

EDITORIAL BOARD

Publisher

Prof. dr. Cristian Niculescu (NICULESCU Publishing House)

Editor-in-Chief

Prof. dr. habil. Sorin Ionescu – University POLITEHNICA of Bucharest, Romania

Deputy Chief Editor

Prof. dr. Gheorghe Militaru – University POLITEHNICA of Bucharest, Romania

Senior Editors

Prof. dr. Anca Alexandra Purcărea – University POLITEHNICA of Bucharest, Romania

Prof. dr. Cezar Scarlat – University POLITEHNICA of Bucharest, Romania

Prof. dr. Florin Dănălache – University POLITEHNICA of Bucharest, Romania

Editors

Acad. Florin Filip – Romanian Academy of Sciences

Prof. dr. Radu Stanciu – University POLITEHNICA of Bucharest, Romania

Prof. dr. Dimitris Karagiannis – University of Vienna, Austria

Prof. dr. Viorel Lefter – Academy of Economic Sciences, Bucharest, Romania

Prof. dr. Peter Doucek – University of Economics, Prague, Czech Republic

Prof. dr. Sergio Alessandrini – Università di Modena e Reggio Emilia, Italy

Prof. dr. Adrian Gheorghe – Old Dominion University, USA

Prof. dr. Rolf Becks – Technical University of Darmstadt, Germany

Prof. dr. Mięczyślaw Lech Owoc – University of Economics, Wrocław, Poland

Prof. dr. Bistra Vassileva – University of Economics, Varna, Bulgaria

Prof. dr. Doina Banciu – National Institute for Research and Development in Informatics, Romania

Prof. dr. Anabela Mesquita – Polytechnic Institute of Porto, Portugal

Prof. dr. Ludwig Kreitz – Robert Schuman University, Strasbourg, France

Prof. dr. Nicolae Vasile – Valahia University of Târgoviște, Romania

Dr. eng. Gheorghe Gheorghe – National Institute of Research and Development in Mechatronics and Measurement Technique (INCDMTM), Romania

Dr. eng. Paul Pencioiu – ICPE SA, Romania

Dr. ec. Vasilica Ciucă – National Scientific Research Institute for Labour and Social Protection, Romania

Assistant Editor

Assoc. Prof. dr. Dana Corina Deselnicu – University POLITEHNICA of Bucharest, Romania

Junior Editor & Web Editor

Lecturer dr. Dan Dumitriu – University POLITEHNICA of Bucharest, Romania

Editorial Team

Lecturer dr. Bogdan Țigănoaia – University POLITEHNICA of Bucharest, Romania

As. drd. Bogdan Fleacă – University POLITEHNICA of Bucharest, Romania

As. drd. Alexandra Ioanid – University POLITEHNICA of Bucharest, Romania

NICULESCU Publishing House

Marian Năpristoc – Editorial Director

Șerban-Alexandru Popină – DTP

ISSN 2344-4088

ISSN-L 2344-4088

Address: 6D Regiei Blvd.

060204 – București, România

Tel: (+40)21-312.97.82

Fax: (+40)21-312.97.83

E-mail: editura@niculescu.ro

Internet: www.niculescu.ro



CONTENTS

Client is the King	3
Cezar Scarlat	
Non-Governmental Organizations and Communities' Protection	5
Santiago Costa Arranz, Paula Monica Dănalache	
The Culture of Sustainability	23
Beatrice Leuştean	
Cloud ERP Implementation	31
Nicoleta Căruţaşu, George Căruţaşu	
Customer Satisfaction in the Automotive Industry	44
Agnieszka Misztal, Iuliana Grecu, Nadia Belu	
New Technologies and Private Life	58
Marc Richevaux, Doina Corina Şerban	
Effect of Employees' Loyalty	67
Alexandra Ioanid, Florin Dănalache, Olivia Doina Negoită	

Client is the King

About two decades ago, when East-European students from already collapsed ex-communist countries (and Romanians among them) started to knock at the doors of prestigious MBA schools – ultimately successfully, some of them had the chance to attend lectures of world-famous professors; and yet some were surprised to hear the thunder-voice of a marketing professor proclaiming: *Client is the King!*

Managers and entrepreneurs from emerging economies were equally confused and have learnt by doing, trial-and-error mostly, that their firms can increase sales and profitability by focusing on clients' needs, oscillating between consumers' leagues, professional and businesspeople associations, sometimes wondering if they should polish the client's shoes in the name of consumer rights ...

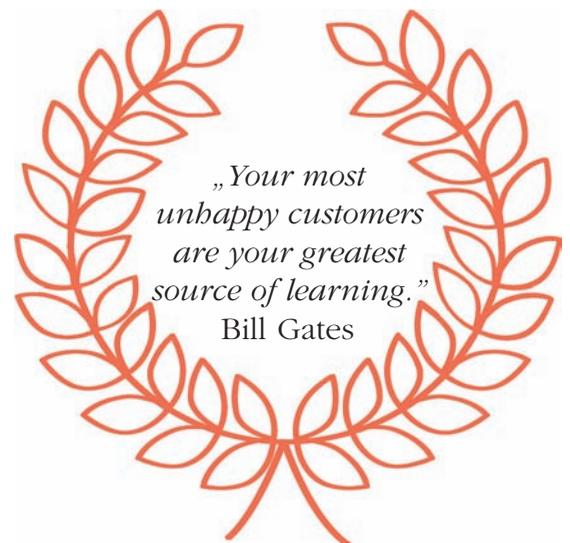
The time flew by busy businesspeople, letting only the scholars and some practitioners to reflect and acknowledge that fierce competition of the market economy has evolved from wild to regulate – and, sometimes, sophisticated competition – featuring more or less neat characteristics of what they would eventually call: price-based competition, technology-based competition, quality-based competition, time-to-delivery-based competition.

We live today in the world of cloud technology; face the challenges of security in the cyberspace; e-commerce and m-payment are more and more visible in the globalized market [is it really?]; and still the companies compete for clients, amid the evolution of the concept and understanding of what competition really means.

Regardless of academia frontrunners' and management gurus' opinions, the businesspeople have realized that paying attention to clients' needs and providing quick answer [i.e. product] to those needs are the key in order to increase their clientele.

The next lesson the businesspeople have learnt (although some of them still have to learn) is that the first method to increase their client base is ... to keep (retain) the clients they have already had! This is basically *client retention*.

Around and from this point on, a whole bunch of concept-centered related theories have emerged: customer satisfaction, customer delight, customer loyalty,





customer lifespan, customer service, customer attrition (customer defection also known as customer turnover). Even newer strategic approaches (as client retention strategies) or indicators (as client retention rate) have become familiar to management practitioners.

Early this decade, standardization of customer service enjoyed significant popularity. Aiming at increasing the customer lifespan, The International Customer Service Institute (TICSI) has released TISSE 2012 (The International Standard for Service Excellence, 2012) which enables organizations to focus their attention on delivering excellence in the management of customer service; the customer satisfaction increases by using Service Quality Model – based on 5 Ps (Policy, Processes, People, Premises, Product) and performance measurement. The implemen-

tation of a customer service standard ultimately leads to higher levels of customer satisfaction and, implicitly, higher customer loyalty and customer retention.

And client retention efforts do not stop here. In conjunction with information technology and software development, growing number of firms can increase their client retention rate by focusing on managing customer relationships (co called Customer Relationship Management, CRM). Actually, besides CRM, customer retention is considered an outcome of several factors (customer satisfaction, customer delight, customer switching cost).

Beyond any doubt, the client is not a king at all; the client should be a reliable, long-term business partner, sharing advantages with all trading partners in this more and more complex, problematic but exciting world.

*Cezar Scarlat
Senior Editor*



Non-Governmental Organizations and Communities' Protection

Santiago Costa Arranz (1), Paula Monica Dănalache (2)

(1) University of Barcelona, Spain, (2) University UNED, Madrid, Spain

Abstract

The purpose of this article is to advance in the analysis of new forms of public management through the participation of the Non-Governmental Organizations (NGO) in regard to what we call crisis or emergency. New managerial approach of emergency situations has been incorporating new policies based on cooperation between Governmental organizations and NGO. In this context we will discover how this new situation affects the management of emergencies, either in its preventive and reactive dimension. We will use the analysis of those emergencies that are caused by risks provoked by human activity (accidents, fires, etc) and / or natural (floods, heavy snowfall, etc), and the connections between actors who have to manage emergencies in both its institutional dimension and its operational dimension. We also delve into the analysis of communication and information provided to the public. In conclusion we will make proposals on how to achieve improved emergency management by NGO participation.

Keywords: public management, Non-Governmental Organizations, emergency, risks, improved emergency management

Introduction

Emergency Management seeks to promote safer, less vulnerable communities with the capacity to cope with hazards and disasters and protects communities by coordinating and integrating all activities necessary to build, sustain, and improve the capability to mitigate against, prepare for, respond to, and recover from threatened or actual natural disasters, acts of terrorism, or other man-made disasters. Many





bibliographical sources show that the Emergency management (EM) is the managerial function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters. In order to implement the principles of EM there are required specific new technologies for: take into account all hazards, all phases, all stakeholders and all impacts relevant to disasters; anticipate future disasters and take preventive and preparatory measures to build disaster-resistant and disaster-resilient communities; use sound risk management principles (hazard identification, risk analysis, and impact analysis) in assigning priorities and resources; ensure unity of effort among all levels of government and all elements of a community; create and sustain broad and sincere relationships among individuals and organizations to encourage trust, advocate a team atmosphere, build consensus, and facilitate communication; synchronize the activities of all relevant stakeholders to achieve a common purpose; use creative and innovative approaches in solving disaster challenges; value a science and knowledge-based approach based on education, training, experience, ethical practice, public stewardship and continuous improvement.

The 21st century was claimed as the digital revolution era: „We are going through

a historic transformation in the way we live, learn, work, communicate and do business (...).” Technology has produced the information age. Such terms like information age, information society and knowledge society are often used to describe the deep-seated impact of the ICT on our lives. Experts argue today that we are living a new industrial revolution more fundamental than the former.

Emergencies Management

Emergencies today are usually associated with widespread destruction of property and/or massive displacements of populations and on the other hand are also associated with increases in morbidity, mortality and the potential for disease outbreaks is usually high. All these effects require fast and well-coordinated response in order to deliver essential services to the affected population and reduce the likelihood of increase in morbidity, mortality and outbreaks. Traditionally in emergencies there has been an inappropriate tendency to place undue prominence on Governmental organizations (GO). This is partly due to the bigger resources, both financial and human, that these GOs have. Local NGOs with their limited resources but great knowledge of local situation can have as much or greater impact in terms of delivering services to displaced populations. Also emergencies tend to pose varying levels of political and security risks, and influence different actors approach emergencies in different ways, up on their political and security considerations.

According to David W. Muriuki (Aston University, 2010), NGOs have a series of strengths that make them ideal actors in emergencies and several challenges that they face in the course of doing their work.

