 1975) (Uzagalieva, A., Kočenda, E. & Menezes, A., 2012). In the context of the life-cycle theory, product innovation is mainly associated with the earlier stages of the process and is applied for the purpose of differentiation and customer attraction with a view to opening up new

[69] Boer, H & WE During. (2001). Innovation, what innovation? A comparison between product, process and organizational innovaton. *International Journal of Technology Management,* , 83–107.

markets. If this first stage is successful, process innovation then takes over as companies attempt to maximize the efficiency and effectiveness of their production and delivery procedures (Abernathy, W. J., & Utterback, J. M., 1978). Echoing this, (Klepper, 1996), in a review of other research, identifies three patterns of product and process innovation within the product life cycle. The first pattern is related to competing with rivals. When the number of rivals grows, product innovations tend to reach a peak as firms seek to secure a competitive advantage. When innovative production appears to be saturated, the second pattern emerges. At this stage, efficiency is more critical than newness, so firms devote an increasing amount of effort to process innovation. The third pattern reflects the fact that at the end of the growth stage, the most recent entrants fail to keep a proportionate share of product innovations. This process shows the complementarily and sequencing of the two types of innovation. The sequence/simultaneous execution of both types may induce a synergic effect that enhances the competitiveness of a firm. Thus, a firm that pursues both types of innovation activities may outperform a firm that enacts only one type (Boynton, A. C., Victor, B. & Pine, B. J., 1993) (Martinez-Ros, 1999) (Pine II, B. J., & Victor, B., 1993) (Schmutzler, A., & Athey, S. , 1995). Innovation is important to preserving or securing the competitive advantage of firms and determining their growth potential. According to the models of (Krugman, 1979) and (Vernon, 1966), innovation is seen as an important segment of a firm's strategic strengths. Its expected effect on export performance gives firms an incentive to invest more in new product and process developments, in order to enter new markets worldwide and be more competitive. Some authors have used export performance as a measure of the output of innovative activities, while other authors have treated exports as a choice problem that results from innovations. For example, (Wagner, 1996) uses a dummy variable for the introduction of new products as a measure of innovation activities, finding a positive effect from innovation on exports. (Hwang, Y.S., Hwang, M.H. & Dong, X., 2015)[70].

A *product innovation* is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant

[70] Hwang, Y.S., Hwang, M.H. & Dong, X. (2015). The Relationships Among Firm Size, Innovation Type, and Export Performance With Regard to Time Spans. *Emerging Markets Finance & Trade* , 947–962.

improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Product innovations can utilize new knowledge or technologies… A *process innovation* is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products… A *marketing innovation* is the implementation of a new marketing method involving significant changes in product design or packing, product placement, product promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales… An *organizational innovation* is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations. Organizational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non tradable assets (such as non codified external knowledge) or reducing costs of supplies. (Piperopoulos, 2011)[71].

5.1 Principles and practice of innovation

According to the Oslo Manual (2005:46), 'an innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. The innovation must be at least new or significantly improved for the firm. Innovation activities are all scientific, technological, organizational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. Innovation activities also include R&D (research and development) that is not directly related to the development of a specific innovation. (Piperopoulos, 2011).

[71] Piperopoulos, P. G. (2011). *Entrepreneurship, Innovation and Business Clusters.* Farnham, England: Gower applied research .

The link between entrepreneurship and innovation emerges from the influential writings of (Drucker, 1985). He argues that innovation is the specific function of entrepreneurship. It is the means by which the entrepreneur either creates new wealth-producing resources or endows existing resources with enhanced potential for creating new wealth. (Drucker, 1985) argues that innovation can be presented as a methodology, it can be taught and it can be applied. The entrepreneur must purposefully and systematically search the sources of innovation, the changes and the indications that create opportunities for a successful innovation. For (Drucker, 1985)[72], the entrepreneur must know and apply the principles of successful innovation. What all the successful entrepreneurs have in common is not a certain kind of personality, rather a commitment to the systematic practice of innovation. (Drucker, 1985).

Clusters can contribute to innovation growth in the following ways:

- by getting more frequent and clearer information on the buyers needs
- by identifying new technological, operating and delivery opportunities
- by direct observation of other firms
- by easier and faster access to new components and processes needed for innovation
- by proceeding faster with innovations due to the proximity of potential suppliers and even their involvement in the innovation process
- by the availability of new professionals needed for introducing innovations
- by utilizing complementarities of local innovation partners
- by reducing operational and transaction costs of innovations.

5.2 Characteristics of the system of innovation

In much of the literature on systems of innovation the main statements are intuitively based and relations between variables are not described in a rigorous manner. This 'inductive' mode of work and analysis based on empirical generalisations has lead to major progress with regard to our knowledge about innovation processes. As already mentioned, we have, for example, learnt that firms do normally not carry out innovations 'in isolation' and that institutions are crucial for innovation processes. This has made the SI approach central for the modern way of understanding innovations. In order to make the SI approach become more 'theory-like' it is,

[72] Drucker, P. (1985). *Innovation and Entrepreneurship: Practice and Principles.* London: Heinemann.

necessary to increase the degree of rigour and specificity of the approach. (Edquist C. , 1997) try to make a small contribution in this direction below, by starting with the general notion of 'system' and 'work myself through' the SI approach with the help of this, i.e. Therefore, he starts with a few remarks about systems and systems analysis in general. In everyday language, as well as in large parts of the scientific literature, the term 'system' is used generously and with limited demands of a precise definition. To the question "What is a system?" there is, however, a common answer in everyday language as well in scientific contexts:

- A system consists of two kinds of entities: There are firstly, some kinds of components and secondly, there are relations between these.

- There should be reasons why a certain array of components and relations has been chosen to constitute the system; they form a whole.

- It must be possible to discriminate the system in relation to the rest of the world; i.e. it must be possible to identify the boundaries of the system. However, only in exceptional cases is the system closed in the sense that it has nothing to do with the rest of the world. That part of the rest of the world that in some sense is important for the system is called its environment. (Ingelstam, 2001)[73].

There are considerable obscurities in these respects in a general sense. What can be counted as components and what can relations look like? To see the system as a whole can be problematic: a political system can conceptually be regarded as a whole, but if it is characterised by strong (internal) tensions, these will, in the analysis, be more important than the whole. A boundary between the system and its environment can in most cases be specified in many ways, largely depending on what is the purpose with the systems analysis. Finally, different analysts, partly guided by different purposes, may judge what is 'interesting' in very different ways. In specific works within systems analysis, these difficulties will not be problematic. On the contrary they will prove to be interesting and analytically fruitful. (Ingelstam, 2001). All descriptions of systems are simplifications. The method of abstraction is used when describing; we disregard

[73] Ingelstam, L. (2001). *Systems and systems research: a 'reasoning' overview with regard to research on energy, technology and society.*

unimportant components and relations. And what is unimportant or not is partly guided by the purpose of our work and our existing knowledge in the field. (Edquist C. , 2001)[74]

We know intuitively and empirically that different organisations and institutions are important for innovation processes. Let us therefore, for the time being, consider organisations and institutions to be the main components of systems of innovation. There is also general agreement on this in the SI literature, although this is sometimes not expressed in a clear and direct manner. Organizations are formal structures with an explicit purpose and they are consciously created (Edquist, C. & Johnson, B., 1997). They are players or actors. Some important organisations in SIs are companies (which can be suppliers, customers or competitors in relation to other companies), universities, venture capital organisations and public innovation policy agencies. Institutions are sets of common habits, routines, established practices, rules, or laws that regulate the relations and interactions between individuals, groups and organisations (Edquist, C. & Johnson, B., 1997). They are the rules of the game. Examples of important institutions in SIs are patent laws and norms influencing the relations between universities and firms. Although there is general agreement that 'organisations' and 'institutions' are the main components in SIs, there is no agreement in the literature what should be meant by these terms. (Nelson, 1993) (Lundvall B.-Å. , 1992). Hence, the term 'institution' is used in at least two main senses in the literature and these senses are often also confused in the literature – even by the same author. The conceptual ambiguity and fuzziness surrounding the term 'institution' has not been sorted out; it is an unresolved issue. (Edquist C. , 1997) Systems of Innovation can be quite different from each other, e.g., with regard to specialisation of production, resources spent on R&D, etc. For example, industrial production in the United States is much more specialised in the production of R&D intensive ('hi-tech') products than is industrial production in the EU (Fagerberg, 2001) (Edquist, C. & Texier, F. , 1996). Further, within the EU, R&D intensities vary greatly between countries. In addition, organisations and institutions constituting components of the systems may be different. For example, research institutes and company-based research departments may be important organisations in one country, while research universities may perform a similar function in another country. Institutions such as laws, norms, and values also differ considerably

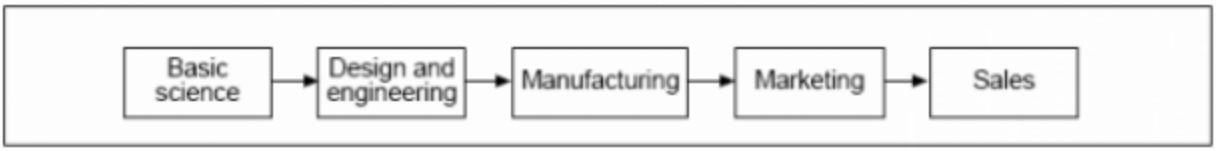
[74] Edquist, C. (2001). The Systems of Innovation Approach and Innovation Policy: An account of the state of the art. *National Systems of Innovation, Institutions and Public Policies* (pp. 1-24). Aalborg,: DRUID Conference.

between systems. In summary, there seems to be general agreement that the main components in SIs are organisations and institutions. However, the specification of these components certainly varies between systems. Let me now briefly address the relations between the main components of SIs. We have already emphasised that interactions between different organisations are crucial in those learning processes that are normally the basis for the development of innovations. These relations may be of a market and or a non-market kind. Here it could be mentioned that markets only co-ordinate transactions, i.e. items sold and bought. They do not deal with other kinds of relations. And learning processes that are interactive between organisations concern exchange of knowledge elements and collaborations that are not easily handled through market transactions. Markets are important in systems of innovation, but other mechanisms – e.g. non-market based collaboration - which mediate the relations between components in the systems, are also important. The relations between organisations and institutions are important for innovations and for the operation of systems of innovation. Organisations are strongly influenced and shaped by institutions; organisations can be said to be 'embedded' in an institutional environment or set of rules, which include the legal system, norms, standards, etc. But institutions are also 'embedded' in organisations. Examples are firm specific practices with regard to bookkeeping or concerning the relations between managers and employees; a lot of institutions develop inside firms. Hence, there is a complicated two-way relationship of mutual embed deadness between institutions and organisations, and this relationship influences innovation processes and thereby also both the performance and change of systems of innovation. (Edquist, C. & Johnson, B., 1997)[75]. Another type of relation between organisations and institutions is that some organisations directly create institutions. Examples are organisations that create standards and public organisations that formulate and implement rules that we call innovation policy. (Edquist, C. & Johnson, B., 1997). Institutions may also be the basis for the creation of organisations, e.g. when a government makes a law that leads to the establishment of an organisation. There may also be important interactions between different institutions, e.g. between patent laws and informal rules concerning exchange of information between firms. Institutions of different kinds may support and reinforce each other, but they may also contradict and be in conflict with each other. The

[75] Edquist, C. (1997). *Systems of Innovation: Technologies, Institutions and Organizations.* London: Pinter.

relations between organisations and institutions are very complex and often characterised by reciprocity. This emphasis on the complex relations between components constitutes a major advantage of the SI approach. However, it also constitutes a challenge since our knowledge about these relations is very limited. The relations between two phenomena cannot be satisfactorily investigated if they are not conceptually distinguished from each other. It is therefore important to specify the concepts and to make a clear distinction between organisations and institutions in order to be able to address the relations between them. A precise scientific language is a precondition for empirical work; analytical distinctions and conceptual specificity are essential. (Edquist C. , 2001). [76]

5.3 Innovation process



One of the leading authors who have contributed to the historic analysis of developing innovation process models is Roy Rothwell. The conceptual framework of the innovation process will be described from his perspective, using his division according to generations. Rothwell distinguishes between five generations of the innovation process model (Rothwell, 1994). However, it is important to stress that progress from one model to another does not mean that the previous model is completely abandoned and replaced. Models can issue from each other or can be linked, while transition from one generation to another is the result of changing attitudes. Determining which innovation process is the final correct one depends on the type of industry and innovation. With this, Rothwell explains that the sequence of generations is not a hierarchy of better and better-used models. (Žižlavsk, 2013)

- ***1st generation - the technology push model*** - The division of the innovation process into phases is not a new phenomenon and has been made since at least the 1950s. The linear

[76] Edquist, C. (2001). The Systems of Innovation Approach and Innovation Policy: An account of the state of the art. *National Systems of Innovation, Institutions and Public Policies* (pp. 1-24). Aalborg,: DRUID Conference.

Žižlavsk, O. (2013). Past, Present and Future of the Innovation Process . *International Journal of Engineering Business Management* , 1-8.

Technology Push Model became widely used until end of 1960s. During these years of post-war economic growth, companies focused on building production capacity and research and development. The market was simply a place that captured the fruits of research and development – people bought what was currently on offer. Innovation was understood as a linear process, with research, development and the outputs of new successful products standing on the same level. The chronological alignment of each phase, from elementary research, the preparatory phase of production, production, marketing and final sale is shown on Figure below.

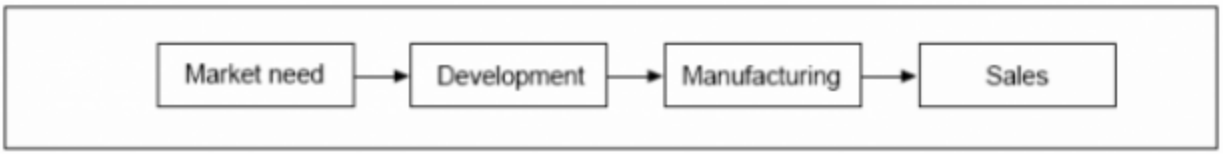


Figure 14 - The linear technology push model

A good example of a successful linear technology push model is laser technology. Lasers were intensively researched in the 1950s as their theoretical background was developed from the knowledge of Einstein, Planck and Bohr. In 1960, the first laser device was successfully built by Maiman in California, and laser technology found applications in many fields. Today, lasers are used for cutting, boring and welding materials, and they have also revolutionized measurement, medical and information technologies. (Žižlavsk, 2013)

- ***2nd generation - the market pull model*** The 1960s through to the mid-1970s were characterized by relative wealth and changed market conditions. Thanks to increased competition and diversification, it became important to include the customer's needs in the innovation process, and thus also in marketing. This led to the formation of a new model pulled by the market and its needs, which was still represented by a linear organization of the individual phases, as in the previous generation – the Market Pull Model. (Žižlavsk, 2013)
  The understanding of the process and the concept of innovation changed to include what was seen as a result of perceived – and sometimes of accurately expressed - customers' needs, sourced through market research. The needs and demands of the market determined the work of research and development departments in companies. Many companies achieved only

incremental innovation; therefore, it was not possible to react to market shifts. (Žižlavsk, 2013)

- ***3rd generation - The coupling of R&D and marketing (the interactive model)*** - In the 1970s, as a result of the economic crisis following World War II, inflation, saturation of the market and high offer capacities shifted trends towards rationalization, consolidation, control and cost reduction. It was clear that neither technological push nor market pull strategies were enough to successfully handle the innovation process. The further detailing of the phases and the implementation of feedback steps were needed. A new generally accepted model, adapted in the mid- 1970s, combined the technology push and market pull models. It was improved with feedback and called the Interactive model of technological opportunities and the needs of the market. Rothwell saw the offer, as well as the market, as an impulse for the innovation process. Research, development and marketing functions worked equally under these models. (Žižlavsk, 2013)

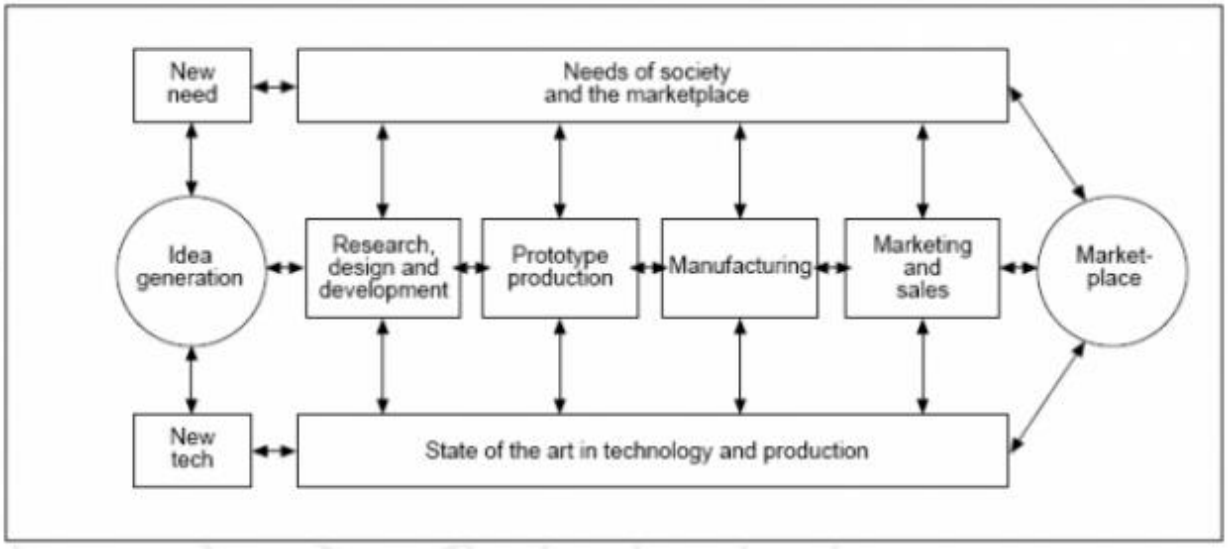


Figure 15 - The interactive phase model

- ***4th generation in the integrated business processes model*** - This generation was characterized by the parallel use of integrated research teams, and the involvement of the supplier and important customers. It clearly stands out from the third generation and models a stronger parallel process of innovation. Cooperation between research, development and production is enhanced, and horizontal collaboration, regardless of the company's

boundaries, is also considered. Due to the constantly shortening product lifecycle, this period is characterized by a time-based strategy. Due to the necessary shortening of innovation time, process innovation is seen as a parallel process instead of as a sequenced process. External sources of ideas and thoughts become more important, and the innovation process integrates external resources as well as the activities of different internal departments. This leads to the overlap of various functions and tasks, but mainly to substantial time savings compared with the previous sequence processes. The fourth generation covers the so-called Integrated (Chained) Model by (Kline, S. & Rosenberg, N., 1986),[77] which represents a further step towards a comprehensive innovation process actively involving research and existing knowledge. This model demonstrates the necessity of integrating knowledge into the innovation process, because knowledge is not understood as a result of scientific activities, but rather as a result of interaction between the individual units of a company, the company itself and its environment. The division of this model is not very innovative. It is new in the fact that the market represents both the beginning and the end of the innovation process. Knowledge is integrated in all phases of the innovation process (mainly in the research phase) and, therefore, considered as a necessary prerequisite for innovation. The market and the consumer are perceived in the same way. (Žižlavsk, 2013)

[77] Kline, S. & Rosenberg, N. (1986). An Overview of Innovation. *Harnessing Technology for Economic Growth* , 275-306.

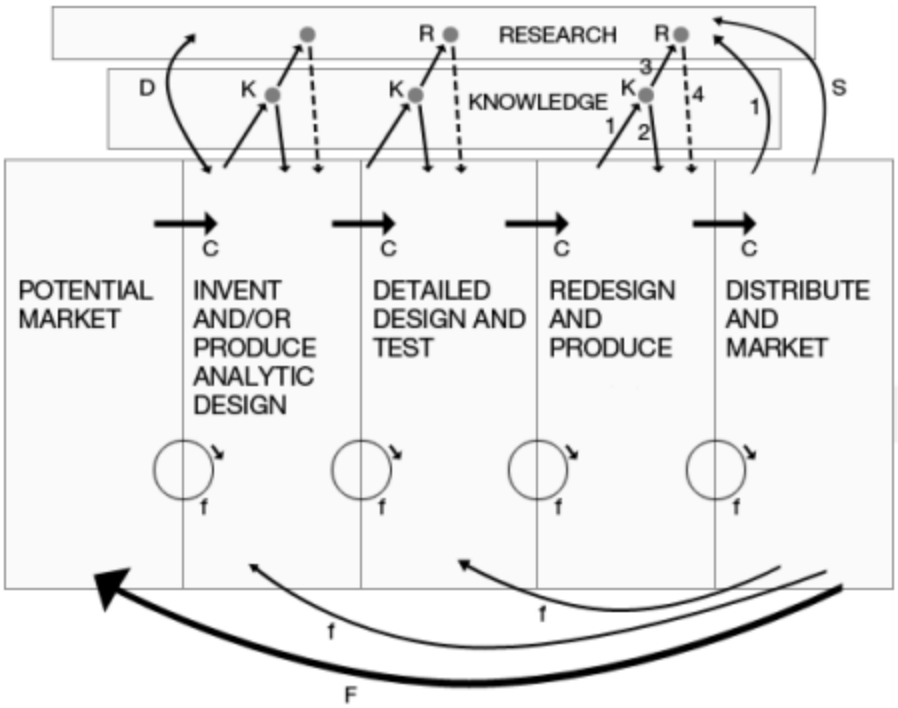


Figure 16 - The integrated chained model

- ***5th generation - system integration and networking*** - Strategic trends from the fourth generation have been preserved in an intensive and improved form with a stronger focus on quality and performance. Thanks to the constant growth of competition, the shortening of the product lifecycle and the sharp technological turn, the importance of a time-based strategy was adapted from the fourth generation. Although it was not necessarily important to be the leading company with innovations on the market, being the one that offered a product in a short time represented a certain competitive advantage. It is also necessary to consider how the reduction of the time left for research and development led to increased costs. This relationship was presented by (Gupta, A. Brockhoff, K. & Weisenfeld, U., 1992)[78] showing the relationship between the development time and research costs. If the research period is reduced to below the minimum of a function (to the left along the curve), cost increases upon additional expenses for coordination. A similar effect applies to the extended development time over the maximum of the function (to the right along the curve). Additional costs also arise, especially with decreasing motivation and increased variable costs (e.g., additional

[78] Gupta, A. Brockhoff, K. & Weisenfeld, U. (1992). Making Trade-offs in the new product development process: A German/US Comparison. *Journal of Product Innovation Management* , 11-18.

working time). Thanks to measures aimed at increasing the efficiency of the innovation process, it is now possible to move from a higher to a lower time/cost curve. This kind of parallel shift of the curve represents development cost reductions, while preserving the same time needed for development and the same costs for research. The minimum of the new function lies at the point of low cost of research and the short time necessary for development. (Žižlavsk, 2013)

The following measures to increase efficiency are needed in the fifth generation:

i) System integration with inner organization,
ii) Extensive networking,
iii) Flexible and flat organizational structures,
iv) Mature inner data bans, and
v) Electronically supported product development.

The Internet is the main driver expanding the boundaries of research and development activities in companies, facilitating integration with the company environment (competitors, traders, customers, suppliers, etc.). The innovation process of the fifth generation is characterized by Rothwell as the System Integration and Networking Model (SIN model). It extends the parallel development of the fourth generation with the integration of IT methods, such as simulated studies and expert systems. Collaboration with external research facilities and cooperation in the marketing area are much stronger than in the fourth generation. These advanced strategic partnerships were set up along with collaborative marketing and research arrangements, such as 'open innovation'. This model also emphasizes the vertical linkages with suppliers and customers along the whole innovation process (e.g., suppliers are involved in the co-development of new products and/or share the technical systems used for it), and the horizontal linkages take place in a variety of forms (joint ventures, alliances, consortia, etc.). The fifth generation also represents an intensive transition to electronic means – advanced companies use IT methods (such as computer-aided design) to support and speed up the innovation process. Figure shows the relation with Rothwell's description of the last three generations, where each generation represents an efficiency increase, especially in terms of reduced costs when compared to the previous generation. (Žižlavsk, 2013)

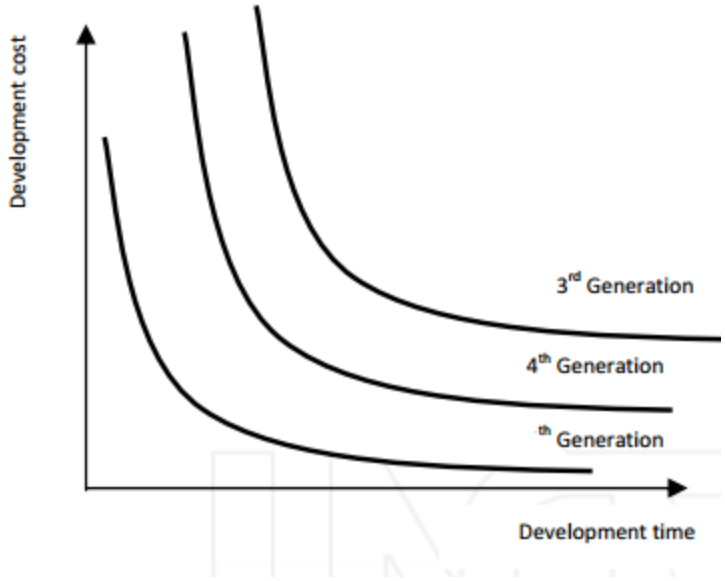


Figure 17 - Cost reduction curve

Successful innovations are the results of a series of management, marketing, scientific, technological, organizational, financial, business and other types of activities. Market participants act together with employees, technologies and environmental influences, all of them acting dynamically and independently. This characterizes a complex system. The innovation process must be a key process in a company, since innovation provides sustainable market success. Well-managed and successfully-introduced innovation into the market represents a tool for companies, by means of which they can achieve competitive advantages and enable their long-term prosperity. (Žižlavsk, 2013)

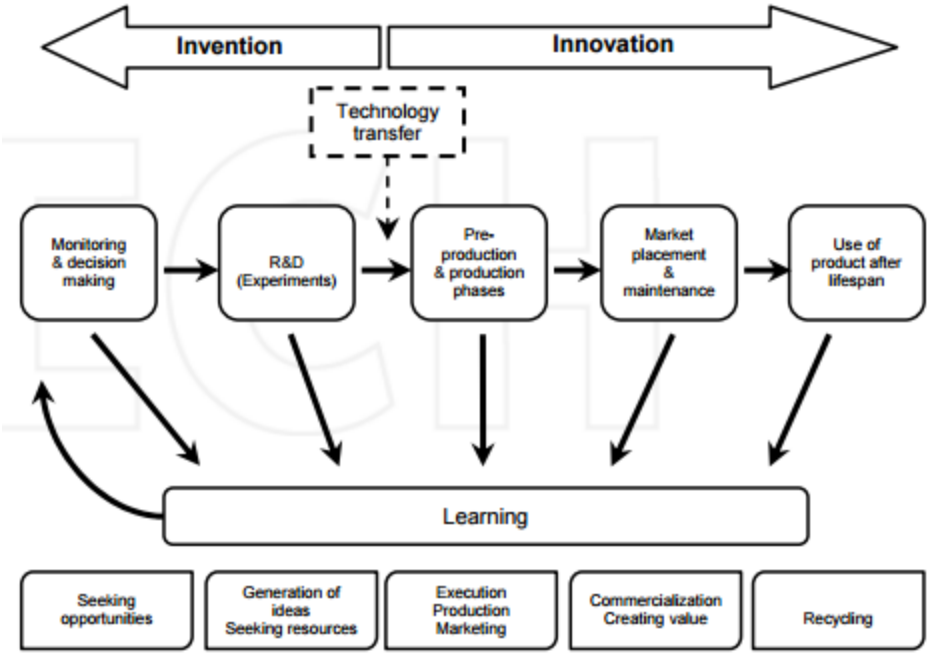


Figure 18 - Design of innovation process model

(Drucker, 1985), in his work Innovation and Entrepreneurship, argues that these two concepts, taken together, are the driving forces of revitalization in any entrepreneurial society. In his perspective (as well as those of other influential scholars) innovation is understood as a process of continuity and transformation development at the same time. (Piperopoulos P. G., 2011).

Innovation in the Schumpeterian sense is then defined by the carrying out of new combinations. This concept covers the following five cases:

1. The *introduction of a new good* – that is one with which consumers are not familiar yet – or a new quality of a good.
2. The *introduction of a new method of production* – that is one not yet tested by experience in the branch of manufacture concerned, which need, by no means, to be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially.
3. The *opening of a new market* – that is a market into which the country in question has not previously entered, whether or not this market has existed before.

4. The conquest of a *new source of supply of raw materials or half manufactured goods* – again irrespective of whether this source already exists or whether it has first to be created.
5. The *carrying out of the new organization* – that is of any industry, like the creation of a monopoly position (for example, through trustification) or the breaking up of a monopoly position. (Schumpeter, 1942).

5.4 Individual and organization innovation

Innovation systems theory defines 'systems' in terms of a number of 'actors' and stresses that the relationships between them and system performance is often determined by the weakest link in the chain. This means that policy interventions should focus on the weaknesses (Polenakovik, R. & Pinto, R., 2010)[79].

Systems theory also suggests that individual policy instruments applied in isolation are unlikely to have a dramatic impact on overall system performance. In complex systems there are likely to be many weak links and accurate targeting of an individual weak link will only produce incremental improvements unless other weak links are also addressed. The policy implication is that there is a need for a broad range of policy instruments, rather than a focus on any one aspect. This also suggests the need for frequent experimentation and evaluation of single instruments and combinations of instruments, with the results being continually fed into the policy formulation process. Figure below presents a simple innovation system comprising four interdependent sectors, taken from (Guy, K. & Nauwelaers, C., 2003). There are interacting groups of actors defined in terms of the public and private sectors and their roles as 'knowledge creators' or 'knowledge users'. Each sector is also characterised by a dominant issue in STI, such as:

• The supply of and demand for qualified human resources (Social and Human Capital).
• The knowledge base (Research Capacity).
• The ability to innovate (Technology and Innovation Performance).
• The capacity of markets to absorb and diffuse innovations (Absorptive Capacity).

[79] Polenakovik, R. & Pinto, R. (2010). The National Innovation System and its relation to small enterprises: the case of the Republic of Macedoni. *World Journal of Science, Technology and Sustainable Development* , 91-107.

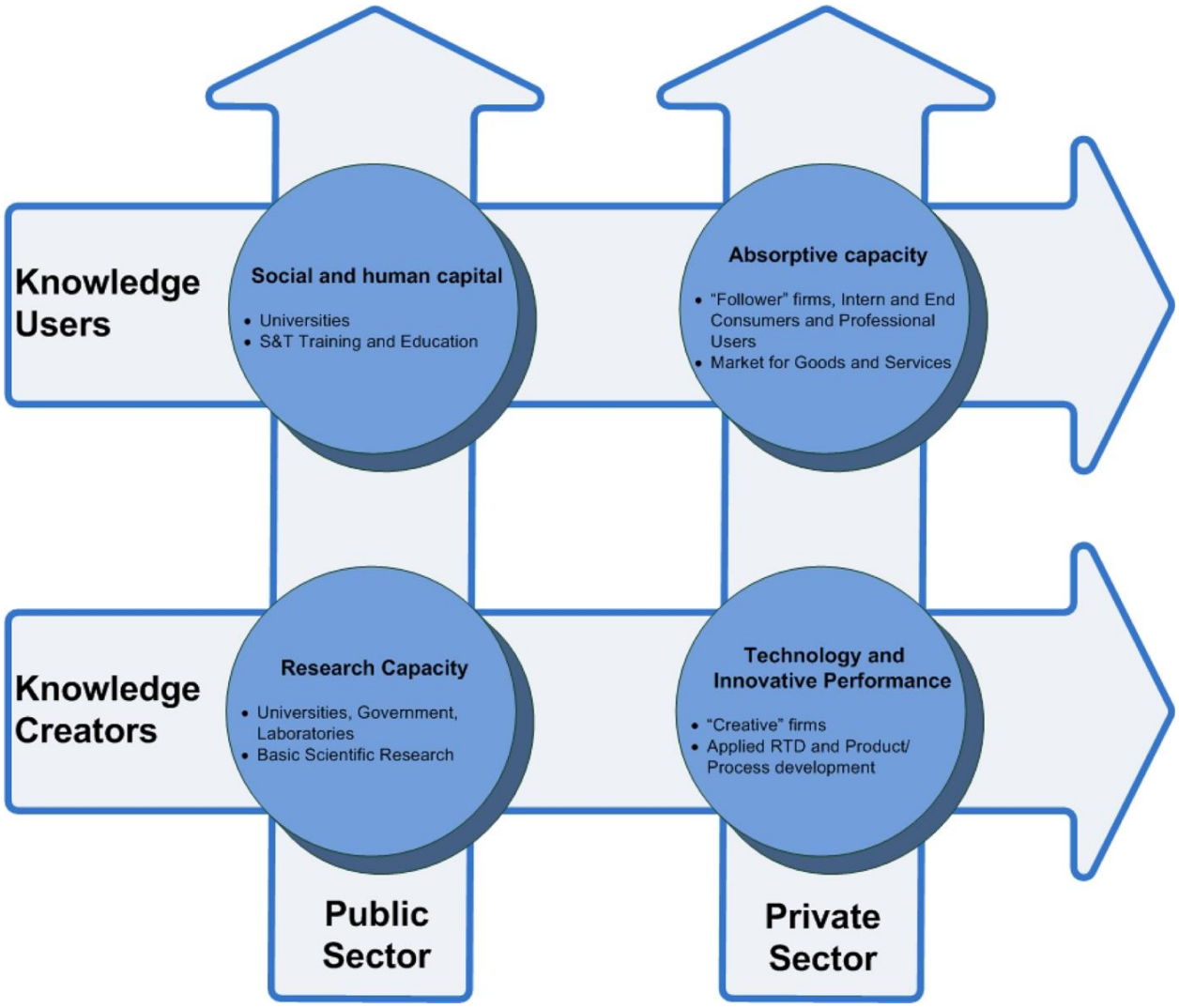


Figure 19 - Issues, actors and activities in a simple STI system

The (national/regional/sectoral) innovation system is a focusing device aiming at analysing and understanding processes of innovation (rather than allocation) where agents interact and learn (rather than engage in rational choice). The aim of using this device is to find out which alternative institutional set-ups support strong dynamic performance of a (national/regional) economy or a sector. (Lundvall, B.A., Jospeh, K., Chaminade, C. & Vang J. (Eds), 2009)[80] (Asheim, B.T., Smith, H.L. & Oughton, Ch., 2011).

[80] Lundvall, B.A., Jospeh, K., Chaminade, C. & Vang J. (Eds). (2009). *Handbook of Innovation Systems and Developing Countries.* Cheltenham: Edward Elgar.

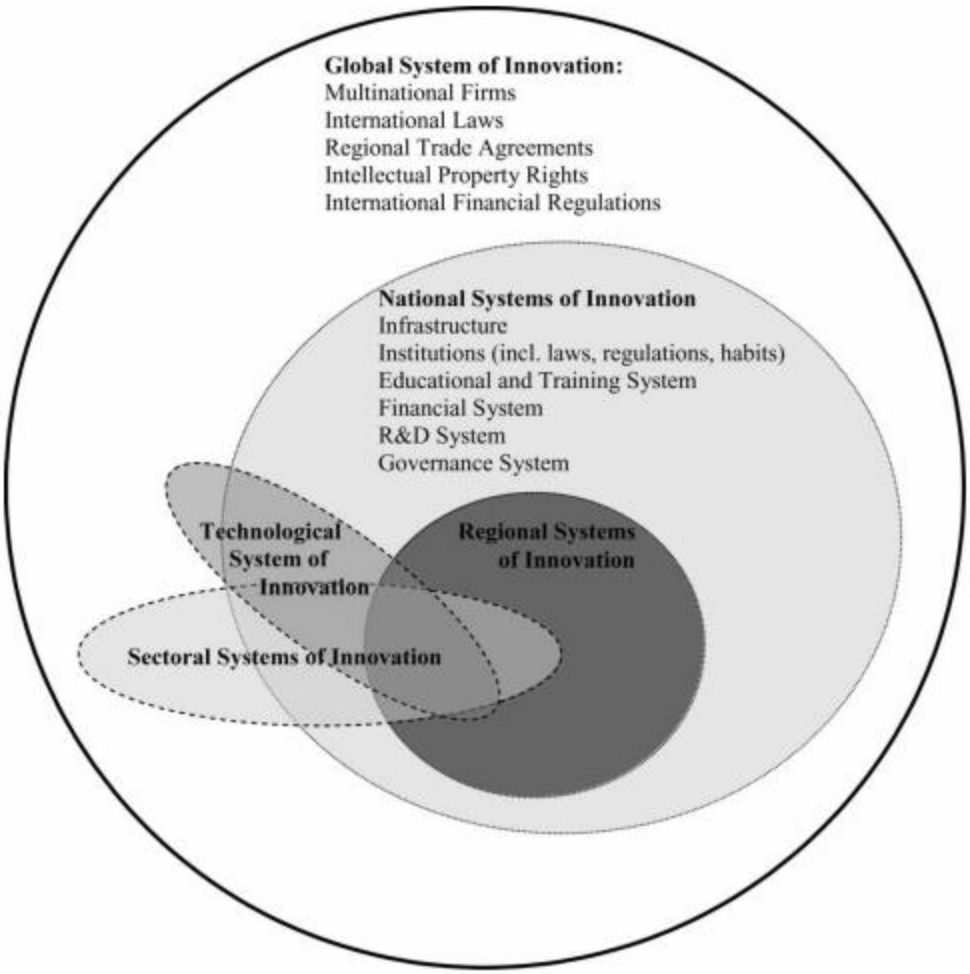


Figure 20 - Relationship between global, national, regional, sectoral and technological systems of innovation

(Frenz M. & Oughton C, 2005) (Asheim, B.T., Smith, H.L. & Oughton, Ch., 2011)

6. Human resource management

Nowadays all firms are developing the human resource management. They based on their human resource to increase the profit. Human resource provide their knowledge to their companies, depends on the strategy that company implement to satisfy them. Humans like to contribute in unique way in their organization but their need to work harder. The results from the survey, shows that many employees are satisfied with their work, their benefits from work and the company flexibility. But in other way, there are many of them, which can contribute more in their performance if the company increase the benefits and create better strategy. Human

resource department are more focus in engaging experts in strategic cases than to involve their employee to make good strategies. By increasing the role of their employees and contribution of them in their workplace, company will have very good reputation and in long terms will succeed quickly and adapt quickly in market.

The present research will investigate the overall effect of Human Resource Management on the organization as well as on the individual working in the organization. Report also tries to find out the challenges to create good strategies for powering employees to work harder and to archive the company goals.

As companies reorganize to gain competitive edge, human resources plays a key role in helping companies deal with a fast-changing competitive environment and the greater demand for quality employees.[81]

The general futures of Human resource management are well known. Today a firm's success largely depends on the capabilities of its members. Firms may have the capital and technology, but it is Human Resources (HR) that will help firms face the challenges of business globalization. Capital can be generated. So can technology. But the HR required to propel an organization through the coming challenges must be rightly and appropriately encouraged and motivated. (Rose,, R. Ch. & Kumar, N., 2006)[82].

Human resource management (HRM) examines what can or should be done to make working people more productive and satisfied. For this to be achieved, management must regard the development of superior human resources as an essential competitive requirement that needs careful planning, hard work, and evaluation (Ivancevich, 2003).

It has been found that employee skills, attitudes, motivation and behaviours mediate the influence of HRM policies and practices on organizational effectiveness. More particularly,

[81] http://www.investopedia.com/terms/h/humanresources.asp#ixzz3ZHtv5qMw

[82] Rose,, R. Ch. & Kumar, N. (2006). The Influence of Organizational and Human Resource Management Strategies on Performance. *Internacional Society for Performance Improvement* , 18-24.

selection processes as well as training and development opportunities may be linked to performance due to their motivational effects. A good number of studies have shown evidence of how such HRM practices have influenced organizational outcomes. For instance, Terpstra and Rozell (1993) found a significant positive relationship between company profits and staffing practices such as the study of recruiting sources and the use of selection interviews and tests.

6.1 Theoretical framework of HR

Many authors try to define the HR, but we are expressing some of them.

"*The company department charged with finding, screening, recruiting and training job applicants, as well as administering employee-benefit programs*".

"*The department or support systems responsible for personnel sourcing and hiring, applicant tracking, skills development and tracking, benefits administration and compliance with associated government regulations*".

"*The people that staff and operate an organization ... as contrasted with the financial and material resources of an organization."*

Strategic HRM (SHRM) theory has often been used as the basic framework for the investigation of HR strategy and firm performance. (Rose,, R. Ch. & Kumar, N., 2006). The focus on human capital as a source of competitive advantage has intensified the need for organizations not only to understand and win the talent war (Gardner M. T., 2005)[83] but also has led to a tighter integration of the fields of strategic management and strategic human resource management (HRM) often through the lens of the resource-based view (RBV) (Barney J. B., 1991) (Wernerfelt, 1984).

This section looks into the key differences among the universalistic, contingency, and configurationally perspectives revolving around SHRM. Universalistic perspective calls for "best practices," which implies that some HR practices are always better than others. Accordingly, firms that adopt these practices will see better performances. Within this school of thought, seven practices have been consistently identified as strategic HR practices (Osterman, 1987)

[83] Gardner M. T. (2005). Human resource alliances as a means of improving the recruiting, management, and retention of employees. *International Journal of Human Resource Management* , 1057-1074.

(Sonnenfeld, J.A., & Peiperl, M.A. , 1988) internal career opportunities; training systems; appraisals; profit-sharing plans; employment security; voice mechanisms, including formal grievances systems plus participation in decision making; and the degree to which jobs are tightly or narrowly defined. (Rose,, R. Ch. & Kumar, N., 2006)

Rectifying the imbalance in the literature is important for two key reasons. First, unlike other organizational resources, employees can leave (Coff, 1997). Turnover not only depletes accumulated human capital, it also offers rival organizations opportunities to appropriate knowledge. Furthermore, with most other investments (e.g., the development of an idiosyncratic manufacturing process), organizations can reasonably estimate the investment's life span. But human capital is essentially beyond the organization's control, so unexpected losses or depletions forfeit potential returns on investments, placing decision makers in a dilemma about whether to invest (Coff, 1997). Second, when accumulated human capital is depleted, workers must be replaced, which costs organizations not only money but also starts a 'period of dynamic adjustment costs while the best uses of the human capital are discovered and tailored to the needs of the new environment' (Hatch, N.W. & Dyer, J. H., 2004), (Lepak, D. P. & Shaw, J., 2008), (Shaw, J.D., Park, T.D. & Kim, E., 2012)[84]

An organization must develop an HR system that achieves both horizontal and vertical fit (Becker, B. & Gerhart, B., 1996). Horizontal fit refers to the internal consistency of the organization's HR policies or practices, and vertical fit refers to the congruence of the HR system with other organizational characteristics, such as a firm's strategy. (Rose,, R. Ch. & Kumar, N., 2006).

