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INTEGRATING BUSINESS INTELLIGENCE IN STATE ADMINISTRATIVE STRUCTURES FOR STIMULATING INNOVATIVE CLUSTERS

Case
study

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JEL Classification

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Abstract

Business intelligence and knowledge management seems to gain the attention of the society regarding the benefits that brings to it when this two domains are considered as a whole. The advantage of using business intelligence in order to take decisions and bring innovation to the business, are convincing more and more entrepreneurs to implement this solution. The challenge in managing and using the knowledge that the business intelligence offers to the business, comes with the integration of the information with state administrative structures datas that have to be available to business clusters in order to improve their decisional process. In our paper, we demonstrate the benefits of using business intelligence in Romanian state administrative structures underlying the way that this adoption would support the activity of innovative and creative clusters.

Introduction

Innovation is the main catalizator of the progress, and both are the key of economic and social development. In the Information Age, the states have to be efficient in order to develop themselves and survive. Regardless of the nature of the innovation (technological, commercial or strategic) the scanning activity is to identify the way to reach this major goal, both by the companies and public authorities.

Also, while many organizations are still immersed in the Information Age where the linear, process-oriented work is being automated or shipped overseas, another age is foreseeing. This is the Integral Age, where the approach to productivity have a focus on “redesign rather than fine-tuning, on transformation rather than reformation or renewal, and on open, flow-state dynamical systems rather than closed-in, boxed-in, and rigid, final-state models and methodologies”, as Beck D. E. sustain in *Human Capacities in the Integral Age*. This next phase for business is one that competes on innovation.

Through it's mechanism created to give whole picture of the processes of an enterprise in order to analyze them and take proper decisions, Business Intelligence (BI) is the top-most priority of many chief information officers as an instrument in creating business effectiveness and innovation that achieve their strategic initiatives. More than that, there is a growing need among state administrative structures around the world in order to revitalize their activity and their delivery of service to business and citizens.

On the other side, an important feature of innovation is that this development catalyst is increasingly organized under innovative clusters. This because, this form of grouping under the same umbrella of interconnected businesses, associated institutions, suppliers, catalizators and other stakeholders with common interests, is capable to create a dynamic growth, with a greater impact in the society, rather than an individual focused on innovation. So in Romania, there are three main innovative clusters that are meant to create value into the society. Their activity have to be hardly sustained from all the levels, because their impact can be unexpectedly good.

In the next sessions, we present previous work on this subject, with an overview on the benefits that implementing BI in Romanian administrative structures would bring for sustaining the activity of innovative clusters and thus, the development of the society. For argue our paper, we present a case study based on data obtained from a BI tool, the way they can be transformed into information for giving valuable input to the innovative clusters and also they can benefit from them to develop their business. In the last part of the paper we bring some concluding notes in order to resume the work.

Business Intelligence in State Administrative Structures

Business Intelligence (BI) “combines products, technology, and methods to organize key information that management needs to improve profit and performance” (Williams & Williams, 2007). For this, BI is composed by two key elements that are business information and business analyses considered in the context of business. These, lead to decisions and actions of the business that adopt them and conduct to an improved business performance result. In other words, BI is not a single product, a technology or a methodology, it is a mechanism composed by these elements in order to offer information assets to the enterprise that make decisions to improve business processes.

According to Muntean et al., (2014), Business Intelligence approaches are subordinated to Performance Management. In order to have a successful BI, there must be assure a specific framework based on technologies, tools and systems. One of the most important factor that influences BI is key performance indicator (KPI).

Business intelligence integrates business analysis, companies reporting and performance management.

For enterprises, the main goal is to increase revenues and/or reduce costs, improving performance and increasing profits. On the other side, the public sector primary focus is service to citizens, coping with budget constraints and using resources wisely in support of the agency's mission. Also, in many countries there is a need to revitalize state administrative structures to facilitate customer centered, cost-efficient, and user-friendly delivery of services to citizens and businesses (Gnanet al., 2013; Gupta et al., 2008). Figure 1. illustrate this concept.