IBM PC brought together all the desirable features of a computer in a Small single machine. It offered 16 kilobytes of user memory (expandable to 256 kilobytes), one or two floppy disks and an optional color monitor. When designing the PC, IBM contracted for the first time production of components it to companies from outside. The

chip processor It came from Intel and operating system called DOS (Disk Operating System) came a company with 32 employees came from a company with 32 employees called Microsoft. This „outsourcing” has changed whole before industry computers.

Table 1 – The strengths and challenges of the NGOs

STRENGTHS OF NGOS	<ul style="list-style-type: none"> • create public awareness – NGOs have good links with the media, have used their relationship to maintain focus on issues they consider important, encourages donors to provide support; • flexibility – most NGOs, do have the capacity to adapt rapidly to changing environments. Many partners have rules and regulations (stringent security precautions) that sometimes hinder their services delivery to populations in great need; • maneuverability – NGOs can reach many hard to reach areas and populations because these may be well endowed with air or sea transport capabilities; • ability to respond fast – NGOs have established protocols on how to respond to emergencies, be it man-made or natural disasters. They also have readily available human and capacity to rapidly mobilize them, material and financial resources for use in emergencies.
CHALLENGES OF NGOS	<ul style="list-style-type: none"> • Being ignored – host governments tend to ignore local NGOs, especially in decision making, considering NGOs reports as being non-technical. Yet because of their presence and interaction with affected populations, NGOs especially local ones are in a better place to correctly identify the needs of the affected population; • Lack of big picture – small NGOs do not usually have established connections with governments and as a result they are not aware of what is really happening on the ground in terms of the scale of destruction, number and location of displaced people and priority services that need to be offered; • Poor coordination – in emergencies situations, having a strong coordinating body is the key to the successful delivery of services to affected populations. In many instances when the work of NGOs looks haphazard, it is usually due to lack of strong central coordinating mechanism.

The rapid advance of microcomputers and requirements of communication between microcomputers greatly stimulated the development of computer network and communication systems through computer. LAN technology has developed rapidly in the second half of the 1980s Interconnection LAN has led to the rapid development of Wide Area Network (WAN) technology during the 1980s and early 1990s (Stalberg, 1994).

Computers were originally designed for the purposes of scientific calculations. However, computers are now commonplace in schools, offices and homes and are used to store, process and take enormous amounts of information to an incredible variety of purposes. Computers no longer are just calculating machines, as suggested by the name, but are also tools communications and are also able to act as video and audio players and so away.

The content processed by computers and communication underwent fundamental changes in recent 20 years. The most important roles of technology in emergency management are: to connect, inform and ultimately save the lives of those impacted by disasters; to restore connectivity to impacted areas so that governments can communicate with citizens and people can find their loved one; to enable responders to coordinate rescue missions and work efficiently from the minute they arrive in a disaster zone; to help businesses recover so communities can begin to rebuild faster; to help us analyze, track and study natural disasters, after and in between incidents so that we can always be learning and developing better solutions and prepare to save more lives (Li, 2011).

With the progressive, real-time open sharing of data during disasters, we expect to see a shift and rewiring of how disaster

response is managed. Today we have phone calls, situation reports that come a day later, and a variety of data sources we rely upon to make critical decisions.

The emergence of the computing and telecommunications technologies in the latter part of the 20th Century and the beginning of the 21st Century will dramatically transform emergency management, as it is known today. Managers, involved in emergency management, will combine new technologies' resources and utility to enhance all elements of decision making (Stalberg, 1994). Mobile wireless networks serve as the backbone for communications and offer access to a variety of resources currently only available at a very high cost and in limited situations. As a result of a greater interconnectedness of public, private, and non-profit emergency management agencies, traditional organization boundaries and separation of departments





will undergo significant change as the intelligent community is created. Resource allocation will become more efficient and the capacity to analyze more complex issues in time of crisis will be more available to decision-makers.

Technology used throughout the emergency management includes digital phones, satellite dishes, scanners, fax machines, personal computers, local and wide area network connections including the Internet, digital cameras, geo-positioning systems, geographic information systems, chemical dispersion modeling programs, digital pagers, and portable weather stations. The pace in which the technology is impacting emergency management organizations is increasing, requiring anyone involved in emergencies and disasters to learn fast and keep on learning. Mobile phone, geographic infor-

mation systems (GIS), Twitter and other technologies are increasingly being used to warn communities of potential crises and inform them how to prepare, and to help governments and aid agencies predict how emergencies may unfold. In the last years appeared the channels dedicated to community-based input, interaction, content-sharing and collaboration, known as Social media. Social media refers to online technologies and practices used to share opinions and information, promote discussion and build relationships.

The technological development of the Social Media Devices allowed, at a higher level the communication between different entities participant in various facets of an emergency, from development and early warning activities before emergency, immediate activities during an emergency,

and reconstruction efforts afterward improve dramatically. All new performances in communication made possible a strong involvement of the local NGO in all phases of an emergency.

Owing to the characteristics social media have, connectedness, participation, openness, conversation, community, this is more and more use in Emergency management. The most important benefits of Social media for Emergency management are: increase access to audiences, improve engagement with citizens, partners and stakeholders, increase the speed of public feedback and input, reach specific audiences on specific issues, reduce dependence on traditional media channels, and counter inaccurate press coverage. The advances in communication and information technologies have challenged organizations dealing with emergencies to develop new communication strategies for emergency situations. IT tools have given people more ways to seek and share information. Now, anybody with a mobile phone can broadcast information to friends, family and acquaintances. Anybody in a disaster situation can share the details instantly, and sources of information have multiplied dramatically, to such an extent that it can be difficult to make sense of the overwhelming amount of information. And for Emergencies management agencies, in a matter of seconds following a disaster, they now have access to much more information than was ever available before the advent of SM. Mainstream media were quick to appreciate the power of IT technology. Previously, before the advent of SM, when a flood affected an area, for example, residents would switch on their TVs and wait for the city council authority broadcast to tell them what to do. Now, victims are browsing their mobile phones, checking what friends and neigh-

bors are sharing about the event. In a very short time, a huge amount of information is amassed from various sources, often containing contradictory stories. What to do then? Who can they trust?

Social media can be used as a systematic emergency management tool. It can be used by emergency management communicators to help: Communicate and engage with the public/affected individuals, Establish situation awareness, Upload images to verify or refute rumours, Gather damage estimates. Some of the most commonly used social media tools are Facebook, YouTube and Twitter. Social media is becoming an integral part of life online as social websites and applications proliferate. Most traditional online media include social components, such as comment fields for users. Here are some prominent examples of social media possible to be use in emergency management: Facebook is a popular free social networking website, Twitter is a free microblogging service, Google+ is Google's social networking project, Wikipedia is a free, open content online encyclopedia, LinkedIn is a social networking site, Reddit is a social news website and forum and Pinterest is a social curation website.

Communications for Emergency Management

Emergency management activities can be grouped into five phases that are related by time and function to all types of emergencies and disasters. These phases are also related to each other, and each involves different types of skills.

- Planning – Activities necessary to analyze and document the possibility of an emergency or disaster and the potential consequences or impacts on life, proper-

ty, and the environment. This includes assessing the hazards, risks, mitigation, preparedness, response, and recovery needs.

- Mitigation – Activities that actually eliminate or reduce the probability of a disaster (for example, arms buildup to deter enemy attack, or legislation that requires stringent building codes in earthquake prone areas). It also includes long-term activities designed to reduce the effects of unavoidable disaster (for example, land use management, establishing comprehensive emergency management programs such as vegetation clearance in high fire danger areas, or building restrictions in potential flood zones).
- Preparedness – Activities necessary to the extent that mitigation measures have not, or cannot, prevent emergency.

In the preparedness phase, governments, organizations, and individuals develop plans to save lives and minimize disaster damage (for example, compiling state resource inventories, mounting training exercises, installing early warning systems,

and preparing predetermined emergency response forces). Preparedness measures also seek to enhance emergency response operations (for example, by stockpiling vital food and medical supplies, through training exercises, and by mobilizing emergency response personnel on standby).

- Response: activities following an emergency or disaster. These activities are designed to provide emergency assistance for victims (for example, search and rescue, emergency shelter, medical care, and mass feeding). They also seek to stabilize the situation and reduce the probability of secondary damage (for example, shutting off contaminated water supply sources, and securing and patrolling areas prone to looting) and to speed recovery operations (for example, damage assessment).
- Recovery: activities necessary to return all systems to normal or better.

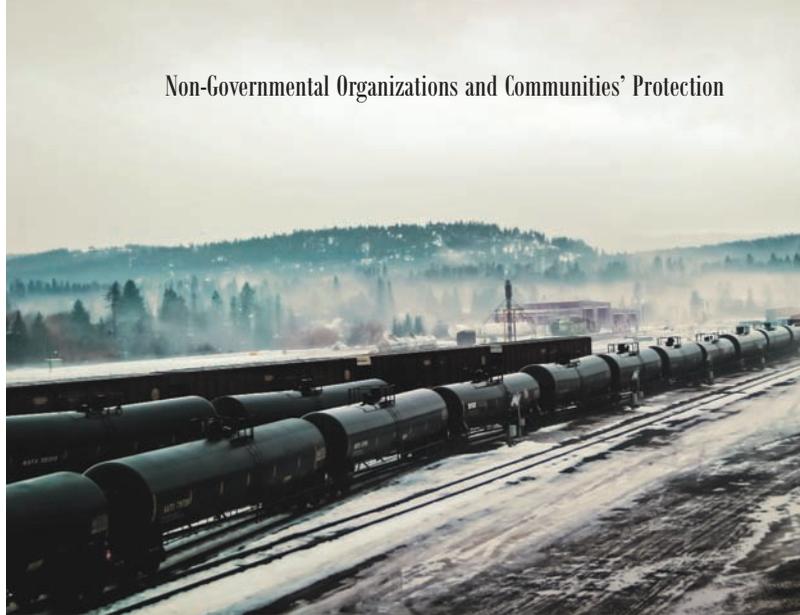
Efficiency of above activities depend on technologies used for monitoring, detecting and triggering alarm systems used for different types of hazards: Hurricane, Flash flood, Riverine flood, Tornado, Avalanche, Earthquake, Tsunami, Landslide, Volcano, Dam failure, Transported hazardous materials, Fixed-site hazardous materials, Nuclear power, Terrorism, Nuclear attacks.

Communication networks for emergency monitoring, detecting and warning systems are classified into four groups: WiFi, P2P, Cellular Network, and Satellite. These emergency communication networks are often heterogeneous (different devices, different protocols) and have some uniformed pattern like: real time requirements, redundancy and large coverage of population. Modern technologies for communication provide the critical path for relief



in emergency and disaster situations. Communications connect and help move logistical, rescue and first responder resources in any region of the world facing or recovering from natural or man-made disasters. Deploying wireless communications is typically among the first priorities in any emergency response, rescue, or relief situation. However, terrestrial wireless equipment (cellular phones or land mobile radios) is only useful when communications towers and other fixed equipment are in place to connect wireless equipment to the local and global communications backbone. In the majority of emergency situations, the infrastructure has either been destroyed by the disaster (e.g. New Orleans after Hurricane Katrina) or was not available before the disaster (e.g. the earthquake in Pakistan). This reality makes it critical for emergency workers to have access to a wireless communications network that is not dependent on terrestrial infrastructure.