As defined by (Noe, R. A., Hollenbeck, J. R., Gerhart, B. & Wright, P. M., 2010), human resource management is a philosophy, policy, system and practices that can affect the behavior, attitudes and performance of employees. Activities of HRM include HR planning, staffing, training and development, performance management, compensation management, safety and health and employee relations.

[84] Shaw, J.D., Park, T.D. & Kim, E. (2012). A resource-based perspective on human capital losses, HRM investments, and organizational performance. *Strategic Management Journal* , 572-589.

In table below we present some conceptual framework from different authors about the human resource and their implication in firm performance.

(Zakaria, N., Zainal, S. R. M. & Nasurdin, A. M., 2011)[85]

Table 6 - Summary of best practices in Human Resource

Delery and Doty (1996)	Delaney and Huselid (1996)	Way (2002)	Wang and Zhang (2005)	Theriou and Chatzoglou (2008)
1. The use of internal career ladders 2. Formal training systems 3. Results-oriented appraisal 4. Performance based compensation 5. Employment security 6. Employee voice 7. Broadly defined jobs	1. Staffing selectivity index 2. Training index 3. compensation 4. Grievance procedure, 5. Decentralized decision making 6. Internal labor market 7. Vertical hierarchy	*Staffing* 1. Extensiveness of staffing *Compensation* 2. Group-based performance pay 3. Pay level *Flexible job assignments* 4. Job rotation *Teamwork* 5. Self-directed teams *Training* 6. Formal training *Communication* 7. Involvement in meetings discussing work-related issues	*Functional HRM dimension* 1. Personnel selection & placement 2. Performance appraisal 3. Pay & bonus system 4. Personnel training & development *Strategic HRM dimension* 5. Career development & promotion 6. Employee participation 7. Quality control program 8. MBO 9. Team management 10. Corporate culture	1. High levels of teamwork 2. Performance-related pay 3. Decentralized decision making 4. Comprehensive recruitment and selection procedures 5. Limited status differences 6. Extensive training 7. Employees' involvement and internal communication arrangements 8. Internal career opportunities 9. Broadly defined job descriptions

This figure below depicts firm performance as affected by organizational strategy (responsiveness to external customers and markets), speed (internal efficiency through reengineering), and HRM strategy (mobilization of human assets), with HRM strategy mediating the relationships between key organizational variables and performance. An important issue in SHRM is whether a company should develop its competence internally or externally, what (Lepak, D.P., & Snell, S.A., 1999) termed as "make" (internal development) and "buy" (acquire externally) dimensions. Following (Bae, J., & Lawler, J.J., 1999), the make-and-buy dimension is related to the acquisition, development, and retention of employees (patterns of competence management). The "make" strategy relies primarily on the internal development of critical HR,

[85] Zakaria, N., Zainal, S. R. M. & Nasurdin, A. M. (2011). Investigating the role of human resource management practices on the performance of SME: a conceptual framework. *Journal of Global Management* , 74-92.

while the “buy” strategy emphasizes acquisition of such competencies via the external labour market. Several relevant practices of the “make” strategy include selective recruiting, extensive training, promotion from within, and long-term attachment mechanisms. Nevertheless, firms can use multiple HRM strategies. Make and-buy strategies are not necessarily mutually exclusive (Lepak, D.P., & Snell, S.A., 1999), (Rose,, R. Ch. & Kumar, N., 2006)

(Bae, J., & Lawler, J.J., 1999)

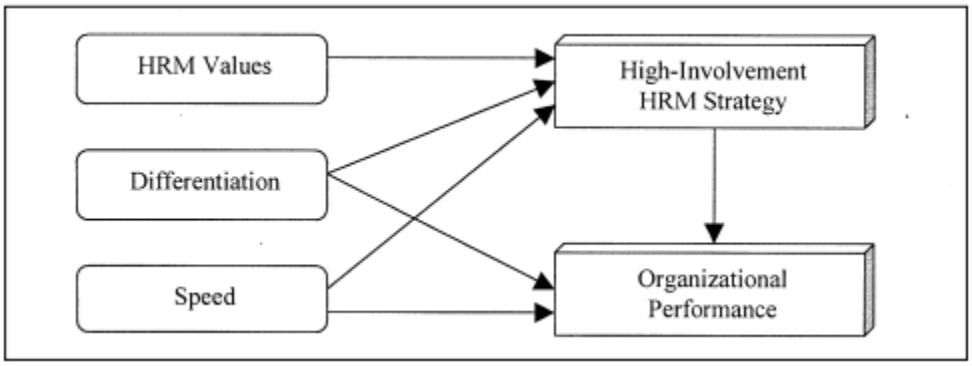


Figure 21 – Framework of Organizational Strategy, Strategic HRM, and Firm Performance

CHAPTER 2

7. Methodology

7.1 About the research

Permanent orientation towards change and innovation strategies, or respectively responding to any provocation coming from outside or inside, represents the base of enterprise management, entrepreneurship as transitional or permanent activity behaviour. Quest for enterprise development, particularly entrepreneurial activities, either at the level of individuals, companies, or beyond, is also a requirement for survival.

The main management problem is to build cluster concept of corporation between companies, based on technological resources and digital models.

Below is a description of the basic terms of the research subject:

- *Digital business model* - describes how each of the activitiesin your enterprise will interact digitally with its customers and generate values. A great digital business model will often challenge the status quo in the enterprise. Digital business model has three capabilities – content, experience and platform.

- *Performance* - The accomplishment of a given task measured against preset known standards of accuracy, completeness, cost, and speed. Performance is deemed to be the fulfillment of an obligation, in a manner that releases the performer from all liabilities under the contract.

- *Cluster firms* – a network of connected business suppliers and associates in a specific field that are all located in the same geographical area. Clusters are thought to provide increased efficiency and productivity so businesses can be competitive on a national and global scale.

In Kosovo's point of view, having the youngest population in Europe might be a competitive advantage, in terms of the labour supply and availability of human capital, but in the policy perspective, it might cause challenges in channeling this kind of human capital. One of the biggest concerns is that skills and competencies possessed by workers are not the ones demanded by firms, suggesting the need for further changes in the education and training systems. The business community and academia should work more closely to ensurecompatibility of skills and knowledge acquired from formal education and the business needs (relation: theory vs. practice). Our goal is to developa functional model that will be able to process goods, create products and delivering such final products to the consumers. All this involves making use of machinery, resources and then the ability to incentivize and build systems, and then collect the data in order to have clear picture how the production line is working now and what are our expectations in terms of production capacity and reducing cost.

7.2 Compilation of the questionnaire

The purpose of this study is to identify, obtain, analyze and present data from primary sources about digital performance of clustered firms. In order to identify and select companies to be part

of this study, we took evidence from the Food and Veterinary Agency. Records gave 49[86] meat processing companies. We randomly chose 7 of such industries, based on locations of such companies, in order to cover all municipalities around Republic of Kosovo. In this regard, we try to evaluate different meat industries with different production capacities, numbers of employees, differences in safe food categories and differences in industry characteristics. We have engaged in surveys and thorough interviews with all these meat industries, for different categories.

The survey is structured into 5 parts. In part 1, we obtain general information about the industry, in part 2 we try to evaluate their digital performance, in part 3 we obtain detailed information about human resources, while in the 4thpart we made questions about cooperation within the cluster, and the last part tried to obtain information about internal company organization. This survey has in total 32 questions.

In our efforts to validate such information, we conducted 4more surveys, in order to obtain information and to use them as case studies.

- The first survey involved local farmers, in order to obtain direct information about cluster collaboration. We chose local farmers because they are strategic partners of meat industries,being a source of direct supply of raw material.Farmers were chosen randomly, while the process involved filling in a survey form.This survey extracted information from 101 farmers.
- The second survey was conducted with companies which also collaborate directly with meat industry in terms of sales. Companies were also randomly chosen in different cities. The main criterion for the survey was for the company to have collaboration with at least 3 companies covered by this research activity.
- The third survey was conducted with employees of all companies covered by the study. This survey was conducted in order to obtain information on the employees' own perception of their firms and internal processes, with a specific focus on implementing digital services in all departments. Considering the total number of employees in the meat industry, we choose randomly 100 of them.

[86]Evidencereceived on 29.10.2015 from the website of Food and Veterinary Agency

- The forth survey was done with 100 respondents from different cities, with a view of evaluating the products manufactured by all these meat industries. The idea was to evaluate the quality, design and characteristics of different products separated into categories, from the perspective of consumers.

Ultimately, we engaged in observation for a single randomly chosen product in the packaging department, to see whether the company can increase performance by using digital models. In this case we have used Pro Model to analyze data.

7.3 Testing the questionnaire

Since for the paper we have prepared 5 different questionnaires for various categories of respondents, a prior test for surveys was deemed necessary.

Testing questionnaires precedes the field survey, and was used as a pilot survey, to ensure easy access to questionnaires for the respondents, and for the questionnaires to be as comprehensive and suitable as possible for them. For all questionnaires, we initially took test surveys with 2 meat industry businesses, 10 local farmers, 10 sales companies, 5 employees and 10 consumers, and further reconstructed the surveys using recommendations and reconstructions of questions. In this stage, questionnaires were physically disseminated, and all recommendations in terms of wording and sorting of questions were thoroughly analized and corrected in the final questionnaire. Such testing procedure was undertaken in the period between May and August of 2015, under the supervision of the thesis incumbent. Questionnaires were distributed to specific categories, divided specifically, and the territory included all of the Republic of Kosovo. Normally, upon completion of this stage, all questionnaires were changed in structure, and in five cases, even in wording of questions.

7.4 Validity and reliability

In relation to the reliability and validity of measuring instrument, in this case validity of the questionnaire, several assessment criteria was used in ensuring effective measurement. Specifically, a key question was whether the questionnaire would effectively measure what it was meant to, and if yes, how accurate would such measurement be. Some of the criteria used in ensuring validity include assessing whether the questions are accorded to the context of study, and whether the questionnaire does measure the factors of its purpose, utilization of performance

measurement and their comparison to standard measures, the criterion of internal validity, which is related to the conclusions grounded upon actual results and not an opinion influencedby research bias, and the criterion of external validity, which shows the level of applicability of study findings on the whole population, and not only the sample of study. The study utilizes the criteria above, excluding the standard measure. These criteria were confirmed by piloting the questionnaire, while the external validity criterion was based on literature research on the theoretical model of concurrence, and its use in building the applicable model for the study.

The reliability of the questionnaire is based on the solidity of performance of measurement instruments. More concretely, reliability means that not only must the questionnaire provide good and accurate results, but also that such results are almost identical in similar measurements, namely to guarantee sustainability in measurement results. In our study, an issue of reliability may be raised as the following: whether the questionnaire does measure what is meant to be measured? Can information obtained from the survey answer relevant research questions? Researchers in this area argue that the reliability of questionnaires may be improved by performing explorative studies in the field, or by performing pre-tests with a small number of persons with similar features of the target group (Singleton et al., 1993). In previous chapters of this thesis, an explorative study of literature was performed, while the questionnaire was analysed with field experts and academia, to test whether questions in the questionnaire were relevant. Hence, both suggestions of scholars in improving credibility of measurement instruments, as mentioned above, were practiced in the study.

7.5 Objective of research

Objectives of research are as follows:

- Identify clusters problems
- Identify mechanisms to increase performance
- Identify differences in the acceptance of extra tasks by different departments in the company
- Identify whether there are enough mechanisms in the company to ensure proper follow up of tasks execution
- Identify solutions to use same digital business model in a cluster

7.6 Type of research

Cross-sectional analysis has the advantage of avoiding various complicating aspects of the use of data drawn from various points in time, such as seriesof residuals. It also has the advantage data analysis itself not needing an assumption on the nature of relationships between variables, due to stability over time, though this comes at the cost of requiring caution if the results for one time period are to be assumed valid at some different point in time.

7.7 Research paradigm

In order to enrich the objective formulated above, the research paradigm will be quantitative, and therefore, questionnaires are created separately for four target groups. One of the questionnaires addresses consumers, while the other questionnaire cluster companies, in order to capture their perspectives regarding various features of the processes taking place within the firm, and ways to improve their own performance in a cluster group. Regarding the objective of research, we will examine the correlation between using the same digital business model and the impact on firm performance, but we shall also examine clusters problems, identify mechanisms to increase performance, human resources and ability to adapt in cluster environment, etc.

Thus we have tried to capture the multitude of relationships and variables established between two groups, considering the facts gathered by the four questionnaires, hence allowing their comparison or correlation.

7.8 Research design

The study will use a descriptive design to support results from questionnaires, while methods of research will necessarily be quantitative and qualitative. The purpose of using descriptive surveys is to collect detailed and factual information that describe an existing phenomenon. Data were collected on the basis of concepts defined in the research model hypothesis tests. The study is descriptive because it adopted the use of questionnaires aimed at finding the impact of digital models in cluster firms' performance. In an attempt to minimize as much as possible the respondents' subjectivity, some of our questions will deal only with raw data regarding company activities.

Literature review will take a part on this paper, by presenting different approaches about the topic, and presenting different results from other authors.

7.9 Variables in research

In this paper, we divided variables in research into independent and dependent variables presented below:

7.9.1 Independent variables

1. The approach of companies to measurementdepartments' performance
2. Criteria for evaluating firms included into a cluster
3. Impact of digital models into thecompany performance

7.9.2 Dependent variables

1. Company strategy focusing on sales
2. Cluster's effects on company sales
3. Development of new products, 100% domestic products
4. Ability to be coherent with cluster groups by offering quality products

7.10 Indicators

7.10.1 Indicator 1: Clusters firms collaboration

- Criteria of developing partnerships between firms – capacity of production, human resources, technological infrastructure, etc.
- Agreement on Responsibilities– payment criteria, distribution plan, product quality, responsibility of the companies in a cluster, etc.
- Cluster strategy - strategic investment, innovation, collaboration strategy,
- Tasks execution program – corporate governance, business hierarchy, etc.
- Evaluation process – appraisal of employees, monthly department evaluation, company evaluation, financial reports and consultative meetings

7.10.2 Indicator 2: Company performance

- Evaluation methods used, importance of assessment criteria, categories of evaluators involved in the assessment process, opinions on causes of poor performance scored by the

company, the scope in which results of performance are used, existence within investigated firms of efforts to improve performance.

7.10.3 Indicator 3: Digital performance

- What digital models is your company using to evaluate performance?
- Are these models created to identify problems of the company and to increase performance by correcting actual mistakes?
- Opinionsof staff members on the use of such digital models, opportunities and challenges?
- Comparison of performance results between cluster companies, does this cluster collaboration achieve fundamentals goals?

7.10.4 Indicator 4: Results of cooperation

- How satisfied are companies with cluster collaboration?
- What results were achieved during the collaboration period, did sales increase?
- Did performance improve during this period?
- What problems do they have, technical problems, staff retention, limited production capacity, etc.?
- Are they motivated to continue with this kind of cooperation?

In order to have useful results, we shall use Nominal and Interval measurements of indicators.

7.11 Basic research hypothesis

The main objective of this paper is to bring about a new era of using digital models in manufacturing companies in our country. Our focus is to develop these managing methods to increase productivity and to decrease production cost.

Based on theoretical approach, we define some hypothesis to argue:

7.11.1 General hypothesis:

Digital models influence in cluster firm performance

7.11.2 Specific hypothesis 1

Using technology impact on firm performance

7.11.3 Single hypothesis 1

- Departments are easier to manage when technology is used
- Impact of technology impact on performance of employees
- Technology fosters innovation
- Technology influences to decrease product price

7.11.4 Specific hypothesis 2

Firms will increase their performance in a cluster

7.11.5 Single hypothesis 2

- Cluster collaboration stimulate development of new products
- Cluster affects the quality of products/services
- Cluster increases market responsibility

7.11.6 Population

The targeted population of this research shall be selected companiesin the meat processing sector in the Republic of Kosovo. We shall conduct unit analysis in the agro sector industry, and include information technology service providers.

- ✓ 7 meat industries (structured interview)
- ✓ 101 farmers (Direct survey)
- ✓ 100 sales companies (Online survey)
- ✓ 100 employees (Direct survey)
- ✓ 100 consumers (Direct survey) and
- ✓ 7-seriesobservation of packaging department (obtaining information from relevant manufacturing documents and direct observation)

7.12 Sample of research

We shall use random samples in selecting processing companies for the survey (or individual interviews) in both sectors. This is also considered a fair way of selecting a sample from a given population, since every member is given equal opportunity of being selected. Another key feature of simple random sampling is its representation of the population.

A list of all processing companies was acquired from Food and Veterinary Agency in Kosovo.From 49 food processors, 7 will be picked through random sampling. The chosen processing companies will then be the target sources of respondents of the researcher. We will conduct surveys (or individual interviews) with general managers of 7 food processors. The processing facilities will be contacted to obtain a verbal consent to administer the questionnaire to employees at their working places. A letter of consent will also be sent to them along with a sample copy of the questionnaire that will be used, as well as the protocol of the researcher. Data collection was conducted throughout the facilities of companies operating hours from Mondays through Friday in order to include all employees.

We will observe packaging departments of each processing company in order to present data before and after using digital models. The Pro model application will help us in this case to analyze all the variables from this process.

Cluster sampling will be used in cases of surveys with farmers and consumers, because that is accomplished by dividing the population into groups, usually geographically. These groups are called clusters or blocks. The clusters are randomly selected, and each element in the selected clusters will used.

7.13 Procedure and instrument gathering the data

7.13.1 Procedure 1 - Survey

We have designed the questionnaire with farmers to have an idea how clusters are implemented and to understand where their key problems lie in the cooperation process. The questionnaire will have 14 questions. We will useLikert-scale questionnaire with multiple choices from: strongly disagree ‘to strongly agree‘.

Questionnaires with processing companies will have 32 questions, and our focus will be in gathering information different subjects, including how digital business model stimulates the company performance.

The questionnaires with consumers include some basic components, like quality of products, design, and price for different products.

We also prepare survey to disseminate to employees. This survey includes most relevant information about the employee's satisfaction in their working place. Such survey shall have a total of 15 questions.

7.14 Research methodology

The inconsistency and absence of the official data in Kosovo are one of the major barriers for reliable research. Therefore, this research will be focused on cross-sectional data rather than time-series data. The research will be conducted in the Republic of Kosovo and it is separate in two parts.

The respondents of this study are farmers, processing companies, consumers and employees of the companies that are selected to respond in our prepared survey. They are the ones who are the knowledgeable enough to answer the problems posed in the present study. They answered the questionnaire that the researchers will give them which supplies the information the researchers need.

The target population in this research are selected companies SMS's sector in Republic of Kosovo. We will do unit analyse in processing industry.

We will use random samples in selecting processing companies because its ease of assembling the sample. It is also considered as a fair way of selecting a sample from a given population since every member is given equal opportunities of being selected. Another key feature of simple random sampling is its representativeness of the population.

Cluster sampling will used in cases of doing survey with consumers, because is accomplished by dividing the population into groups, usually geographically. These groups are called clusters or blocks. The clusters are randomly selected, and each element in the selected clusters will used.

We design the questionnaire with processing companies to have an idea how clusters are implementing and to understand where they have the main problem during the corporation process. The questionnaire has 32 questions. We will use Likert-scale questionnaire with five choices from: strongly disagree 'to strongly agree'. The questionnaire will be distributed by 1) physicaly and 2) electronic post (Free Online survey - electronic questionnaire).

Main Research Questions (RQs)	Strongly Agree	Agree	Neither (Neutral)	Disagree	Strongly Disagree
	↓	↓	↓	↓	↓
RQ1: How does a digital business model stimulate company performance?	1	2	3	4	5
RQ2: Variable 1: How a digital business model stimulate company strategy	1	2	3	4	5
RQ3: Ability to be coherent with cluster group!	1	2	3	4	5
RQ4: Clusters effects	1	2	3	4	5
RQ5: Developing new products	1	2	3	4	5
RQ5: Which departments use digital programs?	1	2	3	4	5

Note:only questions that will not be part of the "Likert-Scale" questionnaire are general questions to the companies surveyed. In this survey, the targeted group will involve all persons/companies that have information and can answer questions/statements from a designed questionnaire, and these are:

- Food processing companies (are the only ones that can offer useful information about cluster partnership, because they form a bridge between farmers and retailers).
- Farmers (farmers are able to inform us about the technical issues and product evaluation due to their direct communication with companies).

– Consumers can inform us about the quality of products and all other issues, including prices and their personal perception about each product.
– Employees – we can gather data from employees in order to have an idea about the perception about their daily work and changes that company will need to do.

As in data analysis and interpretation, we expect to analyse the developed scores by utilizing the following steps:

Step 1

– mean score (x),
– standard deviation (s), and
– coefficient of variation (cv)

Step 2

– the overall scores for each variable (statement) studied will be developed (i.e., overall mean score, overall standard deviation, and coefficient of variation) for all studied variables

Step 3

– Other analyses would be performed (where applicable and needed), such as: correlation, regression, etc.

7.15 Ethics in research and legal issues

The information collection process must be carried out to the highest ethical standards in order to protect and respect confidencieality of all data from each person/company. No data should be collected or stored that would in any way jeopardize a person/company's safety. In particular, direct interview methods with farmers should only be used if required information is not otherwise available by any other means. The management team must also ensure that a policy to preserve confidentiality is in place to control disclosure of personal and identifying information when data is passed to other individuals for collation and indicator calculation. The principle of

confidentiality should be subject to the need to act to provide immediate protection to each person/company where necessary.

We will use and observeinternational copyright laws, with the intention of ensuring the enjoyment of rights of the participants.

7.16 Testing hypotheses

In this section, we shall test hypotheses made in the thesis, and generate findings and recommendations therefrom.

A general hypothesis is

H0: Digital models do not influence cluster firms' performance

H1: Digital models influence cluster firms' performance

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
How do digital models stimulate the performance of the company?	7	1	5	2.71	1.496
Valid N (listwise)	7				

The center of distribution (mean) is 2.71 and the standard deviation is 1.496, from this result we can see a small standard deviation, which means that we do not have spread data, or data are very close to the mean. As we can see from the result, the significance level is 0.003, which is lower than 0.05, which means that we reject the null hypothesis.

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
How do digital models stimulate the performance of the company?	4.800	6	.003	2.714	1.33	4.10

Special hypothesis 1

H0: Using technology does not impact firm performance

H1: Impact of use of technology on firm performance

Bootstrap for One-Sample Test

	Mean Difference	Bootstrap[a]				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
Is your company willing to invest in technological infrastructure?	1.286	.037[b]	.153[b]	.001[b]	1.143[b]	1.571[b]

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

b. Based on 913 samples

The center of the distribution (mean) is 1.286 and the standard deviation error is 0.153, from this result we can see that we have a small standard deviation, whichmeans that the we do not have spread data, the data are very close tothe mean. As we can see from the result, the significance level is 0.001 that is lower than 0.05, whichmeans that we reject the null hypothesis.

Single hypothesis 1.1

H0: Departments aren't easier to manage by using technology

H1: Departments are easy to manage by using technology

Bootstrap for One-Sample Test

	Mean Difference	Bootstrap[a]				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
In which departments do you need to apply technology?	2.143	-.009[b]	.465[b]	.049[b]	1.286[b]	3.143[b]

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

b. Based on 997 samples

The center of the distribution (mean) is 2.143 and the standard deviation error is 0.465. From this result we can see that we have a small standard deviation, whichmeans that the we do not have spread data, the data are very close of the mean. As we can see from the result, the significance level is 0.049 that is lower than 0.05, whichmeans that we reject the null hypothesis.

Single hypothesis 1.2

H0: Technology doesn't impact performance of employees

H1: Impact of technology on performance of employees

Bootstrap for One-Sample Test

	Mean Difference	Bootstrap[a]				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
How are the staff members willing to apply information systems to the relevant departments?	1.857	.000[b]	.297[b]	.001[b]	1.286[b]	2.429[b]

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

b. Based on 999 samples

The center of the distribution (mean) is 1.857 and the standard deviation error is 0.297, from this result we can see that we have a small standard deviation that means that the we do not have spread data, the data are very close of the mean. As we can see from the result the significance level is 0.001, which is lower than 0.05, this means that we reject the null hypothesis.

Single hypothesis 1.3

H0: Technology does not stimulate innovation

H1: Technology stimulates innovation

Single hypothesis 1.4

H0: Technology increases product price

H1: Technology decreases product price

Bootstrap for One-Sample Test

	Mean Difference	Bootstrap[a]				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
How do you evaluate the quality of your products?	3.714	.002[b]	.272[b]	.001[b]	3.286[b]	4.286[b]

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

b. Based on 996 samples

The center of the distribution (mean) is 3.714 and the standard deviation error is 0.272, from this result we can see that we have a small standard deviation that means that the we do not have spread data, the data are very close of the mean. As we can see from the result the significance level is 0.001 that is lower than 0.05, this means that we reject the null hypothesis.

CHAPTER 3

8. Research report

8.1 Data analysis

During this research we have obtained much informationfrom different sources, and based on suchfacts, we have developedwhole new data dimensions on digital performance. All such data wereseparated and analyzed in different levels during this research. In this chapter, we summarize alldata in different categories.

8.2 Results from survey with consumers

Since our research is multi-dimensional, we have aimed to analyse information from different viewpoints. In this case, we have prepared a study targeting consumers who consume domestic produce on daily basis. This survey included 100 respondents, of which 40% male and 60% female. All details of respondents involved are presented in the table below. According to data, 16% of respondents are under the age of 20, of which 11% male and 5% female, age 20-34 around 40% of respondents, 14% of which men and 26% women. The ages between 35 and 49 had a total of 16% of respondents, of which 2% were male, and 14% female; respondents in ages

50 to 64 were 15%, where 2% were male and 13% female, while over the age of 65, a total of 13%were interviewed, counting for 11% of men and 2% women.

Table 7 – Results from survey with consumers - Correlation between Age and Sex

		Age				
		<20	<35	<50	<65	>65
Sex	Male	11	14	2	2	11
	Female	5	26	14	13	2

Since the survey exclusively covered 7 meat industries, the results obtained from the survey are presented below:

Table 8 - Results from survey with consumers - Correlation between: Quantity of meat you consume monthly? Your assessment of physical infrastructure of meat industries in Kosovo; and What should a meat product contain in your opinion?

				Quantity of meat you consume monthly?				
				<1kg	<5kg	<10kg	<20kg	>25kg
Your assessment of physical infrastructure of meat industries in Kosovo?	A Meat industry	What should a meat product contain in your opinionis?	Quality of products	5	3	3	2	0
			Price	2	1	1	2	0
			To be produced with the most advanced technology	0	1	0	0	0
			Forms and designs to be innovative	0	0	0	0	0
			Size and weight of the product	0	0	0	0	0
	A2 Meat industry	What should a meat product contain in your opinion?	Quality of products	1	2	1	0	0
			Price	0	5	0	0	0
			To be produced with the most advanced technology	0	0	0	0	0
			Forms and designs to be innovative	0	0	0	0	0
			Size and weight of the product	0	0	0	0	0
	B Meat industry	What should a meat product contain in your opinion?	Quality of products	5	4	1	0	0
			Price	7	4	0	0	0
			To be produced with the most advanced technology	0	1	0	0	0

			Forms and designs to be innovative	1	0	0	0	0
			Size and weight of the product	0	0	0	0	0
			Quality of products	9	2	0	0	0
			Price	4	1	0	1	0
	F Meat industry	What should a meat product contain in your opinion?	To be produced with the most advanced technology	0	1	0	0	0
			Forms and designs to be innovative	3	0	0	0	0
			Size and weight of the product	0	0	0	0	0
			Quality of products	1	2	0	0	0
			Price	2	3	0	0	0
	L Meat industry	What should a meat product contain in your opinion?	To be produced with the most advanced technology	0	0	0	0	0
			Forms and designs to be innovative	0	0	0	0	0
			Size and weight of the product	0	0	0	0	0
			Quality of products	1	0	0	0	0
			Price	2	0	0	0	0
	K Meat industry	What should a meat product contain in your opinion?	To be produced with the most advanced technology	1	1	0	0	0
			Forms and designs to be innovative	0	0	0	0	0
			Size and weight of the product	0	0	0	0	0
			Quality of products	5	1	1	0	0
			Price	3	2	0	0	0
	M Meat industry	What should a meat product contain in your opinion?	To be produced with the most advanced technology	1	0	0	0	0
			Forms and designs to be innovative	0	1	0	0	0
			Size and weight of the product	0	0	0	0	0

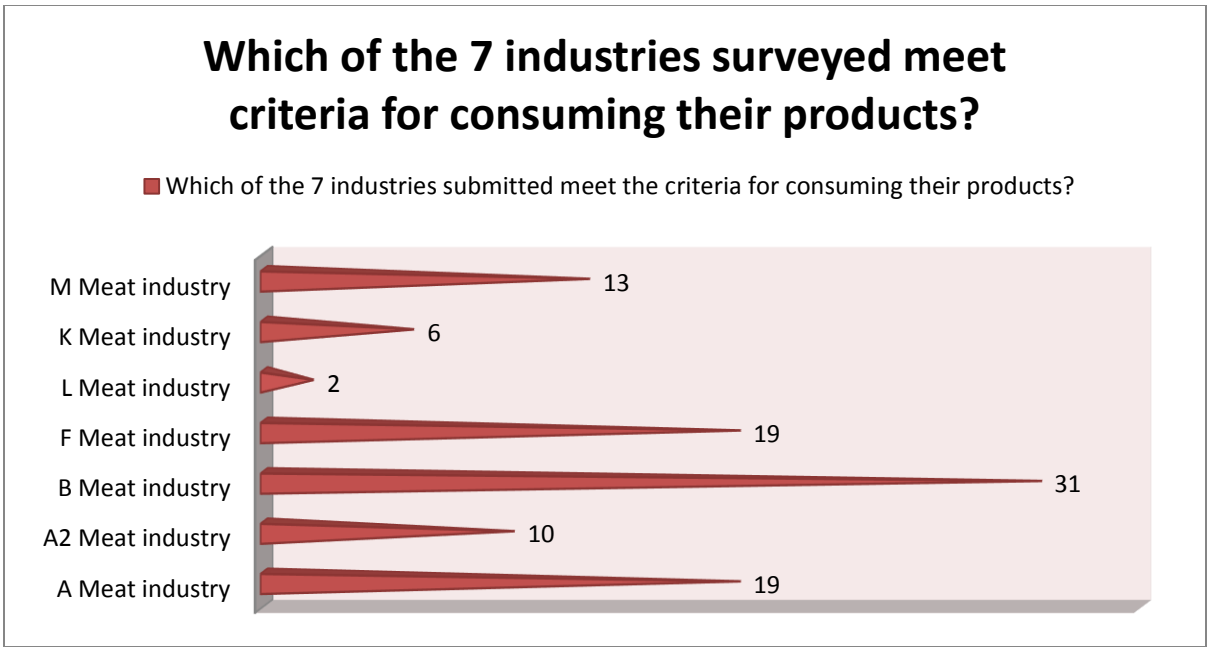
Based on the table above, upon analysis, we have derived that consumers are rather prudent in choosing their food products. This conclusion came as a result of the fact that 49% of respondents said that the quality of produce is very important, but also 40% stated that the price

must be adapted to the standard. Only 5% of respondents would be interested in meat industries improving their designs, while 6% believe that products must be produced by advanced technology.

If we analyse meat industries, then the results are the following:

- For the MI A, 13% of respondents have stated their opinions on product quality, and 6% on the product prices, while only 1% have mentioned technology.
- For the MI A2, 4% of respondents talked about quality of produce, and 5% related to the pricing, while other positions were not mentioned.
- For MI B, 10% of respondents talked about product quality, and 11% about the prices of products, only 1% stated about technology.
- For MI F,11% of respondents talked about of respondents talked about product quality, and 6% about product prices, only 1% made statements about technology, while 3% talked about shape and design of products.
- For MI L, 3% of respondents talked about product quality, dhe 5% about product prices, while there were no statements on other items.
- For MI K, 1% of respondents talked about product quality, and 2% about product prices, only 2% made statements on technology.
- For MI M, 7% of respondents talked about product quality, and 5% about product prices, only 1% made statements about technology, while 1% talked about the shapes and design of packaging.

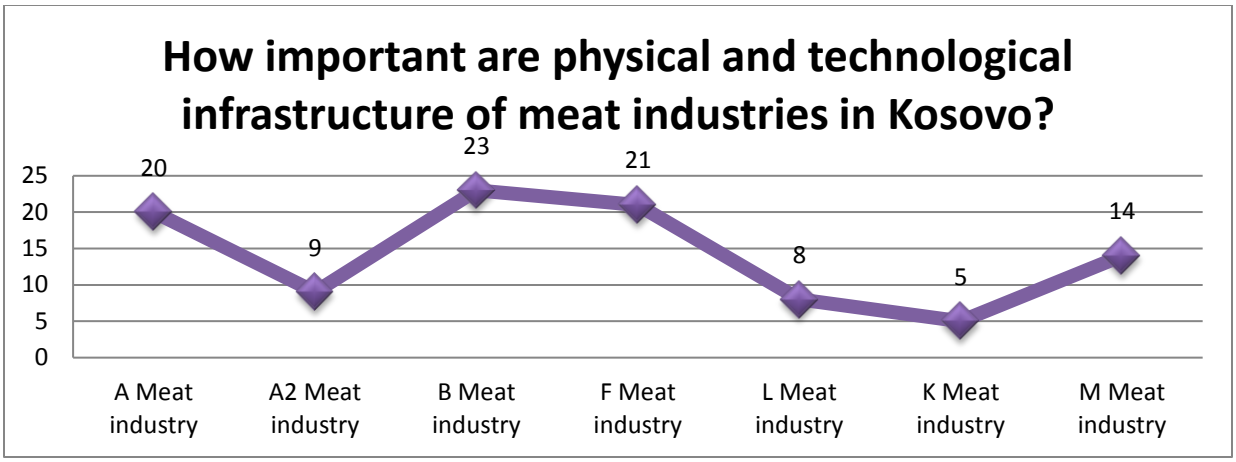
One of the questions included in the questionnaire was about the industries that meet all criteria to consume their products, and the responses were as the following:



Graph 1 - Which of the 7 industries surveyed meet criteria for consuming their products?

We assume that such results came as a direct consequence of marketing that MIs undertake, in variousforms. One must mention the fact that 3 MIs got their best scores because at the time of survey, they were very active on TV, fairs and social networks, and therefore, the satisfaction rate was better. To the question whether respondents have visited these MIs, all respondents responded negatively, stating that such a direct visit would not be necessary.

To the last question in the questionnaire, how do you assess physical and technological infrastructure, based on photographs taken in all MIs showing their infrastructure, the respondents gave the following replies:



Graph 2 - How important are physical and technological infrastructure of meat industries in Kosovo?

In this chart, there is a clear assessment of such MIs by consumers, and it is clear that the best satisfaction score is given to MI B, which came first in the category, followed by meat industries F and A, which score almost identically. One must underline that this ranking is rather important for MI strategies, having in mind that the consumer evaluation allows for easier access, and delivery of better products and services.

Through such question, we have tried to respond to the indicator 1.3 in this research.

8.3 Results from survey with farmers

To have a precise overview of the clustering function, we must initially take into account the most sensitive section of the model – supply of raw matter. Since our study aims to present details of MI operation, it is essential to do so by including the farmers' category in the survey. During this period, we have made contacts with 100 farmers, who have filled in our questionnaires. Data collected from the survey are presented in the table below.

Table 9 - Results from survey with farmers - Correlation between Municipalities, number of employees, number of animals in farm?

				Municipality						
				Prishtina	Mitrovica	Peja	Prizreni	Ferizaj	Gjilani	Gjakova
				Count	Count	Count	Count	Count	Count	Count
Number of employees	<10	Number of animals in farm?	>10	6	6	3	4	4	1	2
			11-20	0	5	3	9	1	0	1
			21-45	0	0	0	1	0	0	0
			46-100	2	0	4	2	0	5	1

<49	Number of animals in farm?	>10	0	0	0	0	0	0	0
		11-20	0	0	0	0	0	0	0
		21-45	0	0	0	0	0	0	0
		46-100	3	11	5	5	2	1	1
>50	Number of animals in farm?	>10	0	0	0	0	0	0	0
		11-20	0	0	0	0	0	0	0
		21-45	0	0	0	0	0	0	0
		46-100	4	2	3	1	3	0	0

This survey included 15% of farmers in the Municipality of Prishtina, 24% from the Municipality of Mitrovica, 18% from the Municipality of Peja, 22% from the Municipality of Prizren, 10% from the Municipality of Ferizaj, 7% from the Municipality of Gjilan and only 5% from the Municipality of Gjakova. From the data, one can see that the survey extended throughout the territory of the Republic of Kosovo.

If viewed from another angle, one can conclude that in the Municipality of Prishtina, 6% of farmers covered with the survey own a relatively small farm, with less than 10 hears, while 9% of farmers included in the survey owned farms with 46-100 heads.

Data from the Municipality of Mitovica are a bit different. In this municipality, 6% of the farms are small, with fewer than 10 heads, 5% are farms with fewer than 20 heads, while 13% of them are farms with up to 100 heads.

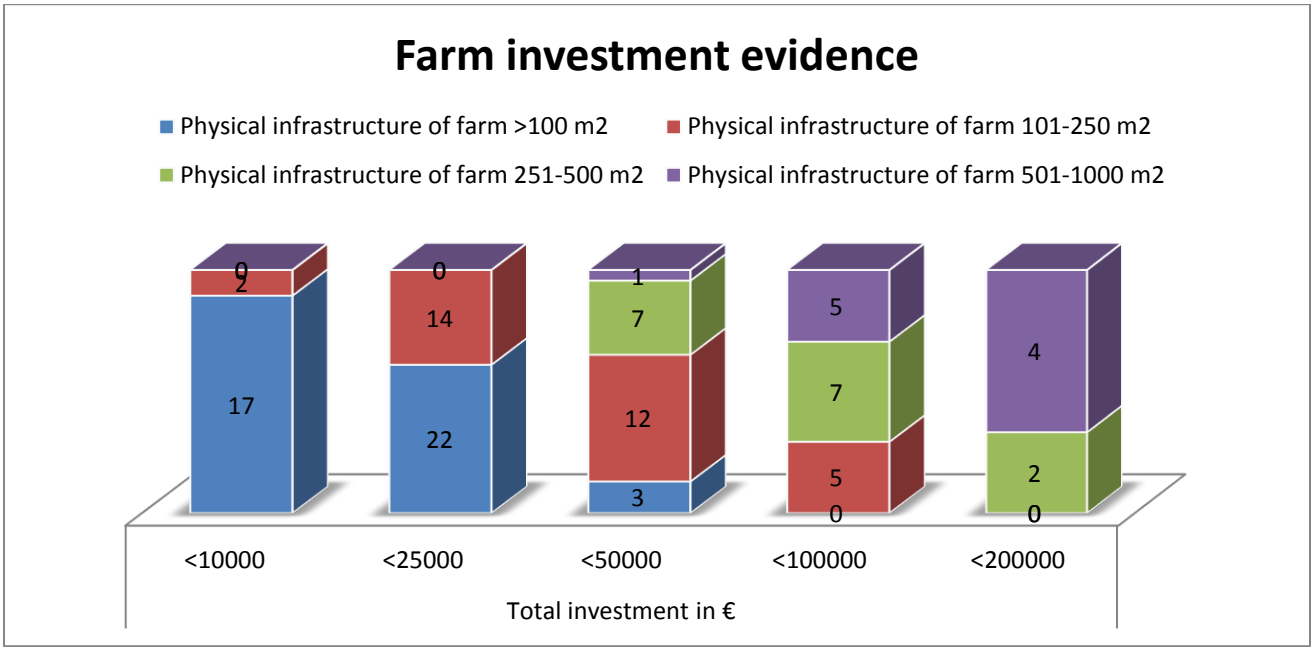
In the Municipality of Peja, we hav recorded 3% of farms with up to 10 heads, 3% of farms with up to 20 heads, 12%are large farms with up to 100 heads.

The Municipality of Prizrenhas 4% rather small farms with up to 10 heads, 9% have capacities with up to 20 heads, 8% are larger farms with up to 100 heads, and only 1% are farms with capacities of up to 45 heads.

In the Municipality of Ferizaj, around 4% of farms have up to 10 bovine heads, 1% of farms have less than 20 bovine heads, while 5% have fewer than 100 heads.

In the Municipality of Gjilan, around 1% of farms are small, with fewer than 10 heads, while around 6% are larger farms with up to 100 bovine heads.

In the Municipality of Gjakova, around 2% of farms are small, 1% have up to 20 heads, 2% are larger farms with up to 100 heads.



Graph 3 - Farm Investment evidence

Based on such results, one could say that the farms surveyed, mainly small in size, have limited infrastructure, but also budgets. Farmers generate their revenues mainly from the sales of animals. The Government of Kosovo does award grants and subsidies for farmers every year, though their beneficiaries do not contribute in improving conditions in the farm, but only invest in expanding their physical infrastructure. Many of the farmers interviewed have benefited from such grants and subsidies, but their effect is rather small, while the agricultural Strategy is not a document that is really observed, since it is a document designed without much of a research basis.

Based on the chart above, around 42% of farms have physical infrastructure of less than 100m^2, around 33% of farms have a physical infrastructure covering from 101-250m^2, around 16% of farms surveyed have 251-500m^2, while only 10% of farms have physical infrastructure of up to 1,000m^2.

Proportional to the farm size, farmer investments do not fail. If viewed on the percentages of investment, one could say that 19% of Kosovo farmers have invested around 10,000€ in their farms, 36% have invested around 25,000€, 23% have invested around 50,000€, while 17% have

made capital investments that amount to 100,000€, while an investment of over 200,000€ was made only by 6% of surveyed farmers.