In developed countries like Poland, business intelligence is implemented on state administrative structure, being present on all functional areas (Ziemba&Obł k,2014). Business intelligence is improving the capacity of government to adapt to market conditions and to be better prepared in this smart environment.

In the last years, many countries around the identified the need to revive the public administrations to improve and facilitate their services. For this, governments decided to introduce innovation in their structures, processes and services, also in their activity management. A concluding example for this is Italy where Information System Consortium Piemonte (CSI Piemonte) has promoted innovation in public sector since 1977 as a provider of BI and IT platforms. In 1980 they implemented SAS, a BI analysis tool, in public administration. In this way, they built a substantial information asset (850 databases, 500

collections of information, about 20,000 tables) which has been organized in sectoral data marts including historical and integrated information from different domains of activities like tourism, health, agriculture, environment, cultural heritage, demography, justice and others, in order to “to support projects in a wide variety of areas” (Miller et al., 2006).

In Romania, there are no public institutions that implemented BI. Only few of them use reposts implemented in BI by external providers, but the level of extracting real information analyzing the data, and integrating different domains in order to create value to other institutions and businesses is an unsatisfied need for our society and a real opportunity for development.

Innovative Clusters

All around the world, the endogenous growth sources are directed towards intellectual capital, knowledge management and human creative potential. In literature review is using a more diversified terminology, which includes also specific approaches of knowledge economy and the last trends of creative economy and creative-innovative clusters.

The business environment is adapting continuously, creating the prerequisite to attract the intellectual capital, in order to improve the creative-innovative potential, especially in cluster, but also at regional or sectoral level. On this line, smart and creative cluster are a good example of stakeholders that interact and create a network for enhance their performance on short and long term. Clusters support the start-up process and new business ideas, which contribute to competitiveness increasing.

In limited situations, sectoral clusters could help businesses to develop, through: costs reduction, innovation opportunities and efficient using of local resources. The most important objective for cluster implementation in business is to create and develop on short and long term the competitive and sustainable advantage, contributing in so to competitiveness, productivity and profitability increasing. Using the creative-innovative potential, in the third stage of competitive development, named by Michael Porter in the last *Global Reports for Competitiveness* launched by *Global Competitiveness Forum*, “innovation stage” in innovative clusters could increase the number of employees and could create new business opportunities (2011). Michael Porter and his followers as Michael Best are known because of his concept of “clusters’ dynamics”, considers that common use of knowledge, technologies, resources and institutions, that could give a value added and significant advantage special to the sectoral activity of clusters. This fact is based on the complementarity principle at cluster formation.

According to Romanian legislation (*Impact Program*, 2006), clusters reflect a group of manufacturers, users and beneficiaries, that are reunite to the purpose of applying good practices from European Union for the competitiveness increasing.

Regarding international experience there is a large diversity. Thus, regarding the density of clusters’ distribution, made by research institutes from USA, it observed that the number and density of clusters is different in USA than Europe. In European Union prevails small clusters, less dense, relatively dispersed. This fact could determine a reduction of success rates associated to clusters.

The investigation made by now in literature review, allows us to consider that creative, innovative and smart clusters’ model appear to be the most better developed in United Kingdom. Besides, Bridget Rosewell (2011) identifies four principal domains as center of innovation: creative industries, goods and services based on diminished carbon emissions, advanced manufactures services and IT/technology services.

A similar model was designed in Romania in 2008, when Minister of Economy started a campaign to registered all clusters, formed a cluster association and created a formal framework for clusters’ supervision. Nowadays this association held 31 clusters with theirs companies, stakeholders, research institutes, academies, universities and public institutions. United for the same objective, clusters’ members are more performing and competitive, at national and international level, where are formed cooperation partnerships and technologic transfer. The presence of catalysts, even if there are expertise centers, consultants or incubators, all of these help the information transferring.

According to Clusters Associations from Romania, the “*Four Leaves Clover*” modelis formed by companies, research institutes and universities, public institutions and catalysts, and has already success. For instance:

- “Dacia-Renault Cluster” automotive industry, with 31 members
- “Pro Wood Cluster”, furniture industry, 29 members.