Satellite communications provide such a solution. Satellites are the only wireless communications infrastructure that is not susceptible to damage from disasters, because the main repeaters sending and receiving signals (the satellite spacecraft) are located outside the Earth's atmosphere. Users today have two kinds of satellite communications networks available to support emergency response activities: geostationary satellite systems (GEO) and low Earth orbit satellites (LEO). Satellite technology can provide narrowband and broadband IP communications Internet, data, video, voice over IP) with speeds starting at 64 Kbps from handheld terminals up to 4 Mbps bi-directional from portable VSAT antennas. Fixed installation can bring the bandwidth up to 40 Mbps. The operation of these satellite systems and services follows the general topology



depicted below (source: Futron Corporation and GVF, the non-profit association of the global satellite communications sector).

Solutions using this topology can be used for both advance disaster mitigation services and to support relief and recovery efforts under three general categories: Handheld mobile satellite communications, Portable and transportable mobile satellite communications and Fixed satellite communications terminals.

Spanish Case Study

We are going to use, as a case study, the way communications were managed during the high speed train accident that took place in the town of Santiago de Compostela, Galicia, the 24th of July 2013. The accident occurred at approx. 4 km outside the town. There were 79 fatalities and hundreds of casualties (Reinero, Vizoso, 2013, Puga *et. al.*, 2013). We must take into consideration that the 25th of July, is the feast of Saint James the Apostle in Spain, so a day of great importance that imposed a great mobilization of law enforcement.

The main objective will be to analyze how did the information system between the emergency services worked in order to



properly deal with the emergency situation and also how the emergency services along with the other actors involved communicated the valuable information to the citizenship.

In Spain as in the majority of the EU countries there is an emergency line 112, free of charge that is available 24 hours a day and all 365 days of the year. This system was implemented through the regional governments (Comunidades Autonomas) which have the responsibility in emergency matters and civil protection. The 112 service is meant to attend phone calls made by citizens who require medical attention, help regarding fire, and rescue, citizenship security, civil protection regardless of the public administration responsible for solving the situation. Thus, the simultaneously transmission of the assistance requirement to the intervention bodies responsible for the actual intervention contributes to their better coordination. The 112 service operates at two levels: reception, attention and phone call management; mobilization and resource management. The

direct intervention bodies in case of emergency have the responsibility of mobilizing the proper resources for solving the emergency.

In our case, the emergency service is the responsibility of the Xunta de Galicia which is the regional government of Galicia. The Spanish railway system is operated by a public company with private management. Thus there are two companies, on one hand the company that transports passengers by train (RENFE) and secondly the company responsible for managing the railway infrastructure (ADIF).

In order to analyze the communication flow of the 112 service and of the two companies involved in the accident, we are going to use a social network approach, especially Twitter and Facebook and also the public record of the 112 service communication of the accident. We are also going to look into the mass media reaction during the days after the accident took place. The first call received by the 112 emergency services occurs at 20:41 hours on the 24th of July 2013. It is a neighbour who alerts of the train accident. She is the one to inform about fatalities. This phone call activates the emergency services of the fire fighters, ambulances, national police and local police. The phone call is derived to the fire fighters unit.

As the records of the 112 emergency service state, Xunta de Galicia needed more than two hours to declare the alert level 2 which is the most appropriate for such a disaster. This delay meant that for one hour and 46 minutes the truck which was supposed to serve as base of communication didn't arrive in the area. During this time, communication was made only through mobile phones. This caused delays for the two helicopters which were supposed to come to the area and also in

the emergency system coordination. During this period there was no coordination and each body was acting on its own with the difficulty of managing the volunteers that were starting to arrive at the scene. Not until two hours after the accident that emergency services start to take control of the situation (Ron, 2013).

The Xunta of Galicia had to improvise and use a Twitter account that wasn't designed for emergency situations @Xunta. Therefore it was very clear that the account managers had no experience in handling emergency situations. The 112 service had neither a twitter account nor a facebook one in order to be able to communicate with the citizenship. Therefore, it took 50 minutes for the first tweet to be sent after the accident. The first official information delivered by RENFE and ADIF companies came at midnight, three hours after the accident through their official web pages and twitter and facebook accounts. From that moment onwards, both companies, but especially ADIF, welcomed the conversation on their social media accounts and used them to sent information.

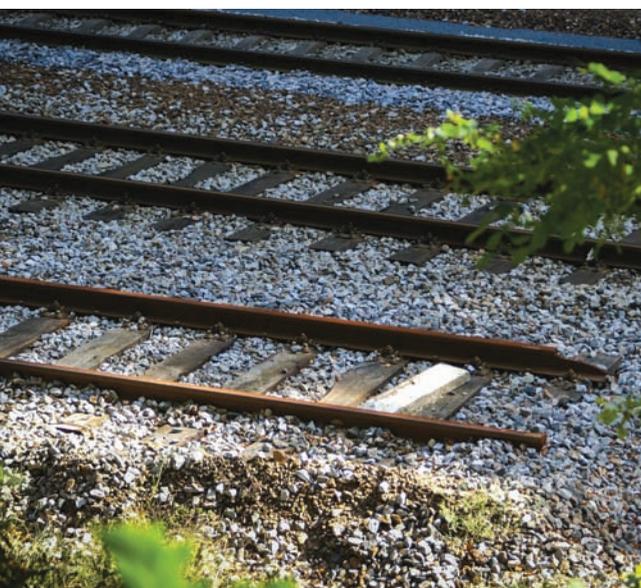
During the previous moments, when there was no information transmitted via social networks, both the administration and the companies used traditional ways of

communication (Storify, 2013). Red Cross was able to create and mobilize a psychological care unit for victims and their families at 9 pm the same day of the accident, only 18 minutes after the first report of the accident. This shows the ability to quickly react of this NGO and the utility of the work they have done. The unit was maintained until July 26 at 11.30 pm.

Discussion

The definition of the crisis has to do with the moment when the organization loses the control of basic resources because of the sudden and unexpected situation. In this sense, crisis management is the management of uncertainty. Moreover, in order to be able to have a response to the crisis and start to regain control of the situation, the first hours of the crisis are of vital importance. Improving emergency management with new technologies of communication and information is based on the development of protocols and language exchange between heterogeneous systems. In our situation, it is difficult to understand how a city which has a functional emergency system had so huge delays in activating the emergency protocol. The reality showed us that the protocols didn't work.

Nowadays, along with the advent of the social media, communication is not a unidirectional flow of information but a multidirectional system. Studies of emergencies have placed Twitter as „arguably the second most important social media site for emergency management practitioners” (Crowe, 2011), therefore it is impossible to understand emergencies without social media. Studies have shown that social media are the common networks we use in order to contact with friends and



families during an emergency. „Social media are also commonly used by individuals and communities to warn others of unsafe areas or situations, inform friends and family that someone is safe, and raise funds for disaster relief” (Rabe, 2013).

In our case study, social media was very effective in promoting citizen solidarity. Moreover, thanks to social media, voluntary blood donors and psychologist were found in order to assist the casualties and grieved families. This use of social media made it easy for families to receive information and also for volunteers to identify blood donation centers not only in Galicia but through Spain. The tweeters started to use their accounts to re-tweet (RT) all the information related to the accident.

As demonstrated, it is not so much a matter of communication and corporate reputation: an active, dynamic and efficient crisis communication would have made possible for RENFE and ADIF to contribute to mitigate the impact of the consequences of the accident. This has

been demonstrated by the 3000 re-tweets of the first tweet in which RENFE announced the helpline number in spite of being published with an important delay, three hours after the accident. Another example is the 2100 re-tweets of the telephoned number designated for the affected families.

These are the reasons why there are crisis manuals, simulations are being organized and exceptional communication procedures are defined. The main goal is to be prepared and have resources in standby to manage a crisis situation in order to earn precious minutes or hours in the communication management. Transport companies, airplane companies and railway companies are aware that this kind of accident may occur so they normally are the most prepared in order to re-act rapidly to offer information regarding the victims. Apparently it was not what happened in this case.

The tragedy in Galicia has become the first major emergency that occurs in Spain



with a high number of fatalities and international impact since social media has emerged changing the communication paradigm. This disaster, however, has come at a time when the implementation of emergency communications in Spain was not well developed in all administrations. Moreover, not all of them had opted for the social media as an important tool in their emergency communication policy. The Xunta de Galicia, as competent authority, did not know how to manage the complexity of the emergency neither at operational level (two hours to coordinate the emergency response) neither in terms of public communication (50 minutes for the first communication). The same happened to the responsible companies RENFE and ADIF. This deficient response contrasts strongly with the way the Boston police reacted during the marathon terrorist attacks. In this very complex and unexpected situation, the police reacted within minutes using their Twitter account. Moreover, the capture of the suspects was also reported, practically, live at the time of the events (Rodriguez, 2013, Aston University, 2010).

In our case, both the regional government and the two companies, RENFE and ADIF, didn't manage the emergency efficiently, during the first moments after the accident, and their actions instead of helping to alleviate the emergency created a situation of miss information, thus generating more social alarm that normally would a situation like this create. In a second moment, after several hours have past, the situation changed drastically improving the transmission of information through all channels and especially social media.

Romanian Case Study

Romania is highly affected by natural disasters, of which floods are particularly common in most parts of the country between May to November due to rainfall and/or the melting of snow. Flood management often unites the specialized civilian structures with the military, even though it is considered to be a civilian operation. Besides the public administration, private actors and citizens have obligations within the civil security system in Romania. A national system for crisis management that covers the entire spectrum of crises in the field of security does not exist in Romania. Instead, there are different systems, such as the National System for the Management of Emergency Situations (NSMES) dealing with civil emergencies. This is central in Romanian civil security along with the National System for Preventing and Combating Terrorism, which deals with terrorism. The types of disasters encountered in Romania are the following: floods, heavy snowfalls, strong storms, earthquakes, landslides, epidemics, nuclear, chemical or biological accidents, infrastructure accidents, hazardous material spills, large fires and water works accidents.

An „emergency situation” is defined in the Romanian legislation as „an exceptional event with a non-military character, with an amplitude and intensity that endangers human health, the environment, the material and cultural values of importance”. A disaster is defined as an „event that occurs due to the activation of particular types of risks, of natural or manmade causes, that generates human, material losses or environmental changes, and which, through its scale, its intensity and consequences, reaches or exceeds the levels of gravity established in the emergency management”.



The intervention system in emergency situations in Romania is based on the principle that public administration authorities need to have the responsibility and control in emergency situations and is thus organized according to the three administrative levels: national, county and local. Each level has the responsibility to manage its own emergency situations in its territorial area. All components of the National System for the Management of Emergency Situations (NSMES) at the different levels are headed by the prime minister, through the minister of interior which has the overall responsibility for civil protection in Romania. Prefects and mayors lead the emergency management at county and local levels, respectively.