By this question, we have made an effort to respond to indicator 1.3 of the present research.

Table 10 - Results from farmer survey – correlation between satisfaction with cooperation with companies and type of clients?

		How satisfied are you with the cooperation offered by the companies?				
		Not at all satisfied	Not satisfied	Moderately satisfied	Satisfied	Very satisfied
Your clients are:	Companies	10	18	21	15	5
	Citizens	2	5	8	5	12

Out of 100 farmers interviewed, fewer than 32% have stated that main buyers of their goods are citizens visiting their farms and purchasing animals for their family needs. Meanwhile, more than 68% have stated that main buyers are businesses that buy animals for meat processing or direct sales from meat stores.

Meanwhile, to our question on the satisfaction with cooperation provided, their replies were as the following:

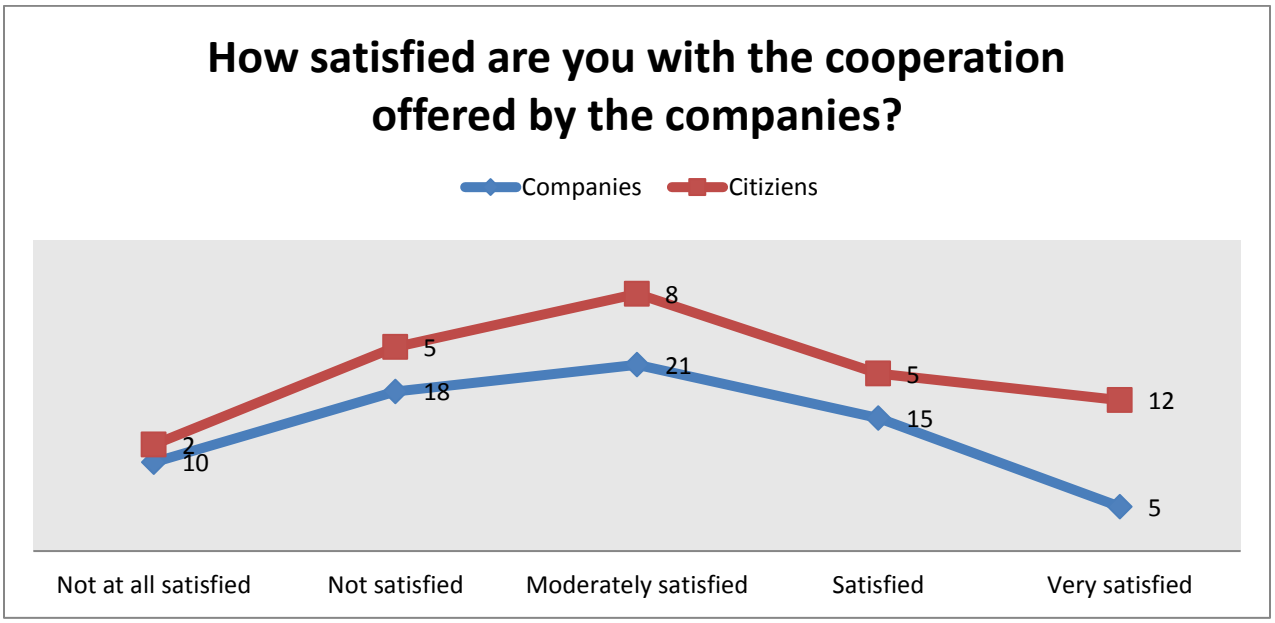
It is clearly seen that farmers have better cooperation with citizens, rather than companies, for the following reasons:

Table 11 Facts on cooperation with Companies and consumers

Companies	Citizens
Delays in payment of goods	Cash payment
Larger amounts of purchase	Smaller amounts of purchase
Purchases by order	Ad hoc purchases
Quality of animals and relevant documents, including veterinary books	Quality of animals
Animal age (older more preferred)	Animal age (younger more preferred)
Standards and hygiene	hygiene
Feeding method	Feeding method

By this question, we have tried to respond to the indicator 1.2 of the present survey.

Meanwhile, the graphic representation of the data above is the following:

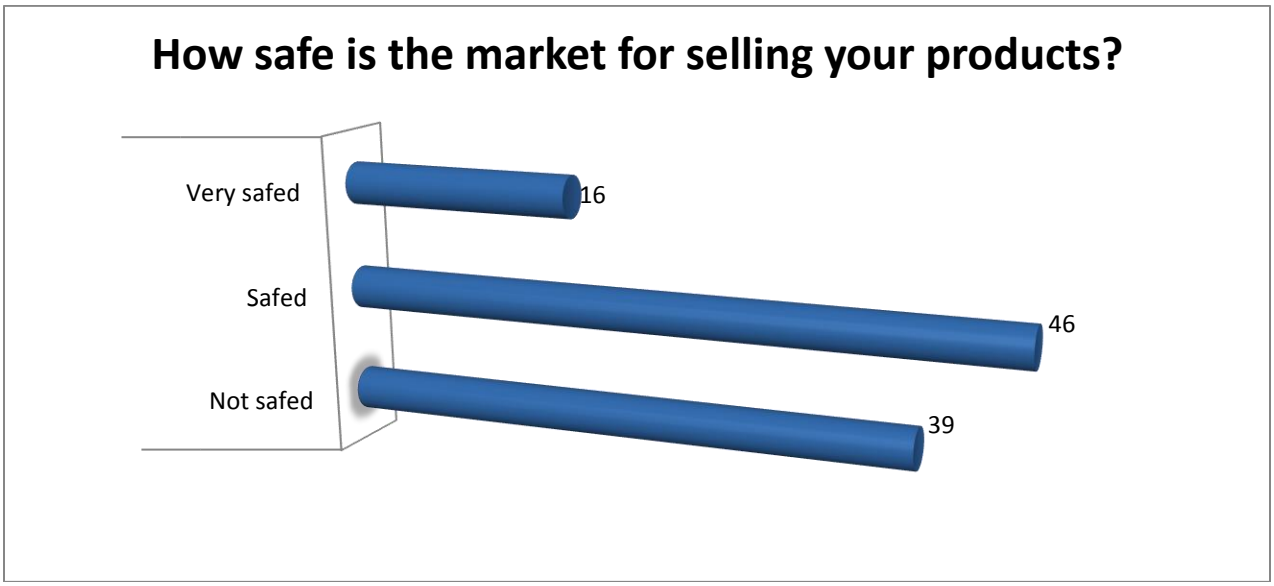


Graph 4 - How satisfied are you with the cooperation offered by the companies?

In terms of market certainty, only around 16% are very certain and safe in the market, 46% are somewhat safe, and 38% are not certain or safe. Such situation comes to exist due to many factors we shall list in the following sections.

Larger farms that have stated their certainty in the market have made considerable investments in the area, they have specialized themselves, enjoy financial sustainability, have standards and specialized staff in livestock raising and husbandry, and have experience in the area. Therefore, this category is rather safe in the market, because most companies are very much interested in cooperating with specialized and experienced farms. A second category of respondents, stating that they are somewhat safe in the market, includes those farmers that have support, are quality-oriented and have tradition in the sector. Regardless of the fact that they do not apply all standards as required by their cooperating partners, many have begun their efforts in this regard. A third category, those who do not feel very certain in the sector, includes all farmers with no experience in the area, and those who have made investments without any strategic development plan, with no market research or specialized staff. One must mention the fact that this farmers' category, in most cases have their own family members supervising, feeding and cleaning animals.

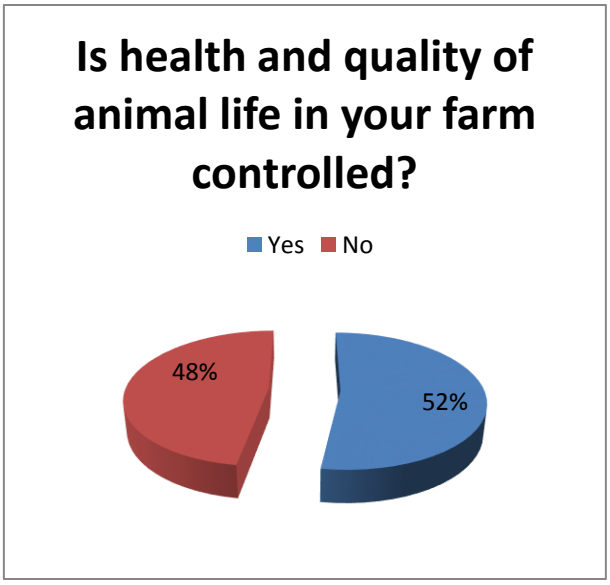
By this question, we have tried to respond to the indicator 1.1 of the present research.



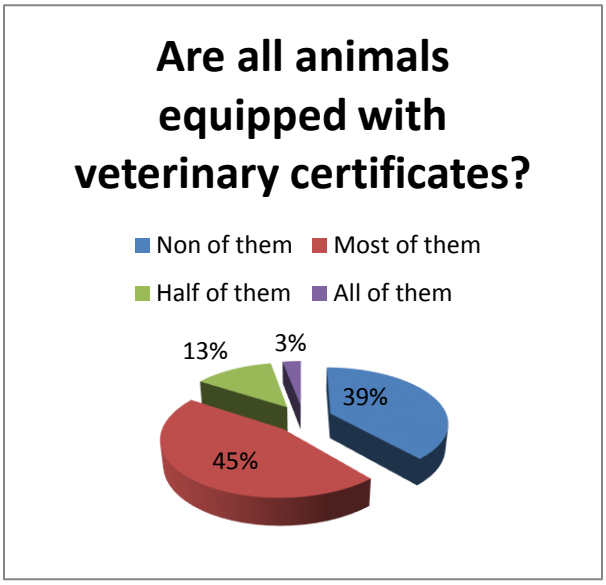
Graph 5 - How safe is the market for selling your products?

2 most important questions of the questionnaire related to quality of live of animals and health, have scored poorly. According to the respondents, these two fundamental criteria are not permanently checked by the state, and even those who are supervised, have quite the room for manipulating. One must underline the fact that the Food and Veterinary Agency has a limited number of veterinarians who perform such checks in the field. Due to the large number of farmers with their small farms, it is impossible to conduct regular inspections and improve quality in the area. In terms of veterinary certificates, regardless of the fact that by Kosovo Laws, every animal must have a Health Card, in practice, this leaves much to desire, because not all farmers have knowledge on such rules, and then not even all veterinarians who examine animals assign importance to such issue. A difference is made by more experienced farmers, who provide for better conditions, and there is a trend of awareness raising in terms of animal health, nutrition and life.

One must underline the fact that every investment made in animal health is an investment made by farmers, divided from the general farm budget. Veterinary services are costly, and practically, such services are only offered when it is necessary to intervene. Routine veterinary examinations are only rare, and such examinations are only performed in cases of animal illnesses.



Graph 6 - Is animal health and quality of life in your farm checked?



Graph 7 - Are all the animals equipped with veterinary certificates?

Since the state institutions have not prioritized the operations of this sector, and therefore the sector is problematic, room for abuses by farmers is rather large, where in our case, only 3% of the farms have their animals registered as per applicable legislation, 45% of farms have most of their animals registered, while over 39% of farmers have no animals registered and documented as per applicable legislation. This is a rather disturbing piece of information, since not only animal life and welfare is endangered, but also endangering the population due to its consumption.

8.4 Results from survey with firms

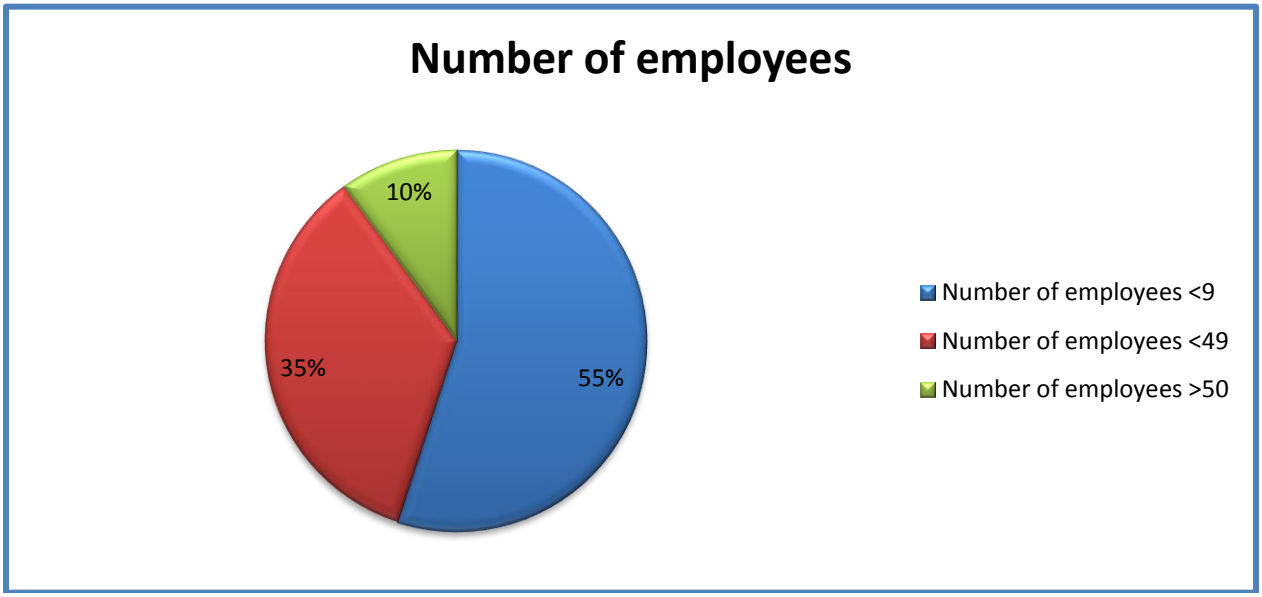
In our efforts to have a comprehensive research document, we decided to conduct a survey with generally smaller businesses with direct access to meat industries and consumers, who in turn provide direct information for each product. Each of the businesses interviewed have cooperated with meat industries, and the data collected with the questionnaire are presented as the following:

Table 12 - Results from survey with firms - Correlation between City and number of employees

		City						
		Prishtina	Mitrovica	Peja	Prizreni	Ferizaj	Gjilani	Gjakova
		Count	Count	Count	Count	Count	Count	Count
Number of employees	<9	22	24	4	0	2	2	1

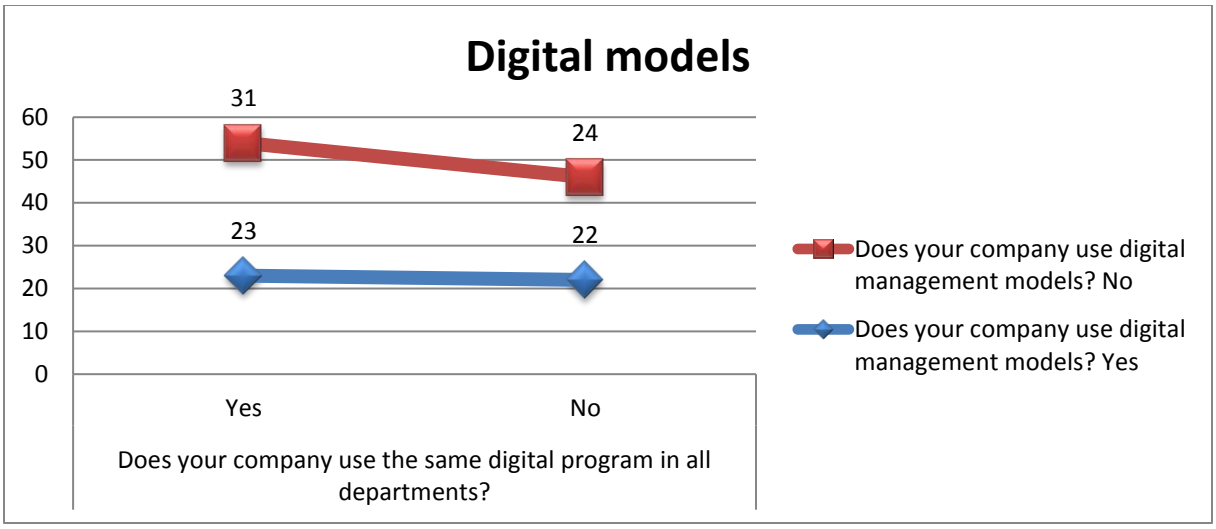
	<49	16	15	3	1	0	0	0
	>50	5	4	0	1	0	0	0

Research covered 100 enterprises operating within the territory of the Republic of Kosovo, namely in 7 major cities thereof. Enterprises were ranked according to their staffing numbers. Based on survey results from the 100 enterprises, 43 work in the Municipality of Prishtina, 43 are from the Municipality of Mitrovica, 7 from the Municipality of Peja, 2 from the Municipality of Prizren, 2 from the Municipality of Gjilan and 1 from the Municipality of Gjakova. Of the surveyed enterprises, 55% have fewer than 9 staff, 35% have fewer than 49 employees, and only 10% have over 50 full-time hired employees.



Graph 8 - Number of employees

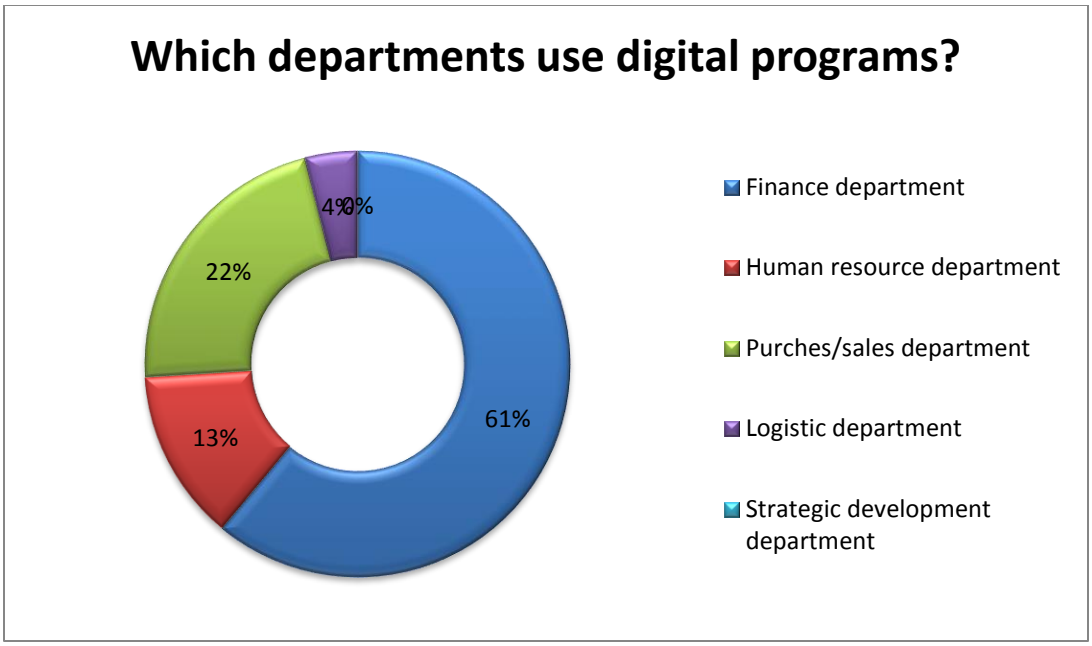
These data confirm the information that businesses in Kosovo are mainly small businesses, mainly commerce enterprises that generate revenues from retail sales. In businesses with fewer than 9 employees, leading businesses are those positioned in specific areas, have no organizational structure, and are managed by family members. In medium-sized businesses, organizational structure is visibly better, but also top-to-bottom communication is based on standard. Larger businesses with over 50 employees have official organizational structures, communication lines and clear responsibilities.



Graph 9 - Digital models

In our second analysis, in the business questionnaire we have received information that around 45% of surveyed enterprises have stated that they do not use digital management models, while 55% of enterprises have stated they do. To the question "whether they use the same digital models in all departments", 54% have stated positively, while 46% of businesses surveyed have stated that they do not use the same system in all departments.

With this question, we have tried to respond to the indicator 3.1 of the present research.

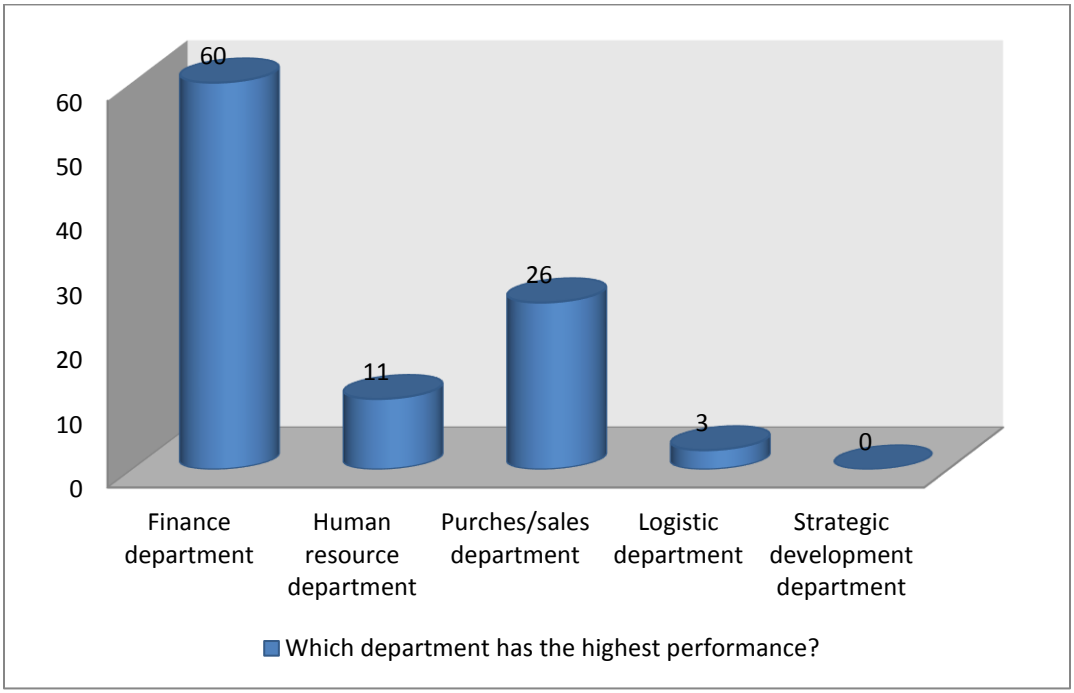


Graph 10 - Which departments use digital programs?

To the question "Which department uses digital programs", responses from enterprises have been rather surprising, in the sense that 61% have stated that only their Financial Departments use digital programs, 22% use digital programs also in sales/purchase departments, while 4% of surveyed enterprises manage their logistics with GPS applications, and around 13% of enterprises have stated that they manage their human resources with digital models. If one would further analyse these results, we come to the conclusion that such data are a result of the fact that mainly smaller enterprises were covered with the survey, enterprises with no clear operating structures, and therefore, their focus is in having precise evidence in finance and sales departments. Logistics of small enterprises is already simple, and therefore, we may assume that owners have not deemed necessary to invest in the area. Also, having in mind that 55% of the enterprises surveyed have fewer than 9 staff, it is rather normal that HR departments do not receive much investment either.

This assumption is further confirmed by the following chart, which deriving from responses to the questionnaire, shows that 60% of respondents have confirmed that the Finance Department has a higher performance, pursued by 26% with their sales department, and 11%, respectively 3% with their HR and logistics Departments.

The fact that the survey has not produced any information on strategic planning departments does merit comment, having in mind that targeted enterprises have a different format of internal organization and management. Although an important department, our survey has not recorded a single company with such a department.



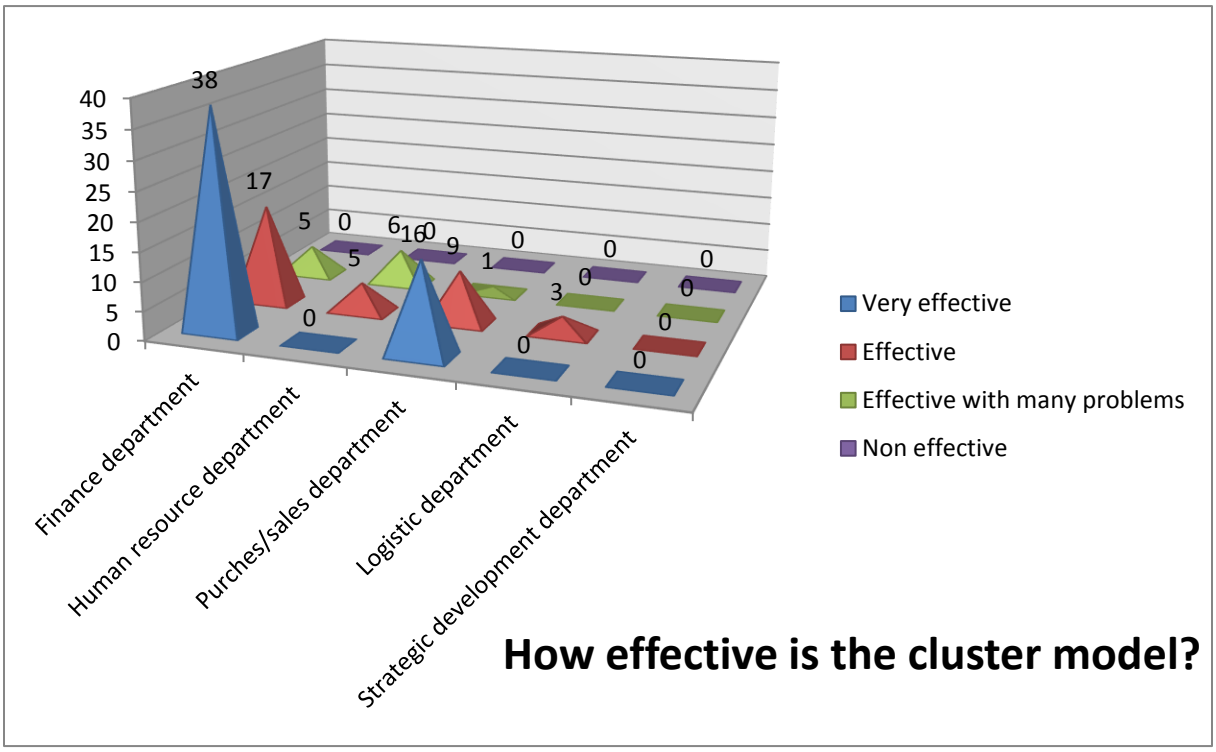
Graph 11 – Which department has the highest performance?

Meanwhile, to confirm on our research question, how effective is the clustering model, we were able to secure the following data:

According to research, this model is very effective in 54% of cases, effective in 34% of cases, and effective but problematic in 12% of cases. This occurs due to the fact that cluster management is a rather novelty method in our country, while managerial and technical abilities for such management are rather poor.

If the analysis goes deeper into departments, then we conclude that the Finance Department appears to be most effective, pursued by Sales/Purchase Department, while the HR Department scores lower in the list, appearing effective but problematic in 16% of the time, and only in 5% of cases, it was scored effective. Through this question, we have tried to respond to the indicator 4.2 of this research.

This is a very important indicator in the survey, for which we engage to validate research data, based on routine processes employed by businesses.



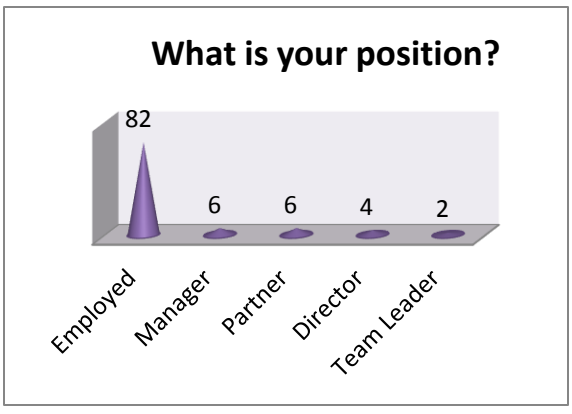
Graph 12 - How effective is the cluster model?

By this graph, we have received responses on the indicator 4.3 of our thesis.

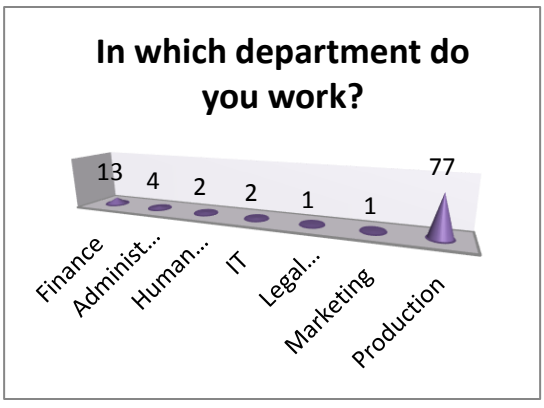
8.5 Results from survey with employees

As in any other model, clustering is rather dependant on contributions of human resources. For this reason, in this section, we shall present data coming from MI employees, to verify several indicators that are very important for building general conclusions of the topic.

Graph 13 - What is your position?



Graph 14 - In which department do you work?



With this questionnaire, we were able to interview 82% of employees (task executors), 6% managers (hierarchic level), 6% parter (outsourcing business partner), 4% directors, and 2 team leaders. In the interviewees, 13% work in the Finance Department, 4% in the Administration, 2% in HR, 2% in IT, 1% in the legal office, 1% in marketing and 77% in production.

With the crosstabs option in the SPSS, we have analysed two variables that are closely linked to each other. This is about performance of employees, and impact of technology in performance.

To the question whether performance is evaluated in the enterprise, 65% of respondents entirely agree that performance appraisal is conducted, 9% agree that there is performance appraisal, 16% of respondents shy away from responding by being neutral, and 10% do not agree that there is performance appraisal, or that it is realistic.

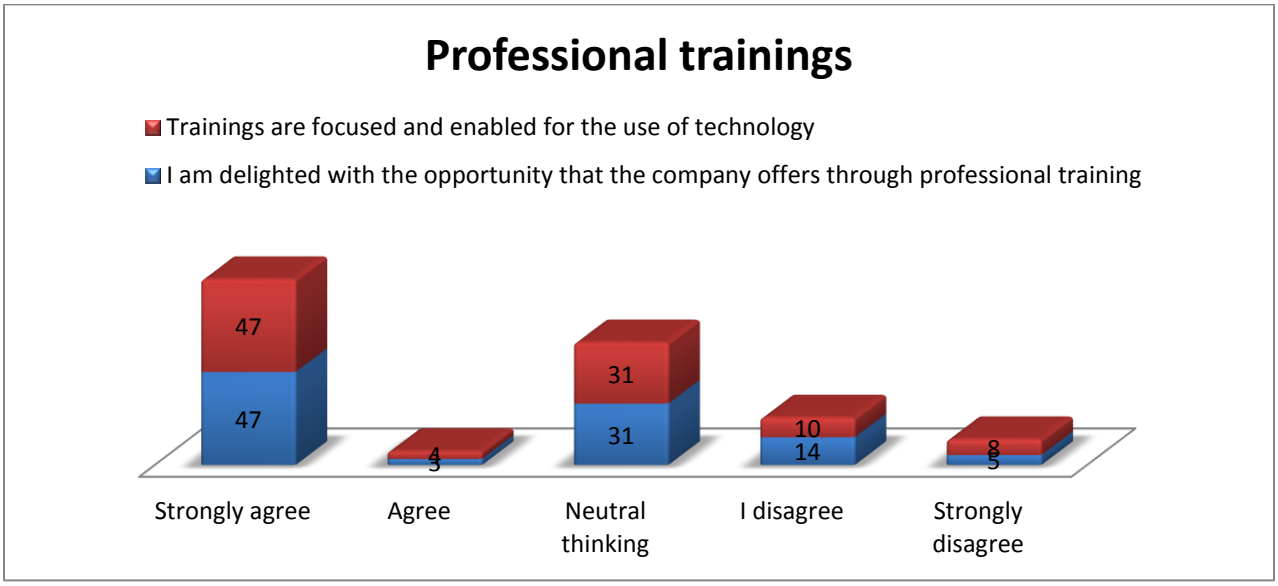
If one gets back to the question "whether staff performance is influenced by technology used in the company", the data are the following: 52% of respondents fully agree that technology does influence their performance, 30% have a neutral opinion on the matter, while 18% do not agree that technology has an impact on their performance.
The following table provides necessary clarifications to validate indicator 2 of this paper, with all necessary remarks.

Table 13 - Results from survey with firms - Correlation between "Performanceis influenced by the level of technology that the company uses" and "Performance at work is assessed in our institution"

		Performance is influenced by the level of technology that the company uses					Total
		Strongly agree	Agree	Neutral thinking	I disagree	Strongly disagree	
Performance at work is assessed in our institution	Strongly agree	34	5	18	6	2	65
	Agree	2	2	2	0	3	9
	Neutral thinking	3	1	7	2	3	16
	I disagree	1	1	0	0	2	4
	Strongly disagree	3	0	3	0	0	6
Total		43	9	30	8	10	100

In this case, liability falls with the company, which must provide for staff appraisal and training, because there are only two alternatives to improvement of such situation. First, if training opportunities are specific and provide necessary knowledge on the flow of processes without any

technical problems, or the staff, in one or another way, refuses to absorb information influencing change in routines they have acquired over a period of time. In this regard, we have studied the matter and received information that over 50% of respondents believes that training is appropriate to the working position, while 31% have a neutral stance, while 18% believe that training is not adequate. Roughly the same percentages appear when employees talk about training opportunities offered by the company. Upon such results, one may conclude that all employees that wish to enhance their professional careers do have a possibility of doing so by attending training offered by companies, while with technological advancements; manual working cycles are diminimishing, thereby lowering costs of staff salaries.

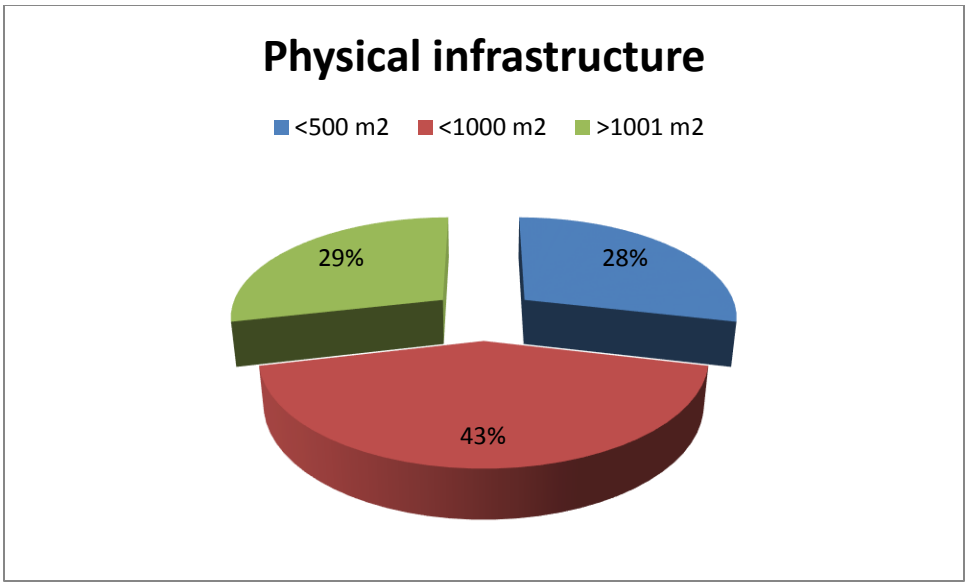


Graph 15 - Professional trainings

8.6 Results from survey with meat industry

With this questionnaire, we have tried to collect data we have elaborated in the theoretical part of the thesis, thereby being comparative in the process.

The chart below presents the physical infrastructure of surveyed MIs, and according to results, around 28% have a physical infrastructure that does not exceed a surface area of 500m^2, most have areas of around 1000m^2, while 29% have surface areas that exceed 1000m^2.



Graph 16 - Physical infrastructure

Based on such records, one may say that considerable investment has been made in infrastructure, though missing a proper strategy to develop this sector, which is unfortunately still missing. If we cast an overarching sight on overall investment of these entities, we get the following table:

Table 14 - Results from survey with meat industry – Total investment and planned investment forcoming years

		Total investment		
		<500000 euro	<1000000 euro	>1000000 euro
Planned investment forcoming years	<100000 euro	0	2	0
	<400000 euro	2	0	0
	>400000 euro	1	1	1

There are 3 surveyed companies which from the beginning of their activity have engaged in capital investments of around 500,000 € in the sector, 3 other entities have invested around 1,000,000€, while 1 other company have invested over 1,000,000€, thereby creating model conditions and specialization in the sector. It is important to underline the information that all companies do aim for expansion in the market and produce, and in that regard, they all have their new investment plans they aim to implement in the coming years. According to data, 2 MIs plan to invest around 100,000€ more in production lines and other equipment, 2 plan to invest around

400,000€ in the sector only in the coming year, while 3 other MIs claim to invest over 400,000€ only in this sector. Such investments would be funded by company profits, a section from grants, and then loans from commercial banks.

Based on records on production capacities and numbers of active produce, we have generated the following results: 29% of respondents have capacities of less than 1 ton of produce daily, 29% have a capacity of under 5 tons, while 42% of MIs surveyed have capacities of over 5 tons of produce daily. Overall, such findings reflect and validate earlier information, that the sector has received considerable investment, though if analysed from the produce perspective, we get the following overview: 29% of respondents have stated that they have less than 10 active products, 29% have stated that they have up to 20 products active in the market, and only 13% have stated they possess around 50 products under the company brand, while 29% of MIs say that they have not more than 35 active products in the domestic market. None of the companies surveyed export their produce overseas.

Table 15 - Results from survey with meat industry - Production Capacity with Number of products

Production capacity * Number of products Crosstabulation

		Number of products				
		>10	11-20	21-35	36-50	Total
Production capacity	<1 ton/day	1	1	0	0	2
	<5 ton/day	1	0	1	0	2
	>5 ton/day	0	1	1	1	3
Total		2	2	2	1	7

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
How muchare staff members willing to apply information systems to their relevant departments?	7	1	3	1.86	.900
Valid N (listwise)	7				

When coming back to digital management systems, to our question on "whether staff members are willing to apply information systems in various departments", 42% of businesses, upon

assessing their staff, have stated that they are not ready to apply information systems, 29% have stated to be ready, while 29% others are making preparations to bring about change.

Table 16 - Results from survey with meat industry - How much are staff members willing to apply information systems in their relevant departments?

		Count
How are the staff members willing to apply information systems to the relevant departments?	Not ready	3
	Ready	2
	Prepared	2

If one compares the responses to questions: "Is your company willing to invest in technological infrastructure?" and "In which departments do you need to apply technology?", departments with greater needs of investment and preparation in Finance, with over 66%, 17% in Logistics, and 17% in Human Resources. 71% of MIs have stated their willingness to invest in technology, while 29% are still not ready, and notably, there is a lack of willingness to invest in logistics and HR departments.

The following table provides necessary clarifications related to indicator 3 of the thesis.

Table 17 - Results from survey with meat industry - Is your company willing to invest in technology infrastructure and In which department do you need to apply technology?

Case Processing Summary

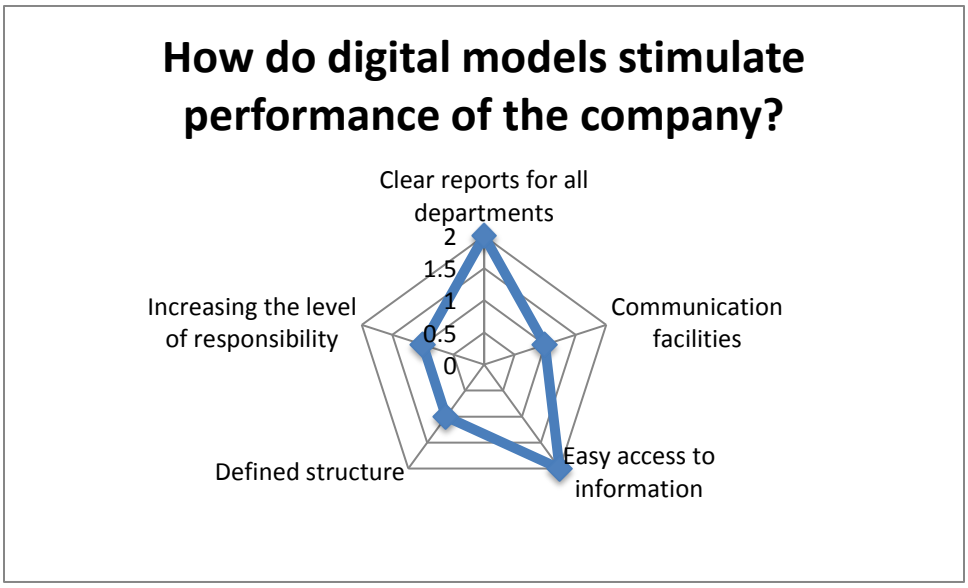
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Is your company willing to invest in technological infrastructure? * In which departments do you need to apply technology?	7	100.0%	0	0.0%	7	100.0%

Is your company willing to invest in technological infrastructure? * In which departments do you need to apply technology? Crosstabulation

		In which departments do you need to apply technology?			Total
		Finance department	Human resource department	Logistic department	
Is your company willing to	Yes	3	1	1	5

invest in technological infrastructure?	No	0	1	1	2
Total		3	2	2	7

Based on literature review, we are aware that clusters do influence many dimensions of business, depending on the concept of their creation. However,the perception of MIs on their operations in clustering can be confirmed by the next question, which is "How do digital models stimulate the performance of the company?"