In October 2012 at Bucharest had been place a conference on “Innovation Cluster Days”, where it were present cluster representatives, European Commission members, World Bank members, delegates of public institutions, universities and research centers. The main objective was ideas and experience changing between clusters.

In the paper of Steven Casper (2007) from *Keck Graduate Institute of Claremont* was analyzing the employees mobility and the implication on know-how, knowledge transfer in order to stimulate innovation. Also, he marked three important

characteristics of technologic clusters: the network effect, heterogeneity, market orientation.

The innovation report “*Mosaic L3C*” by Biggers et al., in 2012, develop the idea of business incubator that ensure an innovative framework based on ITC applying. The relevant aspects are referring at entrepreneurial support, technological support, concentration on key sectors, international linkages for clusters, competitive, creative and innovative environment. Through cluster creation and development, the ideas and experience changing, stimulate the creativity of clusters (Varney, 2007; Dingli, 2007).

In the paper “Steve Jobs – innovation Secrets” (Gallo, 2011), it is presented the companies role in other manner. The organizations must encourage their employees to act like a entrepreneurs. This companies affirmed Jobs, gave time to their employees to follow their passions and also encourage them to assume risks.

According to Edward de Bono (2010), the innovations came from anticipative thinking, because it represents the progress source. From the same hypothesis starts Tom Peters (2010) who consider innovations as a competitive advantage. The challenges launched by Clusnet – Final Report (Lindqvist, G. 2011,), are to reunite every important domains in a synergetic and integrated framework. The purpose of this action is to make an attractive region, visible at international level. Michael Porter et al. demonstrates in his paper “*Clusters, Convergence, and Economic Performance*” (2011), that cities based on industrial clusters lead to new industries, because of the region convergence. In doing so, Porter sustains cluster formation.

Case Study

As shown in our paper, we consider the need of BI implementation in our Public Sector, a valuable source of generating information that can be wisely used by innovation catalysts, represented in Romania, mainly by the innovative clusters.

For this, we took in consideration the waste report from the food area. This report contains data collected this year, because the project of implementing BI in environmental administration started this year. For this reason, we assume that data are incomplete, only 39% of the Romanian districts reported data, and these can be incomplete. Moreover, there are major discrepancies between regions regarding their development stage. The national policies for development should sustain inter-regional cooperation and permanent transfer of information and technology, which facilitate the reduction of differences between the stages of development.

From available data we observed that from the total waste quantity reported 12% was removed, 2% was stored and 86% was capitalized, as shown in Figure

2. This seems to be a positive image, but if we extrapolate to the entire country considering our available data, we would observe a percentage of 31% removed waste. More than that, stored waste represent an important aspect for us, this meaning that removed and stored waste can be capitalized reused in other innovative businesses.

The public authorities could interfere and prevent the risks of innovative clusters, by offering stimulants and special taxation to those companies that invest recycling.

To provide a more concrete view, we considered two categories of waste: *other wastes unspecified*, which offer a positive image (Fig. 3) and *waste preparation mixture before thermal processing*, which offer a negative image (Fig. 4).

We choose these indicators mostly because they are calculated for each region and it is more easily to make comparisons between them. Another aspect is their values. As the graphics show the indicator “other wastes unspecified” is well capitalized.

In Figure 3, we can see that 99% of waste in the category “other wastes unspecified” was capitalized and only 1% being stored. The proportion is in favor of the capitalization.

In Figure 4, we can see that total amount of waste in the category “waste preparation mixture before thermal processing” was removed, meaning that this source of reutilization was untapped.

More exactly, companies did not invest in capitalization and did not make any efforts to stored this waste preparation mixture.

Even if we consider the image that category “other wastes unspecified” offer to us, a positive one, we can offer a counterexample observer on vegetable waste. As shown in the following figure (Fig. 5) 92% of vegetable waste was capitalized and only 8% removed. But taking in consideration the way of capitalizing, we observed that the entire amount of capitalized waste was given to different salubrity companies. This means that even the waste was capitalized, this does not means that it was reused to produce another product.