While public authorities carry out their tasks connected to information dissemination, they are supported by media, schools, NGOs and private sector. Furthermore, training programmes for the population in

the field are provided by both the public authorities and the private sector. In this sense, cooperation protocols, partnerships and agreements have been signed between the public administration authorities at all three administrative levels and actors within the private sector

The first case of virus H1N1 in Romania was confirmed on the 27th of May 2009 and the last one on the 8th of April 2010. During this period of time, there were 7008 cases of H1N1 confirmed in Romania, of which 122 deaths resulted, and thus a fatality rate of 1.7%. In August, in a press release of the Ministry of Health, it was announced that the vaccination campaign would take place in parallel with the production of the vaccine against the H1N1 virus. On the 10th of September, the Ministry of Health decided that the Public Health Directions should suspend for 7 days the activity in the education facilities where three cases of H1N1 were confirmed in three different classes of the same school. In the beginning of November, the Committee for Flu Coordination decided that all hospitals should enter quarantine as an additional measure for the prevention of flu spread. In the end of November, the Ministry of Health announced that the vaccination campaign was starting. In December, the vaccine was distributed around the country.

The process of communication was coordinated by the Ministry of Health in the pre-pandemic stage, and by the prefect and local authorities in later stages. While the health sector was the main responsible in elaborating and implementing the response in the pandemic, the other components of the NSMES were to participate as well. Thus, the prime minister had to coordinate through the NCES the management of the pandemic at the national

level providing and coordinating the communication and public information at the national level. It was supported by the NOC (National Operational Centre) within GIES, OCC (Operational Centre for Command) within the Ministry of Interior and the Operative Centre within the Ministry of Health. At the county and local levels, prefects and mayors ensured the implementation of the measures provided in the plan and played a major role in raising awareness to the population about the pandemic. Citizen had to become pandemic situation managers as well, more exactly to make sure they had access to accurate information, food, water and medicine.

Another emergency situation in which NGOs were involved, have occurred on 30 October 2015 when The Colectiv nightclub fire was a deadly fire in Bucharest, Romania, which killed 60 people (26 on spot, 34 in hospitals) and injured 151. The fire, the worst incident in Romania since Balotesti plane crash occurred during a free concert performed by the metalcore band to celebrate the release of their new album, MANTRAS OF WAR. The band's pyrotechnics, consisting of sparkler firework candles, ignited the club's flammable polyurethane acoustic foam, and the fire spread rapidly. Most of the victims were poisoned by toxins released from the burning foam. Overwhelmed by the high number of victims, Romanian authorities transferred some of the seriously injured to hospitals in Israel, the Netherlands, Belgium, Austria, the United Kingdom, Norway, Germany and France. Mass protests over the corruption linked to the fire led to the resignation of Prime Minister and his government.

On the night of the tragedy (Troncotă, 2015) civil society (NGOs) representatives and journalists accused the Romanian

Health Ministry of incompetency with the existing emergency hospitals in Bucharest not having enough capacity to treat the injured. For days in a row this made the news – our hospitals are not able to cope with the situation. This information made the media explode with accusations against the Healthy Ministry, saying it had misinformed and misguided public opinion. This debate was an illustration of how post-traumatic symptoms can have an impact on public discourse. Looking at this campaign of accusations against the Romanian Ministry of Health in dealing with the tragedy at a time of an unprecedented crisis, it seems that the constructive part was that it showed us the critical importance of transparency in public affairs. At this point, it is essential for journalists, NGOs' representatives and protesters to protect themselves from misinformation spread in social media in order for the process to keep its initial intentions.

Discussion

The Romanian National System for the Management of Emergency Situations is a functional system characterized by few principles stated in the National Strategy for the Prevention of Emergency Situations. Nevertheless, improvements are required concerning stronger involvement of the private sector in the Romanian crisis management. While one of the stated principles on which civil protection is based upon is cooperation between the authorities and NGOs, neither citizens nor the private sector are particularly motivated or encouraged to participate in crisis management by the legal framework. On the one hand, authorities fail to (or lack the resources to) inform the citizens on the on-going crises and the necessary action to be undertaken



which leaves the citizens out of the system. This is why citizens are unengaged in common activities and uninvolved in the destiny of their own community. Citizens on the other hand, tend to rely too much on the authorities and feel that it is the task of the state to provide for their safety. A culture of safety should be promoted so that citizens turn from safety receivers into safety providers as well. Furthermore, increased involvement of volunteers and generally of the private sector is needed. Their role and their responsibilities in crises have to be more clearly defined. The concepts of 'volunteer' and 'volunteering' need to be better clarified and the voluntary services for emergency situations should officially be included in the National System for the Management of Emergency Situations as these are the only capabilities for intervention at the local level which is the first level activated in case of crisis.

Key points from the examination of Romanian Case Study include:

- There is a high risk of misuse of social media. Kinds of misuse include the following: spreading of rumors and falsehoods, bogus donation requests for individuals posing as official response and support channels, tweeting by the public for help when they should be using conventional channels, sharing confidential police information, such as the location of officers in the case of the terrorist attack and, potential misuse by mainstream media for the sake of speed instead of accuracy and correctness in their news flow.
- Even though social media are used during an event, does not always mean that a wider audience will be reached. Journalists may henceforth take on an active role assisting and participating in the efforts of first responders.
- In many respects, the use of social media may be driven by a lack of alternatives from mainstream media.
- Social media can act as counterbalance when conventional warning systems fail to operate.
- The case indicates that it would be wise for organizations and authorities to utilize both traditional media technologies and social media when supporting and communicating with the public.

Conclusions

What happened in Galicia came to demonstrate that social media/networks are a very effective tool to distribute last minute information almost synchronic and with great impact. The consequences were both positive and negative. The use of social media in the emergency management system is necessary but it is important that it should be managed by specialists who

are able to use social media in order to produce benefits for lowering the emergency and for generating information with the purpose of minimizing the impact of the emergency and help mitigate it (Aston University, 2010). The role of NGOs is essential when managing emergencies such as the train accident in Santiago de Compostela, the speed with which the Red Cross acted demonstrates the rapid intervention and operational capacity of these NGOs that get involved in emergency management.

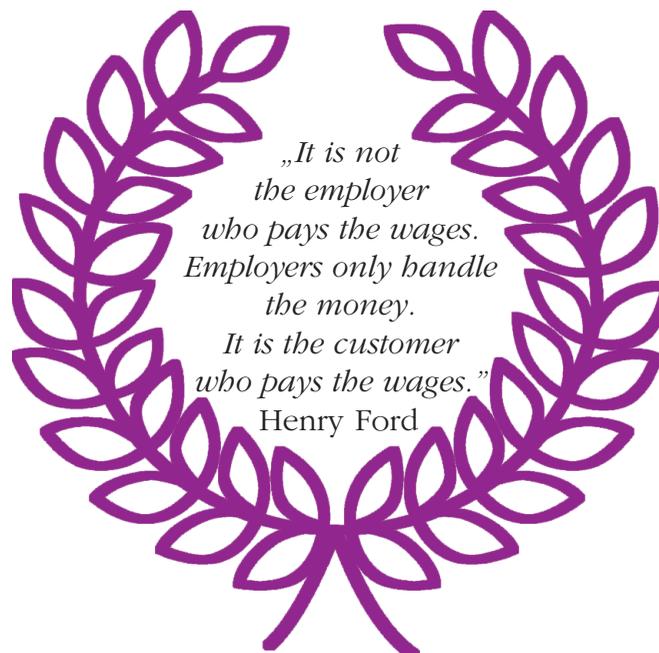
The emergency situations will certainly draw more lessons to improve. Is neces-

sary to set up and to develop a stronger relationship to start much better coordinated with NGOs and voluntary sector people who want to involve to really manage the situation properly. „We have immediately created a liaison office with the volunteers. The second thing, not necessarily learning, but one thing that I hope to get to he – we have very wisely in the way we look, comment and pointed before we have complete data and I hope that, at some point, to get this wisdom in certain places”, said Romanian State Secretary of Ministry of Interior (Pro TV, 2015).

REFERENCES

1. ASTON UNIVERSITY. (2010) *Web 2.0 and Social Media in Disaster Management: Using Web 2.0 applications and Semantic Technologies to Strengthen Public Resilience to Disasters*. [Online] Available from: <http://www.disaster20.eu> [Accessed: 15th October, 2015].
2. Crowe, A. (2011) The Social Media Manifesto: A Comprehensive Review of the Impact of Social Media on Emergency Management. *Journal of Business Continuity Emergency Planning*. 5(1). pp. 409-420.
3. Li, Y. (2011) *A Survey on Communication Networks in Emergency Warning Systems*. Report Number: WUCSE-2011-100. [Online] Available from: http://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1053&context=cse_research [Accessed: 15th October, 2015].
4. Lindsay, B.R. (2010) Social Media and Disasters: Current Uses, Future Options and Policy Considerations. *Journal of Current Issues in Media & Telecommunications*. 2. pp. 287-297.
5. Puga, N., Bravo, A., Sueiro, M. (2013) *Accidente tren Santiago. El maquinista del tren entró en la curva a 190 kilómetros en un tramo limitado a 80*. (In English: *Santiago Train Accident. The Driver of the Train Entered the Curve at 190 Kilometers per Hour with a Train Limited at 80*). *El Mundo*. [Online] 25th September. Available from: <http://www.elmundo.es/elmundo/2013/07/25/espana/1374740051.html> [Accessed: 15th October, 2015].
6. Rabe, E. (2013) *Social media – where Boston Police turned in a crisis*. [Online] Available from: <https://www.fels.upenn.edu/news/social-media—where-boston-police-turned-crisis> [Accessed: 21st October, 2015].

7. Reiner, D., Vizoso, S. (2013) *Trágico accidente ferroviario en Santiago de Compostela*. (In English: *Tragic Train Accident in Santiago de Compostela*). *El País*. [Online] 24th July. Available from: http://ccaa.elpais.com/ccaa/2013/07/24/galicia/1374693125_734192.html [Accessed: 15th October, 2015].
8. Ron, A. (2013) *Accidente de tren en Santiago: Twitter muestra su apoyo a las víctimas de la tragedia*. (In English: *Santiago Train Crash: Twitter Shows its Support for the Victims of the Tragedy*). *Lavanguardia*. [Online] 25th July. Available from: <http://www.lavanguardia.com/redes-sociales/20130725/54378846487/accidente-tren-santiago-twitter-apoyovictimas.html> [Accessed: 15th October, 2015].
9. Rodríguez, L.S. (2013) *Accidente Santiago. Cómo mejorar la gestión de la información en Redes Sociales*. (In English: *Santiago accident. How to Improve Information Management in Social Networks*). [Online] 26th July. Available from: <http://informacion-deemergencias.blogspot.com.es/2013/07/accidente-santiago-como-mejorar-la.html> [Accessed: 15th October, 2015].
10. Stalberg, C.E. (1994) *The Intelligent City and Emergency Management in the 21st Century*. *Proceedings: The International Emergency Management and Engineering Conference*. April 18-21.
11. STORIFY (2013) *Usuarios de las redes sociales muestran su solidaridad ante el accidente de tren en España*. (In English: *Users of Social Networks Show Their Solidarity with The Train Accident in Spain*). [Online] 25th July. Available from: <https://storify.com/noticias24/usuarios-de-las-redes-sociales-muestran-su-solidar> [Accessed: 15th October, 2015].
12. Troncotă, M. (2015) *Romania's Collective Tragedy and its Chain Reactions*. *FutureLab Europe*. [Online] 18th November. [Available from: <http://www.futurelabeuropa.eu/blog/romania-collective-tragedy-and-its-chain-reactions/>] [Accessed: 15th October, 2015].