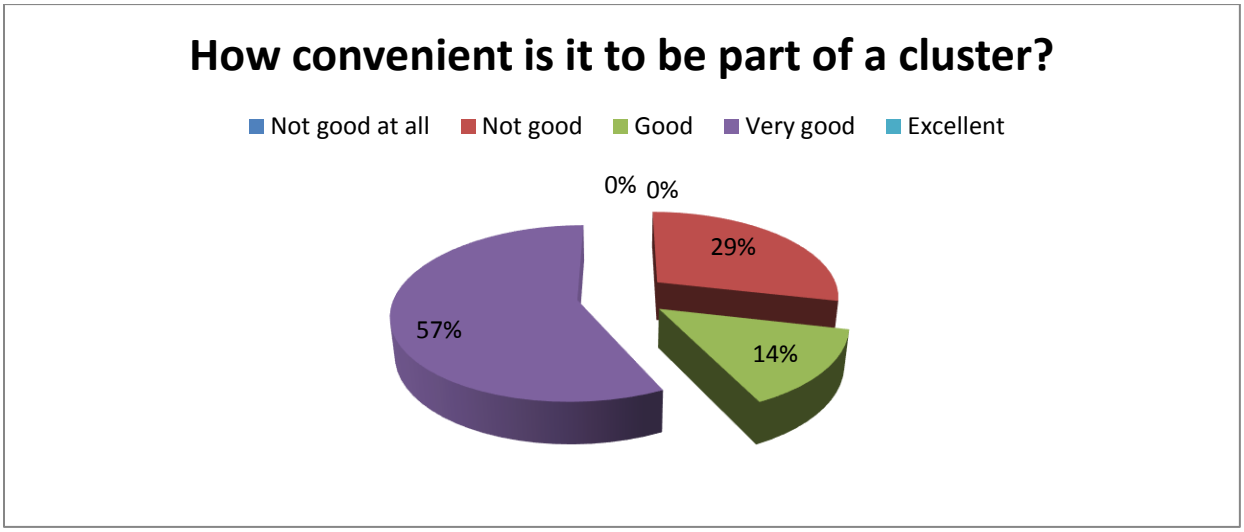
Graph 17 - How do digital models stimulate performance of the company?

29% of responses said that clear relations between all departments facilitate access and decision-making against various situations occurring. 14% of MIs believe that communications are appropriate and generate advantages in the area, 29% of others believe that easy access to information directly influences the company performance, and ultimately, 14% of MIs believe that defined cluster structure in the company and improved responsibility are two elements directly impacting the performance of companies and cluster structure development.

		Count
How do digital models stimulate the performance of the company?	Clear reports for all departments	2
	Communication facilities	1
	Easy access to information	2

	Defined structure	1
	Increasing the level of responsibility	1

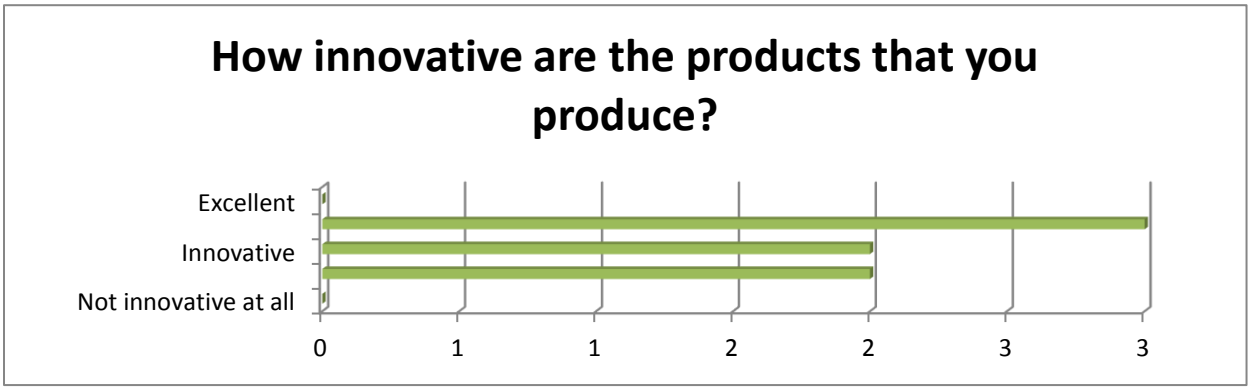
Generally, based on their experience in clusters, 57% of companies are satisfied with results of cluster work, 14% are moderately satisfied, while 29% are not that satisfied. We may assume that this situation appears due to non-timely implementation of all cluster procedures, and lack of experience of staff in the area.



Graph 18 - How convenient is it to be part of a cluster?

With this graph, we give response to indicator 4.1 of the thesis.

To assess the general flow of cluster functions, we have tried to obtain information also on products and innovation MIs bring with their products. 42% of MIs have stated that they are very innovative in developing new products, 29% have stated that they are innovative, while 29% have stated that they are not innovative. However, based on the situation of fact in the market, it is easy to find that all MIs surveyed produce almost identical products, mainly at a high production cost, due to the prices of raw matter, which is mainly imported.



Graph 19 - How innovative are the products that you produce?

8.7 Results from observations of packaging department of each meat industry

With the observations made in the research period, we have been able to collect relevant information on 7 MIs involved in the survey, in their packaging departments, thereby analysing several essential parameters with the Pro Model program, which allow us to develop a longer term and sustainable strategic production plan.

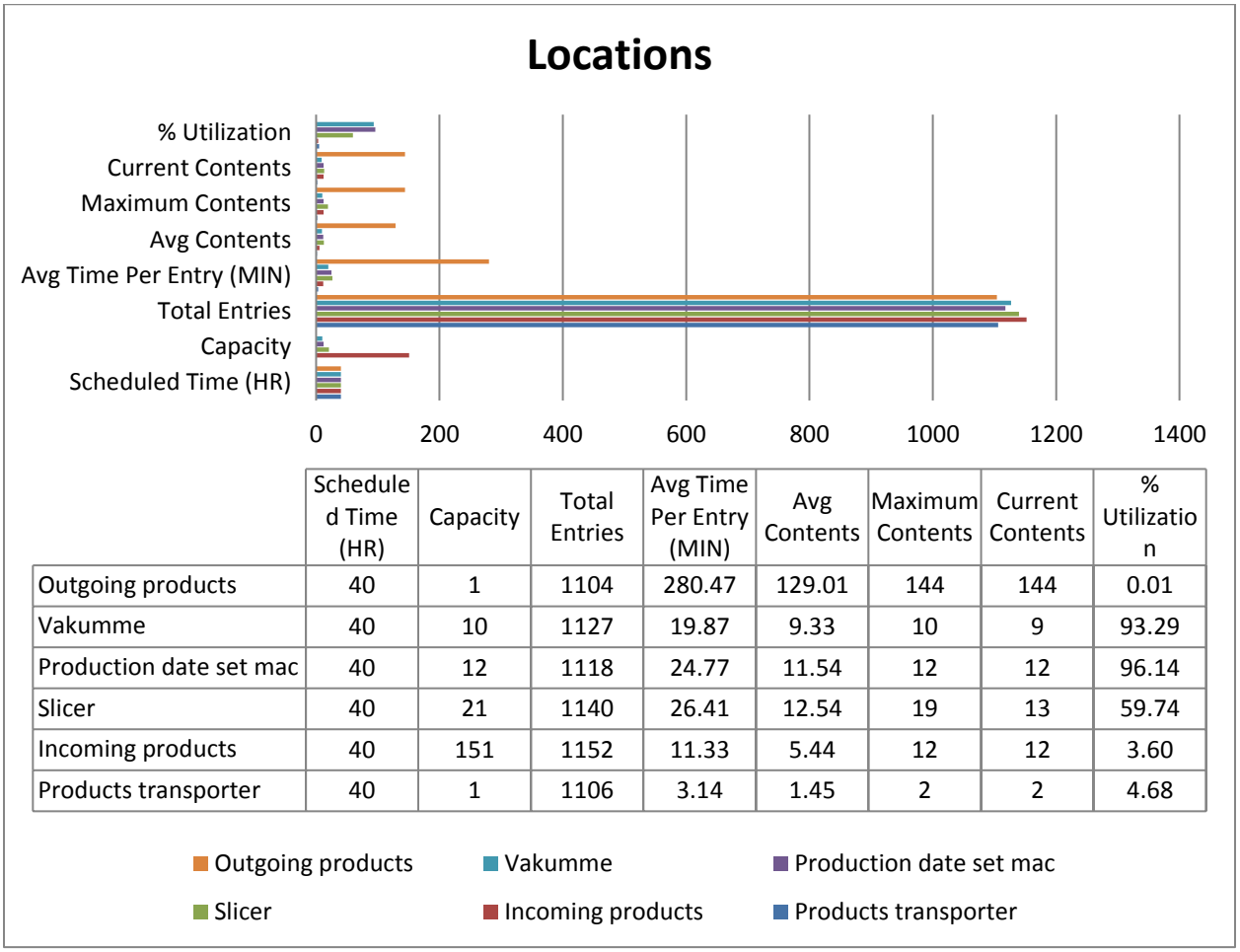
In the Findings, we have tried to present the existing model of operations of such departments, while with the Recommendations – we have presented benefits if such processes are managed with a digital model.

8.7.1 A meat industry - Findings

In the MI A, which is the first in this observation, we have managed to collect data, which are presented in a graphic manner below. According to data collected from the packaging department, we have seen that this department has a total of 4 main devices, and 2 auxiliary devices, all needed to package meat products. According to statistics presented below, vacuuming equipment is used for 93.29% of the time, the expiry date stamping device is used at a rate of 96.14%, and the slicer is used for 59.74%, while the incoming product device is only used at a rate of 3.60%.

If one analyses the viewpoint of utilization of existing capacities, we could say that only the Production date set device is fully used with 86.89%, 10.29% part occupied and only 2.83% of the time it is empty. The slicer device is 1.46% empty, and 98.54% of the time is partly

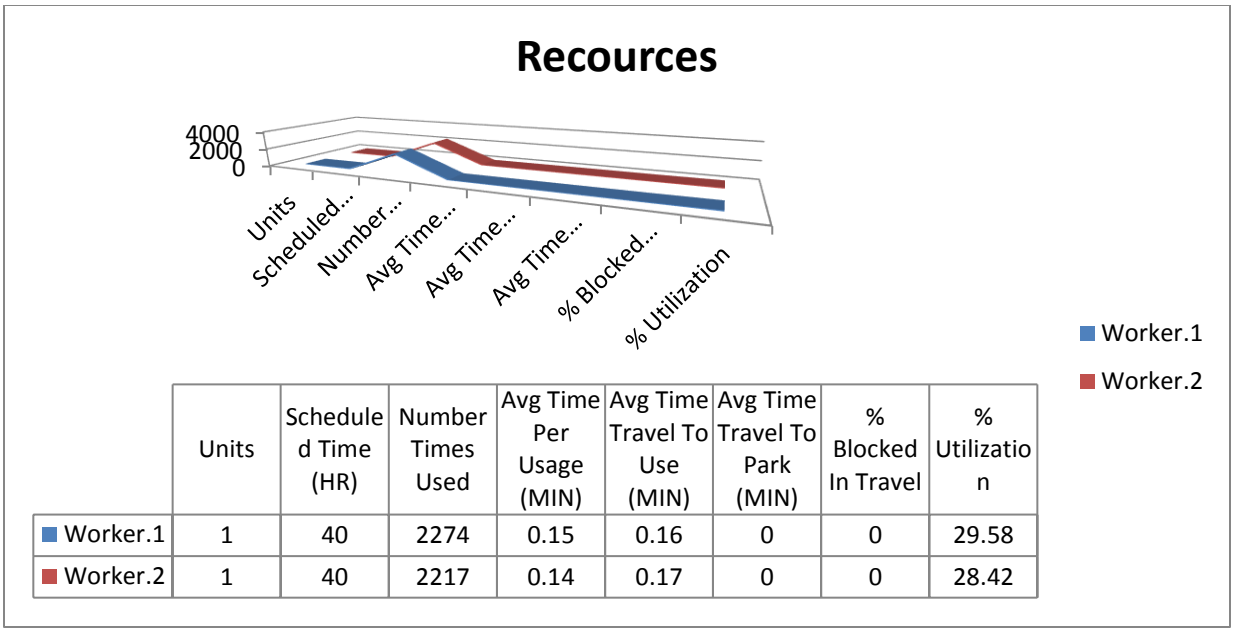
occupied. While the vacuuming device is 2.18% of the time free, 36.07% of the time it is part occupied, while 61.75% of the time, it is full occupied. All other equipment is of little use, or partly used. All such data are presented in the following graphs.



	Scheduled Time (HR)	Capacity	Total Entries	Avg Time Per Entry (MIN)	Avg Contents	Maximum Contents	Current Contents	% Utilization
Outgoing products	40	1	1104	280.47	129.01	144	144	0.01
Vakumme	40	10	1127	19.87	9.33	10	9	93.29
Production date set mac	40	12	1118	24.77	11.54	12	12	96.14
Slicer	40	21	1140	26.41	12.54	19	13	59.74
Incoming products	40	151	1152	11.33	5.44	12	12	3.60
Products transporter	40	1	1106	3.14	1.45	2	2	4.68

Graph 20 – A Meat Industry – Findings -> Locations

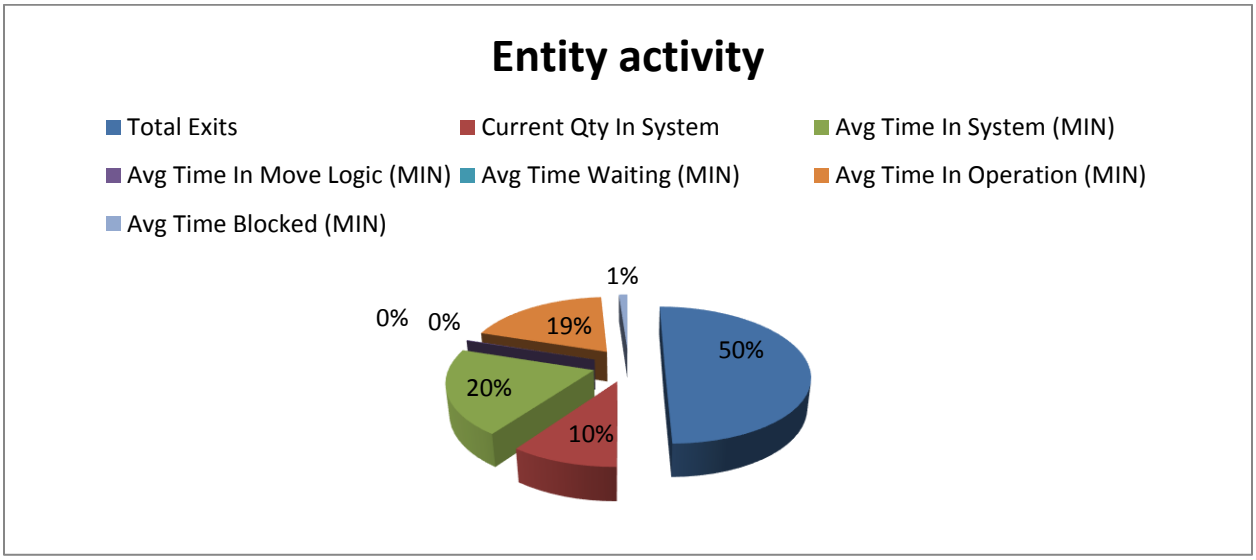
If one analyses the human resources, based on data, we have 2 employees in this department, who according to data are averagely active, because the utilization rate is 29.58% per person, while only 28.42% for a second. In this case, even if the activity in working hours is not maximal, an achievement is that working processes are not interrupted, and that there are no other technical problems in relation to staff retention and movement of products.



	Units	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Worker.1	1	40	2274	0.15	0.16	0	0	29.58
Worker.2	1	40	2217	0.14	0.17	0	0	28.42

Graph 21 – A Meat Industry – Findings -> Recources

The following graph presents some very important information that must be taken into account in changing internal organization of MIs. According to these records, labour is rather inactive during working hours. What one can see in the graph is that in a rather large part of working hours, staff move around, but based on the graph, good news is that products are not blocked.



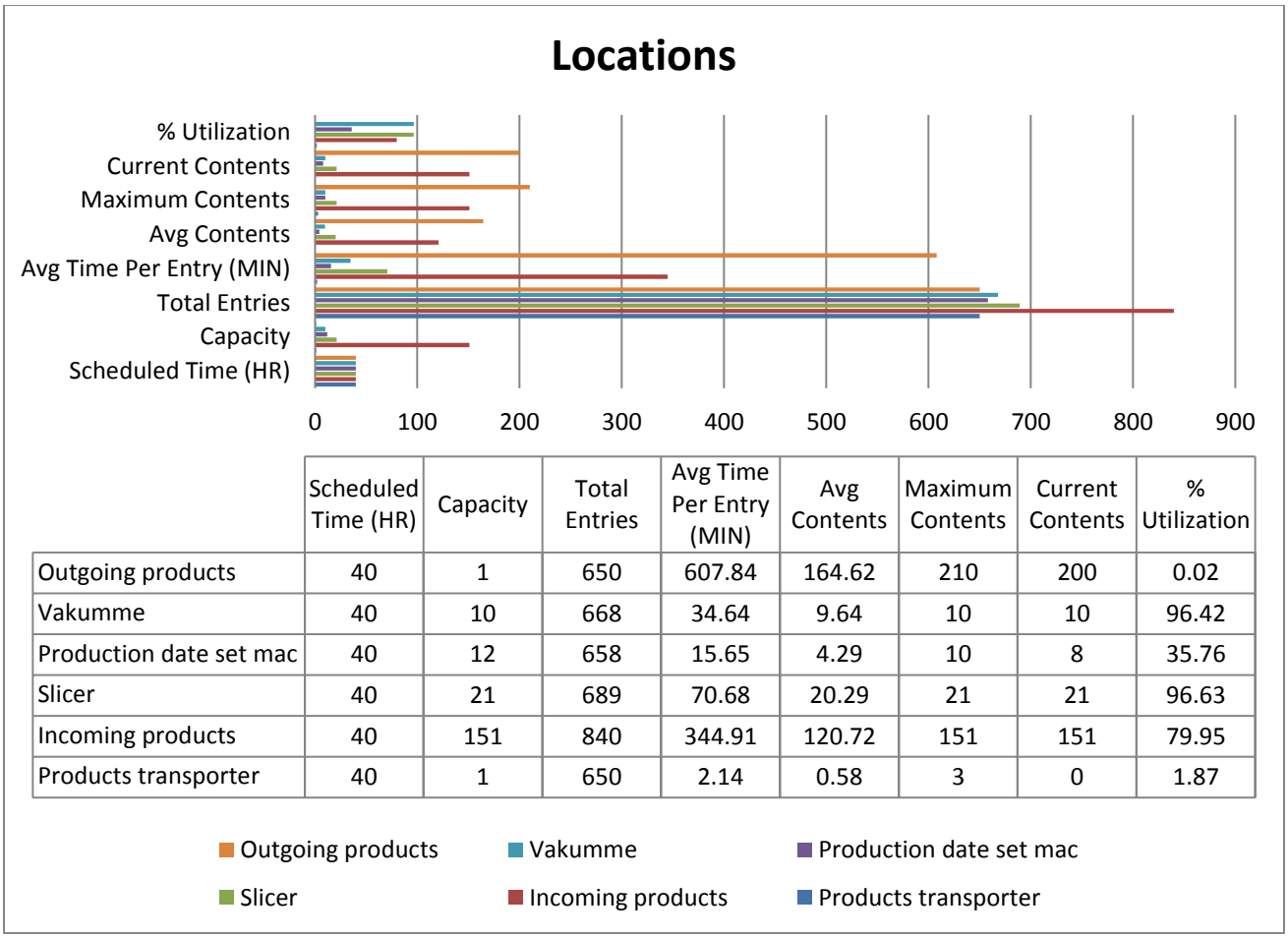
Graph 22 – A Meat Industry – Findings -> Entity activity

8.7.2 A meat industry – Recommendations

Our recommendations on this MI are technical and organizational. In organizational terms, we clearly see immediate restructuring of the packaging department (since we have analysed this department only). Employees must necessarily be active in achieving better results, and to lower production costs. In technical terms, we believe that reorganizing working premises must be undertaken because equipment does not follow production lines and because of great distances between processes, which generate additional moving costs and loss of working hours.

8.7.3 A2 meat industry - Findings

While MI A, had a considerable work volume, such workflows are much lower in the MI A2. This is due to the concentration this company has on the local market. Based on statistics presented, we can assume that processing capacities in this MI are larger than their packaging capacities, and in this case, a bottleneck in this MI is precisely this discrepancy between processing and packaging. The following table presents the capacities of each device installed in the packaging department, including respective packaging capacities.

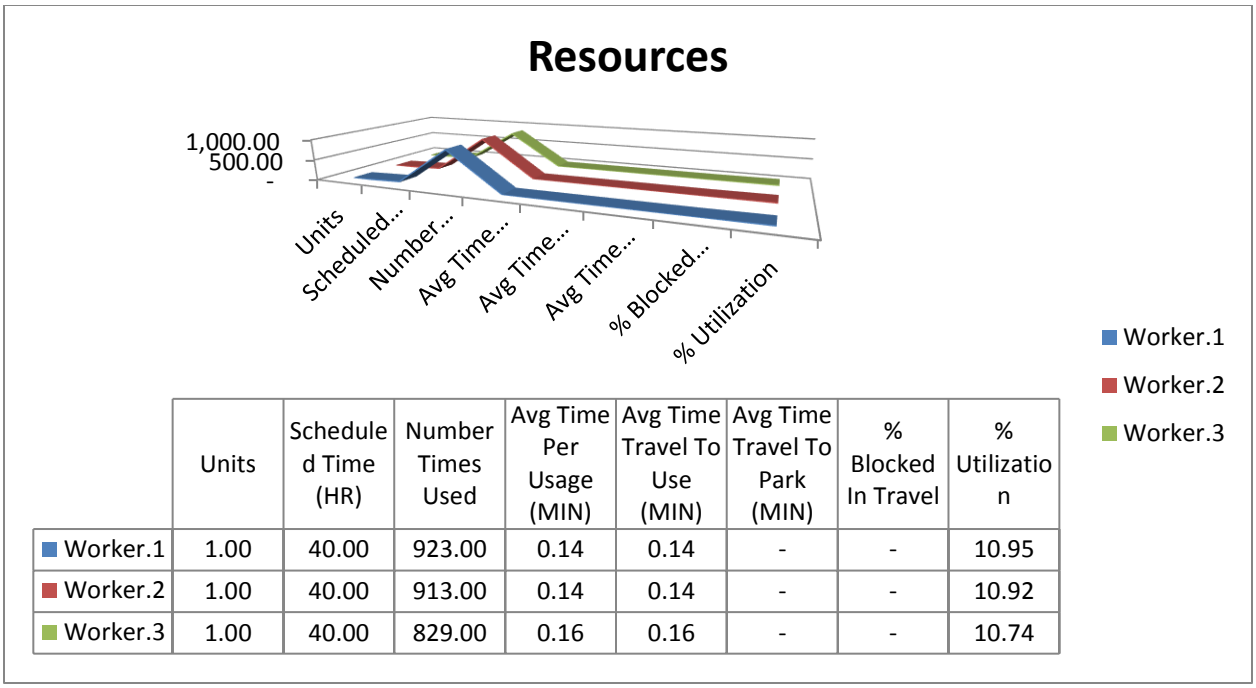


	Scheduled Time (HR)	Capacity	Total Entries	Avg Time Per Entry (MIN)	Avg Contents	Maximum Contents	Current Contents	% Utilization
Outgoing products	40	1	650	607.84	164.62	210	200	0.02
Vakumme	40	10	668	34.64	9.64	10	10	96.42
Production date set mac	40	12	658	15.65	4.29	10	8	35.76
Slicer	40	21	689	70.68	20.29	21	21	96.63
Incoming products	40	151	840	344.91	120.72	151	151	79.95
Products transporter	40	1	650	2.14	0.58	3	0	1.87

Graph 23 – A2 Meat Industry – Findings -> Locations

A more detailed analysis is provided by the following chart, which clearly shows bottlenecks of the MI in each device. The Vacuum and Slicer devices are diminishing vacuuming capacitiesin this MI, because their maximum utilization rate is 89.25% of time, respectively 77.40% for the slicer device. On the other hand, the production date set machine is only 65.38% part occupied. Other equipment are even less utilized.

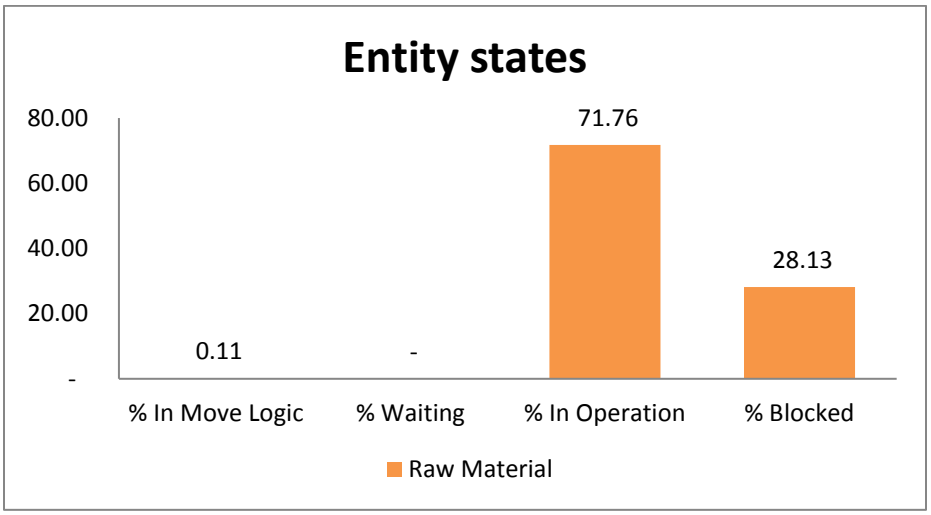
If one talks about the employees, the MI has 3 employees in the packaging department. A good fact is that the MI does not encounter any blockage of processed products in the workflow or in storage in adequate premises, but due to the bottleneck, employees are not active at around 90% of time. To reduce operational costs, these relations must urgently be changed.



	Units	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Worker.1	1.00	40.00	923.00	0.14	0.14	-	-	10.95
Worker.2	1.00	40.00	913.00	0.14	0.14	-	-	10.92
Worker.3	1.00	40.00	829.00	0.16	0.16	-	-	10.74

Graph 24 – A2 Meat Industry – Findings -> Resources

As one can see in the following chart, this MI has a long period of product processing, and in this regard, odds of improving production capacities are rather poor. Stock amounts are small, while their blockage is very much possible. Therefore, the disbalance between the two elements is rather apparent, and generates risks in doing business. At a rate of 28.13% of products blocked due to technological processes, problems are very much evident, while abatement in this stage may be proven problematic.



Graph 25 – A2 Meat Industry – Findings -> Entity states

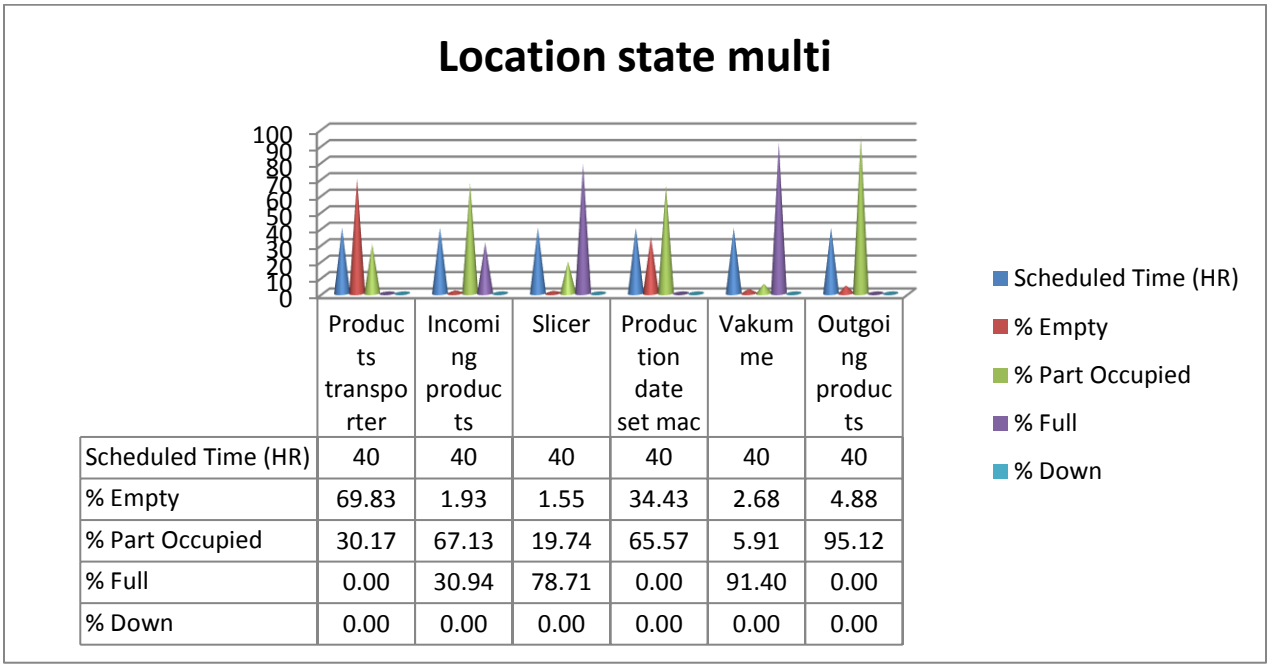
8.7.4 A2 meat industry – Recommendations

Our recommendations for the MI A2 are of a technical nature, taking into account that the MI directly faces limited vacuuming capacities, and a fairly concentrated market. The small number of products in the manufacturing process, and duration of processing and packaging flows are key challenges this MI faces. On the other hand, large operational costs does influence their profit, but if the company aims to expand in the future, then current salary costs for the current staff would be transferred as opportunities and investment, since the staff is already trained in the area, and has developed some stability, however, with increased processing capacities, challenges will be larger, but also opportunities will be bigger. MI A2 must necessarily invest in facility infrastructure, and at least in 2 devices in the packaging department, to eliminate bottlenecks. Converting from the analogue system this MI utilizes into a digital system will be the key challenge the MI will have to confront in the near future.

8.7.5 B meat industry - Findings

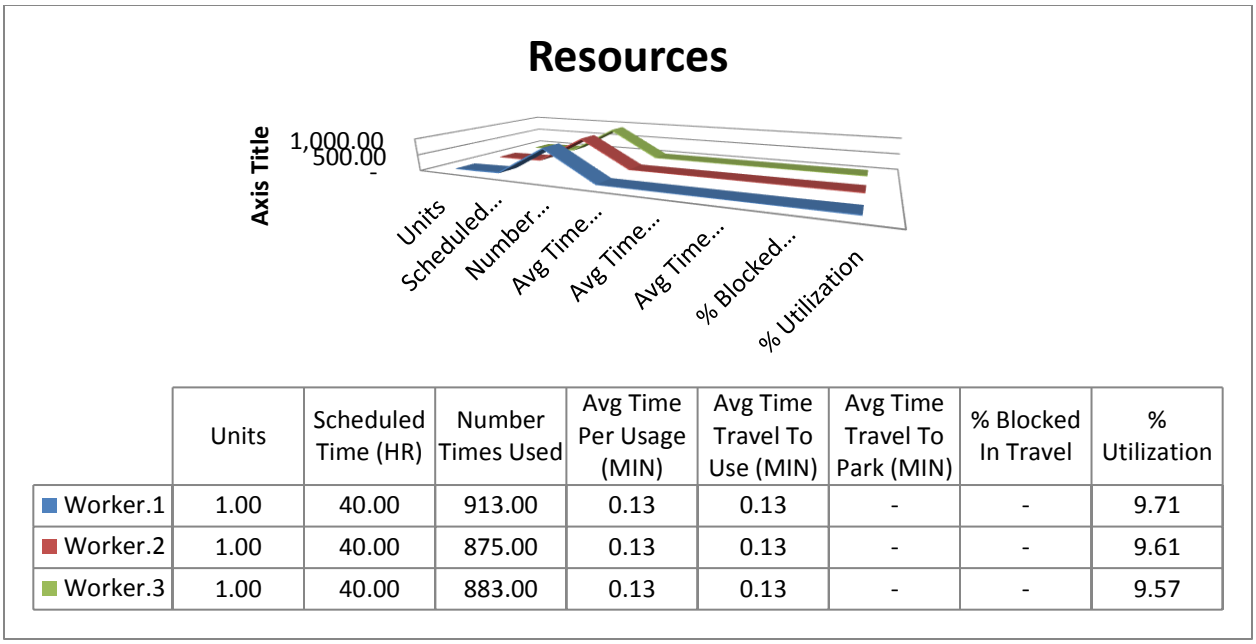
Findings from the MI B shows that this company does also have limited production capacities, and in this case, the situation is almost identical to most MIs surveyed for this paper. What makes a difference with this MI is advanced technology utilized, and relatively young staff trained in using specific apparatus. If analysed from the viewpoint of processing capacities, one would say that despite advanced technology, a challenge is found in limited processing capacities. Again, in this case, there is a bottleneck inside the packaging ward, and in at least 2 devices. We are talking about Slicer and Vacumme machines, which have a utilization rate of 78.71%, respectively 91.40%, which if seen in longer terms, such utilization rate represents some risk, if any of the devices is subject to a defect or deficiency.

Also, in utilizing human resources, another challenge is seen in their use. A rate of over 90% of non-active time is an indicator that must be analysed in details. Although in practice, this is manifested by moving staff to other departments, this is not a solution, since the department performance is not at a desired level. The challenge of ensuring specialized and active staff members is amongst the key issues faced by MIs. However, despite all challenges, this MI does not encounter blockages of products or space limitations. All such data are presented in the following 4 graphs.



	Products transporter	Incoming products	Slicer	Production date set mac	Vakumme	Outgoing products
Scheduled Time (HR)	40	40	40	40	40	40
% Empty	69.83	1.93	1.55	34.43	2.68	4.88
% Part Occupied	30.17	67.13	19.74	65.57	5.91	95.12
% Full	0.00	30.94	78.71	0.00	91.40	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

Graph 26 – B Meat Industry – Findings -> Locations states multi

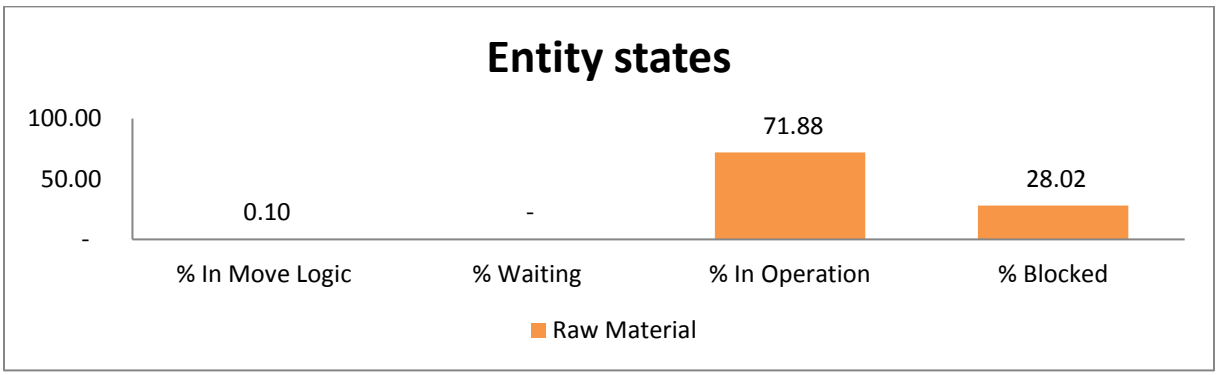


	Units	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Worker.1	1.00	40.00	913.00	0.13	0.13	-	-	9.71
Worker.2	1.00	40.00	875.00	0.13	0.13	-	-	9.61
Worker.3	1.00	40.00	883.00	0.13	0.13	-	-	9.57

Graph 27 – B Meat Industry – Findings -> Resources

In the following graph, one can see that this MI has a good manufacturing organization structure, because a product is processed at an average of 36% of time, in the operation at 26% of time, while 15% of the time, it awaits the next process, while for 10% of processing time, the process blocks. These figures may easily change, if the MI engages in analysis to unblock products, and in reducing packaging waiting times.

When we analyse the following graph, we see that 28.02% of raw matter to be processed and packaged is blocked, while 71.88% of such raw matter is in operation. This is an indicator that clearly shows that the workflow processes must be analysed, and a unique production formula be found to abate manufacturing deficiencies.



Graph 28 – B Meat Industry – Findings -> Entity states

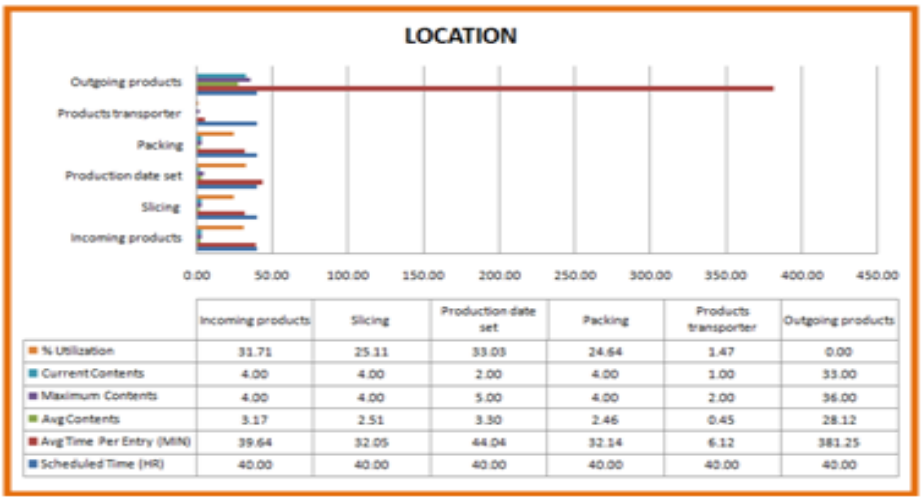
8.7.6 B meat industry – Recommendations

MI B needs to be very careful in its manufacturing agenda, since there is quite some discrepancy between what it actually produces and what it can package. In this case, we have identified a number of examples that confirm the findings. Staff can be better utilized if production and packaging processes are done on timing. Only this way can the MI improve working efficiency with the same resources, and conduct manufacturing without any problem, including ensuring no blockages and reducing the duration of processing. All these changes could contribute to abatement of financial costs, reducting expenses and increasing profits, and also expanding market presence.

8.7.7 F meat industry - Findings

Based on our findings at F meat processing industry, they utilize incoming products 31.71%, slicing 25.11, production date set 33.03, packing 24.64, product transporter 1.47 and outgoing products 0.00.

This situation is present because in this department they don't use all the capacity, they use only less than 20% of total capacity (human and machinery) and the average time of productfinalizationis rather high. We can categorize this section as a weakness of the company.



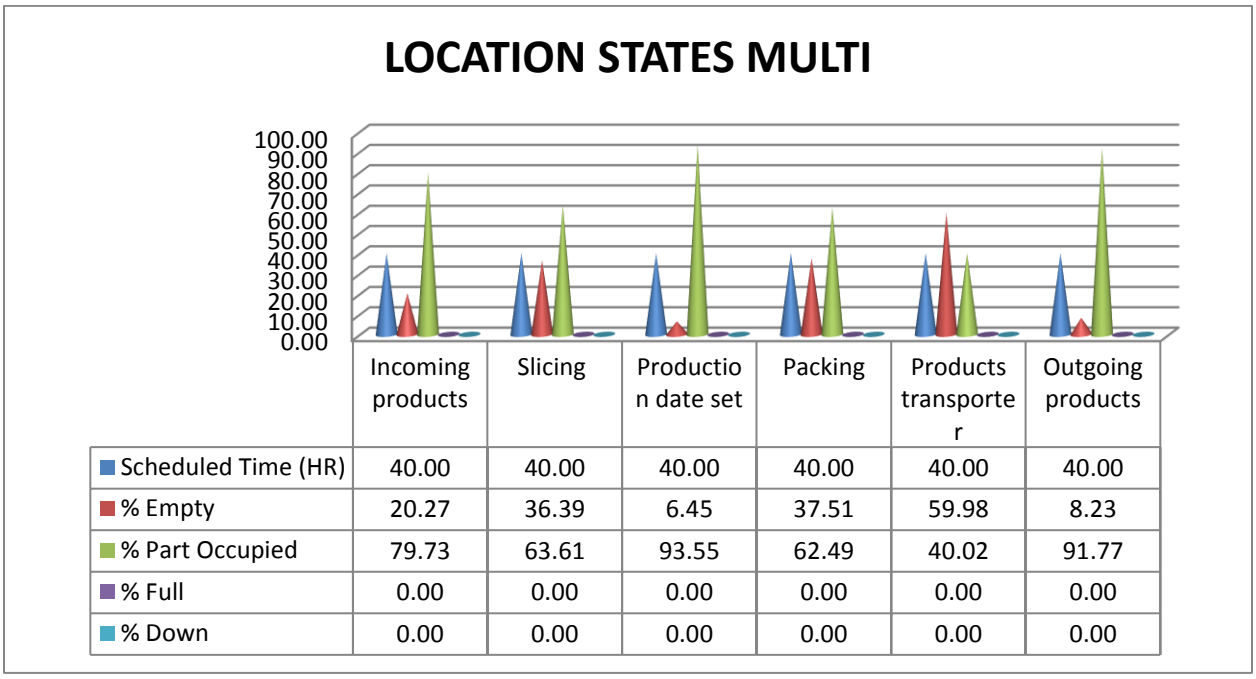
	Incoming products	Slicing	Production date set	Packing	Products transporter	Outgoing products
% Utilization	31.71	25.11	33.03	24.64	1.47	0.00
Current Contents	4.00	4.00	2.00	4.00	1.00	33.00
Maximum Contents	4.00	4.00	5.00	4.00	2.00	36.00
Avg Contents	3.17	2.51	3.30	2.46	0.45	28.12
Avg Time Per Entry (MIN)	39.64	32.05	44.04	32.14	6.12	381.25
Scheduled Time (HR)	40.00	40.00	40.00	40.00	40.00	40.00

Based on the Fproduction model, they only partly use their machinery. In this case, for example the slicing machine is used only for 63.61% of the time, while for 36.39% of the time, it is empty.

Graph 29 – F Meat Industry – Findings -> Locations

The production date set device is in a better situation. This equipment is 93.55% part occupied and only 6.45% empty.