For this, we consider that encouraging the extraction and correlation of different data, can create important input for innovation, that the agents that are interested in exploring new opportunities for creating new products can benefit from this and contribute to the develop of the industry.

Conclusions

In order to improve the sustainability and increase the productivity, governments and economic agents should invest in resources’ wasting and sustain the innovation.

Our paper stands for innovation in the Romanian Administrative Structures through implementation of Business Intelligence, in order to detect areas of development and give the right input to sustain the

activity of innovative clusters. In this way, the enterprises that are included into these clusters, can develop their activities, innovate them and drive economic and social development.

Clusters sustain the development of its members, contributing to diminishing the entrance costs, to diminishing the transactional costs, stimulating interaction and collaboration between companies, identifying innovation and development opportunities.

Moreover, companies could use local resources with the purpose to develop itself more rapidly and in an efficient and intelligent manner, for maintaining the competitive advantage for long run. Thus, through the changes in business environment, in resources mobility, through knowledge transfer, through synergies that exist between industries and networks, innovation contributes to the productivity increasing and improving the quality of life.

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Figures

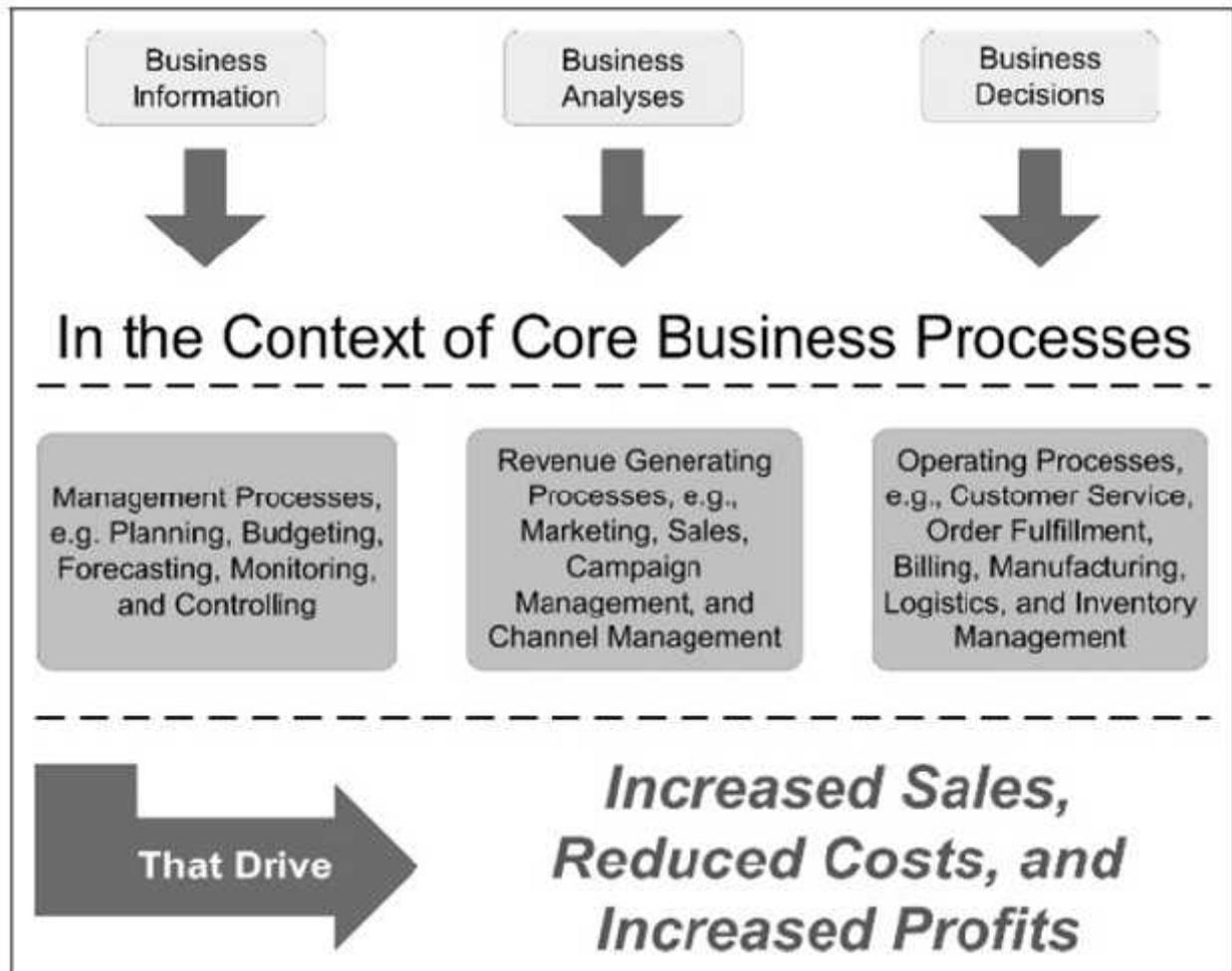


Fig 1. - What BI means in practice [17]

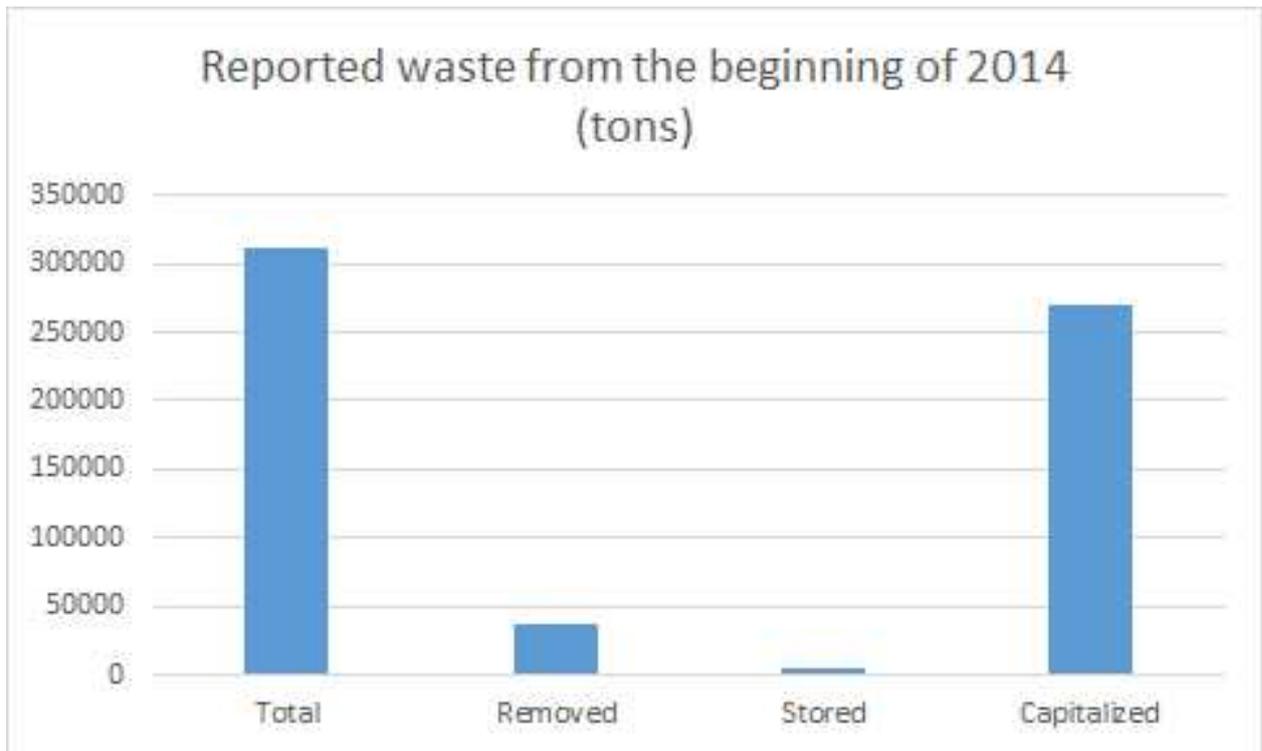


Figure 2 - Total reported waste in 2014 (tons)