The Culture of Sustainability

Beatrice Leuștean

University POLITEHNICA of Bucharest, Romania

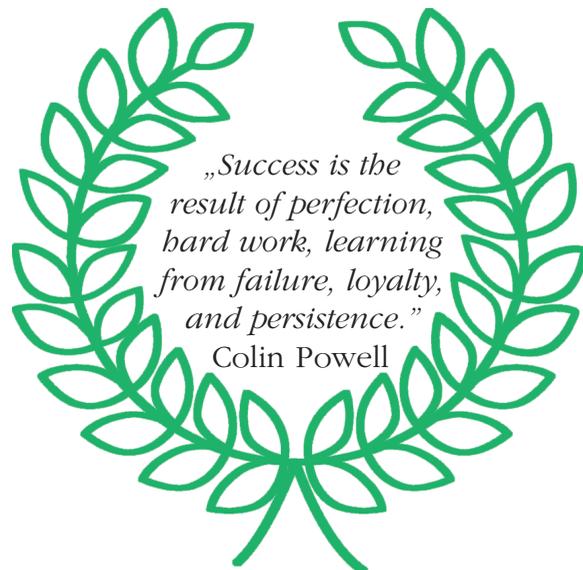
Abstract

The European Common Project states sustainability as one of the main goals on the actual agenda. It is considered of utmost importance and the finances directed towards research on clean technologies, renewable resources, ecological cities, sustainable production etc. represent a considerable amount of the European budget. For this reason, it is important to create a culture of sustainability as an important aspect of the European identity manifested through adequate behaviors. Given the generosity of the concept by itself, „sustainability” is valued and interpreted differently, according to the field of scientific research. The article focuses on the culture of sustainability reflected in scholar and scientific results with a particular interest in the social sciences, management and economics area of research. It tries to encompass the knowledge on this topic using the bibliometric methodology in order to measure, classify and clarify various and valuable contributions that might represent a starting point for further studying the culture of sustainability.

Keywords: culture, sustainability, economics, bibliometry

Introduction

Sustainability is a topic of scientific concern (Jula *et. al.*, 2015, Park, 2011), political debate (United Nations, 2015) and has public effects (Loukola, Kyllönen, 2015). It is also one of the European Project's goals stipulated since Lisbon's agenda (European Union, 2007). The present paper aims to study the scholar contributions in this respect and to present the need for the research and academic initiative (Dumitrescu *et. al.*, 2014) in this field. In order to have a quantitative perspective over the culture



of sustainability (UNESCO, 1997), the author will investigate the scientific results with the bibliometric methodology that will encompass the qualitative analysis of the scholar products.

Bibliometry is considered to be the most effective measurement of the scientific contributions as it reflects the quantitative aspects of the results and also a complementary tool for the qualitative state of the art. This paper will search and analyze the Web of Science and Scopus data as they are considered the most relevant platforms for the dissemination of scientific results. The research will be conducted for forty years time span in all scientific areas, with an emphasis on the social sciences and business domains. This is considered to be an important contribution, as there is no study conducted until present in order to

reflect the scholar's contributions on the culture of sustainability topic of concern. It will be also utilized for a couple of further researches regarding the factors that influence the sustainable individual behavior; the most effective ways to educate the economic choice; the forgotten effects of the culture of sustainability over the economic behavior.

Scientific papers on sustainability

Web of Science returned 5141 results in all years and all the areas of research presenting the synthetic indicators of 24445, the sum of the times cited, 8.11 average citations per item and an average h-index of 62. The published items each year evolved from 1975 until 2015, as follows (Figure 1).

The number of citations in each year is shown in Figure 2.

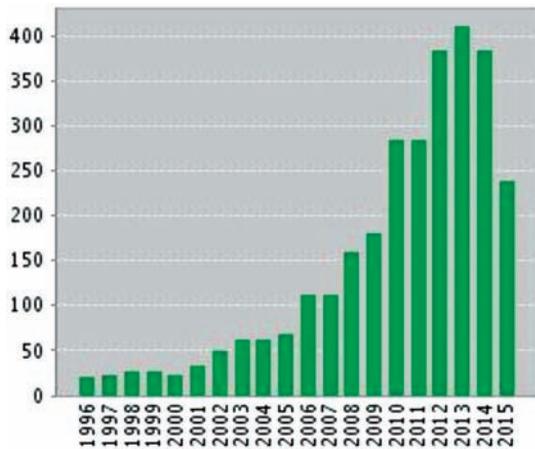


Figure 1 – Sustainability theme of the papers

Source: Web of Science data interrogation

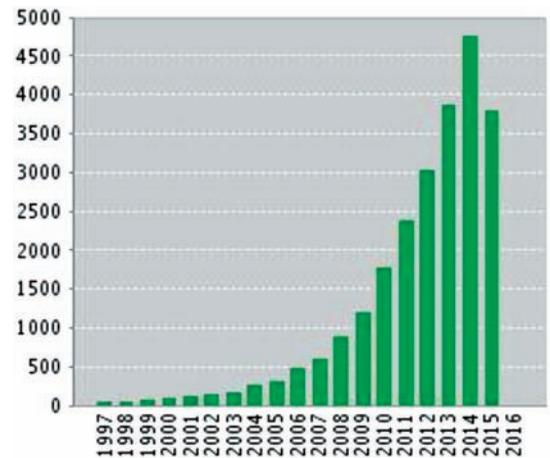


Figure 2 – Global number of citations

Source: Web of Science data interrogation

In order of the relevance given by the total number of citations in all the years and fields of research by the publication, the first 20 articles, authors, year of publication and the number of citations are presented in Table 1.

Table 1 – *The most important papers about sustainability*

Title	Authors	Publication Year	Total Citations	Average per Year
Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study	Geels, F.W.	2002	610	43.57
Global desertification: Building a science for dryland development	Reynolds, James F.; Stafford Smith, D. Mark; Lambin, Eric F.; Turner, B.L.; Mortimore, Michael; Batterbury, Simon P.J.; Downing, Thomas E.; Dowlatabadi, Hadi; Fernandez, Roberto J.; Herrick, Jeffrey E.; Huber-Sannwald, Elisabeth; Jiang, Hong; Leemans, Rik; Lynam, Tim; Maestre, Fernando T.; Ayarza, Miguel; Walker, Brian	2007	533	59.22
Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science	Damschroder, Laura J.; Aron, David C.; Keith, Rosalind E.; Kirsh, Susan R.; Alexander, Jeffery A.; Lowery, Julie C.	2009	470	67.14
Microalgae as a raw material for biofuels production	Gouveia, Luisa; Oliveira, Ana Cristina	2009	398	56.86
Integrated aquaculture: rationale, evolution and state of the art emphasizing seaweed biofiltration in modern mariculture	Neori, A.; Chopin, T.; Troell, M.; Buschmann, A.H.; Kraemer, G.P.; Halling, C.; Shpigel, M.; Yarish, C.	2004	305	25.42
Perspectives of microbial oils for biodiesel production	Li, Qiang; Du, Wei; Liu, Dehua	2008	270	33.75
Nutritional management for enteric methane abatement: a review	Beauchemin, K.A.; Kreuzer, M.; O'Mara, F.; McAllister, T. A.	2008	262	32.75
Integrating seaweeds into marine aquaculture systems: A key toward sustainability	Chopin, T.; Buschmann, A.H.; Halling, C.; Troell, M.; Kautsky, N.; Neori, A.; Kraemer, G.P.; Zertuche-Gonzalez, J.A.; Yarish, C.; Neefus, C.	2001	209	13.93
Biotechnology – a sustainable alternative for chemical industry	Gavrilescu, M.; Chisti, Y.	2005	196	17.82
Assessing the Organizational Social Context (OSC) of mental health services: Implications for research and practice	Glisson, Charles; Landsverk, John; Schoenwald, Sonja; Kelleher, Kelly; Hoagwood, Kimberly Eaton; Mayberg, Stephen; Green, Philip	2008	178	22.25

Integrated mariculture: asking the right questions	Troell, M; Halling, C; Neori, A.; Chopin, T.; Buschmann, A.H.; Kautsky, N.; Yarish, C.	2003	169	13
Microalgae biofuels: A critical review of issues, problems and the way forward	Lam, Man Kee; Lee, Keat Teong	2012	168	42
Current knowledge on non-native freshwater fish introductions	Gozlan, R.E.; Britton, J.R.; Cowx, I.; Copp, G.H.	2010	168	28
Adaptive capacity and community-based natural resource management	Armitage, D.	2005	154	14
Nitrogen removal techniques in aquaculture for a sustainable production	Crab, Roselien; Avnimelech, Yoram; Defoirdt, Tom; Bossier, Peter; Verstraete, Willy	2007	150	16.78
Enhanced CO ₂ fixation and biofuel production via microalgae: recent developments and future directions	Kumar, Amit; Ergas, Sarina; Yuan, Xin; Sahu, Ashish; Zhang, Qiong; Dewulf, Jo; Malcata, F. Xavier; van Langenhove, Herman	2010	148	24.67
Environmental communication and the cultural politics of environmental citizenship	Burgess, J.; Harrison, C.M.; Filius, P.	1998	137	7.61
Multicriteria planning of post-earthquake sustainable reconstruction	Opricovic, S.; Tzeng, G.H.	2002	134	9.57
Towards sustainable production of biofuels from microalgae	Patil, Vishwanath; Tran, Khanh-Quang; Giselrod, Hans Ragnar	2008	132	16.5
Completion of the Pacific bluefin tuna <i>Thunnus orientalis</i> (Temminck et Schlegel) life cycle	Sawada, Y.; Okada, T.; Miyashita, S.; Murata, O.; Kumai, H.	2005	130	11.82

A classification of the most relevant 500 articles by the total citations, given the to-

pic of interest of the publication criteria, reveals the situation presented in Table 2.

Table 2 – *Most cited articles*

Topic of interest:	Number of articles
Science, Engineering, Technology, R&D	110
Health and Medicine	64
Management, Administration, Business and Economics	73
Cities, Social Studies and Psychology	53
Agriculture and Biology	181
Other	19

Areas of interest for sustainability

The most frequent articles are those concerning agriculture and biology and also those on technologies, engineering

and R&D. Management and Economics are on the third rank, while those concerning other social issues are the least frequent (Figure 3).