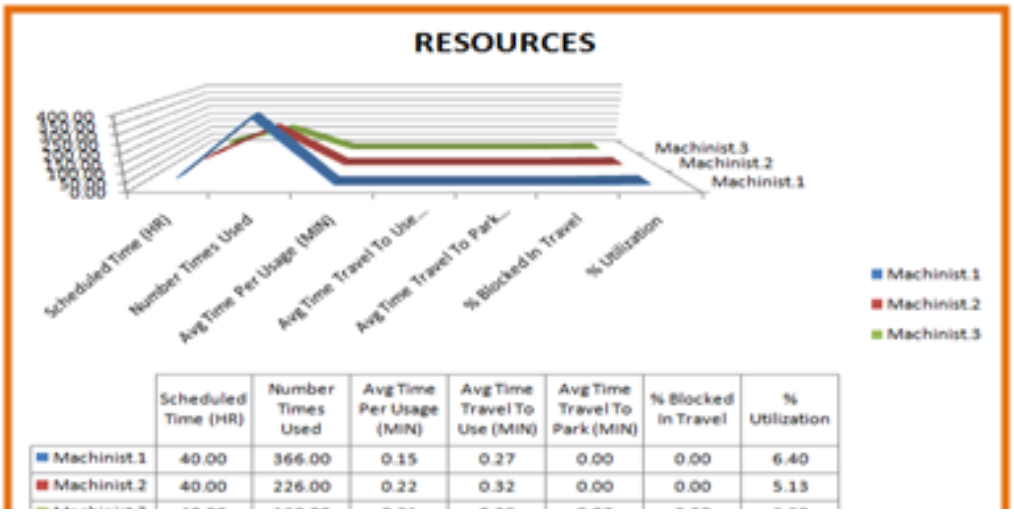
The packing equipment is 62.49% part occupied and 37.51% empty. With this index we clearly can say that this equipment is not well utilized, and the company needs to make modifications as soon as possible in the production model, in order to be more competitive in market. During the scheduled time, theproduct conveyer is 59.98% empty and 40.02% part occupied. This means that logical movementis not properly managed, and in this case the company is paying its price on the increased production costs.



	Incoming products	Slicing	Production date set	Packing	Products transporter	Outgoing products
Scheduled Time (HR)	40.00	40.00	40.00	40.00	40.00	40.00
% Empty	20.27	36.39	6.45	37.51	59.98	8.23
% Part Occupied	79.73	63.61	93.55	62.49	40.02	91.77
% Full	0.00	0.00	0.00	0.00	0.00	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

Graph 30 – F Meat Industry – Findings -> Locations states multi

The company had employed 3 workers in this department, and based on the productivity we can say that they are more than 90% idle during the schedule time. Maybe this situation is present because the company is replacing some equipment and in this time they would not want to fire anyone. However, the problem is that they are not using their resources properly.

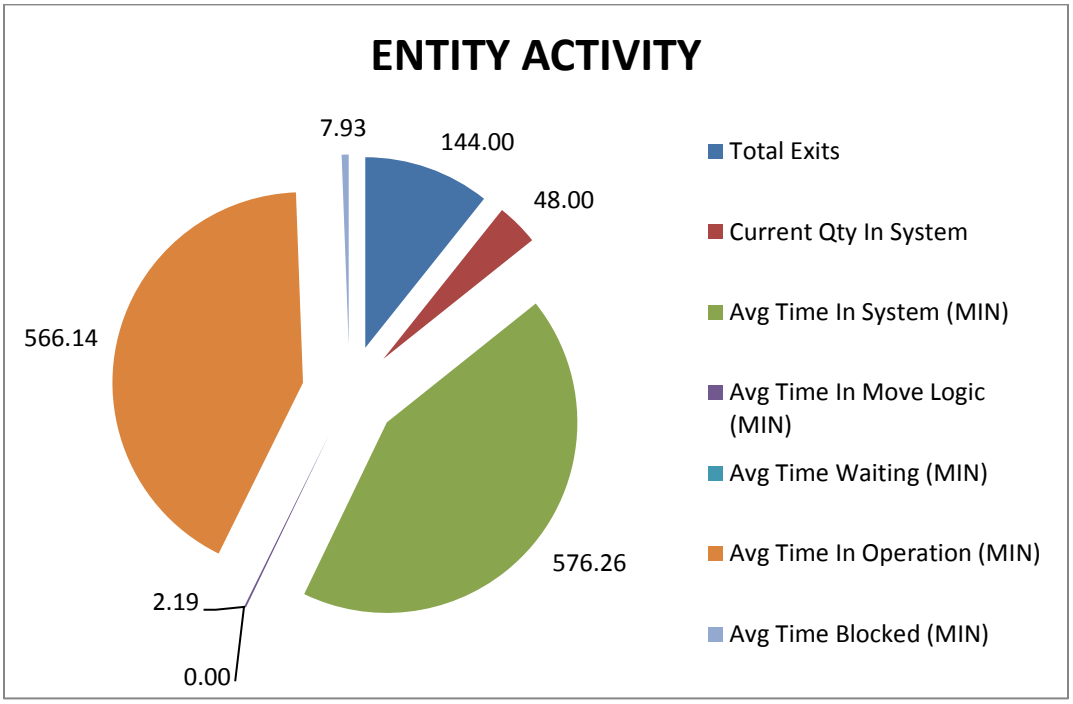


	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Machinist.1	40.00	366.00	0.15	0.27	0.00	0.00	6.40
Machinist.2	40.00	226.00	0.22	0.32	0.00	0.00	5.13

Graph 31 – F Meat Industry – Findings -> Resources

The company had employed 3 workers in this department, and based on the productivity we can say that they are more than 90% idle during the schedule time. Maybe this situation is due to the fact that the company is replacing some equipment, and at this time, they would not want to fire anyone.

The F MI model doesn't seem to have problems with arrivals. Based on the Pro Model report, the company does not have any failed arrivals and this is quite a competitive advantage in this model. The main problem seems to be proper management of actual resources. Using innovative technology costs money and time. In these terms, the company made very good investments in meat processing industry, so all the company needs is good managing model.

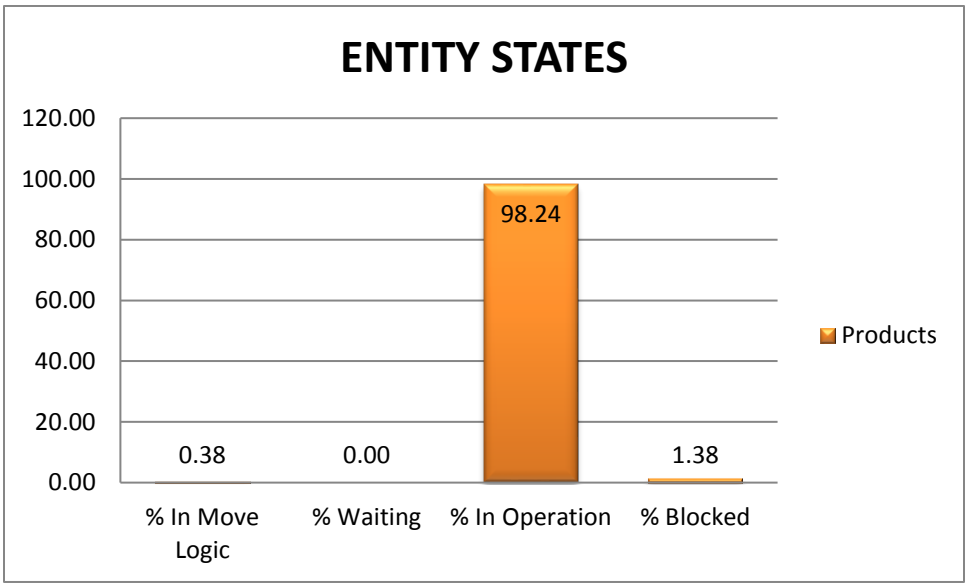


Graph 32 – F Meat Industry – Findings -> Entity activity

Based on the scheduled time, currently the F meat industryimplements a total final number of 144 product units, current quantity in system is 48 units, average time in system is 576.26 min, average time in movement logic is 2.16min, while average time in operation is 566.14 min.

These results show that the entities are not performing that well, since average in system time and in operation times are very high, while the number of total exits is too much lower.

In this period MI Fis well utilizing their entity states, because they have 98.24% products in operation, only 1.38% blocked and 0.38% in move logic. The company has these results based on small capacities of production in time. This calculation reflects the model in terms of use and cost. But if an aim of the company is to try to increase productivity, it will be impossible to have these results during the process, and needs to increase productivity and capacity.

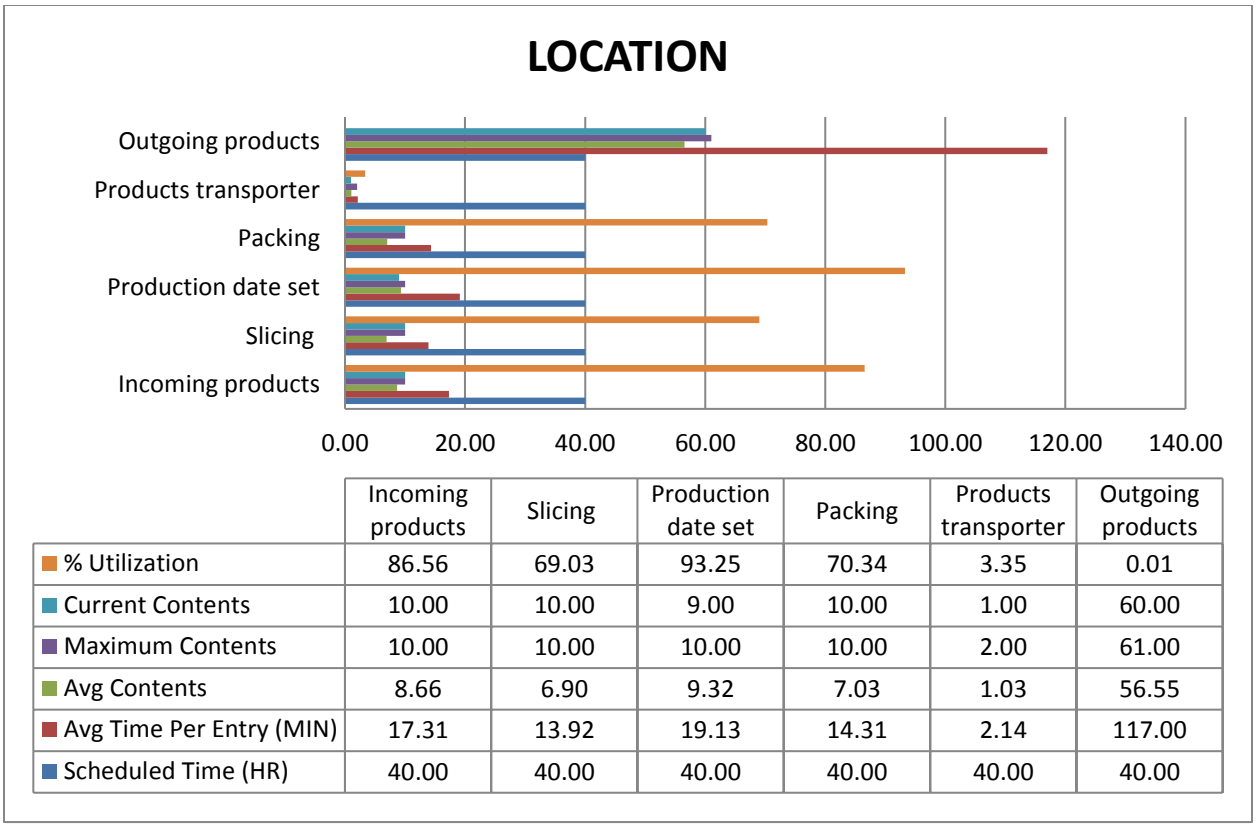


Graph 33 – F Meat Industry – Findings -> Entity states

8.7.8 F meat industry – Recommendations

Based on the results we have from this model, the company has a rate of utilization of 86.56% in incoming products, slicing 69.03%, and production date set 93.25%, pacing 70.34%, product transporter 3.35% and outgoing products 0.01%, since the capacity for these entities is infinite.

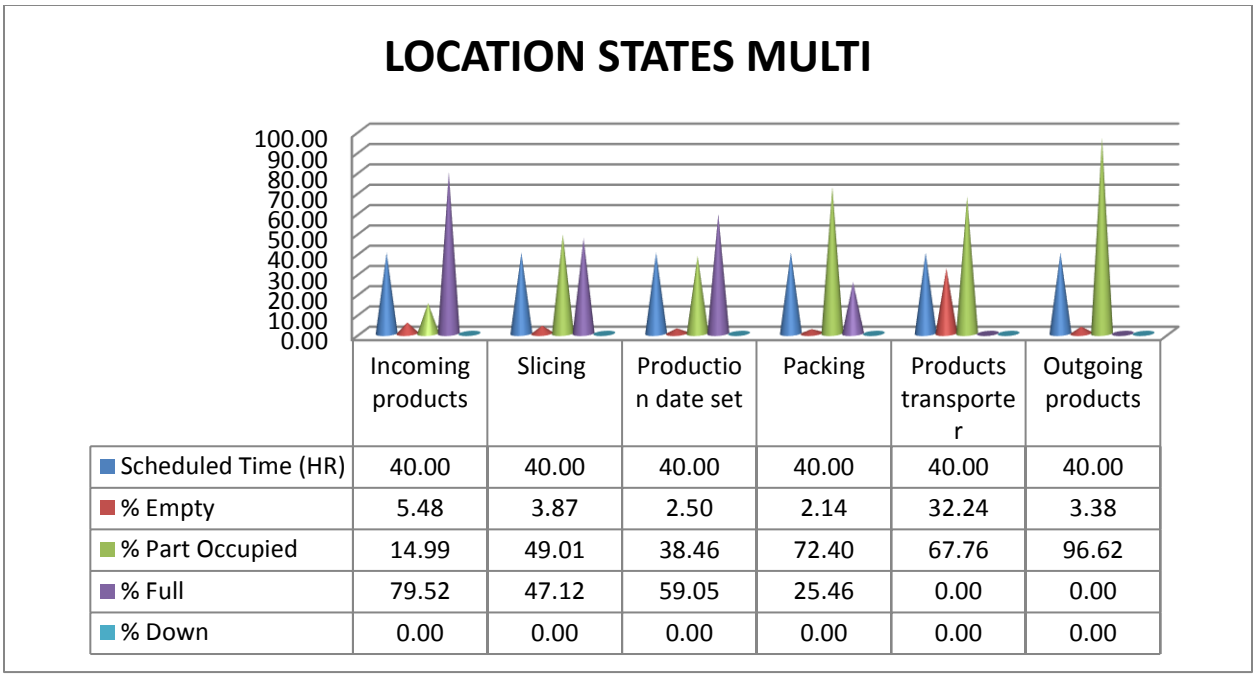
We tried to make some modifications in terms of developing a new digital business model, to increase productivity, to use all the resources (technological, infrastructure and human) and to decrease cost in all departments. The main opportunity in this section is that we use the entire physical infrastructure that we have in disposal.



	Incoming products	Slicing	Production date set	Packing	Products transporter	Outgoing products
% Utilization	86.56	69.03	93.25	70.34	3.35	0.01
Current Contents	10.00	10.00	9.00	10.00	1.00	60.00
Maximum Contents	10.00	10.00	10.00	10.00	2.00	61.00
Avg Contents	8.66	6.90	9.32	7.03	1.03	56.55
Avg Time Per Entry (MIN)	17.31	13.92	19.13	14.31	2.14	117.00
Scheduled Time (HR)	40.00	40.00	40.00	40.00	40.00	40.00

Graph 34 – F Meat Industry – Recomandations -> Locations

In this section we will describe the machinery activity during the scheduled time. Incoming products are managed well, because only 5.48% of scheduled time they are empty, 14.99% are occupied and 79.52% are full working. Slicing is also well managed because only 3.87% the machinery is empty, 49.01% is occupied and 47.12% are full. The same situation is viewed with the production date set machine, with this model we reduce to 2.5% inactive working time, and we increase in 59.05% of full active machinery capacity. The packaging device is more than 72.40% part occupied, 25.46% full and only 2.14% empty during scheduled time. Product transport is 32.24% empty and 67.76% part occupied, and outgoing products are 96.62% part occupied, because we calculated waiting time to be 2hours. Staff utilization in a 40-hour week is at a rate of 81.04%.

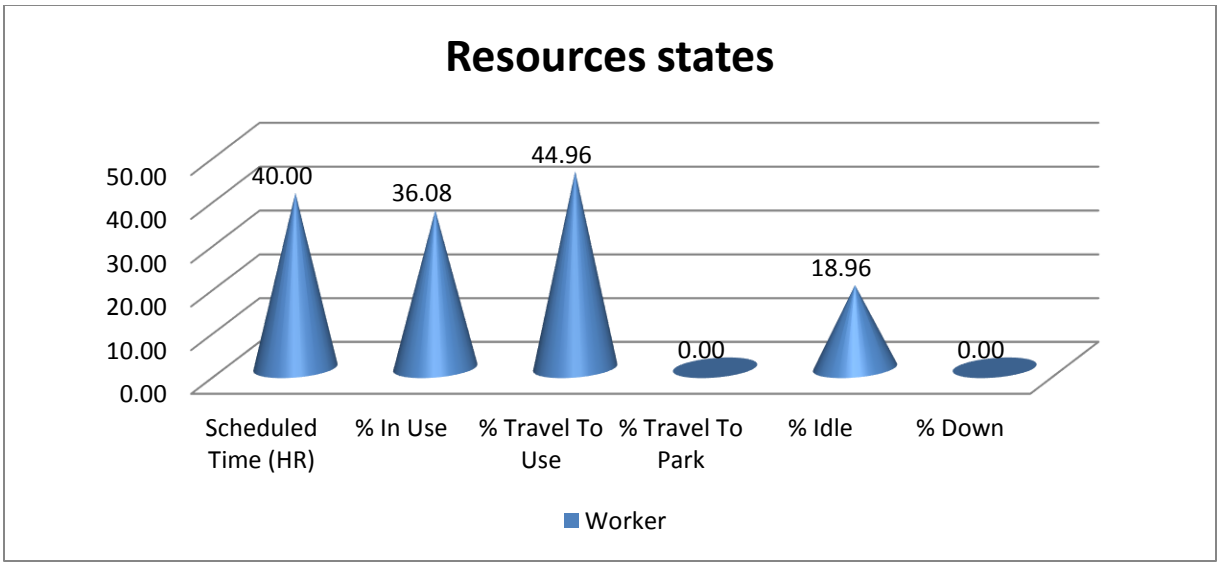


	Incoming products	Slicing	Production date set	Packing	Products transporter	Outgoing products
Scheduled Time (HR)	40.00	40.00	40.00	40.00	40.00	40.00
% Empty	5.48	3.87	2.50	2.14	32.24	3.38
% Part Occupied	14.99	49.01	38.46	72.40	67.76	96.62
% Full	79.52	47.12	59.05	25.46	0.00	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

Graph 35 – F Meat Industry – Recomandations -> Locations states multi

This graph shows the average time of movement of employees. In our case the worker spends 0.18min in usage, 0.23min travel to use and 47,01 is time used during the schedule time.

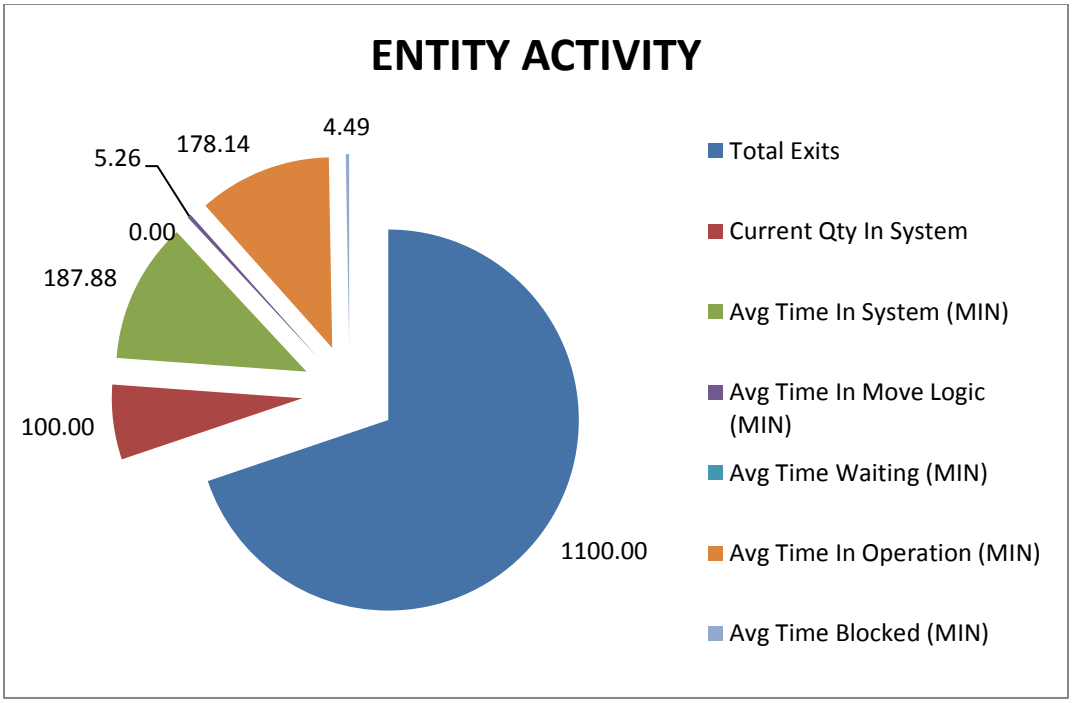
The graph below shows the activity of workers during the scheduled time. In the 40 hours, 36.08% of time, an average employee will be working in machinery, 44.96% of time will be spent to travel to function and 18.96% of time, this person will be idle, or waiting for another entity to take in process or location.



Graph 36 – F Meat Industry – Recomandations -> Resources states

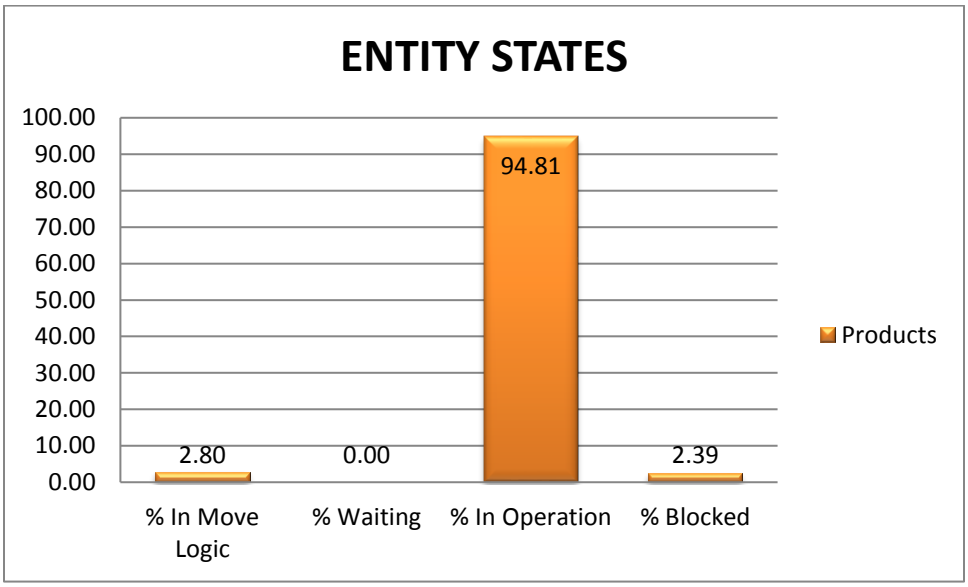
This model doesn't have any failed arrivals, because our focus is to reduce the cost and arrivals have a higher cost in industry.

The entity activity for this model is: Total final products are 1100units, current in system quantity is 100, average in system time is 187.88min, and average in move logistic time is 5.26 min, while the average in operation time is 178.14min.



Graph 37 - – F Meat Industry – Recomandations -> Entity activity

Based on these results the entity activity is well performing, but in the future we need to make some additional changes in order to decrease us automatically increase move logic elements and blocked material.



Graph 38 – F Meat Industry – Recomandations -> Entity states

Based on our results, we can see that waiting times are reduced to a minimum, but we have 2.80% obstacles in moving logic, and only 2.39% in blocked raw material. In our model 94.81% of raw materialsare included in the production process.

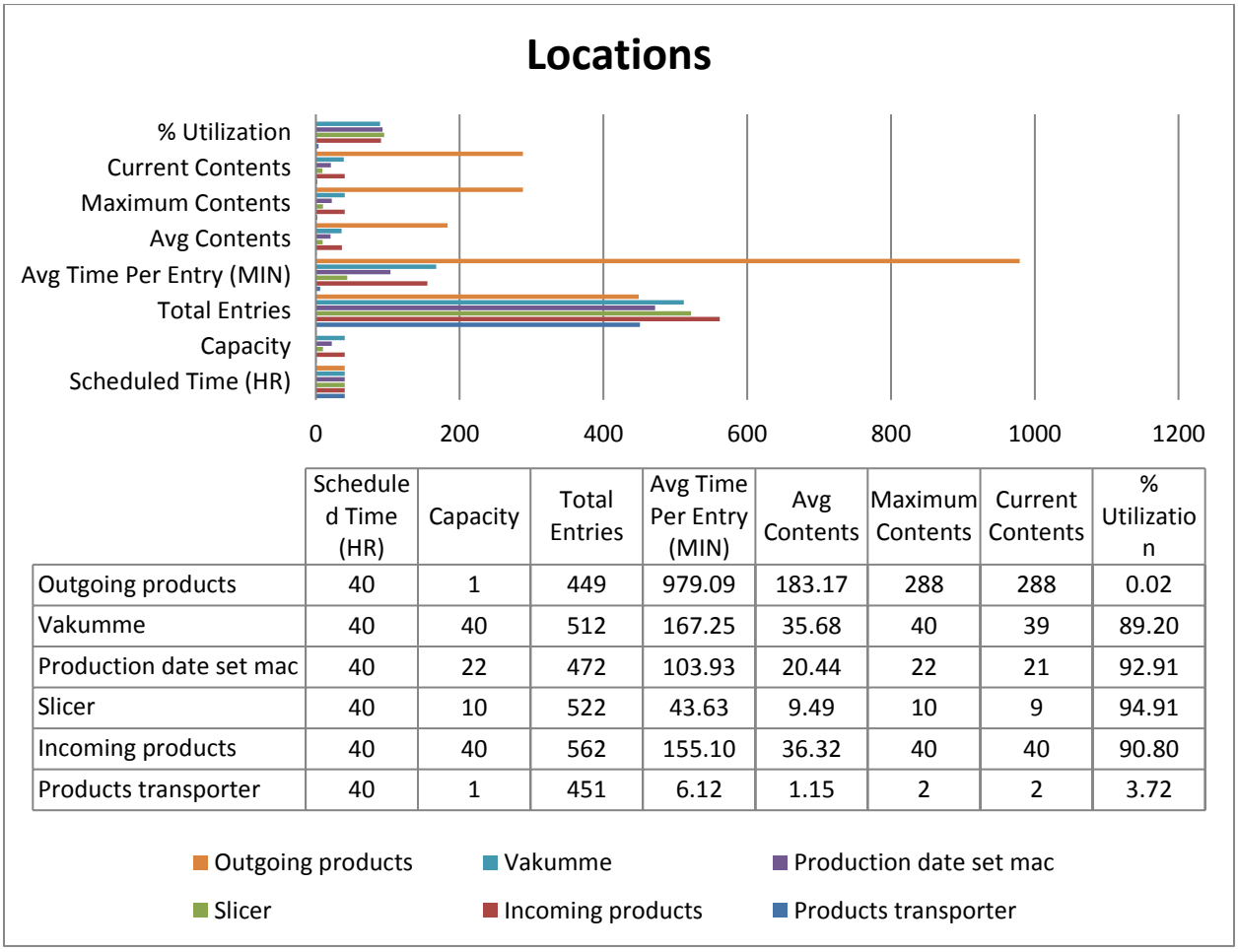
8.7.9 L meat industry - Findings

MI L is a factory positioned in an ecological area, with considerable investment aimed at creating an infrastructure appropriate for meat processing. Since our focus was only in packaging departments, upon an analysis of the department, we saw that along with a well-thought investment process, the company has also analysed capacities and has also framed the machinery in pursuit of the technological processes, which is not really present in other MIs analysed.

Based on the data, one can see that the MI equipment is utilized at over 90% of total capacity, and depending on needs, such capacities change in a serial order. If one analyses individual devices, we can see that the vacuuming device is used for 89.20%, the production date set machine has a utilization rate of 92.91%, the slicer is used for 94.91%, while the incoming products 90.80%. These utilization rates are satisfactory and precisely meet the demands of the company.

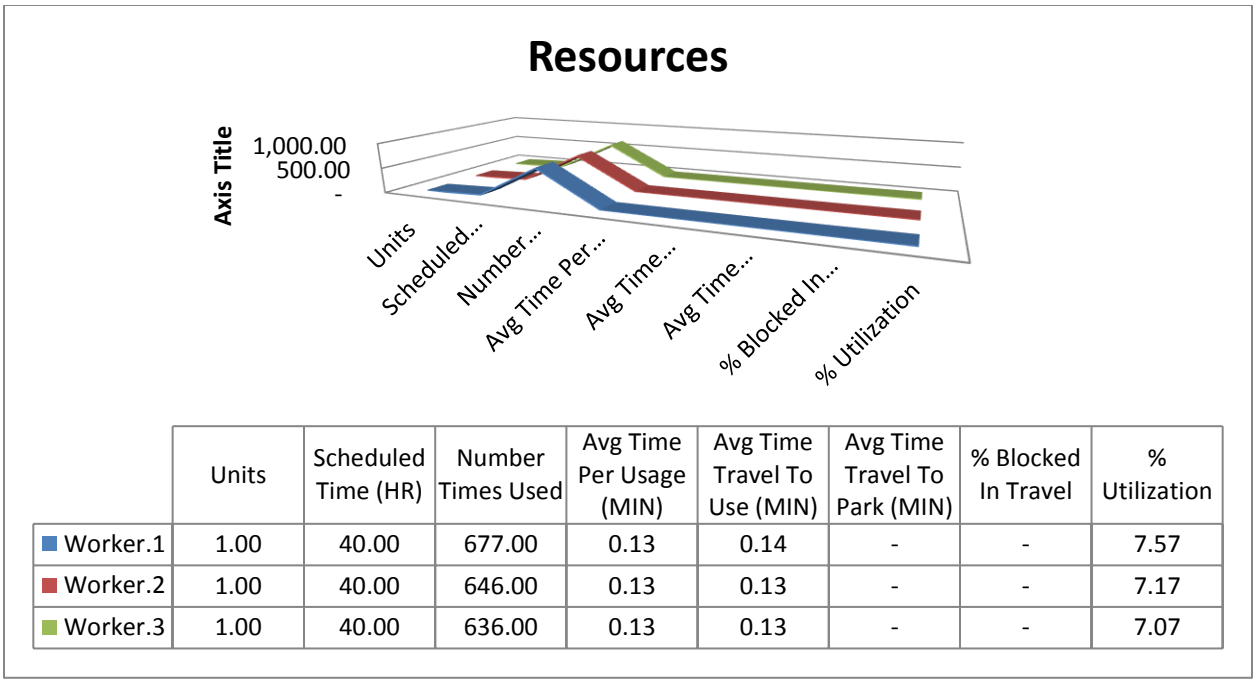
In our analysis of human resources, we found that the company has some problems in utilizing staff, and based on the data recorded, the staff is in minimal rates of utilization. 3 employees are utilized for less than 10% of time in the manufacturing process. This discrepancy is causing undue fixed costs for the company, though it is their strategy to have at least 3 employees in this condition of packaging department. It is clear that the company has no difficulties in transporting or storing products. This is a great advantage to the company.

In terms of raw matter, it is clear that the in the production process, raw matter is at 86.87% of time in processing, while blocked for 13.05% of time. If one engages in a thorough analysis, we can see that the raw matter is in operation for 37% of time, and 42% of time in the system.



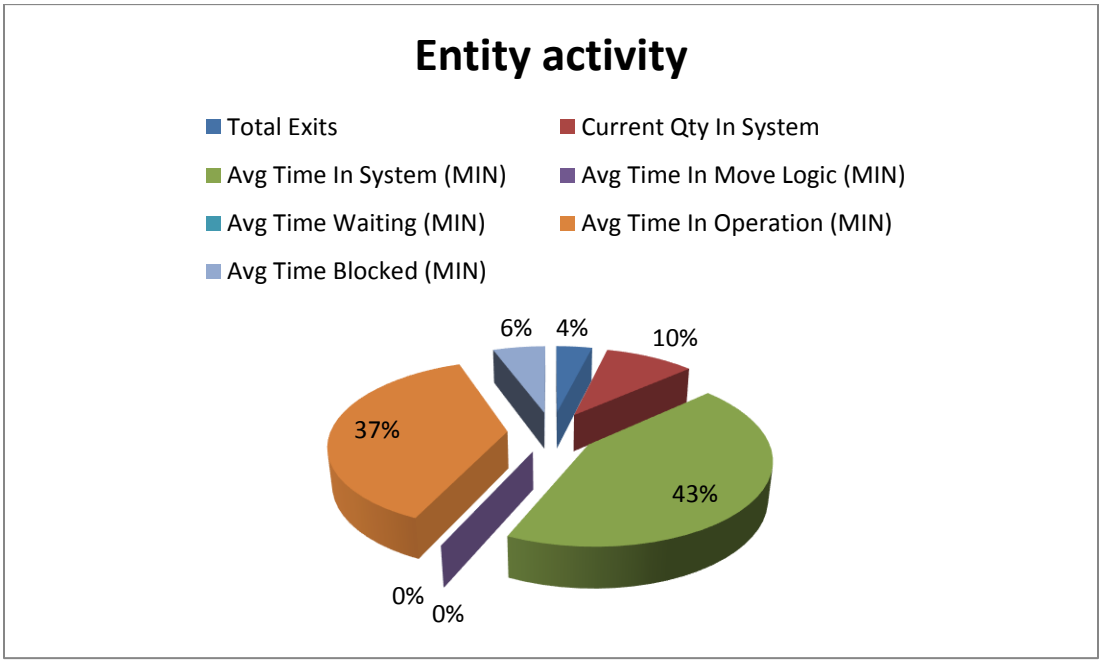
	Scheduled Time (HR)	Capacity	Total Entries	Avg Time Per Entry (MIN)	Avg Contents	Maximum Contents	Current Contents	% Utilization
Outgoing products	40	1	449	979.09	183.17	288	288	0.02
Vakumme	40	40	512	167.25	35.68	40	39	89.20
Production date set mac	40	22	472	103.93	20.44	22	21	92.91
Slicer	40	10	522	43.63	9.49	10	9	94.91
Incoming products	40	40	562	155.10	36.32	40	40	90.80
Products transporter	40	1	451	6.12	1.15	2	2	3.72

Graph 39 – L Meat Industry – Findings -> Locations



	Units	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Worker.1	1.00	40.00	677.00	0.13	0.14	-	-	7.57
Worker.2	1.00	40.00	646.00	0.13	0.13	-	-	7.17
Worker.3	1.00	40.00	636.00	0.13	0.13	-	-	7.07

Graph 40 – L Meat Industry – Findings -> Resources



Graph 41 – L Meat Industry – Findings -> Entity activity

8.7.10 L meat industry – Recommendations

Our recommendations for the MI L are of a technical nature, having in mind that the MI currently faces with limited capacities of raw matter supply, which also causes blockages in

products, which in our analysis appears to be over 13%.The small number of products in the production process, and duration of processing and packaging times are key challenges for the MI. On the other hand, large operational expenditure does influence their profits, however, should the company aspire future expansion, current salary costs for the staff should be transferred as an opportunity and as an investment, since the staff is already trained and enjoys some stability, however, with increased processing; there are more challenges and more opportunities. The MI Lmust necessarily invests in building infrastructure, since the current state does not allow for any expansion of activity. Converting from the analogue system this MI utilizes into a digital system will be the key challenge the MI will have to confront in the near future.

8.7.11 K meat industry - Findings

Based on our findings at K meat processing industry, they utilize incoming products 75.66%, slicing at 86.09%, production date set machine at 92.19%, slicer at 86.09%, product transporter 3.43 and outgoing products 0.01.

Based on K production model, their machinery is only partly occupied. In this case, for example, the slicing machine is using only 73.87% of time and 24.45% is partly occupied. In a better situation is the production date set machine. This equipment is 86.68% full occupied, 9.10% is part occupied and only 4.22% empty.

The vacuum equipment is 83.53% fully occupied, 13.34% partly occupied and 3.14% empty. During the scheduled time, the product transporter is 4.72% empty and 95.28% partly occupied. This means that logical movement is not well managed, and in this case the company is paying a price by increasing production cost with this mistake.

The company had employed 3 workers in this department, and based on productivity one can say that they are more than 90% idle during scheduled time. Maybe this situation is due to the fact that company is investing in equipment, and at this time they would not like to fire anyone. However, the problem remains, the company is not utilizing its resources.

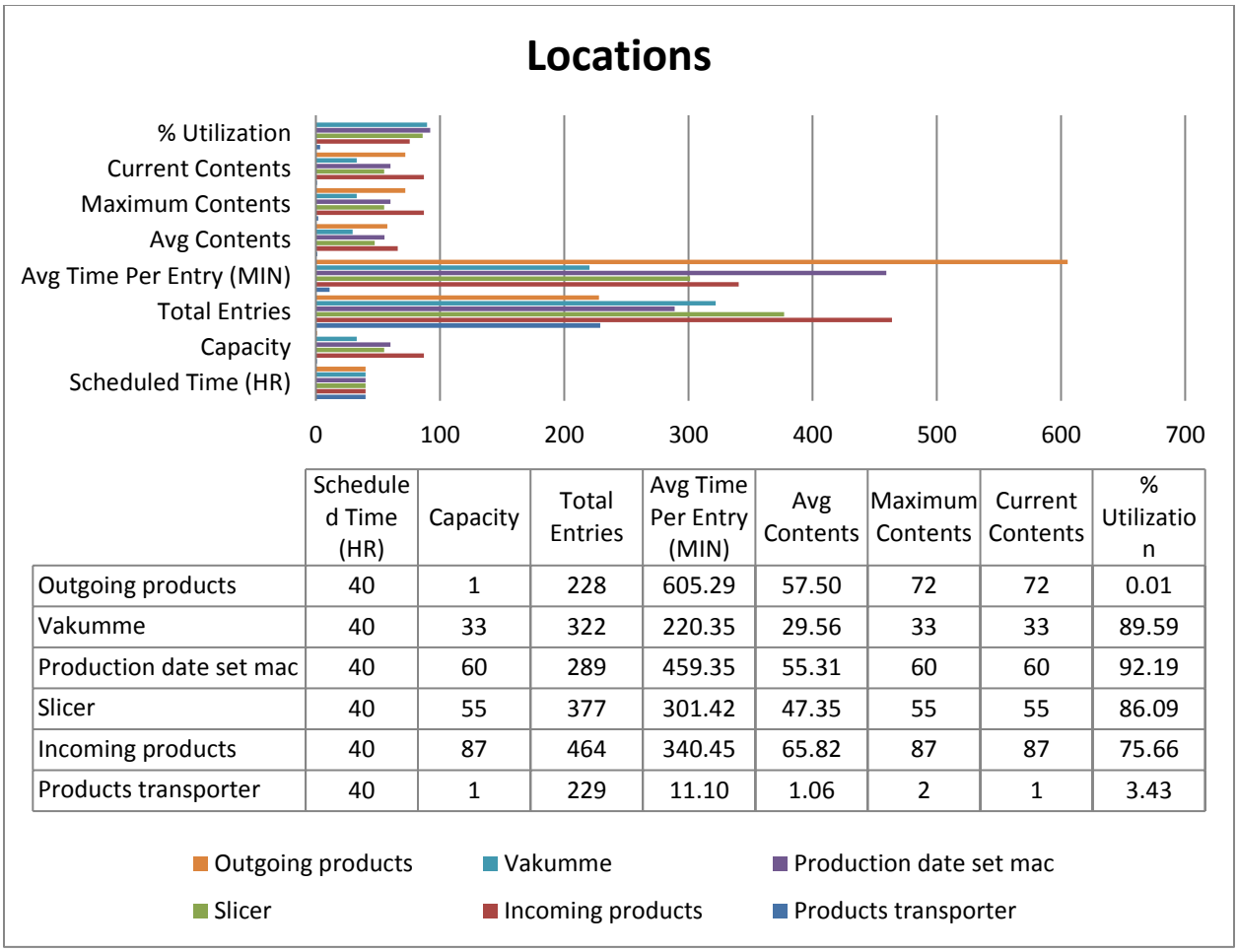
The K MI model doesn’t seem to have problems with arrivals. Based on the Pro Model report, the company doesn’t have any failed arrivals and this is a great competitive advantagein this model. The main problem seems to be proper management of actual resources. Utilization of

innovative technology costs money and time. In these terms, the company had made very good investments in the meat processing industry, so all the company needs is a good managing model.

Based on scheduled time, now the K meat industry has a total of 146 units of final product, average in system time is 43%, the average blocked time is 18%, and average in operation time is 25%.

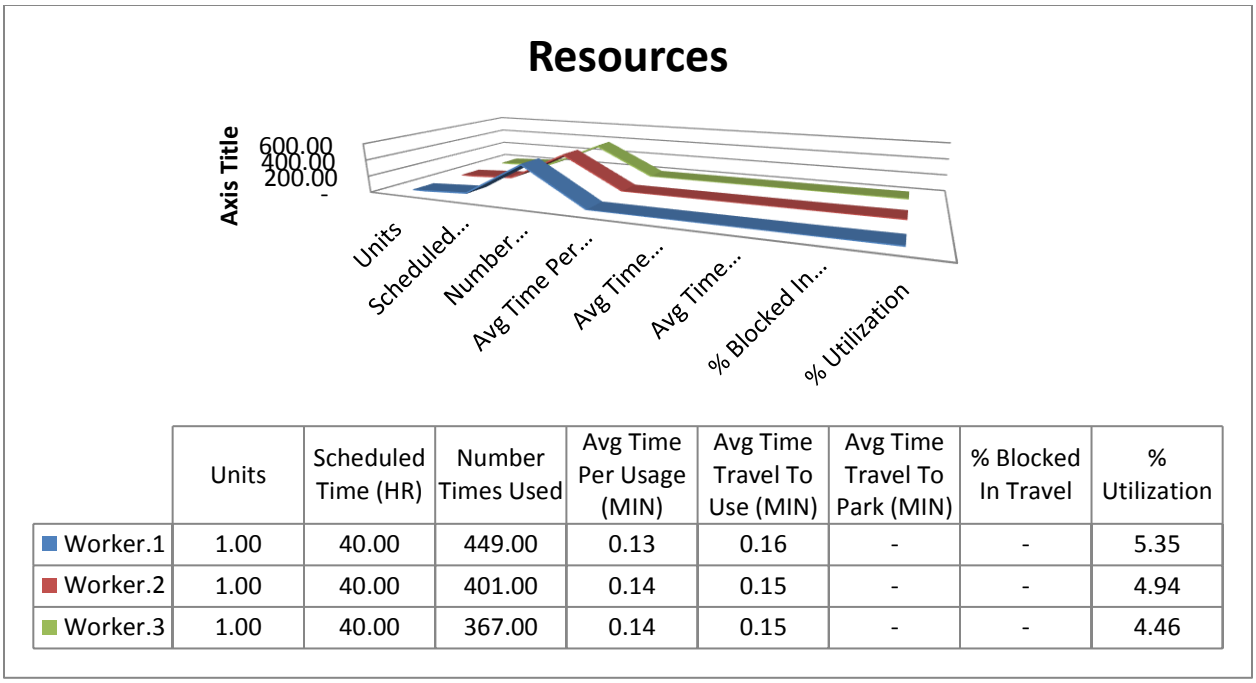
These results show that the entities are not performing very highly, since the average in system time and in operation times are rather long, while the number of total exits is much lower.