Figure 3 - Other wastes unspecified (tons)

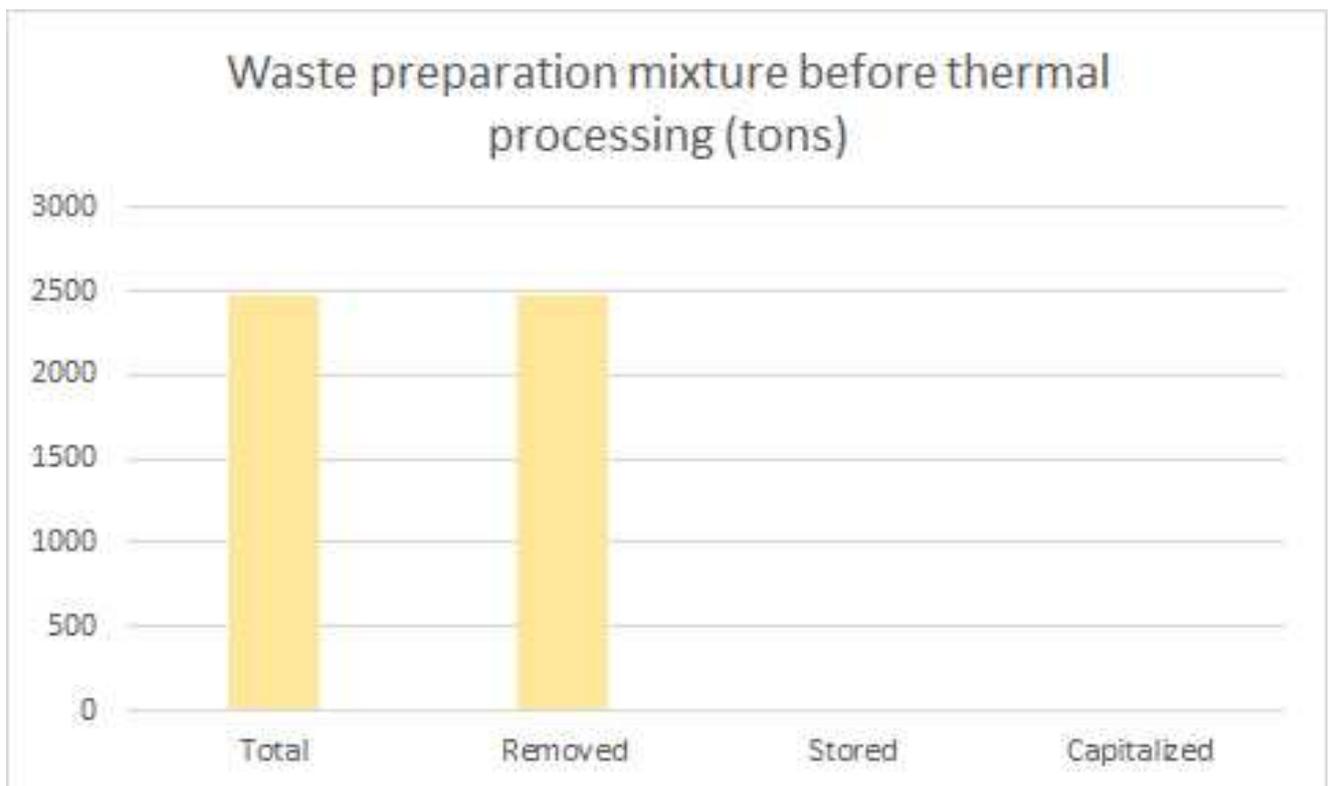


Figure 4 - waste preparation mixture before thermal processing (tons)



Figure 5 - Vegetable waste (tons)