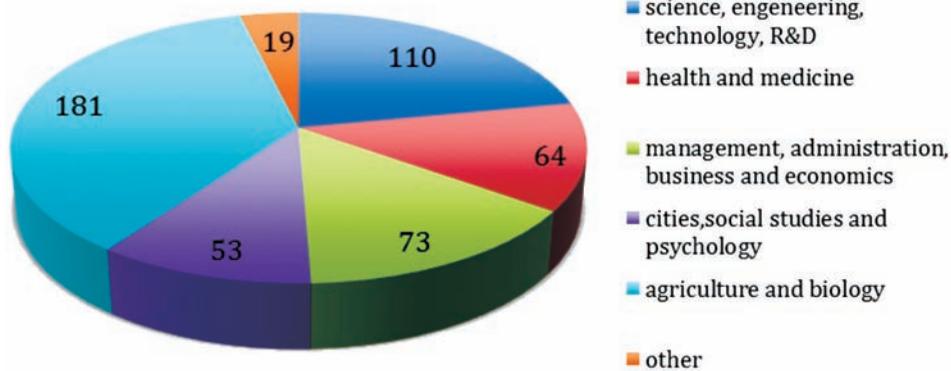


Figure 3 – Scientific areas of interest for the culture of sustainability

From the most cited 500 articles, there have been selected those that directly refer to the culture of sustainability in the management, business and economics field

of research publications. SCIMAGO Journal Ranking returns the following classification (Table 3).

Table 3 – Topic of concern publication's ranking

Rank	Title	ISSN	SJR	H index	Country	No. of articles
252	Journal of Supply Chain Management	15232409	4.555	34	United Kingdom	1
360	Journal of the Academy of Marketing Science	00920703	3.769	108	United States	1
587	Journal of Travel Research	15526763	2.823	69	United Kingdom	1
593	Entrepreneurship Theory and Practice	15406520	2.811	68	United Kingdom	1
881	Annals of Tourism Research	01607383	2.262	95	United Kingdom	1
1002	Tourism Management	02615177	2.111	96	United Kingdom	1
1198	International Journal of Management Reviews	14682370	1.932	52	United Kingdom	1
1225	Journal of Sustainable Tourism	17477646	1.904	49	United Kingdom	4
1249	International Journal of Operations and Production Management	01443577	1.885	86	United Kingdom	2
1486	Journal of World Business	10909516	1.709	60	United States	1
1652	Ecological Economics	09218009	1.616	117	Netherlands	8
1666	Journal of Interactive Marketing	15206653	1.609	58	United Kingdom	1
1802	World Development	18735991	1.536	109	Netherlands	1
1854	Business Strategy and the Environment	10990836	1.515	52	United Kingdom	1

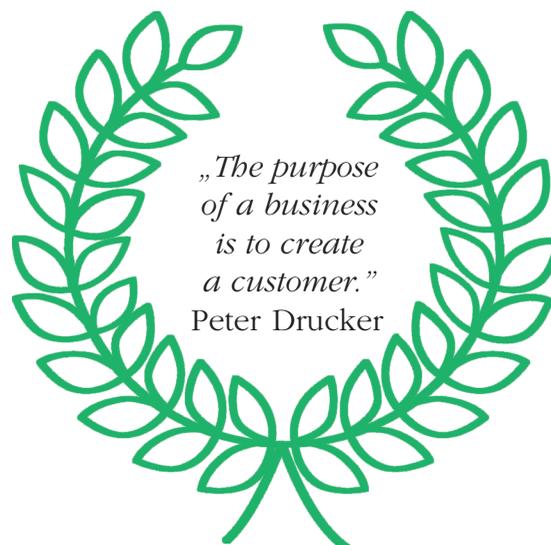
1886	Corporate Social Responsibility and Environmental Management	15353966	1.497	32	United Kingdom	1
2084	Marketing Theory	1741301X	1.413	16	United Kingdom	1
2257	Sustainability Science	18624065	1.348	21	Japan	1
2324	International Journal of Hospitality Management	02784319	1.318	52	United Kingdom	1
2413	Risk Analysis	15396924	1.291	79	United Kingdom	2
2653	Long Range Planning	00246301	1.221	61	United Kingdom	1
2717	Forest Policy and Economics	13899341	1.204	38	Netherlands	3
3083	Journal of Business Ethics	15730697	1.11	87	Netherlands	4
3219	Land Economics	15438325	1.082	60	United States	1
3419	Organization and Environment	15527417	1.036	31	United States	2
3679	Journal of Nursing Management	13652834	0.988	43	United Kingdom	2
3945	Mitigation and Adaptation Strategies for Global Change	15731596	0.94	40	Netherlands	1
3946	European Journal of Marketing	03090566	0.94	47	United Kingdom	1
4599	Sustainable Development	10991719	0.842	32	United Kingdom	3
5020	Fisheries Management and Ecology	13652400	0.784	36	United Kingdom	1
5101	Environmental Management	14321009	0.773	74	United States	6
5326	Ocean and Coastal Management	09645691	0.745	48	Netherlands	4
5550	International Journal of Human Resource Management	14664399	0.718	65	United Kingdom	2
5722	Journal of Nursing Administration	15390721	0.7	60	United States	1
7006	Harvard Business Review	00178012	0.577	117	United States	1
7249	Journal of Macromarketing	02761467	0.558	26	United States	1
7707	Technology Analysis and Strategic Management	14653990	0.517	43	United Kingdom	1
7797	International Journal of Sustainable Development and World Ecology	13504509	0.509	21	United Kingdom	2
8494	Journal of Management, Spirituality and Religion	14766086	0.456	6	United Kingdom	1
8572	Sustainability	20711050	0.452	20	Switzerland	1
9342	Coastal Management	08920753	0.405	33	United Kingdom	1
10726	Journal of Organizational Change Management	09534814	0.331	42	United Kingdom	1
16946	Journal of Environmental Management and Tourism	20687729	0.143	1	Romania	1

Figure 4 presents country ranking of the publications containing management, business and economics articles concerning the culture of sustainability. The countries that cover most this area of scientific research, through scientific papers and specific publications are the United Kingdom, followed

by the Netherlands and the United States. Their journals of business and economics interest also keep the highest mean of H-index.

REFERENCES

1. Dumitrescu, C.I., Lie, R.I. and DOBRESCU, R.M. (2014) Leading multicultural teams. *FAIMA Business & Management Journal*. 4 (December). p. 43.
2. EUROPEAN UNION (2007) Treaty of Lisbon Amending the Treaty on European Union and the Treaty establishing the European Community signed at Lisbon, 13 December 2007. Official Journal of the European Union (2007/C 306/01) [Online] Available from: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2007:306:FULL:EN:PDF> [Accessed: 27th October 2015].
3. Jula, D., Dumitrescu, C.I., Dobrescu, R.M. and Lie, R.I. (2015) Environmental Kuznets Curve. Evidence from Romania. *Theoretical and Applied Economics*. XXII. 1 (602). pp. 85-96.
4. Loukola, O. and Kyllönen, S. (2015) Sustainability – New Requirements for the Society. *The Philosophies of Sustainability*. [Online] Available from: http://www.helsinki.fi/metsatieteet/tutkimus/sunare/21_Loukola_Kyllonen.pdf [Accessed: 23rd October 2015].
5. Park, J. (2011) Debate: Is Sustainable Development Still Relevant? *Development & Society: Climate Change, Governance, Population, Sustainability*. [Online] Available from: <http://ourworld.unu.edu/en/is-the-concept-of-sustainable-development-still-relevant> [Accessed: 23rd October 2015].
6. UNESCO (1997) *A Transdisciplinary Vision for Concerted Action*. (EPD-97/CONF.401/CLD.1.) [Online] Available from: http://www.unesco.org/education/tlsf/mods/theme_a/popups/mod01t05s01.html [Accessed: 23rd October 2015].
7. UNITED NATIONS (2003) Our Common Future, From One Earth to One World. *UN Documents: Gathering a Body of Global Agreements*. (A/42/427. Our Common Future: Report of the World Commission on Environment and Development) [Online] Available from: <http://www.un-documents.net/ocf-ov.htm> [Accessed: 27th October 2015].



Cloud ERP Implementation

Nicoleta Căruțașu (1), George Căruțașu (2)

(1) University POLITEHNICA of Bucharest, Romania, (2) Romanian-American University, Romania

Abstract

The cloud technology, under various forms is becoming more popular in companies life. Targeting low price for ERP, major software provider mixed the virtualization with other services. One important component, for business software applications, the ERP is offered now as cloud service, the license for ERP having the form of annual fee per user. Lowering the price for ERP utilization made them accessible by SME. Nowadays, telecom companies offer, together with other communication and cloud storage services, access to on premise ERP, with standard modules with few customization features, where time-to-deployment is considerably reduced, ERP being delivered as Software as Service. For larger companies, the cloud security issues and ownership of database, conduct to private cloud structures, the infrastructure being owned by the company benefiting of whole cloud technology advantages. Furthermore, the externalization of some services (communication platform – Sharepoint, Office 365) leads to hybrid cloud architecture. This paper debates the business process for ERP implementation, both for traditional and cloud ERP version, highlighting the differences but also common steps.

Keywords: ERP, integrated systems, business process, resource planning

Introduction

For integration into the virtual business environment characteristic of the current economy, businesses undergo a series of structural changes affecting both material flows and information flows within the organization. In this respect, the main mutation in the existing enterprise is to change the objectives in relation to the activities undertaken, starting to produce at the lowest possible price to total customer satisfaction.



„Spend a lot of time talking to customers face to face. You'd be amazed how many companies don't listen to their customers.”

Ross Perot



Changing the company objectives is a direct consequence of increased competition through globalization manifestation regional and international level, increasing customer expectations and diversification of their needs in relation to residential premises. Thus, raises the need to integrate customer requirements in business activity, particularly in post-design stages, through changes imposed by the beneficiary, the initial project. Another very important aspect, in addition to integrating customer requirements in the enforcement process is to increase the quality of business applications software.

The cumulative conditions of today's market, which is still recovering after a severe financial crisis, with an extended globalization factor, high competitiveness and immense pressure on costs lead companies to massive structural changes. As a trend, during the recently finished financial crises, one of the companies challenges was to evaluate and to assess if the already implemented ERP solution respond to their needs, if could be outsourced or another solution is needed. The paper presents the particularities of ERP implementation process, both for traditional and cloud based

version, focusing on major steps and documents. In addition, it explains why ERP implementations aren't able to achieve the goals. The objective of present paper is to clearly state the implementation procedure and documents, starting with initial offer stage and ending with support end post-implementation stage.

ERP Applications

A good part of these changes relates to the execution, which amends the system of coordination and control operations to allow instantiation up their production by building new architectures suited to this goal. Therefore, to transform a company into an operational system in the virtual environment are necessary structural changes correlate to the entire company to which it belongs. The range of business software applications is wide (Căruțașu *et. al.*, 2011), covering multiple functionalities, designed for specific customer needs. For a short description, we may start by examining the relationship between applications type and business functions. In this view, we can find:

- Enterprise Resource Planning (ERP), covering Manufacturing/Operation, Trade, Human Resources and Financial/Accounting business functions (Căruțașu *et. al.*, 2011),
- Customer Relationship Management (CRM), focusing on clients, corresponding to Trade business function, especially to sells and aftersales business (Rosenbröijer, 2014),
- Product Lifecycle Management (PLM), supporting the product from design, manufacturing, sales, service and after service. It could be linked to R&D and Manufacturing/Operation business functions (Stark 2011),

- Supply Chain Management, gathering information regarding whole supply chain, covering product data, stocks, purchase and delivery, mirroring Manufacturing/ Operation business function (Stadtler, 2015) and logistic chain (Purdescu et. al., 2011).