The company scores these results due to small capacities of production in time. This calculation reflects into the model in terms of utilization and cost. However, if the company aims to increase productivity, it is impossible to have such results during the process, therefore it must increase productivity and capacity.



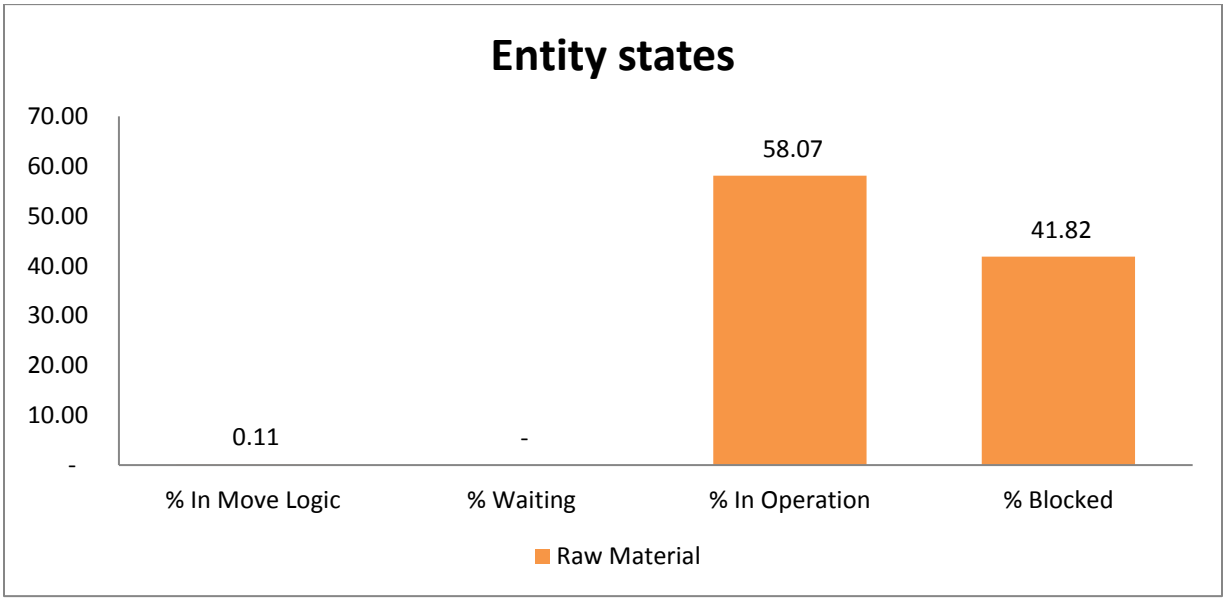
	Scheduled Time (HR)	Capacity	Total Entries	Avg Time Per Entry (MIN)	Avg Contents	Maximum Contents	Current Contents	% Utilization
Outgoing products	40	1	228	605.29	57.50	72	72	0.01
Vakumme	40	33	322	220.35	29.56	33	33	89.59
Production date set mac	40	60	289	459.35	55.31	60	60	92.19
Slicer	40	55	377	301.42	47.35	55	55	86.09
Incoming products	40	87	464	340.45	65.82	87	87	75.66
Products transporter	40	1	229	11.10	1.06	2	1	3.43

Graph 42 – K Meat Industry – Findings -> Locations



	Units	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Worker.1	1.00	40.00	449.00	0.13	0.16	-	-	5.35
Worker.2	1.00	40.00	401.00	0.14	0.15	-	-	4.94
Worker.3	1.00	40.00	367.00	0.14	0.15	-	-	4.46

Graph 43 – K Meat Industry – Findings -> Resources



Graph 44 – K Meat Industry – Findings -> Entity states

8.7.12 K meat industry – Recommendations

Our recommendations are of a technical and organizational nature in this MI. In organizational terms, it is clear that an immediate restructuring of the packaging department (since we analysed this department only) is required. Employees must be activated for better results and for reducing

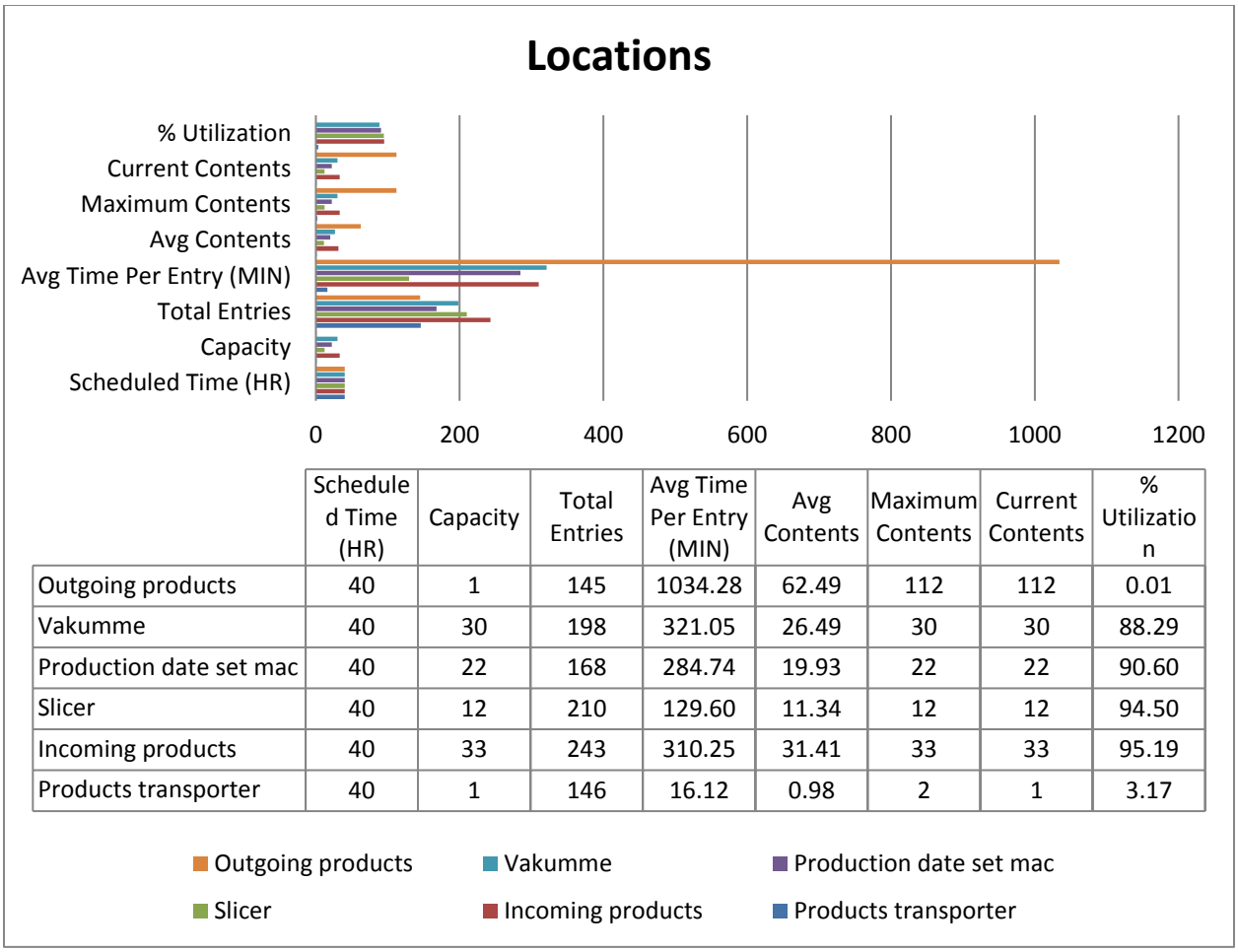
production costs. In technical terms, we believe that working premises could be reorganized, since the devices do not pursue the production process and distances are rather large, thereby generating additional moving costs and losses in working hours.

8.7.13 M meat industry - Findings

MI M is a factory placed in a rather ecological position, surrounded by amazing mountain ranges and nature, and has made considerable investments in various periods, thereby aiming for appropriate infrastructure for meat processing. Since our focus was only in packaging departments, upon an analysis of the department, we saw that along with a well-thought investment process, the company has also analysed capacities and has also framed the machinery in pursuit of the technological processes. Data show that this MI's machinery is being utilized for more than 80% of their capacities, and depending on needs, capacities vary in a serial order. If devices are analysed individually, we can see that the vacuuming device is used for 88.29%, the production date set machine has a rate of 90.60%, the Slicer is currently used at a rate of 94.50%, while the ndersa incoming products device is 95.19%. This utilization is satisfactory and precisely meets the company demands.

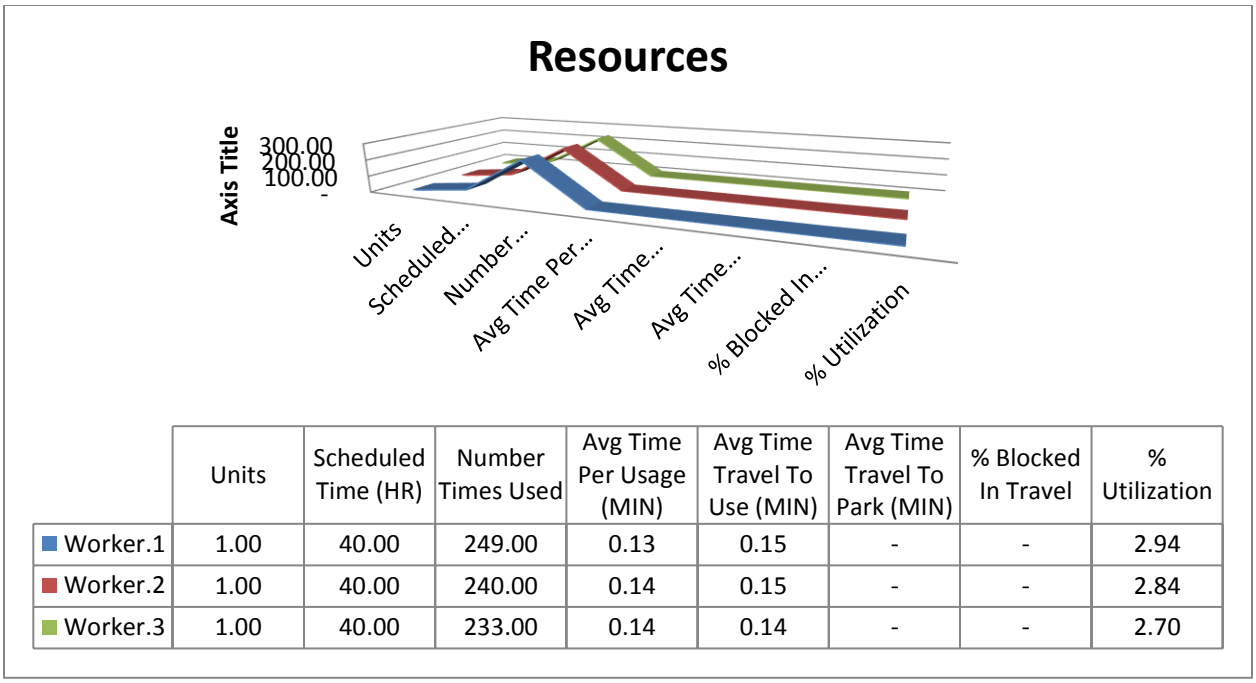
In our analysis of human resources, we found that the company has some problems in utilizing staff, and based on the data recorded, the staff is in minimal rates of utilization. 3 employees are utilized for less than 10% of time in the manufacturing process. This discrepancy is causing undue fixed costs for the company, though it is their strategy to have at least 3 employees in this condition of packaging department. It is clear that the company has no difficulties in transporting or storing products. This is a great advantage to the company.

In terms of raw matter, it is clear that the in the production process, raw matter is at 89.09% of time in processing, while blocked for 10.82% of time. If one engages in a thorough analysis, we can see that the raw matter is in operation for 42% of time, and 47% of time in the system.



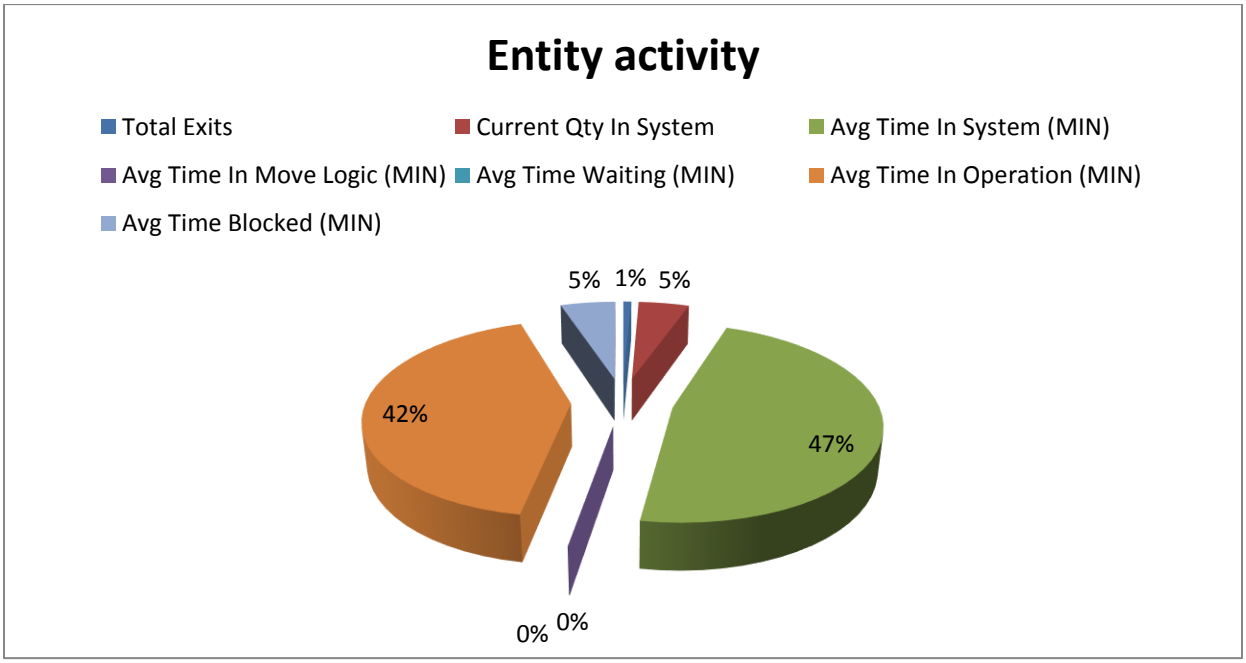
	Scheduled Time (HR)	Capacity	Total Entries	Avg Time Per Entry (MIN)	Avg Contents	Maximum Contents	Current Contents	% Utilization
Outgoing products	40	1	145	1034.28	62.49	112	112	0.01
Vakumme	40	30	198	321.05	26.49	30	30	88.29
Production date set mac	40	22	168	284.74	19.93	22	22	90.60
Slicer	40	12	210	129.60	11.34	12	12	94.50
Incoming products	40	33	243	310.25	31.41	33	33	95.19
Products transporter	40	1	146	16.12	0.98	2	1	3.17

Graph 45 – M Meat Industry – Findings -> Locations



	Units	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Worker.1	1.00	40.00	249.00	0.13	0.15	-	-	2.94
Worker.2	1.00	40.00	240.00	0.14	0.15	-	-	2.84
Worker.3	1.00	40.00	233.00	0.14	0.14	-	-	2.70

Graph 46 – M Meat Industry – Findings -> Resources



Graph 47 – M Meat Industry – Findings -> Entity activity

8.7.14 M meat industry – Recommendations

Our recommendations for MI M are of a technical nature, having in mind that this MI directly faces with limited vacuuming capacities, and a rather concentrated market. The small number of

products in the manufacturing process, and duration of processing and packaging processes are amongst key challenges for the MI. on the other hand, large operational costs do affect their profits, but if the aim of the company is further expansion, then current staff salary costs are to be transferred as opportunities and investment, since the staff is already trained and enjoys some stability. However, with greater processing, there shall be larger challenges and opportunities. MI M must necessarily invest in building infrastructure, and in at least 4 devices in the packaging premises, to eliminate bottlenecks. Converting from the semi-analogous system currently in use by the MI into a digital system shall be a key challenge for the MI in the near future.

8.8 SWOT analysis

In this chapter, we have conducted a SWOT analysis for the meat industry sector in the Republic of Kosovo. Along with all other information presented in this PhD thesis, this section is important for evaluating and comparing results obtained from the companies in our research

8.8.1 Strengths

The industry potential is:

- Ability to substitute imported products with domestic products
- Support from the EU Commission and the Ministry of Agriculture, Forestry and Rural development, with grants for this sector
- Low cost products
- Low cost labour
- Taste and traditional way of processing meat
- Utilization of Human resources

8.8.2 Weaknesses

- Informal economy
- The Ministry of Agriculture, Forestry and Rural Development has not provided any incentives for companies with rapid development potentials.
- Only in two years, the Food and Veterinary Agencyregistered more than 40 new meat factories, all of them with small production and distribution capacities
- Meat factories require international certification and licenses for food safety

- Lack of marketconcentration
- Direct purchasing from farmers
- Direct consumer services are not established properly

8.8.3 Opportunity

- Export to EU, because there are more than 738 million citizens in EU countries
- Human resource development in EU countries for specific products
- Increase research and development to produce innovation products
- Market research will optimise and classify the products in different categories

8.8.4 Threats

- Lack of assessment of human resources and departments
- Lack of market research
- Absence of food technologists specialized in the meat sector
- Limited capacity of domestic farmers
- Spices are imported, since Kosovo has neither the capacity nor resources to produce different spices necessary for the meat sector.

9 Instead of completing a final summary

In this chapter, we shall present a detailed summary of our thesis. In the first section, we shall validate indicators, variables and explicate research queries, to continue further with validation of hypothesis. By the end, we shall present our visual model, which describes all steps and links that make the cluster and the impact of digital models.

This section begins with research objectives, which are listed below:

- Identify clusters problem -> this objective was *confirmed by all respondents, thereby underlining that key problems in a cluster are: communication, digitization, HR and financing.*
- Identify mechanisms of increasing performance *->performance development mechanisms are identified as the following: decentralization of departments and units, facilitated and*

accessible relations between each department, strong responsibility and labour division levels, appropriate communications and a defined structure of internal organization.

- Identify the differences in extra tasks acceptance by different department in company – *it has been confirmed that any changes in structure or working processes are pursued by various technical problems. Additional tasks, according to our research, were accepted only when companies provide payment incentives, otherwise such tasks are rejected in the majority of cases.*
- Identify whether there are enough mechanisms in the company to ensure proper follow up of tasks execution – *all interviewed companies have their elements studied in detailed. The HR Departments must extend and provide more training and personnel development opportunities.*
- Identify solutions to use same digital business model in cluster – *this objective has been met, since in this paper, we present a classical model of a cluster, and all links and impacts each department has inside a cluster. The model is generic, and may be used as such in all MIs.*

Digital business model in a cluster group is presented in the following page.

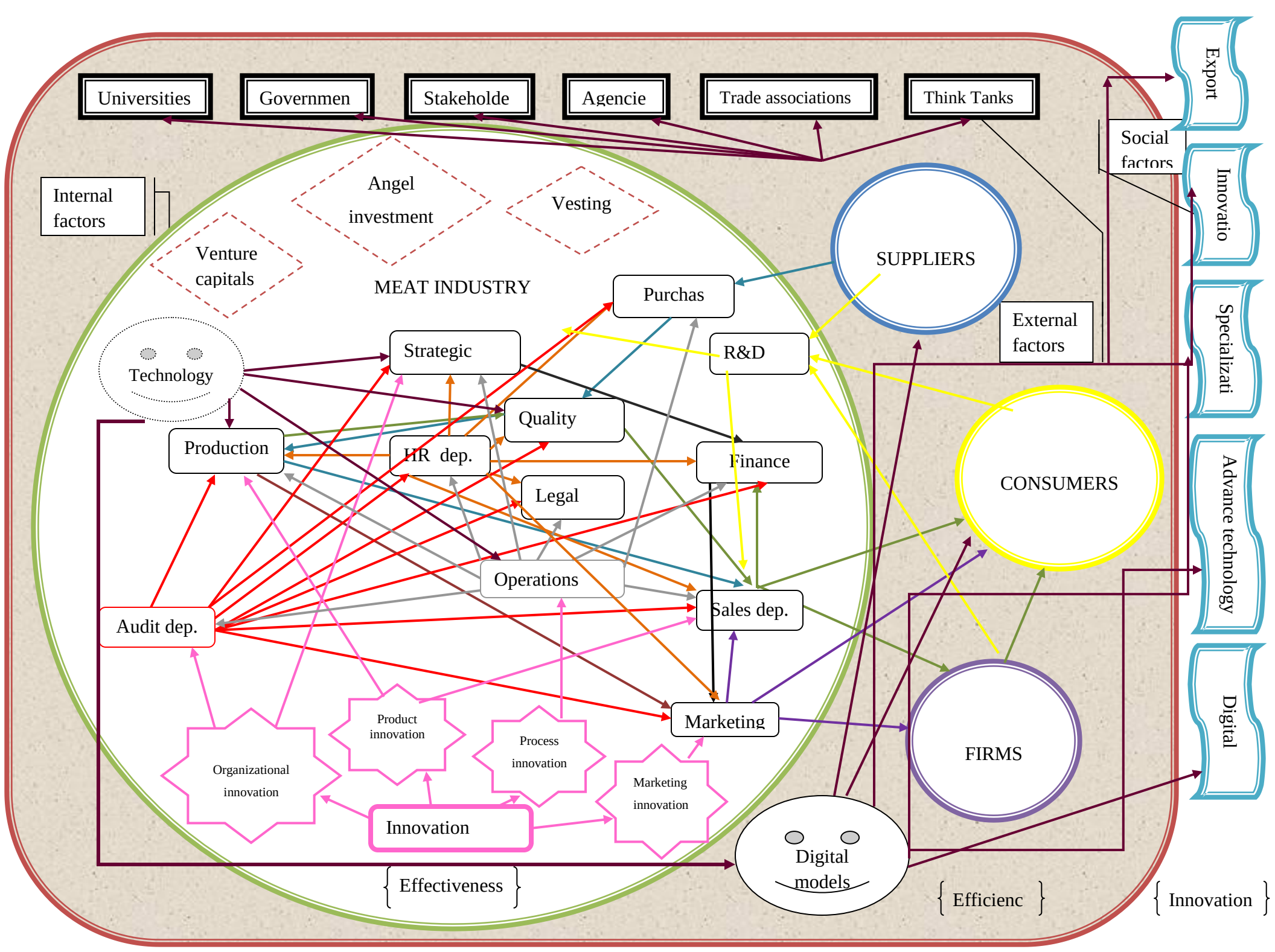


Figure 22 –Diagram flow of digital busimess model in cluster group

Conclusion

*G*iven the established pre-conditions of technology spread and innovation, it is obvious that the 'first step' for any government is to ensure a good investment climate. In other words, ensureopenness to trade, an effective property right regime, a functioning judicial system, adequate infrastructure, and a fair taxation and regulatory system. Infrastructure is particularly important, as firms cannot even consider innovating while trying to operate at high costs and unreliable rail, harbour, electricity and IT provision.

Clusters may be assessed when companies begin cooperating with each other, while the economic development reportswould showpositive trends.

Our country made an effort to develop a cluster strategy several years ago, however the strategy is yet to be adopted to this day.

When one thinks about how business went a few decades ago, there was no email, internet, mobile marketing, telecoms, smart phones, social networks, etc. Nowadays, communications are instantaneous, huge amounts of information move through email and the internet and many other powerful tools are in the hands of owners and employees. Technological innovationhave improved operations of companies of all sizes, and has helped turn small local businesses into global businesses. These are some of the reasons why we need to improve production lines by using technology and creating digital models.

With this case study, we have tried to list some key benefits of using digital models in the meat processing industry. This paper provides a comparative view of companies using digital models versus continuing to use their current production model. Based on such principles, we have made efforts to shed light over many differences in terms of proper management of resources.

Should companies implement digital models in the way presented here, they would be expected to reduce costsfor 32%, increase productivity for 50%, they would incentivise their own personnel by increasing salaries, and provide for more opportunities in their working hours, while the management would also be able to develop feasible strategic plans, and clustering would be easier if these companies aim to establish international relations with other companies.

By implementing this model all meat industry can benefit from:

- Low cost premium products
- Increased productivity
- Increased innovation
- Reducing time
- Using infrastructure
- Using technology properly
- Using equipment in full capacity
- Using human resource
- Decreasing cost
- Reducing production cycle
- Motivating human resources in financial and social terms
- With the use of digital model management, it would be easier to develop strategic projects
- Companies would improve their image
- Companies would focus more on customer relations
- Responsibility in manufacturing departments would greatly increase
- Capacity development
- Organizational alignment
- Greater capacity to apply for international grants
- Online communicataions with the customer
- Staff Training

- Improvement of client care

Our model directly focuses on internal and external factors. Internalfactors may be listed: partners, resources, activities, cost structure. Externalfactors may be: value proposition, distribution channels, customer relationship, customer segments and revenue streams. All this factors would increase with utilization of digital models.

A fact that must be paid specific importance is that generally, meat industries generally manufacture low cost products and generally produce almost the same products, thereby strengthening the competition between them. Therefore, as we have stated, innovation in the area is rather far and below, for the three main issues:

1. Lack of specialized food technologists in our country,

2. The high cost of technological infrastructure and financial constraints

3. Lack of confidence of citizens in consuming more domestic products and innovation that they bring to the market.

Regardless of the obstacles faced by these industries by the day, there are trends that customers benefit from the quality of products currently being offered in the market, and this is one of the elements which applies to take a more positive note, despite the fact that the market still has significant gaps.

When analyzing operations of companies, we need to highlight that local meat processing industriesdistinguish themselves in the market with some qualities that are characteristic of the area in which they operate.

Kosovo is a country that faces numerous challenges, that must necessarily be addressed with investments that directly reflect on the lives of citizens, and it must also accelerate economic development. Therefore, potential is there, ideas are there, investors are missing.

If our country can establish a full complete production chain, beginning from the process of livestock and poultry breeding to their packaging. Only with such a value chain could we say that we reacha higher level, and we could also promote our country in the international market,

with innovative and controlled products, and above all, domestically produced (only by implementing the cluster model as presented in the paper).

Farmers have a good opportunity to increase animal breeding capacities, if they had the certainty of selling all animals without any major obstacle.

The motto “From the farm to the table” is rather important, since the customer can be sure to consume fresh produce every day.

The purpose of this thesis is to promote fully domestically manufactured products, and to establish cooperation networks, under which, companies could establish clusters and have consistent operations.

The model presented in this paper has shown the key areas needed for proper operation of a meat industry, each of which has its own specializations and sub-specializations, and their control methods.

In financial terms, it is very important to mention benefits of this model, taking into account the fact that beneficiaries of this model are not only companies, but even more the customers, governments and educational institutions. From this series of analyses conducted, we conclude that higher incomes in citizens would be achieved by proper government policiessubsidizing local products, eliminating export barriers by creating new jobs, and stimulating educational institutions, developing unique academic and scientific programs to educate generations for which the country needs. Specialization is one of the key elements that enable staff development, but also allows for harmonization of strategies and their implementation. Understanding that the whole process links into a special chain of value, we should then expect drafting of contracts and their implementation, also allowing for appropriate actions even if faced with unforeseen situations.

As a result, such a strategy would enable our country to develop effective yet common strategies that will yield satisfactory results.

It is thought that innovation tends to cluster more companies in sectors in which neighboring regions are also technologically specialized.

If one relies on the theory that for a successful business, it takes 10% vision, 25% passion and 65% sweat (or labour), we can say that in our country, principles of vision and passion are rather pale when compared to principles of imitation and development of similar products. We could say that MIs in Kosovo are rather limited in developing their activities, and especially in improving innovation and offering new products to the market. It is clear that absence of strategic plans bears a lot of impact on the area, therefore, development and investments are all on ad-hoc basis, without any proper analysis.

Based on various theories consulted and presented in this PhD thesis, it was confirmed that technological progress is the first factor that pushes for enterprise development and allows for unique products, thereby pushing further for productivity and fostering innovation in long terms.

One must be aware that the cultural background and country development must be reviewed in detail to ensure creativity and innovation in specific products. It is important to intertwine all three elements in order to develop unique products that would identify the country, values and innovation.

"skills and abilities including: capabilities in problem solving, innovation and creativity, self-direction and initiative, flexibility and adaptability, critical thinking, and communication and collaboration skills are interpersonal skills that every entrepreneur must have. A special emphasis must be placed on the temporal factor, knowing that rapid changes and dynamics of business are key to success.

As we have stated throughout the paper, creativity is multifaceted and multidimensional. It was identifying three interrelated types of creativity:

(1) Technological creativity or innovation,

(2) Economic creativity or entrepreneurship, and

(3) Artistic and cultural creativity.

To be successful in global markets, every company must necessarily invest in innovation development. Investment in technology, entrepreneurship or cultural creativity is key to success. In our country, investment is made in technology, but in many cases, without any clear vision.

Meanwhile, more is invested in entrepreneurship and cultural creativity, and success is apparent. In this case, we must underline the assistance and Smart investment made by the Innovation Center of Kosovo, who have made efforts to specialize teams in technology and information areas. International success is rather evident in this period. Also, in September 2017, the Government of Kosovo has created a Ministry of Innovation, though only in a consolidation phase.

Keep in mind: "Trademarks are a measure of innovation implementation across nations".

The management systems must include the human resources policy, specially the recruiting, training and motivation of the employees that is considered nowadays as the most important factor in the re-source based view of the firm.

If one speaks of strategic management, despite the fact that literature is rather rich in data on its development, in practice, Kosovo companies, and especially meat industries, have no strategic plan that would have been analysed, developed and implemented. Unfortunately, a great deal of work and investment is required in this sector (none of the MIs have any long-term strategic planning for the moment) to be competitive in the region and wider.

The there main pillars of competitiveness (Man, T.W.Y., T. Lau & K.F. Chan, 2002)that are: dimension of performance, processes and potential, in practice, in our surveyed MIs seem to be rather poor, to not say that the three pillars are only superficially addressed, or not addressed at all. MI performance is assessed on their annual turnover, and not by market presence, potentials are analysed by price reductions and not by numbers of active products and new product developed, while processes are analysed from the viewpoint of expense, and not in analysing processes and their cost-effectiveness.

To ensure efficient operation, a cluster must be analysed in several rather special elements, which would directly influence the results of cluster functioning and its longevity. Special attention must be paid to analysing the following areas: Mapping of existing clusters, Evaluation of regional business environments, Creation of a 'Competitiveness Observatory' to track competitiveness and cluster development over time, Financial and technical support for cluster initiative administration, Analyses of the present clusters, Emerging export-oriented clusters with existing base, Clusters serving the local market (retail, finance, construction, health), Other

emerging/potential clusters, FDI attraction, Economic cities/industrial zones/technology zones, Skill upgrading, Small and Medium-sized Enterprises (SME) support (finance, technical assistance). All these analyses shall be required only for basic reasons, to increase exports of our country, and promote unique products of an area in which we operate. Expanding on staff and specialization are also important aspects, though in a different pathway of promotion.

It is generally recognized that not everything can be done on own funding. However, if the initiative is viewed from an international viewpoint, it is easier and more doable. 84% of surveyed MIs have benefited from grant schemes, and based on our own assessment, all have invested in the same area, same production line, and increasing their internal competitiveness, but lowering standards of national produce. This situation comes as a result of an absence of strategy and collaboration between MIs.

In our research, we have noted that 86% of MIs surveyed have at least another business, which already establishes an individual cluster, and in this regard, offers an opportunity for their products tobepresented in another light. Also, we have noted cases in which investment was made in a very different field, in an effort to diversify products and expand on the numbers of products in the market with the same brand, but we have also identified cases when further investments have no link with the MI, but were made to balance revenues and cover expenditure that MIs may incur in various investments, because it is widely known that the return only comes after 10 years.

Recommendation

Kosovo does have the potential to become an important regional player in innovative sectors. Kosovo is currently not living up to its potential, however, some constraints to growth are structural and/or external, but a more favourable policy environment can alleviate many of them.

If we depart from the theory that to have a successful business, it takes 10% vision, 25% passion and 65% sweat (work), we can say that in our country, principles of vision and passion are rather pale in comparison with principles of imitation and development of similar products. Therefore, one could say that MIs in Kosovo are rather limited in their activity development, and especially in innovation and offering new products in the market. It is clear that absence of strategic

planning has a great impact on the area, and development and investments are clearly ad-hoc, and lack proper analysis.

Based on various theories consulted and presented in this PhD thesis, it has been confirmed that technological progress is the first strength that stimulates enterprise development and allows for development of unique products, thereby fostering productivity and increasing innovation in long terms.

One must have in mind that cultural background and country development must be addressed in detail, so as to have creativity and innovation for specific products. It is important to intertwine all three elements to have a unique product that reflects the country, values and innovation.

"Skills and abilities including: capabilities in problem solving, innovation and creativity, self-direction and initiative, flexibility and adaptability, critical thinking, and communication and collaboration skills are interpersonal features each entrepreneur must have. Special emphasis is placed on the factor of time, knowing that rapid change and dynamic business are keys to success.

As we have stated throughout the thesis, creativity is multifaceted and multidimensional. We can identify three interrelated types of creativity:

(1) Technological creativity or innovation,

(2) Economic creativity or entrepreneurship, and

(3) Artistic and cultural creativity.

To be successful in a global market, every company must necessarily invest in innovation development. Investment in technology, entrepreneurship and cultural creativity is key to success. In our country, investment in technology does take place, but in many occasions, without a clear vision. In our case, entrepreneurship and cultural creativity are areas of investment, and initial success is already visible. In this case, one must underline the assistance and smart investment made by the Innovation Center of Kosova, who focuses on specialization of teams in technology and information. International success is very much visible in this period.

Also, in September 2017, the Government of Kosovo established a Ministry of Innovation, which is yet to be consolidated.

Keep in mind: "Trademarks are a measure of innovation implementation across nations".

The management systems must include the human resources policy, specially the recruiting, training and motivation of the employees that is considered nowadays as the most important factor in the re-source based view of the firm.

If one speaks of strategic management, despite the vast literature on development of this field, in practice, Kosovo companies, and specifically meat industry, have no detailed strategic plans analysed, developed and applicable. Unfortunately, it will be required to work more and invest more in this sector (none of the MIs have any long term strategic planning) to be competitive in the region and wider.

The three main pillars of competitiveness according to (Man, T.W.Y., T. Lau & K.F. Chan, 2002)are: performance, process and potential, but in practical terms, in MIs surveyed, these appear to be very weak, not to say that the three pillars are only superficially addressed, or not at all. IM performance is mainly assessed by annual turnover, and not market share, potentials are analysed by price discounts and not the number of active products or development of new products, while processes are analysed from the viewpoint of costs, and not analyses on how to have cost-effective processes.

To ensure efficient operation, a cluster must be addressed in terms of rather special elements, which will directly influence the outcomes of a cluster operation and duration. Special attention must be paid to analyses of the following areas: Mapping of existing clusters, Evaluation of regional business environments, Creation of a 'Competitiveness Observatory' to track competitiveness and cluster development over time, Financial and technical support for cluster initiative administration, Analyses of the present clusters, Emerging export-oriented clusters with existing base, Clusters serving the local market (retail, finance, construction, health), Other emerging/potential clusters, FDI attraction, Economic cities/industrial zones/technology zones, Skill upgrading, Small and Medium-sized Enterprises (SME) support (finance, technical assistance). All these analyses will be required for basic reasons, increasing our country's exports, promoting unique products of the area in which we operate. Increased employment and

specialization of staff are other elements that are also important, but at another approach to promotion.

It is known that not everything can be achieved by own funding. However, if the initiative is viewed from an international viewpoint, it seems to be simpler and easier to implement. 84%of MIs interviewed benefitted from grant schemes, and in our assessment, all have invested in the same field, the same production line, strengthening competition between them, but lowering standards of national produce. This situation comes as a result of lack of strategy and cooperation of MIs between themselves.

In our survey, we have seen that 86% of MIs surveyed have at least another business forming an individual cluster, and in this case, there are opportunities for their products to be shown in a different way. We also have cases in which investment was made in a very different area, in order to diversify products and offer more of them in the market, but we have identified also cases in which a second investment has no connection to the MI, but was created to balance income and cover costs that the MI may incur in various investment, because we know that investment return comes only after 10 years.

Our recommendation for the Government is to develop a concentrating strategy to foster and create a business-conducive business climate. A good investment climate does not only help local firms, but also encourages multinationals to “upgrade” their presence in the country. A conducive climate means that firms are more likely to perform R&D activities in the country, as opposed to just transferring technology from headquarters to local branches. Such activities may be taken upon having the Government establishing the legal infrastructure and putting into place other stimulation strategies, that would encourage businesses to invest and utilize benefits of the cluster model.

With the correlation between trade and innovation, another way to boost innovation is through removing constraints to imports and exports, especially for small firms. This could include some form of matching grant program to help reduce the cost of consultancy and certification required for exporting. With respect to imports, the learning process inherent in capital imports is enhanced when accompanied by training and on-site technical assistance.

The policy of promoting clusters in Kosovo should be read in conjunction with the stimulation of R&D at both the private and public level, high-tech industries enjoying a sustained promotion. Firms perform on average better within their sector at the national level.

“National” clusters benefit from export spillovers or have a specific ability, beyond individual productivity or size that makes them future potential champions

By bringing academia and business closer, venture capital and business incubators go some lengths to curtail another hindrance to innovation in Kosovo. Firm in clusters have better export performance.

The companies should focus more on human resources, because such people can largely improve the company performance and can develop new strategies and techniques to improve the whole model performance. This is one of the reasons why we present some strategies that are strongly focused on staff motivation and company performance.

Expertsdeveloping strategies and legal infrastructure should take into account all these details, because the corporation of the cluster companies need to be very clearly described.

Human Resource Management practices have been shown to be an important element that increases firm performance. In this study we investigate some key topics that the companies needs to improve in a future.

Staff assessment needs to be practiced every month or every two months, because the employees seem to contribute better when such assessment period is looming. With new legal policies, staffs have contracts of up to 6 months with the company, there is no expediency and they have no job certainty. HR management will need to consider these elements and push employees to perform well, because frequent staffing changes aren’t good for company reputation.

Training and specialization courses need to spread to all departments. HR departments needto create very specific strategies, with clear objectives, in order to create a range of benefits that employees can discuss this strategy before implementing it.

The company structure is very well established, but the staff needs to be part of each strategy in order to implement any project in due time.

Increasinginnovation, by offering special attributes for their employees, companies can also reduce their costs, and can increase their social responsibility for the community.

Provision of health insurance policies would further satisfy employees, because technical staff continues to work in difficult working conditions and are exposed to higher risks.

Six important trends have emerged as governors have updated economic development strategies and introduced new initiatives in the past two years:

• States are focusing on the relationship between the state and its regions in fostering economic development;

• States are emphasizing job creation from within the state;

• States are strengthening their support for advanced manufacturing;

• States are creating partnerships to meet industry's demands for talent;

• States are raising expectations for universities to bridge the gap between research and commercialization; and

• States are stepping up business export initiatives.

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ANNEX 1 – Surveys

Farmer research on the application of cluster model to increase competitive skills

Municipality:	Physical infrastructure m^2:	Number of animals:
Number of employees:	Total investment:	Investment planned for next year :

1. YOUR CLIENTS ARE?				
1. Companies	2. Citizens			
2. ARE YOU SATISFIED WITH THE COOPERATION THEY PROVIDE COMPANIES?				
✓ Not at all pleased	✓ Not pleased	✓ Pleased	✓ Very pleased	✓ Excellent
3. IS YOUR FARM CAPACITY SUFFICIENT, BASED ON MARKET REQUIREMENTS?				
1. Not at all enough	2. Not enough	3. Enough	4. Sufficient	5. Very sufficient
4. HOW SAFE IS THE MARKET FOR SELLING YOUR PRODUCTS?				
1. Not at all safe	2. Not safe	3. Safe	4. Moderate safe	5. Very safe
5. ARE THE FOLLOWING ELEMENTS SUCH AS WAY AND TIME OF PAYMENT, ORDERS, QUALITY OF PRODUCTS, DISTRIBUTION PLAN, ETC CLEARLY PRESENT IN YOUR COOPERATION CONTRACT?				
✓ Very clear	✓ Clear	✓ Not clear		
6. WHAT IS YOUR FARM'S ANNUAL GROWTH?				
1. <1%	2. 1%-3%	3. 3%-5%	4. 5-9%	5. Over 10%
7. ARE YOU BENEFIT OF ANY FINANCIAL SCHEME?				
1. Yes	2. No			
8. THE INSTITUTION WHO HAS SUPPORTED FINANCIALLY LAST YEAR IS:				
1. Ministry of Agriculture	2. Municipality	3. International institutions	4. Banks	5. Self-financing
9. IS HEALTH AND QUALITY OF ANIMAL LIFE IN YOUR FARM CONTROLLED?				
1. Yes	2. No			
10. ARE ALL ANIMALS EQUIPPED WITH VETERINARY CERTIFICATES?				
✓ None	✓ Not all	✓ Half of them	✓ Most of them	✓ All of them
11. PLEASE PRESENT THE BARRIERS IN THE BOX BELOW				

The data presented in this survey are confidential and can only be used for research statistics for the doctoral thesis: "DIGITAL PERFORMANCE OF CLASTER FIRMS".