Having in mind the above mentioned business software applications types, ERP application includes dedicated modules (e.g. CRM or SCM). The application should manage information flow (regarding product data, customer and suppliers data etc.), materials flow (inputs and outputs of raw materials, finished goods, fixed assets, etc.) and financial flow (covering flow between company, customers, suppliers etc.) (Căruțașu, 2011).

ERP is defined as complex application that integrates business processes and optimizes available resources of the company. A business process is a set of activities or tasks that contribute to a company goal achievement. A business object may be a person or entity that is part of or interact within a business process. ERP providers are offering today software applications, with embedded business processes and business objects (Brockmann, 2009). Most ERP vendors allow changing their software so that they meet the needs of their customers. As a fact, Microsoft Dynamics NAV 2015, it is already deployed for six different languages and available for customers of various countries, only a year after of first release. For a worldwide market of \$25,4 B, with 3.8% growth over 2012, indicated by Gartner Market Share Analyses: ERP software, Worldwide, 2013 and with a failure rate estimated 40-60% [8], it is clearly understood why concerns over ERP implementations are clearly stated. Into another recent study, Panorama Consulting claim in 2015 ERP Report that

58% of ERP implementation exceed their planned budget and 65% overcome the agreed deadline. With an average cost of \$6.1 million and average duration of 15.7 month for ERP implementation, it is necessary to push forward to comply customer needs. The valuation of ERP industry and a key metric operation indicators is given in (RightScale, 2015), assessing future development of ERP vendors and also technical trends.

ERP Functions and Infrastructure

ERP is multifunctional software package and extends to the entire enterprise. One of the most important feature is that uses the same database for the entire company. As functional point of view, ERP offers support for a wide range of business processes, which is depicted below. Seeing the broad scope within the company, ERP systems relies on complex information systems. ERP modules cover, in general, the functionalities as Accounting, Business Intelligence, Customer Relationship Management, Human Resources, Inventory management, Manufacturing and Supply chain management.



The traditional license on premise ERP is built on three-tier (Figure 1) client-server architecture, starting on database tier, having a logic tier, which includes business processes and objects, meaning the business software application and more often a web server used as graphical interface (Salleh *et. al.*, 2012).

The enterprise application is implemented on a client-server architecture that creates prerequisites for decentralized processing environment.

- The database tier – provides data management organization, including metadata; most often is found here a relational DBMS of the industrial standard, which includes SQL module;

- The logic tier – includes business rules, logic and system functions, programs that support the transfer of data/database servers;
- The presentation tier – is the graphical user interface and navigation software (browser) to access system functions.

Virtualization comes, as most authors accepted, under various forms:

- Infrastructure as a Service (IaaS), where virtual machines are offered, with pre-installed operating systems;
- Platform as a Service (PaaS), adding to IaaS development platform for web applications;
- Software as a Service (SaaS), the cloud service provider offer to customer's access to software as a service.

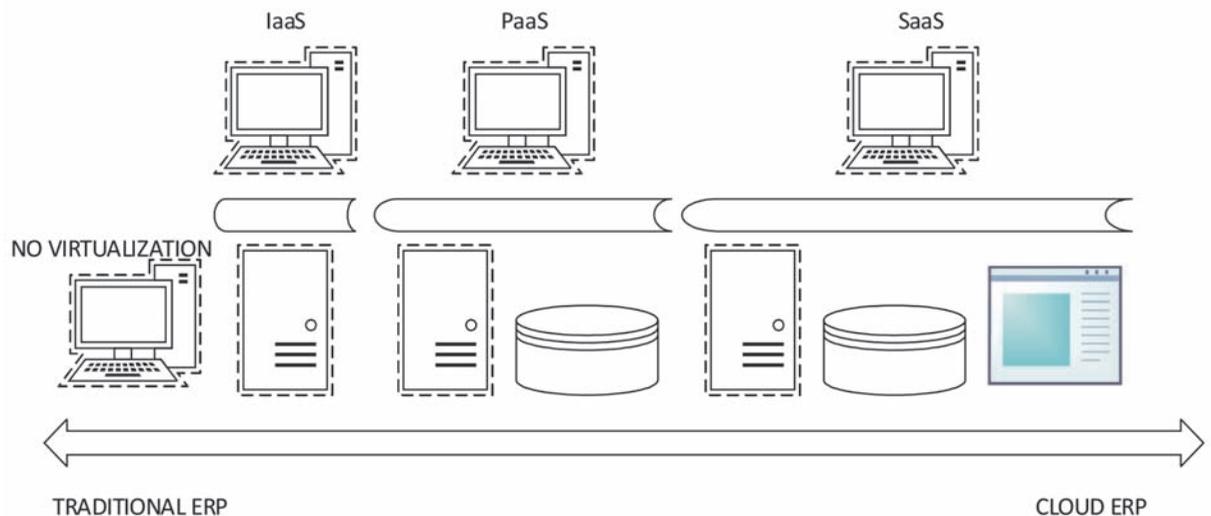


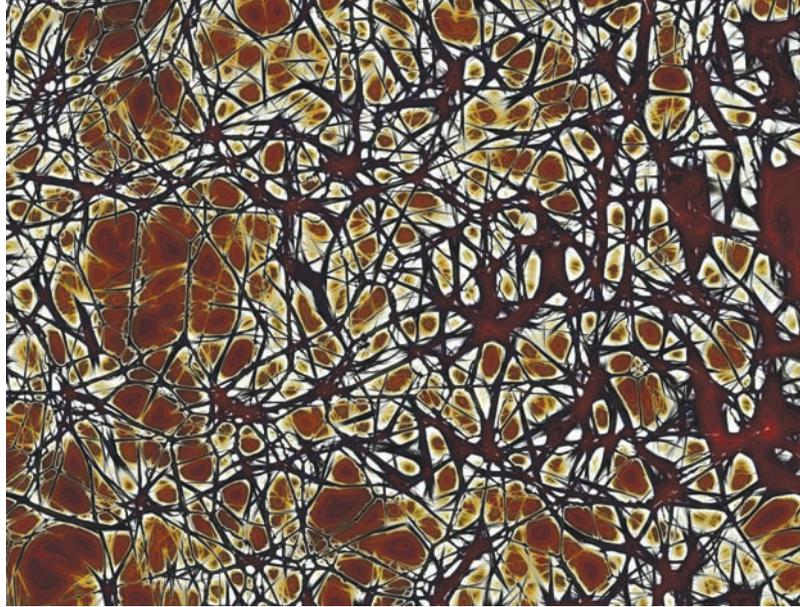
Figure 1 – Cloud vs. traditional infrastructure

Migrating to cloud technologies gives ERP the chance address to SMEs:

- ERP public cloud based, suitable for SMEs where ERP is offered as SaaS, whole computing infrastructure being virtualized (database server, application server, web server), customer accessing a webpage;
- ERP private cloud based, for large companies, with high investments cost in

datacenter in infrastructure, benefiting of secure connections and meeting customer requirements regarding data privacy and security issues;

- ERP hybrid cloud based, mixing above-mentioned types, gaining advantage over reliability, offering solutions for recovery in case of failure from two independent cloud structures.



Actual trend of ERP systems is focusing on including mobile devices into infrastructure chain, with less computing resources, forcing in that way cloud based technology penetration. If cloud technology, together with all connected benefits, is adopted widely to company level, cloud based ERP will be the next generation. The cloud market study (Johansson 2012) indicates that a large number of companies are facing to cloud challenge, where a grouping, from technology adoption maturity of respondents is:

- Cloud watchers, companies that develops cloud strategies and infrastructure, intending to implement them in the near future;
- Cloud beginners, having started the cloud projects, not yet decided the blue print for the cloud solution, seeking for experience in future projects,
- Cloud explorers, with multiple cloud based projects, targeting a larger adoption of cloud technologies;
- Cloud focused, where companies are already oriented their operations to cloud and want to improve cloud services.

The same study indicates that 3% from the respondents have no plans for cloud adoption, 27% are in the watching phase, 38% of companies are exploring cloud technologies, raising from 25% in 2014 and a slightly decrease, from 22% in 2014, to 18% in case of heavier usage of cloud. As cloud type, 30% of companies use public cloud services, 58% hybrid cloud and 5% private cloud only.

ERP Implementation Process

From project management point of view, the implementation process of ERP solution, for a large company, with subsidiaries in different countries and multiple locations

in each country, with thousands of users could become easily a nightmare. However, one-step at the time. ERP providers successfully designed and delivered implementation handbooks and methodologies (e.g. SureStep for Microsoft Dynamics products). Specific to ERP implementation is the large volume of changes to the initial project, accepted by both the customer and the provider. Due to these changes, system development/implementation must respond to customer request for change and data volume variance (Velcu, 2010).

Implementation process stages and documents. The overview of ERP implementation process, revealed in fig. 2, consists in several stages and system status. Each of them are described below, having in mind, that, the customer and consulting company should respect, each stage, each document for final success of implementation.

Initial offer product implementation includes a number of options for modularization, specific data types. It presents the main price option regarding ERP license and prices for customized features. As selling situation, the customer was never using an ERP before, or, on contrary, wants to change an existing system. The stage of stating the scopes and objectives of ERP



implementation is a very important, the accurate set of customer expectations avoids further failure of implementation. Panorama ERP Report 2015 mentioned above covered reasons why a customer wants to implement an ERP system. The most relevant reasons are: improve business performance, standardize global operation, and integrate systems across locations. Mentioning the need of standardization, often an ERP implementation gives the opportunity to the company to implement quality assurance systems certifications (Ionescu, 2013).

After the initial offer acceptance, the consulting company details the customization wanted by the customer. The stage description and analyses of current situation and state desired functionalities implies a complex team, formed by experts in various fields, both from consulting company and customer. In this stage, the AS IS situation of the customer is analyzed, from business and technical point of view. It is a great opportunity for the customer

to identify business process issues, technical issues or other type of issues those constraints the customer to achieve better business results and comply its customer needs. What is recommended in this stage, when customer explores the functionalities and cost estimates of the implementations project, with a 58% of implementation exceeding the budget (Panorama Consulting, 2015), is that the customer and consulting company to develop a strong relationship based on trust. The unforeseen costs do not entirely cover the exceeding of 58%, but also by new customization features wanted by the customer, during the whole implementation process, in comparison against the initial implementation contract.

The customer made implementation decision after the consulting company presents the final offer. The customer and the consulting company signed an agreed form of the implementation contract, stating duration, price, customization features.