Research on the application of digital models in the company

Date:	Municipality:	Number of employees:

1. IS ORGANIZATIONAL STRUCTURE CLEAR FOR ALL EMPLOYEES?

✓ Yes	✓ No

2. HOW DO YOU COMMUNICATE INSIDE YOUR COMPANY?

✓ Formal meetings	✓ Telephone	✓ Email	✓ Non formal meetings

3. HOW DO YOU COMMUNICATE WITH YOUR PARTERS?

✓ Formal meetings	✓ Telephone	✓ Email	✓ Non formal meetings

4. ARE YOU FOCUS IN STAFF DEVELOPMENT?

✓ Yes	✓ No

5. HOW EFFECTIVE IS MANAGEMENT TO REVIEW AND DEVELOPED NEED PROCESSED BY STAFF?

✓ Very effective	✓ Average	✓ Non effective

6. HOW OFTEN DO YOU EVALUATE DEPARTMENTS PERFORMANCE?

✓ 1 month	✓ 3 months	✓ 6 months	✓ 1 year

7. DOES YOUR COMPANY USE DIGITAL MANAGEMENT MODELS?

✓ Yes	✓ No

8. DOES YOUR COMPANY USE SAME DIGITAL MODELS IN ALL DEPARTMENTS?

✓ Yes	✓ No

9. WHICH DEPARTMENT USE DIGITAL MODELS?

✓ Finance	✓ Human resource	✓ Purchase/Sale	✓ Logistics	✓ Strategic development

10. WHICH DEPARTMENT HAS HIGHER PERFORMANCE?

✓ Finance	✓ Human resource	✓ Purchase/Sale	✓ Logistics	✓ Strategic development

11. HOW CLEAR DID THE COMPANY PRESENT IDEAS TO PARTNERS?

✓ Very clear	✓ Clear	✓ Not clear

12. HOW EFFECTIVE IS CLUSTER MODEL?

✓ Very effective	✓ Average	✓ Effective with problems	✓ Non effective

13. ARE THE FOLLOWING ELEMENTS SUCH AS WAY AND TIME OF PAYMENT, ORDERS, QUALITY OF PRODUCTS, DISTRIBUTION PLAN, ETC CLEARLY PRESENT IN YOUR COOPERATION CONTRACT?

✓ Very clear	✓ Clear	✓ Not clear

14. IN WHICH AREAS YOU MAINLY HAVE PROBLEMS?

✓ Finance	✓ Logistics	✓ Human resource	✓ Purchase/Sale

15. COMMENTS:

The data presented in this survey are confidential and can only be used for research statistics for the doctoral thesis: "DIGITAL PERFORMANCE OF CLASTER FIRMS".

Consumer research relating to their preferences for local meat products

Municipality:	Profession:	Average monthly income:
Age:	Sex:	Date:

1. WHAT QUANTITIES OF MEAT YOU CONSUME WITHIN A MONTH?

3. 1kg	4. 5 kg	5. 10 kg	6. 20 kg	7. Over 25 kg

2. WHAT IS IMPORTANT TO YOU FOR A MEAT PRODUCT TO CONTAIN

✓ Quality	✓ Price	✓ To be produced with the most advanced technology	✓ Forms and designs to be innovative	✓ The size and weight of the product

3. WHICH PRODUCT CATEGORIES YOU CONSUME MORE

1. Boiled products	2. Smoked products	3. Fresh products	4. Frozen products	5. Fermented products	6. Processed products

4. WHICH OF THE BOILED PRODUCTS OF KOSOVO PRODUCERS YOU WILL CONSUME *SEE TABLE 1*

APETIT meat industry	**ARMENDI** meat industry	**BUQUKU** meat industry	**FETI** meat industry	**LULI** meat industry	**KORAL** meat industry	**MEKA** meat industry

5. WHICH OF THE SMOKED PRODUCTS OF KOSOVAR PRODUCERS YOU WOULD BE CONSUMED *SEE TABLE 2*

APETIT meat industry	**ARMENDI** meat industry	**BUQUKU** meat industry	**FETI** meat industry	**LULI** meat industry	**KORAL** meat industry	**MEKA** meat industry

6. WHICH OF THE FROZEN PRODUCTS OF KOSOVAR PRODUCERS YOU WOULD BE CONSUMED? *SEE TABLE 3*

APETIT meat industry	**ARMENDI** meat industry	**BUQUKU** meat industry	**FETI** meat industry	**LULI** meat industry	**KORAL** meat industry	**MEKA** meat industry

7. WHICH INDUSTRY HAS PRODUCTS WITH THE MOST MODERN AND FASHIONABLE DESIGN? *SEE TABLE 4*

APETIT meat industry	**ARMENDI** meat industry	**BUQUKU** meat industry	**FETI** meat industry	**LULI** meat industry	**KORAL** meat industry	**MEKA** meat industry

8. HOW MUCH DO YOU VALUE THE PHYSICAL AND TECHNOLOGICAL INFRASTRUCTURE OF MEAT INDUSTRIES IN KOSOVO? *SEE TABLE 5*

APETIT meat industry	**ARMENDI** meat industry	**BUQUKU** meat industry	**FETI** meat industry	**LULI** meat industry	**KORAL** meat industry	**MEKA** meat industry

9. WHICH OF THE 7 INDUSTRIES SUBMITTED MEET THE CRITERIA FOR CONSUMING THEIR PRODUCTS?

APETIT meat industry	**ARMENDI** meat industry	**BUQUKU** meat industry	**FETI** meat industry	**LULI** meat industry	**KORAL** meat industry	**MEKA** meat industry

10. WHAT KIND OF PRODUCT YOU WOULD LIKE TO CONSUME AS LOCAL PRODUCT WHICH IS MISSING IN MARKET?

The data presented in this survey are confidential and can only be used for research statistics for the doctoral thesis: "DIGITAL PERFORMANCE OF CLASTER FIRMS".

Research with employees in meat industry

1. YOUR POSITION IN COMPANY?						
✓ Employed	✓ Manager	✓ Partner	✓ Director	✓ Team leader		
2. IN WHICH DEPARTMENT ARE YOU WORKING?						
✓ Finance	✓ Administration	✓ Human resource	✓ IT	✓ Legal	✓ Marketing	✓ Production
3. COMMUNICATION BETWEEN LEVELS IN YOUR COMPANY IS SUITABLE?						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
4. MANAGERS TRUST IN HIGH LEVEL THEIR SUBORDINATES?						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
5. IN OUR INSTITUTION WORK PERFORMANCE IS APPRECIATED						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
6. THE COMPANY IS FOCUSED IN STAFF DEVELOPMENT						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
7. I AM VERY SATISFIED WITH OPPORTUNITY THAT COMPANY OFFER TO US TO HAVE PROFESSIONAL ADVANCE FROM TRAININGS						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
8. TECHNOLOGY OFFER TO US TO BE MORE EFFICIENT AND EFFECTIVE MOST OF THE TIME						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
9. OUR PERFORMANCE AFFECTED FROM LEVEL OF TECHNOLOGY						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
10. TRAINING ARE FOCUSED AND ENABLING EFFECTIVE USE OF TECHNOLOGY						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
11. LEVEL OF PAYMENTS ARE SUITABLE FOR THE LEVEL OF EDUCATION I POSSESS						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
12. I AM VERY SATISFY WITH THE BENEFITS THAT THE COMPANY OFFER TO US						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
13. THE COMPANY OFFER VERY SAVED WORKING CONDITIONS						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
14. OUR COMPANY IS DEVOTED TO DIVERSITY AND INCLUSIVENESS						
✓ Agree completely	✓ Agree	✓ Neutral	✓ Not agree	✓ Not agree at all		
15. COMMENTS						

Research with company owners (managers) for digital performance of clustered firms

INDUSTRY:		
Municipality :	Legal form:	Email:
Physical infrastructure m^2:	Total investment:	Investment planned for next year :
Number of products:	Production capacity:	Number of employees:

1. In which departments did you had problems?			
2. Is your company located in adequate place for this activity?			
✓ Yes		✓ No	
3. Are you focusing in staff development?			
✓ Yes		✓ No	
4. In how many trainings did your staff participating?			
5. In which department you need training the staff?			
6. Have you have advanced logistic?			
✓ Yes		✓ No	
7. In %, how is your market share in Kosovo?			
8. How is annual increase of the company?			
9. Your product distribution is made by:			
✓ Sale department	✓ Authorized distributer	✓ Both	✓ Sales specialists
10. Are you focusing in costumer care?			
✓ Yes		✓ No	
11. Your company produce:			
Fresh meat	Frozen meat	Smoked meat	Boiled meat	Fermented meat	Processed meat

12. HOW USEFUL IS BEING PART OF CLUSTERED FIRMS?				
Not at all well	Slight well	Moderately well	Quite well	Extremely well
13. HOW DIGITAL BUSINESS MODEL STIMULATE THE COMPANY PERFORMANCE?				
Clear reports for all departments	Communication facilities	Easy access to information	Defined structure	Increasing the level of responsibility
14. HOW OFTEN DID THE COMPANY EVALUATE THE DEPARTMENT?				
✓ Yearly	✓ Every 6 months	✓ Every 3 months	✓ Every 1 months	✓ Every 2 weeks
15. DID YOUR COMPANY IS USING THE SAME DIGITAL PROGRAMME IN ALL DEPARTMENTS?				
✓ Yes		✓ No		
16. HOW LIKELY ARE YOU TO BE PART OF CLUSTER GROUP AGAIN?				
Not at all likely	Slight likely	Moderately likely	Quite likely	Extremely likely
17. HOW SKILLED AT THEIR JOBS ARE THE MEMBERS OF YOUR TEAM?				
Not at all skilled	Slight skilled	Moderately skilled	Quite skilled	Extremely skilled
18. WHAT IS THE HIGHEST DEGREE OF YOUR EMPLOYESS?				
High school	Professional degree	Bachelor	Master	PhD
19. HOW PROFESSIONALLY DOES THE MEMBER OF YOUR TEAM BEHAVE?				
Not at all professionally	Slight professionally	Moderately professionally	Quite professionally	Extremely professionally
20. HOW WELL DOES MEMBER OF YOUR TEAM SHARE RESPONSIBILITY FOR TASKS?				
Not at all well	Slight well	Moderately well	Quite well	Extremely well
21. HOW EFFICIENTLY ARE TEAMS MEETINGS CONDUCED?				
Not at all efficient	Slight efficient	Moderately efficient	Quite efficient	Extremely efficient
22. HOW QUICKLY DOES YOUR TEAM ADJUST TO CHANGING PRIORITIES?				
Not at all quickly	Slight quickly	Moderately quickly	Quite quickly	Extremely quickly
23. DO YOU CURRENTLY HAVE AN ACCOUNT WITH A PROFFESIONAL				

NETWOKING WEBSITE OR NOT?				
1. Yes		2. No		
24. ABOUT HOW MANY OF YOUR PARTNERS HAVE YOU MET IN PERSON AND DISCUSSED ABOUT FUTURE PLANES??				
1. None of them	2. A few of them	3. About half of them	4. Most of them	5. All of them
25. DO YOU INTERACT REGULARLY WITH OTHER CLUSTER COMPANIES MORE, LESS OR ABOUT THE SAME AMOUNT AS YOU CURRENTLY INTERACT WITH YOUR DEPARTMENTS				
1. A great deal less	2. Quite a bit less	3. About the same amount	4. Quite a bit more	5. Great deal more
26. HOW REALISTIC ARE YOU WITH YOUR COLLABORATORS AND CONSUMMATORS?				
1. Not at all realistic	2. Slightly realistic	3. Moderately realistic	4. Very realistic	5. Extremely realistic
27. HOW EFFECTIVE DO YOU USE COMPANY RESOURCES?				
1. Not at all effective	2. Slightly effective	3. Moderately effective	4. Very effective	5. Extremely effective
28. HOW COMMITTED IS YOUR MANAGERS TO MAKING THE COMPANY A MORE COMFORTABLE PLACE TO WORK?				
1. Not at all committed	2. Slightly committed	3. Moderately committed	4. Very committed	5. Extremely committed
29. HOW INNOVATIVE ARE YOUR PRODUCTS?				
1. Not at all innovative	2. Not so innovative	3. Somewhat innovative	4. Very innovative	5. Extremely innovative
30. HOW WILLING IS YOUR COWORKER TO ADMIT MISTAKES?				
1. Not at all willing	2. Slightly willing	3. Moderately willing	4. Quite willing	5. Extremely willing
31. IN WHICH DEPARTMENT YOU CONSIDER THAT YOUR COWORKERS NEED TO IMPROVE PERFORMANCE?				
1. Finance	2. Human Resource	3. Marketing	4. Production	5. Logistic
32. OTHER COMMENTS:				

The data presented in this survey are confidential and may be used only for statistical research for the realization of the PhD thesis: "DIGITAL PERFORMANCE OF CLUSTERED FIRMS".

ANNEX 2 – Tables and Graphs

Results from observations of packaging department of each meat industry

With the observations made in the research period, we have been able to collect relevant information on 7 MIs involved in the survey, in their packaging departments, thereby analysing several essential parameters with the Pro Model program, which allow us to develop a longer term and sustainable strategic production plan.

In the Findings, we have tried to present the existing model of operations of such departments, while with the Recommendations – we have presented benefits if such processes are managed with a digital model.

A meat industry - Findings

In the MI A, which is the first in this observation, we have managed to collect data, which are presented in a graphic manner below. According to data collected from the packaging department, we have seen that this department has a total of 4 main devices, and 2 auxiliary devices, all needed to package meat products. According to statistics presented below, vacuuming equipment is used for 93.29% of the time, the expiry date stamping device is used at a rate of 96.14%, and the slicer is used for 59.74%, while the incoming product device is only used at a rate of 3.60%.

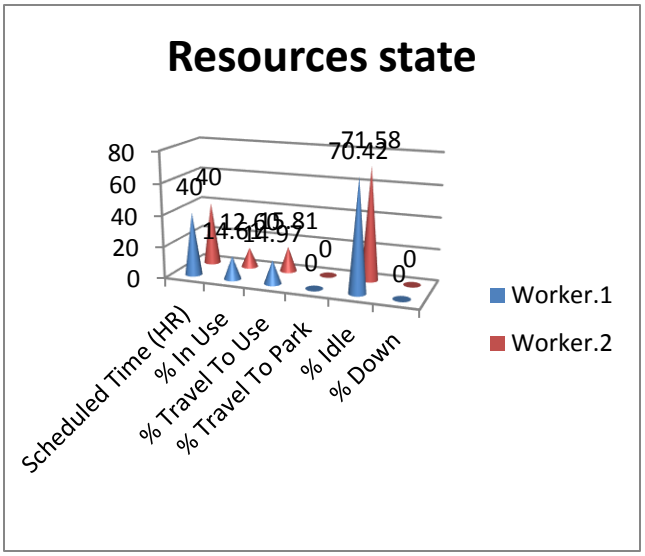
If we analyses the viewpoint of utilization of existing capacities, we could say that only the Production date set device is fully used with 86.89%, 10.29% part occupied and only 2.83% of the time it is empty. The slicer device is 1.46% empty, and 98.54% of the time is partly occupied. While the vacuuming device is 2.18% of the time free, 36.07% of the time it is part occupied, while 61.75% of the time, it is full occupied. All other equipment is of little use, or partly used. All such data are presented in the following graphs.

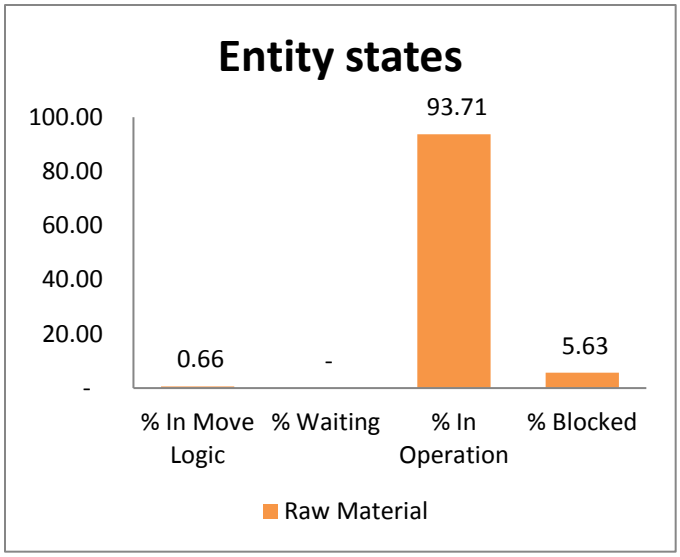
	Products transporter	Incoming products	Slicer	Production date set mac	Vakumme	Outgoing products
Scheduled Time (HR)	40	40	40	40	40	40
% Empty	3.86	51.18	1.46	2.83	2.18	3.67
% Part Occupied	96.14	48.82	98.54	10.29	36.07	96.33
% Full	0.00	0.00	0.00	86.89	61.75	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

Graph 48 – A Meat Industry – Findings -> Location state multi

If we analyses the human resources, based on data, we have 2 employees in this department, who according to data are averagely active, because the utilization rate is 29.58% per person, while only 28.42% for a second. In this case, even if the activity in working hours is not maximal, an achievement is that working processes are not interrupted, and that there are no other technical problems in relation to staff retention and movement of products.

The following graph presents some very important information that must be taken into account in changing internal organization of MIs. According to these records, labour is rather inactive during working hours. What one can see in the graph is that in a rather large part of working hours, staff move around, but based on the graph, good news is that products are not blocked.





Graph 49 – A Meat Industry – Findings -> Resources state

Graph 50 – A Meat Industry – Findings -> Entity activity

A meat industry – Recommendations

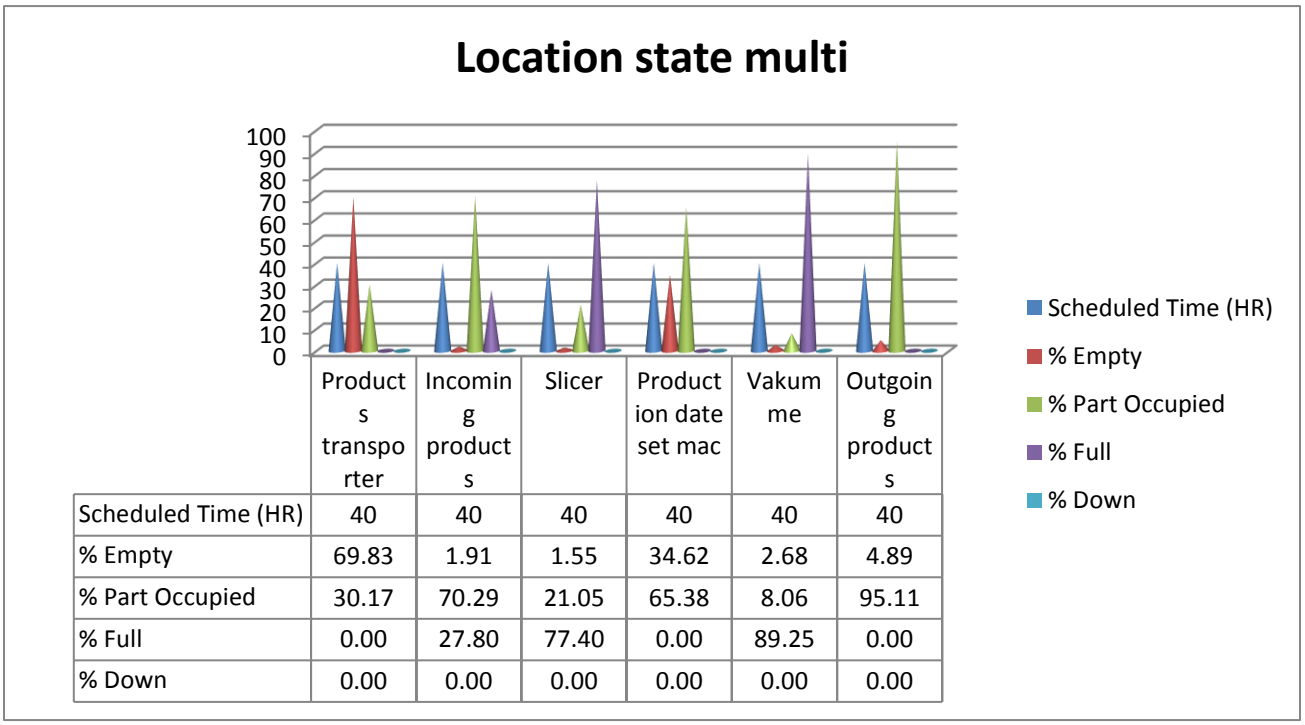
Our recommendations on this MI are technical and organizational. In organizational terms, we clearly see immediate restructuring of the packaging department (since we have analysed this department only). Employees must necessarily be active in achieving better results, and to lower production costs. In technical terms, we believe that reorganizing working premises must be undertaken because equipment do not follow production lines and because of great distances between processes, which generate additional moving costs and loss of working hours.

A2 meat industry - Findings

While MI A, had a considerable work volume, such workflows are much lower in the MI A2. This is due to the concentration this company has on the local market. Based on statistics presented, we can assume that processing capacities in this MI are larger than their packaging capacities, and in this case, a bottleneck in this MI is precisely this discrepancy between processing and packaging. The following table presents the capacities of each device installed in the packaging department, including respective packaging capacities.

A more detailed analysis is provided by the following chart, which clearly shows bottlenecks of the MI in each device. The Vacuum and Slicer devices are diminishing vacuuming capacities in this MI, because their maximum utilization rate is 89.25% of time, respectively 77.40% for the

slicer device. On the other hand, the production date set machine is only 65.38% part occupied. Other equipment are even less utilized.

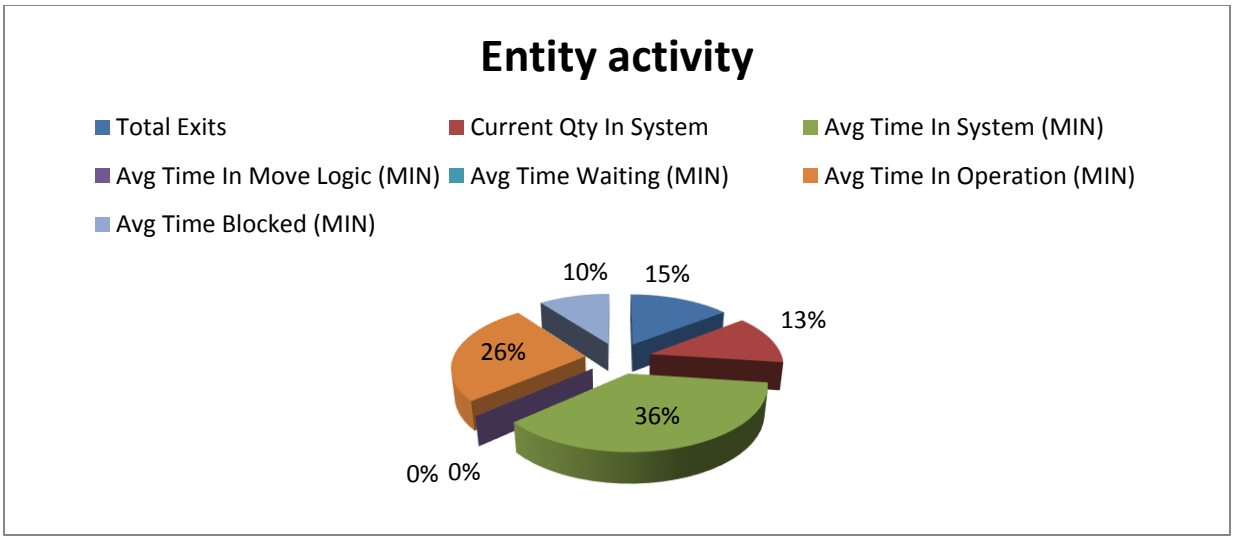


	Products transporter	Incoming products	Slicer	Production date set mac	Vakumme	Outgoing products
Scheduled Time (HR)	40	40	40	40	40	40
% Empty	69.83	1.91	1.55	34.62	2.68	4.89
% Part Occupied	30.17	70.29	21.05	65.38	8.06	95.11
% Full	0.00	27.80	77.40	0.00	89.25	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

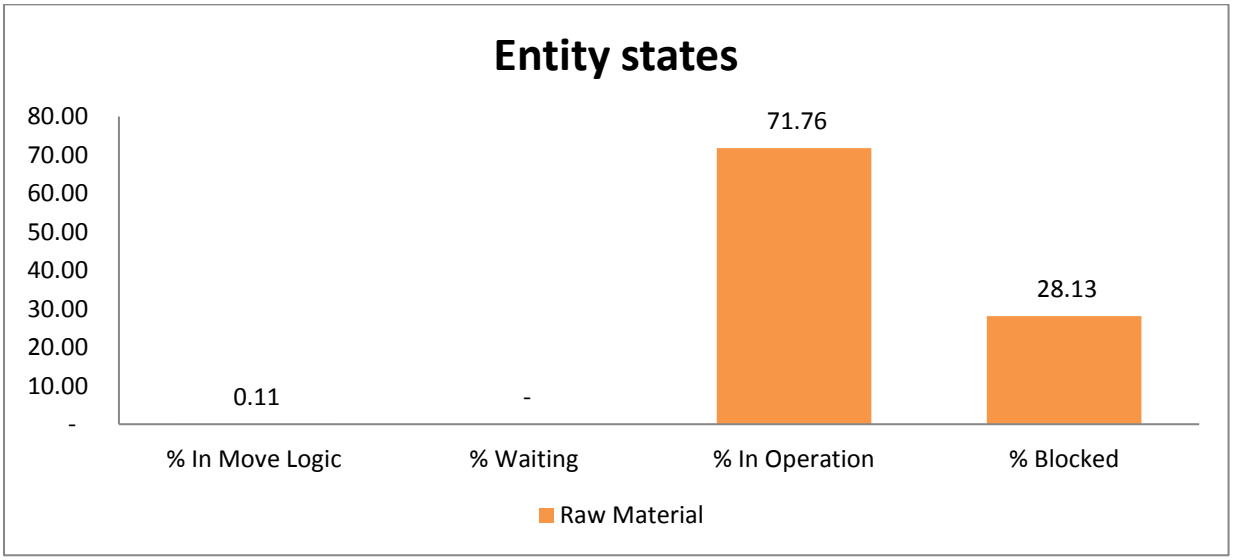
Graph 51 – A2 Meat Industry – Findings -> Locations state multi

If one talks about the employees, the MI has 3 employees in the packaging department. A good fact is that the MI does not encounter any blockage of processed products in the workflow or in storage in adequate premises, but due to the bottleneck, employees are not active at around 90% of time. To reduce operational costs, these relations must urgently be changed.

As one can see in the following chart, this MI has a long period of product processing, and in this regard, odds of improving production capacities are rather poor. Stock amounts are small, while their blockage is very much possible. Therefore, the dissbalance between the two elements is rather apparent, and generates risks in doing business. At a rate of 28.13% of products blocked due to technological processes, problems are very much evident, while abatement in this stage may be proven problematic.



Graph 52 – A2 Meat Industry – Findings -> Entity activity



Graph 53 – A2 Meat Industry – Findings -> Entity states

A2 meat industry – Recommendations

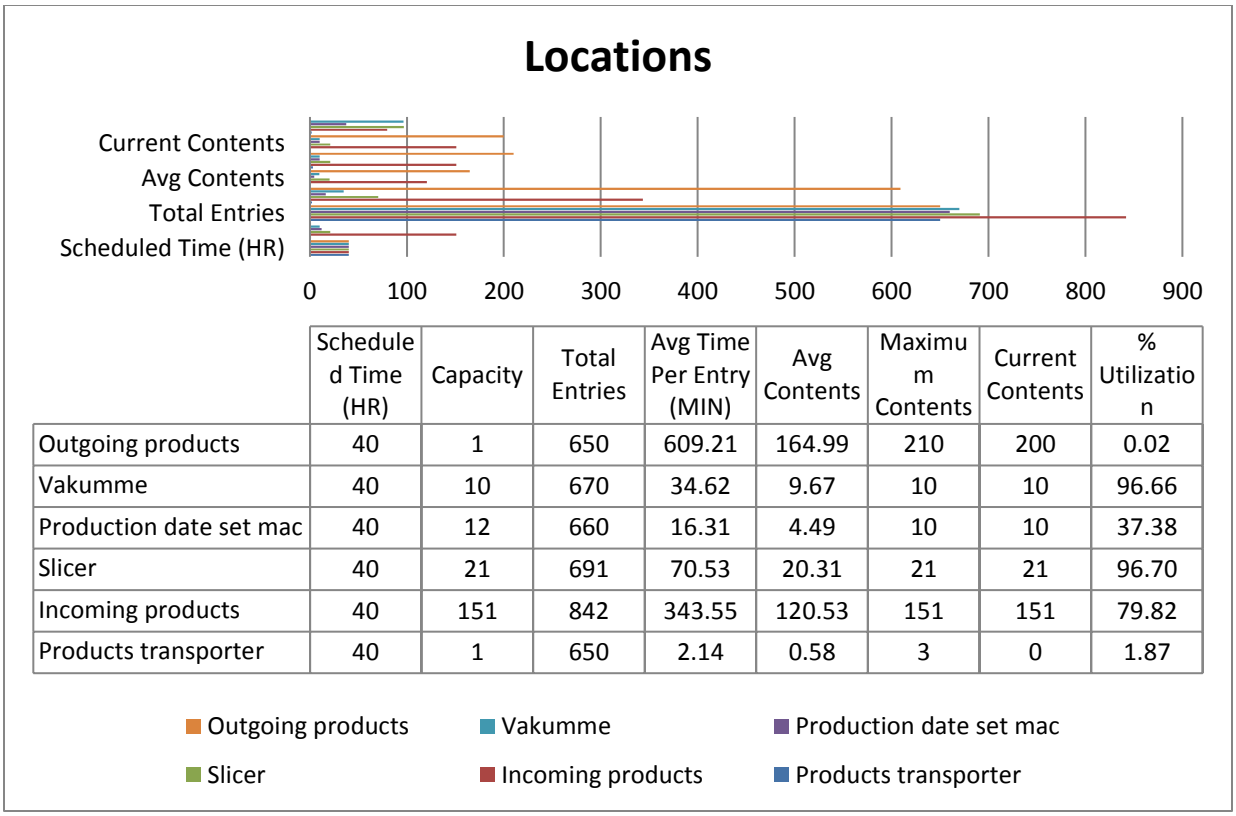
Our recommendations for the MI A2 are of a technical nature, taking into account that the MI directly faces limited vacuuming capacities, and a fairly concentrated market. The small number of products in the manufacturing process, and duration of processing and packaging flows are key challenges this MI faces. On the other hand, large operational costs does influence their profit, but if the company aims to expand in the future, then current salary costs for the current staff would be transferred as opportunities and investment, since the staff is already trained in the

area, and has developed some stability, however, with increased processing capacities, challenges will be larger, but also opportunities will be bigger. MI A2 must necessarily invest in facility infrastructure, and at least in 2 devices in the packaging department, to eliminate bottlenecks. Converting from the analogue system this MI utilizes into a digital system will be the key challenge the MI will have to confront in the near future.

B meat industry - Findings

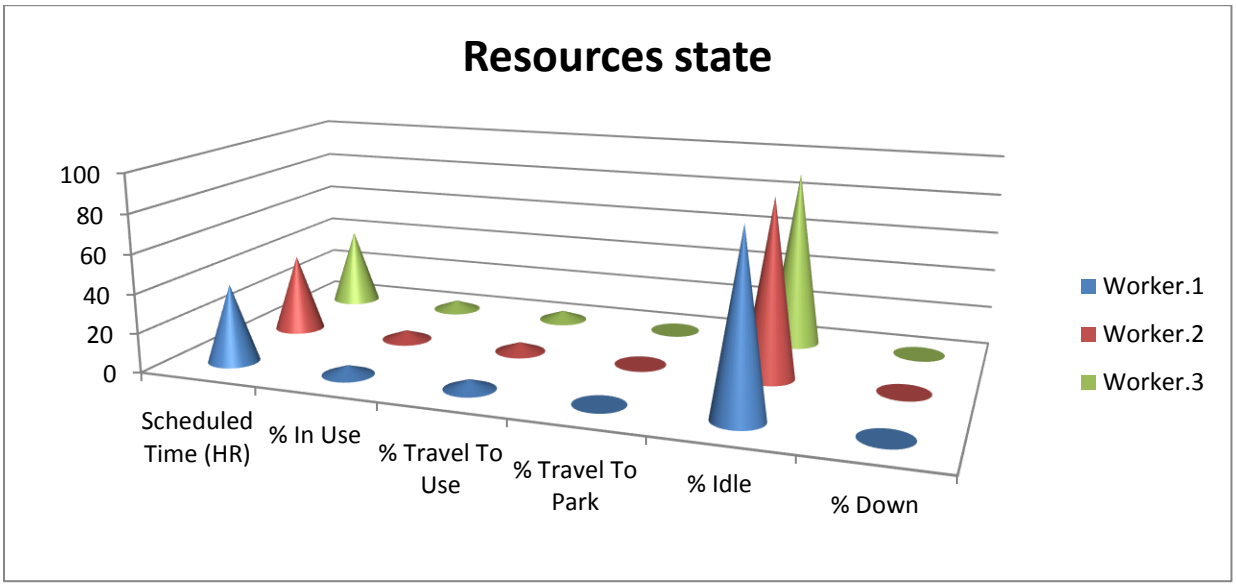
Findings from the MI B shows that this company does also have limited production capacities, and in this case, the situation is almost identical to most MIs surveyed for this paper. What makes a difference with this MI is advanced technology utilized, and relatively young staff trained in using specific apparatus. If analysed from the viewpoint of processing capacities, one would say that despite advanced technology, a challenge is found in limited processing capacities. Again, in this case, there is a bottleneck inside the packaging ward, and in at least 2 devices. We are talking about Slicer and Vacumme machines, which have a utilization rate of 78.71%, respectively 91.40%, which if seen in longer terms, such utilization rate represents some risk, if any of the devices is subject to a defect or deficiency.

Also, in utilizing human resources, another challenge is seen in their use. A rate of over 90% of non-active time is an indicator that must be analysed in details. Although in practice, this is manifested by moving staff to other departments, this is not a solution, since the department performance is not at a desired level. The challenge of ensuring specialized and active staff members is amongst the key issues faced by MIs. However, despite all challenges, this MI does not encounter blockages of products or space limitations. All such data are presented in the following 4 graphs.



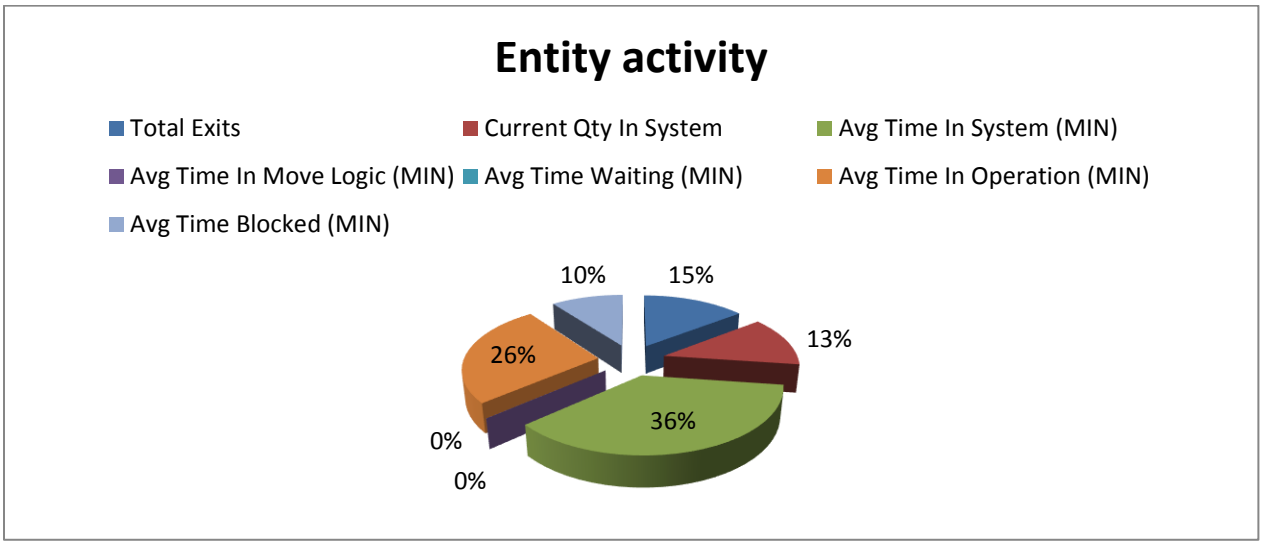
	Scheduled Time (HR)	Capacity	Total Entries	Avg Time Per Entry (MIN)	Avg Contents	Maximum Contents	Current Contents	% Utilization
Outgoing products	40	1	650	609.21	164.99	210	200	0.02
Vakumme	40	10	670	34.62	9.67	10	10	96.66
Production date set mac	40	12	660	16.31	4.49	10	10	37.38
Slicer	40	21	691	70.53	20.31	21	21	96.70
Incoming products	40	151	842	343.55	120.53	151	151	79.82
Products transporter	40	1	650	2.14	0.58	3	0	1.87

Graph 54 – B Meat Industry – Findings -> Locations



Graph 55 – B Meat Industry – Findings -> Resources state

In the following graph, one can see that this MI has a good manufacturing organization structure, because a product is processed at an average of 36% of time, in the operation at 26% of time, while 15% of the time, it awaits the next process, while for 10% of processing time, the process blocks. These figures may easily change, if the MI engages in analysis to unblock products, and in reducing packaging waiting times.



Graph 56 – B Meat Industry – Findings -> Entity activity

When we analyse the following graph, we see that 28.02% of raw matter to be processed and packaged is blocked, while 71.88% of such raw matter is in operation. This is an indicator that clearly shows that the workflow processes must be analysed, and a unique production formula be found to abate manufacturing deficiencies.

B meat industry – Recommendations

MI B needs to be very careful in its manufacturing agenda, since there is quite some discrepancy between what it actually produces and what it can package. In this case, we have identified a number of examples that confirm the findings. Staff can be better utilized if production and packaging processes are done on timing. Only this way can the MI improve working efficiency with the same resources, and conduct manufacturing without any problem, including ensuring no blockages and reducing the duration of processing. All these changes could contribute to abatement of financial costs, reducing expenses and increasing profits, and also expanding market presence.

F meat industry - Findings

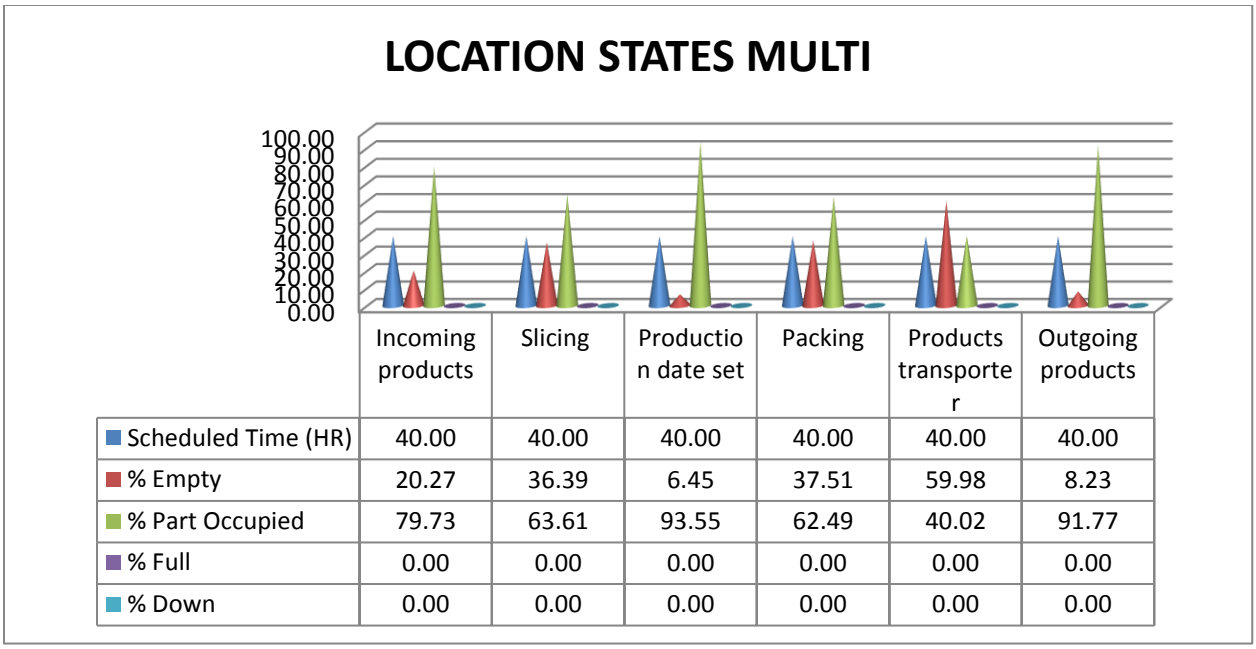
Based on our findings at F meat processing industry, they utilize incoming products 31.71%, slicing 25.11, production date set 33.03, packing 24.64, product transporter 1.47 and outgoing products 0.00.

This situation is present because in this department they don't use all the capacity, they use only less than 20% of total capacity (human and machinery) and the average time of product finalizations rather high. We can categorize this section as a weakness of the company.

Based on the F production model, they only partly use their machinery. In this case, for example the slicing machine is used only for 63.61% of the time, while for 36.39% of the time, it is empty.

The production date set device is in a better situation. This equipment is 93.55% part occupied and only 6.45% empty.

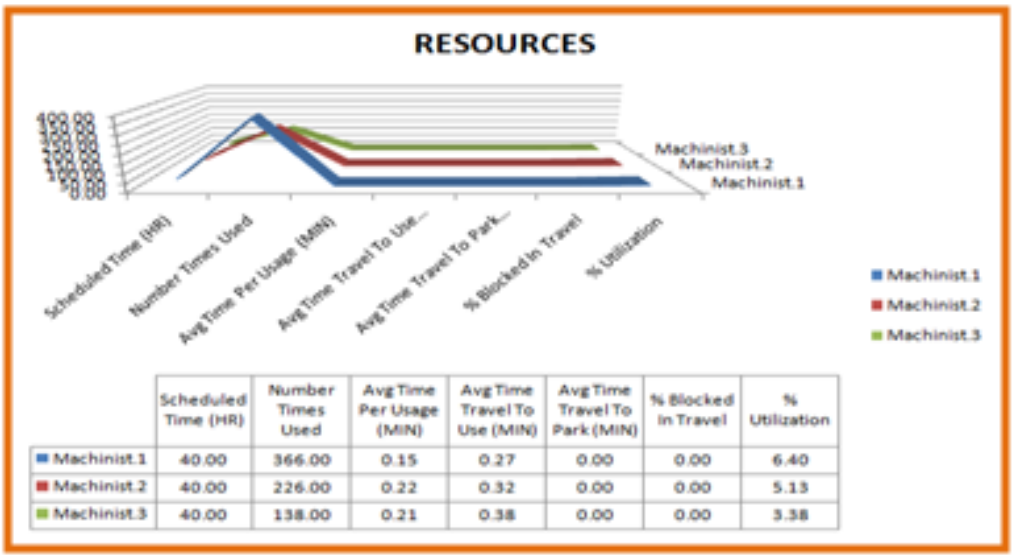
The packing equipment is 62.49% part occupied and 37.51% empty. With this index we clearly can say that this equipment is not well utilized, and the company needs to make modifications as soon as possible in the production model, in order to be more competitive in market. During the scheduled time, the product conveyer is 59.98% empty and 40.02% part occupied. This means that logical movements not properly managed, and in this case the company is paying its price on the increased production costs.



	Incoming products	Slicing	Production date set	Packing	Products transporter	Outgoing products
Scheduled Time (HR)	40.00	40.00	40.00	40.00	40.00	40.00
% Empty	20.27	36.39	6.45	37.51	59.98	8.23
% Part Occupied	79.73	63.61	93.55	62.49	40.02	91.77
% Full	0.00	0.00	0.00	0.00	0.00	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

Graph 57 – F Meat Industry – Findings -> Locations states multi

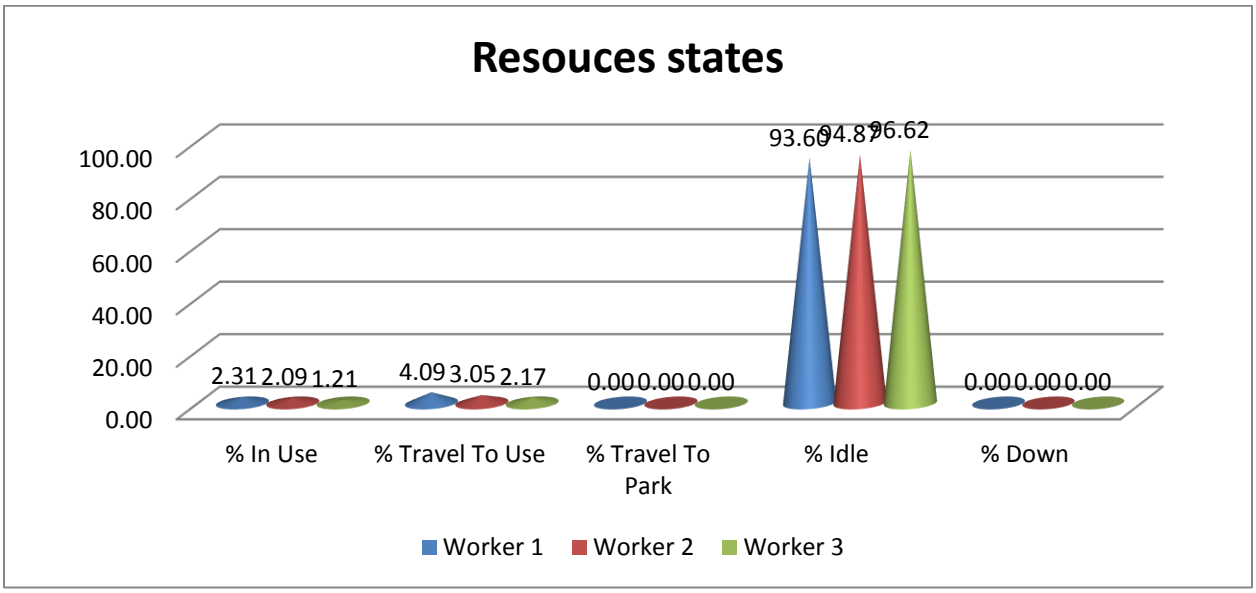
The company had employed 3 workers in this department, and based on the productivity we can say that they are more than 90% idle during the schedule time. Maybe this situation is present because the company is replacing some equipment and in this time they would not want to fire anyone. However, the problem is that they are not using their resources properly.



	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Machinist.1	40.00	366.00	0.15	0.27	0.00	0.00	6.40
Machinist.2	40.00	226.00	0.22	0.32	0.00	0.00	5.13
Machinist.3	40.00	138.00	0.21	0.38	0.00	0.00	3.38

Graph 58 – F Meat Industry – Findings -> Resources

The company had employed 3 workers in this department, and based on the productivity we can say that they are more than 90% idle during the schedule time. Maybe this situation is due to the fact that the company is replacing some equipment, and at this time, they would not want to fire anyone.



Graph 59 – F Meat Industry – Findings -> Resources states

The F MI model doesn't seem to have problems with arrivals. Based on the Pro Model report, the company does not have any failed arrivals and this is quite a competitive advantage in this model. The main problem seems to be proper management of actual resources. Using innovative technology costs money and time. In these terms, the company made very good investments in meat processing industry, so all the company needs is good managing model.

Based on the scheduled time, currently the F meat industry implements a total final number of 144 product units, current quantity in system is 48 units, average time in system is 576.26 min, average time in movement logic is 2.16min, while average time in operation is 566.14 min.

These results show that the entities are not performing that well, since average in system time and in operation times are very high, while the number of total exits is too much lower.

In this period MI F is well utilizing their entity states, because they have 98.24% products in operation, only 1.38% blocked and 0.38% in move logic. The company has these results based on small capacities of production in time. This calculation reflects the model in terms of use and

cost. But if an aim of the company is to try to increase productivity, it will be impossible to have these results during the process, and needs to increase productivity and capacity.

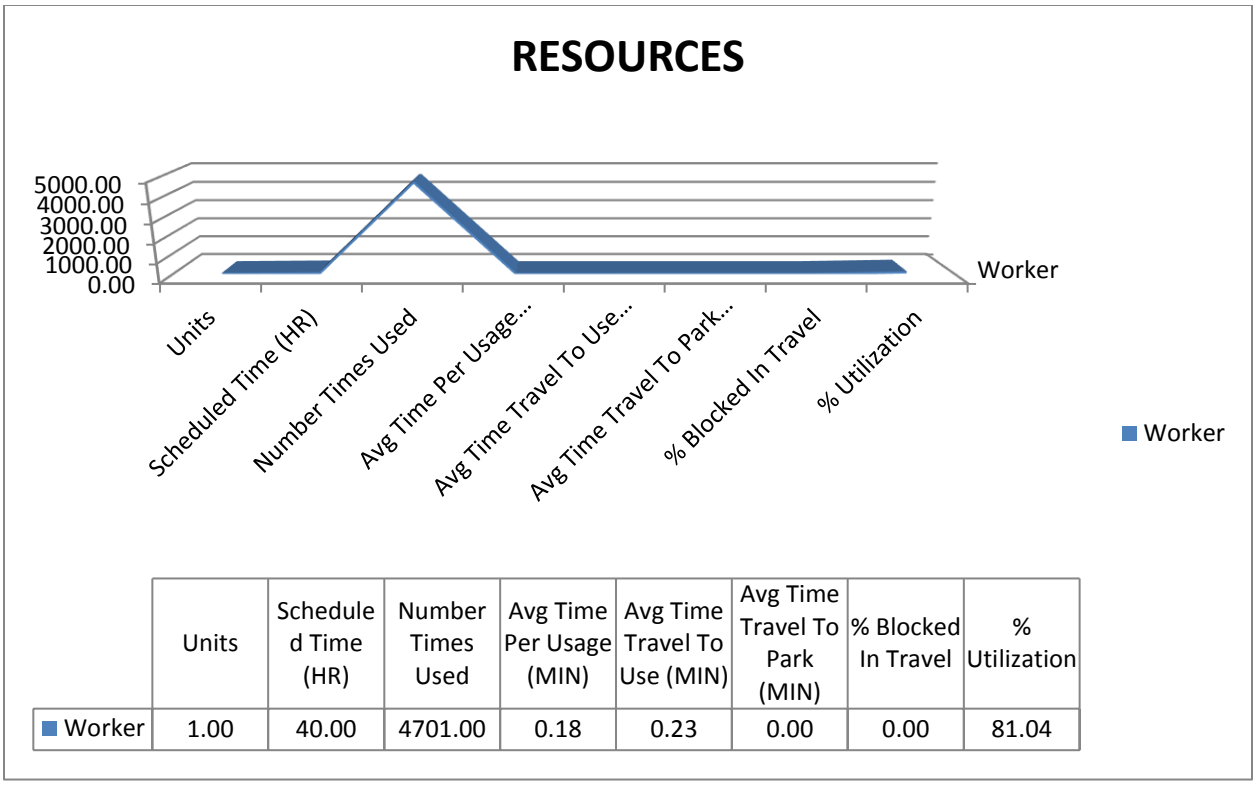
F meat industry – Recommendations

Based on the results we have from this model, the company has a rate of utilization of 86.56% in incoming products, slicing 69.03%, and production date set 93.25%, pacing 70.34%, product transporter 3.35% and outgoing products 0.01%, since the capacity for these entities is infinite.

We tried to make some modifications in terms of developing a new digital business model, to increase productivity, to use all the resources (technological, infrastructure and human) and to decrease cost in all departments. The main opportunity in this section is that we use the entire physical infrastructure that we have in disposal.

In this section we will describe the machinery activity during the scheduled time. Incoming products are managed well, because only 5.48% of scheduled time they are empty, 14.99% are occupied and 79.52% are full working. Slicing is also well managed because only 3.87% the machinery is empty, 49.01% is occupied and 47.12% are full. The same situation is viewed with the production date set machine, with this model we reduce to 2.5% inactive working time, and we increase in 59.05% of full active machinery capacity. The packaging device is more than 72.40% part occupied, 25.46% full and only 2.14% empty during scheduled time. Product transport is 32.24% empty and 67.76% part occupied, and outgoing products are 96.62% part occupied, because we calculated waiting time to be 2hours. Staff utilization in a 40-hour week is at a rate of 81.04%.

This graph shows the average time of movement of employees. In our case the worker spends 0.18min in usage, 0.23min travel to use and 47.01 is time used during the schedule time.



	Units	Scheduled Time (HR)	Number Times Used	Avg Time Per Usage (MIN)	Avg Time Travel To Use (MIN)	Avg Time Travel To Park (MIN)	% Blocked In Travel	% Utilization
Worker	1.00	40.00	4701.00	0.18	0.23	0.00	0.00	81.04

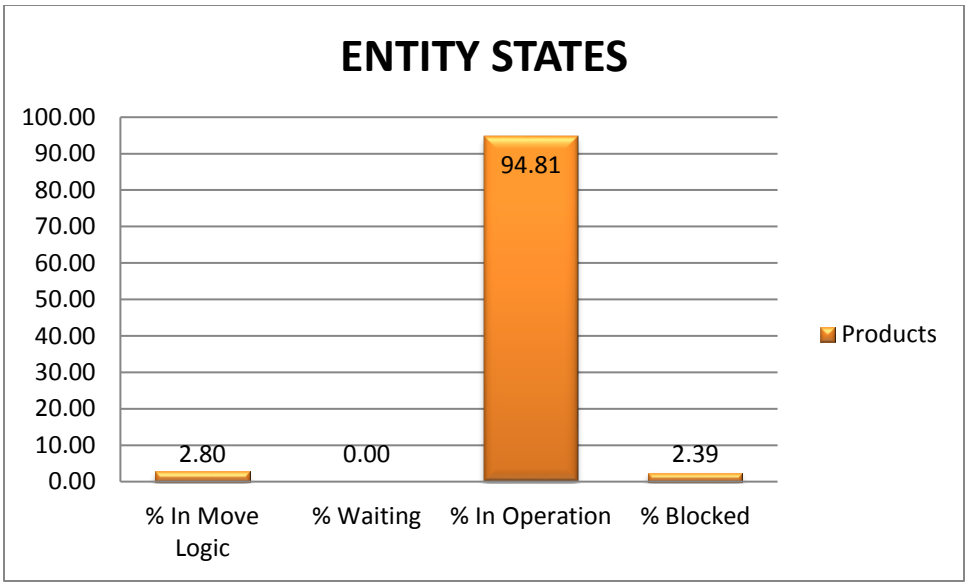
Graph 60 – F Meat Industry – Recommendations -> Resources

The graph below shows the activity of workers during the scheduled time. In the 40 hours, 36.08% of time, an average employee will be working in machinery, 44.96% of time will be spent to travel to function and 18.96% of time, this person will be idle, or waiting for another entity to take in process or location.

This model doesn't have any failed arrivals, because our focus is to reduce the cost and arrivals have a higher cost in industry.

The entity activity for this model is: Total final products are 1100units, current in system quantity is 100, average in system time is 187.88min, and average in move logistic time is 5.26 min, while the average in operation time is 178.14min.

Based on these results the entity activity is well performing, but in the future we need to make some additional changes in order to decrease us automatically increase move logic elements and blocked material.

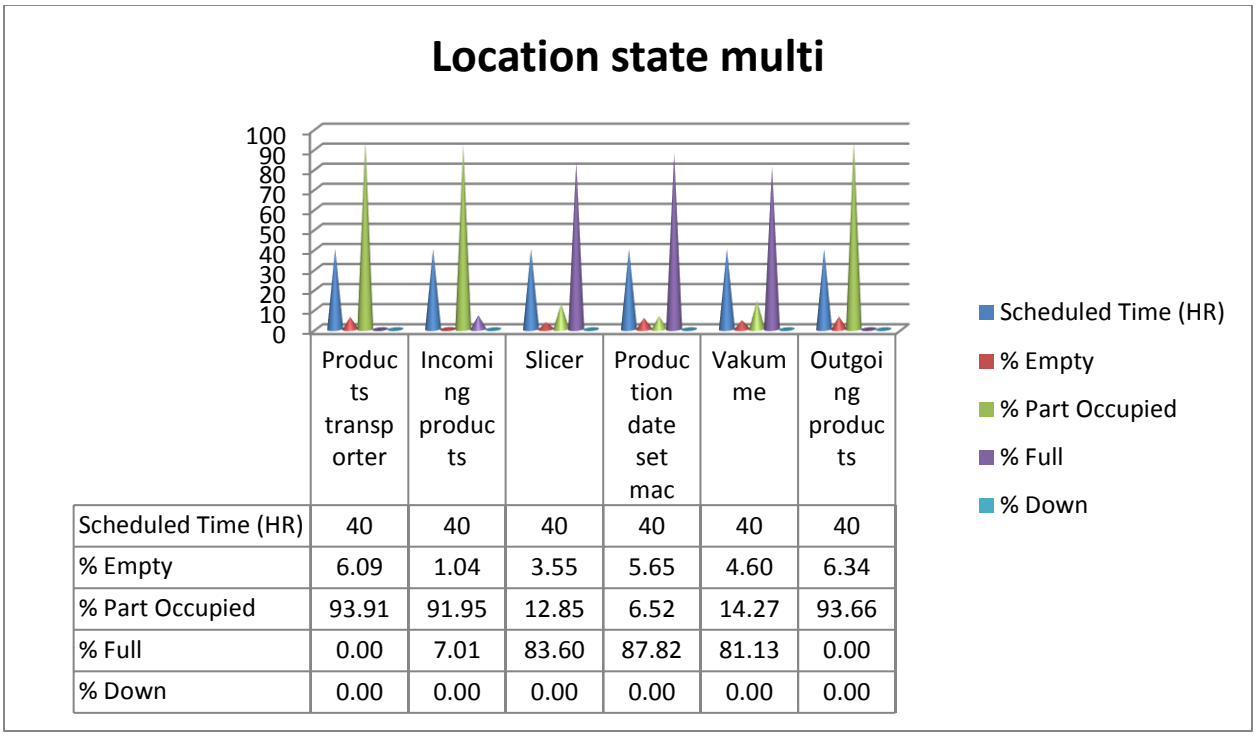


Graph 61 – F Meat Industry – Recommendations -> Entity states

Based on these results the entity activity is well performing, but in the future we need to make some additional changes in order to decrease us automatically increase move logic elements and blocked material.

L meat industry - Findings

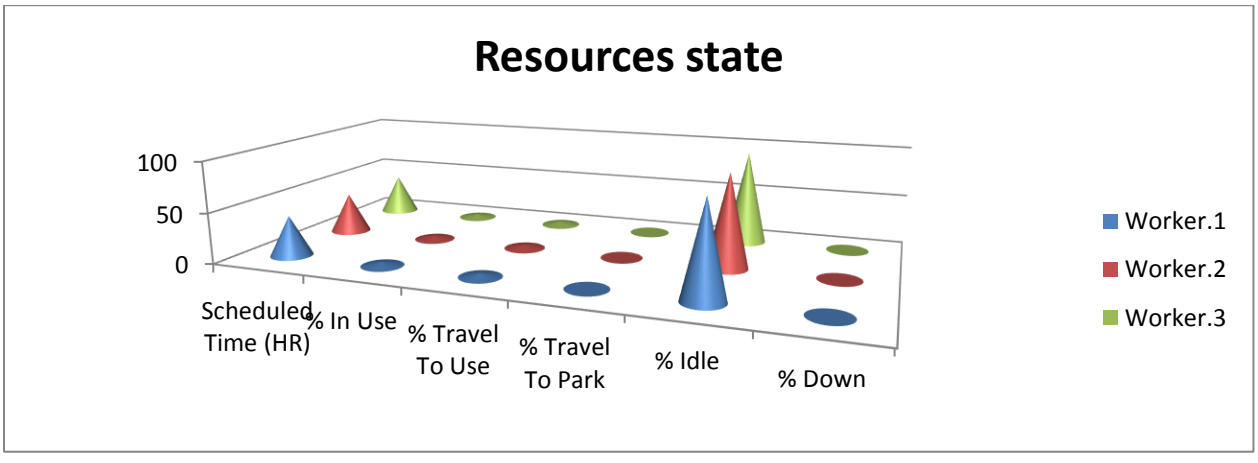
MI L is a factory positioned in an ecological area, with considerable investment aimed at creating an infrastructure appropriate for meat processing. Since our focus was only in packaging departments, upon an analysis of the department, we saw that along with a well-thought investment process, the company has also analysed capacities and has also framed the machinery in pursuit of the technological processes, which is not really present in other MIs analysed.



	Products transporter	Incoming products	Slicer	Production date set mac	Vakumme	Outgoing products
Scheduled Time (HR)	40	40	40	40	40	40
% Empty	6.09	1.04	3.55	5.65	4.60	6.34
% Part Occupied	93.91	91.95	12.85	6.52	14.27	93.66
% Full	0.00	7.01	83.60	87.82	81.13	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

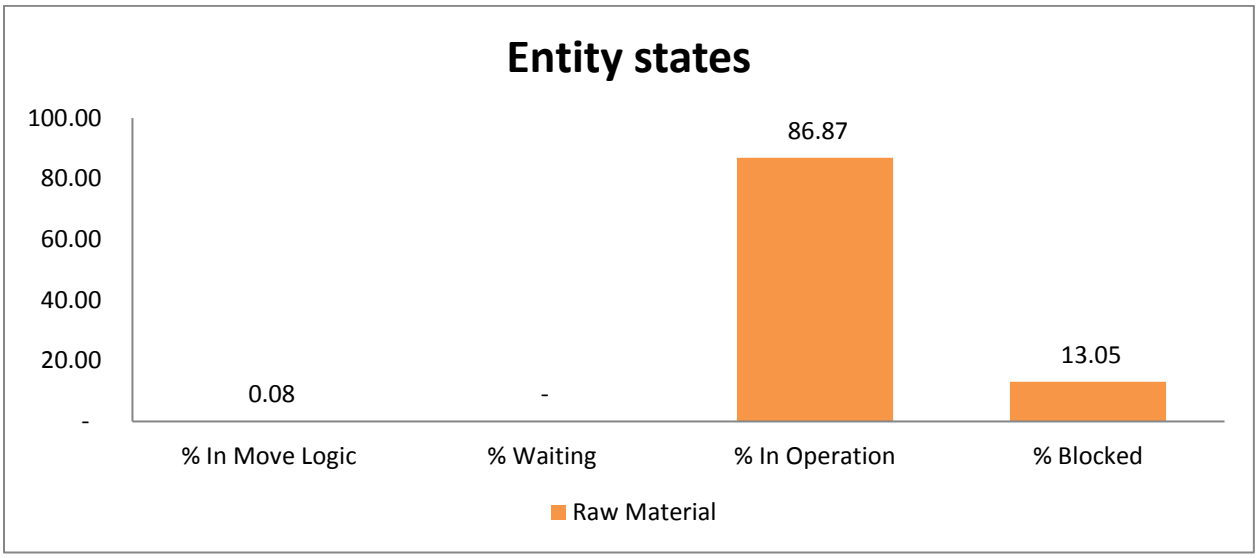
Graph 62 – L Meat Industry – Findings -> Locations state multi

Based on the data, one can see that the MI equipment is utilized at over 90% of total capacity, and depending on needs, such capacities change in a serial order. If one analyses individual devices, we can see that the vacuuming device is used for 89.20%, the production date set machine has a utilization rate of 92.91%, the slicer is used for 94.91%, while the incoming products 90.80%. These utilization rates are satisfactory and precisely meet the demands of the company.



Graph 63 – L Meat Industry – Findings -> Resources state

In our analysis of human resources, we found that the company has some problems in utilizing staff, and based on the data recorded, the staff is in minimal rates of utilization. 3 employees are utilized for less than 10% of time in the manufacturing process. This discrepancy is causing undue fixed costs for the company, though it is their strategy to have at least 3 employees in this condition of packaging department. It is clear that the company has no difficulties in transporting or storing products. This is a great advantage to the company.



Graph 64 – L Meat Industry – Findings -> Entity states

In terms of raw matter, it is clear that the in the production process, raw matter is at 86.87% of time in processing, while blocked for 13.05% of time. If one engages in a thorough analysis, we can see that the raw matter is in operation for 37% of time, and 42% of time in the system.

L meat industry – Recommendations

Our recommendations for the MI L are of a technical nature, having in mind that the MI currently faces with limited capacities of raw matter supply, which also causes blockages in products, which in our analysis appears to be over 13%.The small number of products in the production process, and duration of processing and packaging times are key challenges for the MI. On the other hand, large operational expenditure does influence their profits, however, should the company aspire future expansion, current salary costs for the staff should be transferred as an opportunity and as an investment, since the staff is already trained and enjoys some stability, however, with increased processing; there are more challenges and more

opportunities. The MI L must necessarily invests in building infrastructure, since the current state does not allow for any expansion of activity. Converting from the analogue system this MI utilizes into a digital system will be the key challenge the MI will have to confront in the near future.

K meat industry - Findings

Based on our findings at K meat processing industry, they utilize incoming products 75.66%, slicing at 86.09%, production date set machine at 92.19%, slicer at 86.09%, product transporter 3.43 and outgoing products 0.01.

Based on K production model, their machinery is only partly occupied. In this case, for example, the slicing machine is using only 73.87% of time and 24.45% is partly occupied. In a better situation is the production date set machine. This equipment is 86.68% full occupied, 9.10% is part occupied and only 4.22% empty.

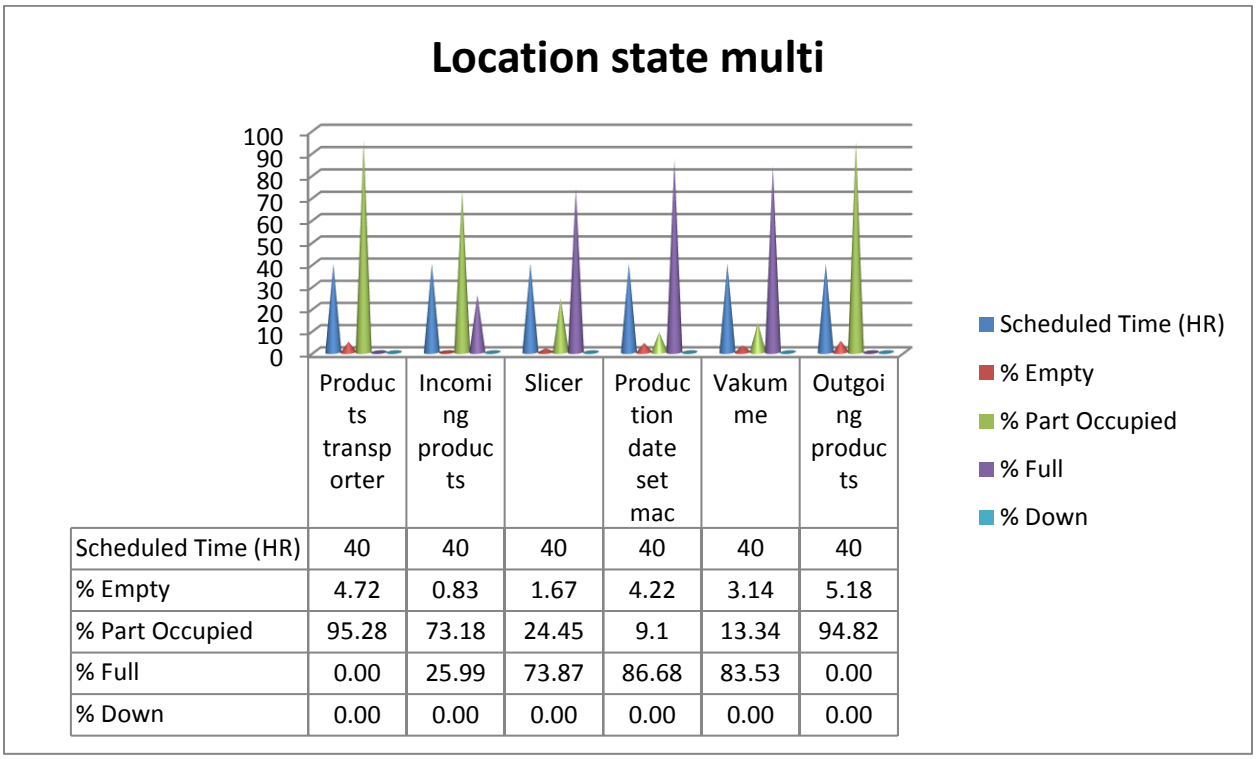
The vacuum equipment is 83.53% fully occupied, 13.34% partly occupied and 3.14% empty. During the scheduled time, the product transporter is 4.72% empty and 95.28% partly occupied. This means that logical movement is not well managed, and in this case the company is paying a price by increasing production cost with this mistake.

The company had employed 3 workers in this department, and based on productivity one can say that they are more than 90% idle during scheduled time. Maybe this situation is due to the fact that company is investing in equipment, and at this time they would not like to fire anyone. However, the problem remains; the company is not utilizing its resources.
The K MI model doesn’t seem to have problems with arrivals. Based on the Pro Model report, the company doesn’t have any failed arrivals and this is a great competitive advantage in this model. The main problem seems to be proper management of actual resources. Utilization of innovative technology costs money and time. In these terms, the company had made very good investments in the meat processing industry, so all the company needs is a good managing model.

Based on scheduled time, now the K meat industry has a total of 146 units of final product, average in system time is 43%, the average blocked time is 18%, and average in operation time is 25%.

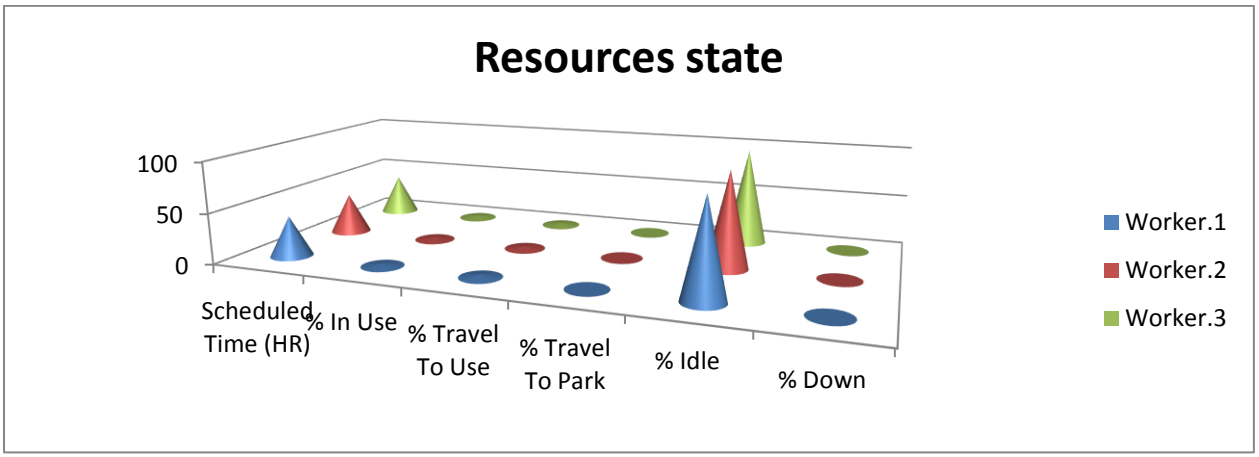
These results show that the entities are not performing very highly, since the average in system time and in operation times are rather long, while the number of total exits is much lower.

The company scores these results due to small capacities of production in time. This calculation reflects into the model in terms of utilization and cost. However, if the company aims to increase productivity, it is impossible to have such results during the process, therefore it must increase productivity and capacity.

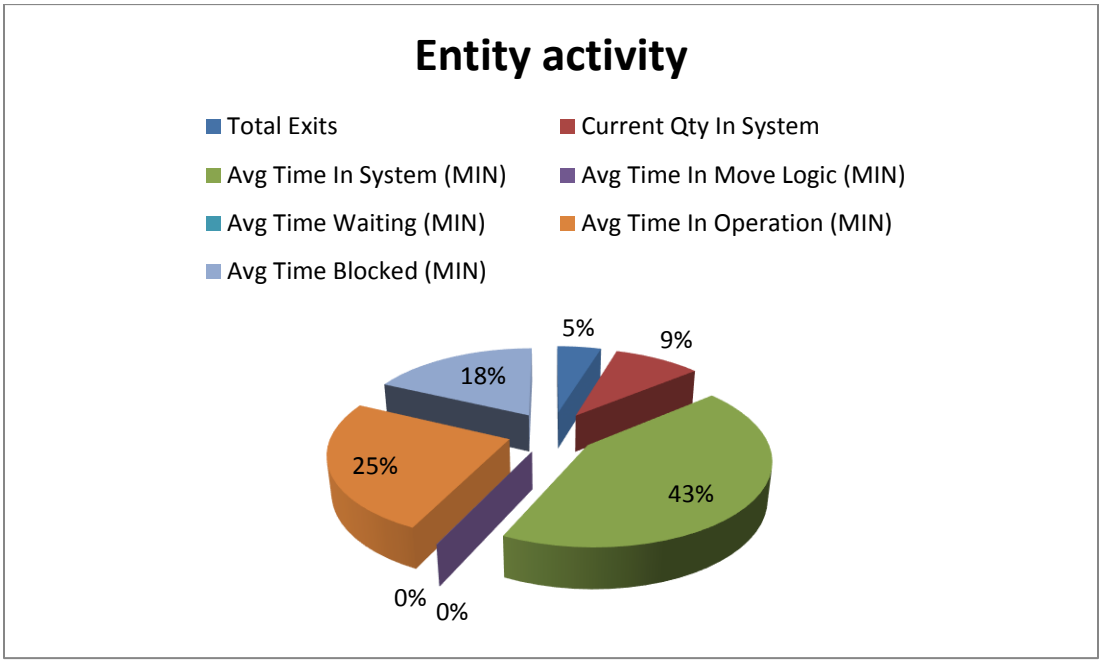


	Products transporter	Incoming products	Slicer	Production date set mac	Vakume	Outgoing products
Scheduled Time (HR)	40	40	40	40	40	40
% Empty	4.72	0.83	1.67	4.22	3.14	5.18
% Part Occupied	95.28	73.18	24.45	9.1	13.34	94.82
% Full	0.00	25.99	73.87	86.68	83.53	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

Graph 65 – K Meat Industry – Findings -> Locations state multi



Graph 66 – K Meat Industry – Findings -> Resources state



Graph 67 – K Meat Industry – Findings -> Entity activity

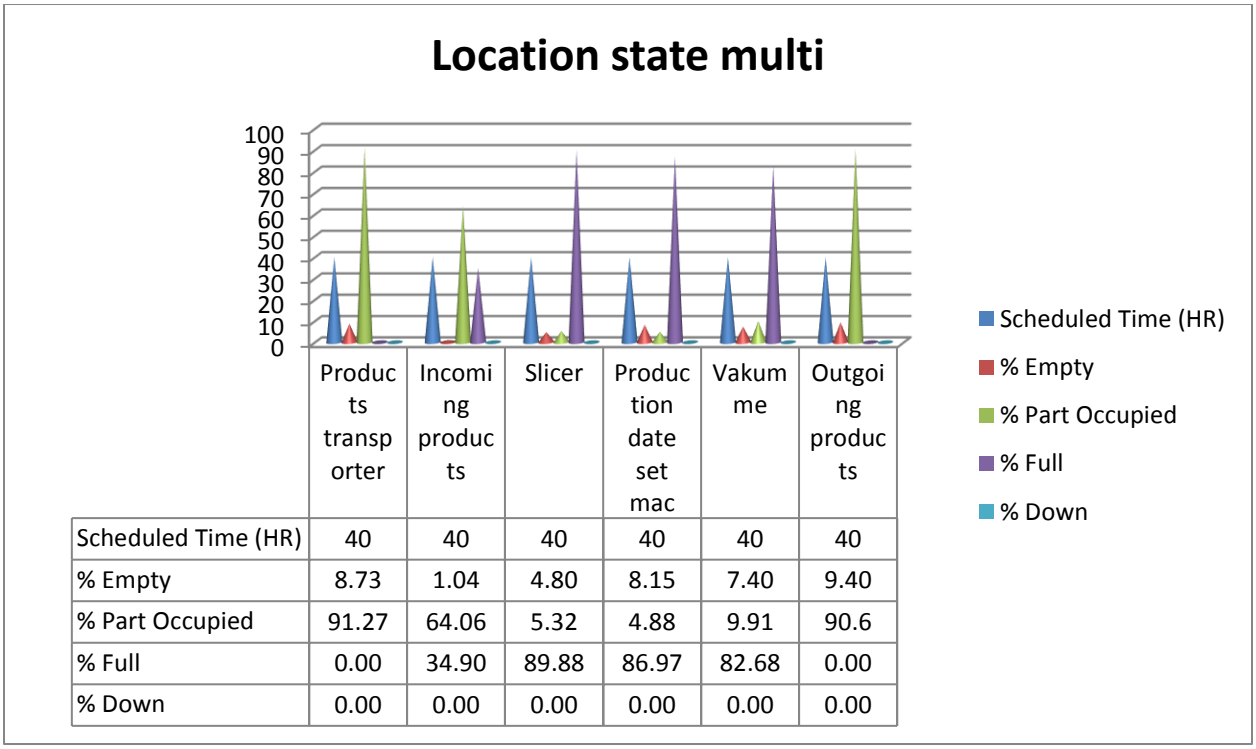
K meat industry – Recommendations

Our recommendations are of a technical and organizational nature in this MI. In organizational terms, it is clear that an immediate restructuring of the packaging department (since we analysed this department only) is required. Employees must be activated for better results and for reducing production costs. In technical terms, we believe that working premises could be reorganized,

since the devices do not pursue the production process and distances are rather large, thereby generating additional moving costs and losses in working hours.

M meat industry - Findings

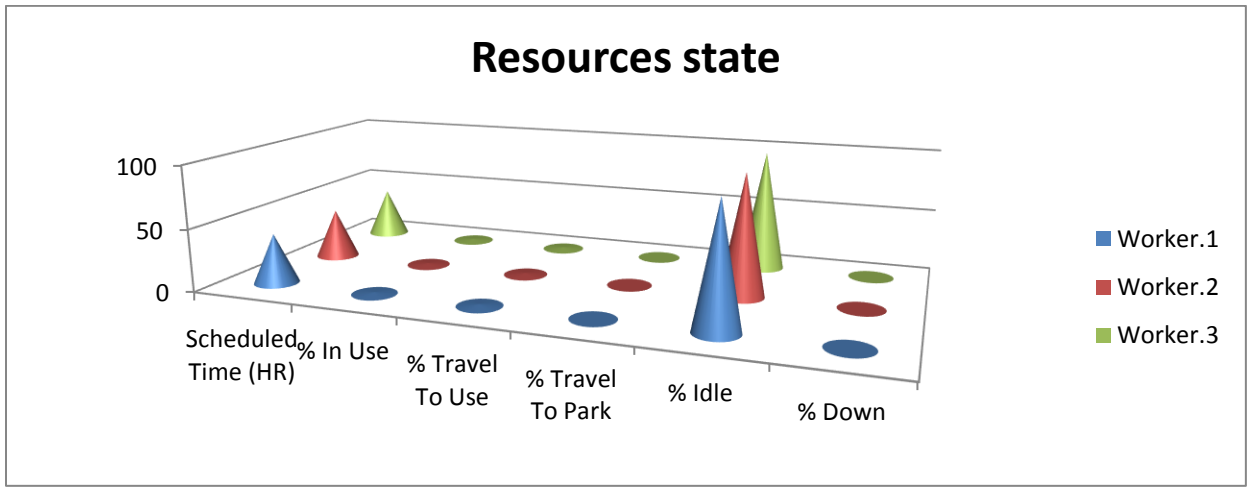
MI M is a factory placed in a rather ecological position, surrounded by amazing mountain ranges and nature, and has made considerable investments in various periods, thereby aiming for appropriate infrastructure for meat processing. Since our focus was only in packaging departments, upon an analysis of the department, we saw that along with a well-thought investment process, the company has also analysed capacities and has also framed the machinery in pursuit of the technological processes. Data show that this MI's machinery is being utilized for more than 80% of their capacities, and depending on needs, capacities vary in a serial order. If devices are analysed individually, we can see that the vacuuming device is used for 88.29%, the production date set machine has a rate of 90.60%, the Slicer is currently used at a rate of 94.50%, while the incoming products device is 95.19%. This utilization is satisfactory and precisely meets the company demands.



	Products transporter	Incoming products	Slicer	Production date set mac	Vakume	Outgoing products
Scheduled Time (HR)	40	40	40	40	40	40
% Empty	8.73	1.04	4.80	8.15	7.40	9.40
% Part Occupied	91.27	64.06	5.32	4.88	9.91	90.6
% Full	0.00	34.90	89.88	86.97	82.68	0.00
% Down	0.00	0.00	0.00	0.00	0.00	0.00

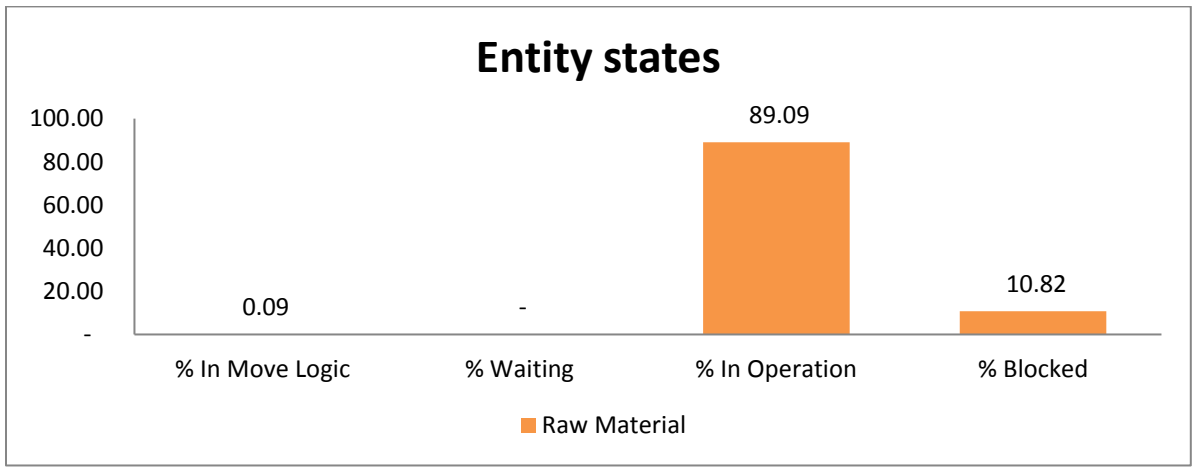
Graph 68 – M Meat Industry – Findings -> Locations state multi

In our analysis of human resources, we found that the company has some problems in utilizing staff, and based on the data recorded, the staff is in minimal rates of utilization. 3 employees are utilized for less than 10% of time in the manufacturing process. This discrepancy is causing undue fixed costs for the company, though it is their strategy to have at least 3 employees in this condition of packaging department. It is clear that the company has no difficulties in transporting or storing products. This is a great advantage to the company.



Graph 69 – M Meat Industry – Findings -> Resources state

In terms of raw matter, it is clear that the in the production process, raw matter is at 89.09% of time in processing, while blocked for 10.82% of time. If one engages in a thorough analysis, we can see that the raw matter is in operation for 42% of time, and 47% of time in the system



Graph 70 – M Meat Industry – Findings -> Entity states

M meat industry – Recommendations

Our recommendations for MI M are of a technical nature, having in mind that this MI directly faces with limited vacuuming capacities, and a rather concentrated market. The small number of products in the manufacturing process, and duration of processing and packaging processes are amongst key challenges for the MI. on the other hand, large operational costs do affect their profits, but if the aim of the company is further expansion, then current staff salary costs are to be transferred as opportunities and investment, since the staff is already trained and enjoys some stability. However, with greater processing, there shall be larger challenges and opportunities. MI M must necessarily invest in building infrastructure, and in at least 4 devices in the packaging premises, to eliminate bottlenecks. Converting from the semi-analogous system currently in use by the MI into a digital system shall be a key challenge for the MI in the near future.