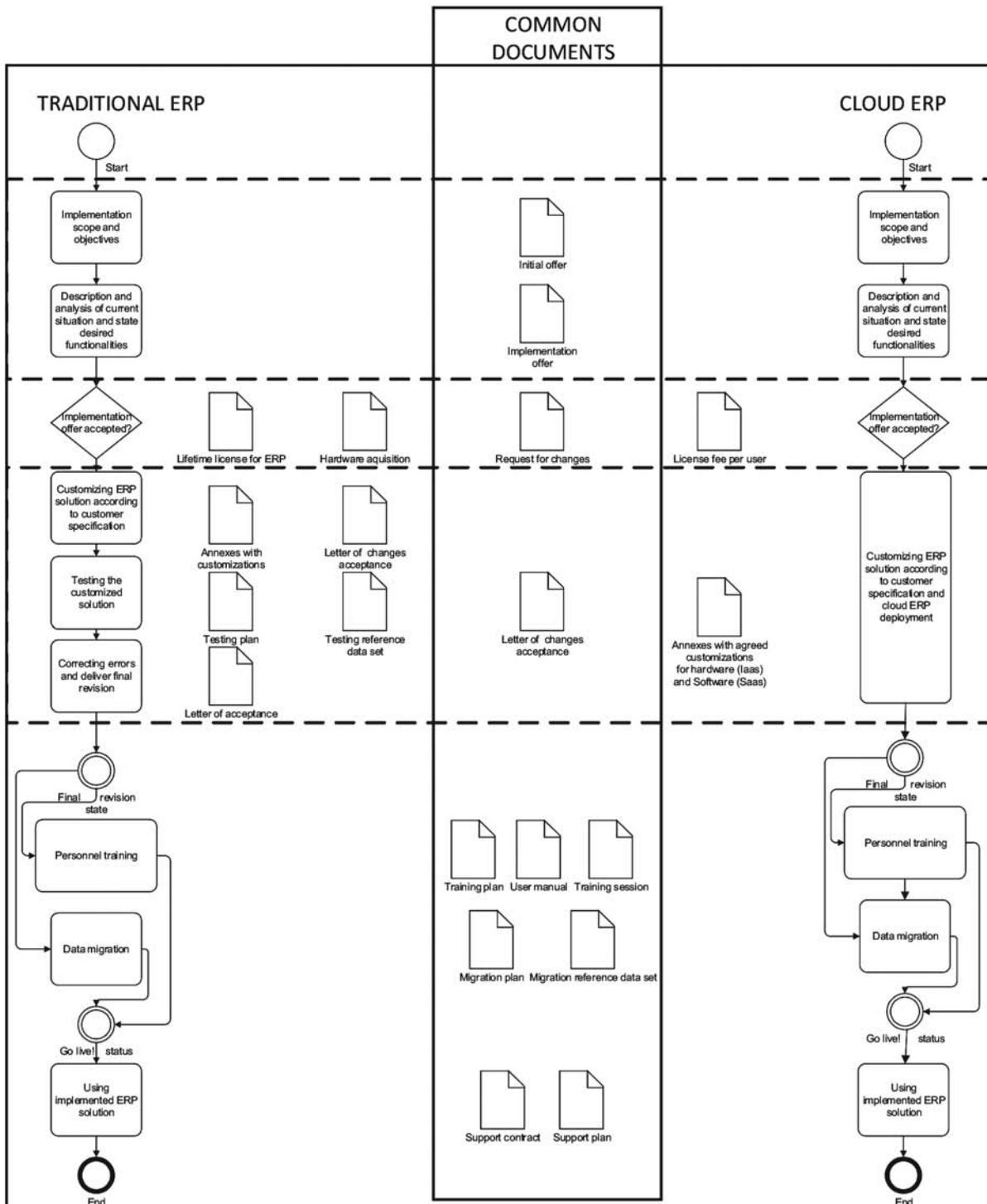


Figure 2 – Cloud vs. traditional implementation flow

The contract comprises as annex, the description of current state analyses. Following the agreement between the customer and the consulting company shall

be a primary planning for the implementation project. Before the start of the execution itself, it have to detail the project execution and transform to into execution

plan, completed by timing the execution plan and resource allocation.

There are methods that enable automation at this level determine the timing and allocation of resources. During customizing ERP solution according to customers' specification stage, more in-depth analyses are made, covering both business and technical aspects. Therefore, depending customer most advantageous situation, decides to adapt its structural organization and business processes to ERP embedded process management or to customize the ERP according to customer current business process.

Addition of new functionalities and further customization are very common fact for this stage, the customer identifying other reports or product features that can be useful into implementation goal achievement. In testing the customized solution stage, the Testing plan is drawn up, including test scenarios, the types of users that perform testing and types of failures identified. Testing is performed using a Testing data reference set. As a result of this phase, is delivered a testing report contains checked functionalities and possible inconsistencies of the system. After correcting the errors reported in the testing stage and signed the letter of acceptance the ERP system fulfills the conditions necessary for final revision state. Errors may occur in the later stages, even in production stage, and are corrected by consulting company. Having the final revision status achieved, the personnel training stage could be performed. The consulting company, together with the customer, define a training plan, stating the reference training materials, type of training sessions and customer employees that attends to those training sessions. Data migration stage covers the process of initial system data population with items, stock,

customers, vendors, account balance, manufacturing capacities, service contract types, jobs, human resources etc.

This process involves data migration from different sources (like excel file, older database system, previous ERP) and has importance into ERP implementation success. It demands a strong commitment from both, customer and consulting company. All migrated data are included into migration reference data set. Everything now is set and system achieves go live status. From this point is recommended to use only the implemented ERP solution. Is easier to plan this start point in the beginning of fiscal year. Further, the consulting company assists the customer in ERP operation and for possible technical issues. This means to have agreed a support contract and a support and maintenance plan.

Costs and object of license. As cost categories, we need to emphasize hardware costs, meaning costs regarding hardware procurement, necessary to implement



the ERP product, software costs, license for operating system, database server and ERP product (sometimes other software are prerequisites to assure all functionalities, like Office 365 in case of data export or Outlook and SharePoint for contact, messages, meetings synchronization) and customization costs. The last category includes business consultancy, technical consultancy, request for changes against standard edition, training costs and installation/migration costs. ERP implementation process usually implies three parties: the ERP provider, the ERP consultant and the customer. Therefore, the customer pays, according to implementation contract, for the right to use ERP, for a stated period, signing the End User License Agreement (EULA) covering the rights and obligation for all parties implied. In addition, the customer is the beneficiary of consulting services provided by the consulting company. Each implementation involves personalized costs structure and importance for each cost type

in the budget. Finally, we underline the fact that the customer is not the owner of implemented ERP.

Traditional and Cloud ERP Implementation

Even ERP implementation offer significant benefits for the customer, when such high rate of failure exists, with more than 40% customers receiving less than 50% planned benefits, the financial loss must be assumed. Delaying delivery terms, lack of knowledge regarding contract obligation often led to trials in civil cases, between customer and consulting company. Therefore, that is why very important to asses, implement and respect implementation procedure and documents, as a mutual written proof of respect between parties.

As could be seen, most factors leading to success or failure might be provided within an ERP implementation process. In fact, decisions made by the implementation in the early stages (10% of the design cycle), 90% influence project outcomes. In published case studies and from personal perspective can be determined the following common causes that led to the failure of ERP implementation projects (Botta-Genoulaz, 2005), in relationship to implementation stages described above. *Misunderstanding of ERP purpose*, most common into first stage of initial offer. The customer should understand very accurate what ERP purpose is. In addition, the consulting company must clearly expose to the customer the kind and volume of effort involved in such implementation. ERP is not just a software package used to print invoices, is complex knowledge system, embedding business and technical processes at company level. Understanding and set correct the customer expectations





is imperative. *Lack of top management support*, from various causes, starting from misunderstanding of impact level that implementation have on company level and ending to personal ambitions of people that occupy top management positions, is a challenging situation.

As any other project, the ERP implementation should state clearly, at least in the contracting stage, the *key performance indicators* (KPI) use to judge the success or failure of implementation. When those are missing or unclear, each party consider that his efforts are more the enough to satisfy the contract obligation. General terms like „respecting national laws and regulations” is recommended to be avoided and replaced with targets that are more specific. Also, is recommended to state for each stage specific KPI, in order to track the implementation progress more accurate, and to avoid stuck situations. During the customization process, decisions are made to change the current business processes, as a result of solutions provided by

the consulting company to optimize the activity of the customer. Keeping those in sight, *weak change process management* lead to obvious failure. Because customer employees often ERP implementation process saw as supplementary work and they are not fully understand the ERP benefits, it generates a low level of user involvement.

In addition, fear of changes is another important aspect. The beginning is very enthusiastic for both parties, after that, if top management support is missing, correlated with duration of such process, the involvement is decreasing dramatically, generating obvious issues to the entire process. Another important cause of failure is data accuracy used for describing current situation and data migration. If the initial data is not correct, any generated report will include errors compared to real situation, despite of user operation fairness.

The recommendation is that data used for migration to be collected into a reference set, very carefully checked, and agreed by both parties as contract annex. The most common mistake is that the consulting company is not involved into migration process, the customer might introduce errors into initial data setup by lack of knowledge or using an inappropriate procedure. Better results are obtained if a critical mass of employees are trained to perform their daily task. Usually, in this stage, the implementation costs exceeds the budget and the project is overdue. So, instead of reducing the number of employees, that attend to training, is recommended to cut cost from using cheaper training type, like virtual lessons. Underestimating the importance of education and training is an important factor that could make from an ERP implementation a failing process. In addition, the lack of training materials and user manual in native language of user

generates understanding and operation errors, that later will conduct to an endeavor to find the cause of error found.

Specific implementation issues. Comparing costs regarding the ERP implementation, it can be noticed some difference, between cloud and traditional ERP (Table 1). First, regarding hardware infrastructure, operating systems, database server and ERP license, needed into traditional form for ERP implementation, are replaced by annual fee per user. This might be relevant for SME and a reduced number of employees, because if we are taking into account several thousands of users, the annual fee becomes important. Anyway, this comparison should have in sight also, the cost of hardware maintenance, parts and person-months, software upgrade and, in some untested solutions, time and availability.

Customizing ERP, remains a special fee. If the ERP customer request special features, the partner still need to add/change the base ERP components and acquiring AS IS status of company. Regarding on premise deployment of ERP, it is more suitable for SME, being localized for companies' operation country. Furthermore, the tele-

com companies offers now, as package ERP modules for SMEs, having limited functions.

Having in mind the switching of ERP solution, in case of traditional ERP, the migration from one solution to another is often difficult to achieve. In case of cloud ERP, depending on what service it acquired (IaaS or PaaS), the virtual machine of ERP could be migrated easily from one cloud provider to another.

In addition, from security point of view, the internal policies are no longer in debt of the company, in cloud case, is completely dependent of cloud service. This issue is addressed by cloud service provider at cloud level and is not customized for each company. To enforce the security policies on company level, a good possibility is to host own cloud. Anyway, the security issue has to be enforced also in case of public cloud access.

Nevertheless, the cloud version is completely dependent on network performance, but as an advantage the system data and recovery option is more advanced. The comparison between traditional and ERP implementation is widely covered in the literature (Elragal 2012, Mijač *et. al.*, 2013, Duan *et. al.*, 2013, Awad 2014).

Table 1 – *Type of costs traditional vs. cloud ERP*

Type of costs	Traditional ERP	Cloud
Lifetime ERP license	x	
Lifetime database license	x	
Annual fee per user		x
Hardware infrastructure (for ERP and Database server)	x	
Customizing fee for ERP functions	x	x
Third party application fee	x	x
Data migration fee	x	x
Internet connection fee		x
Trainings	x	x
Maintenance	x	
Support	x	x

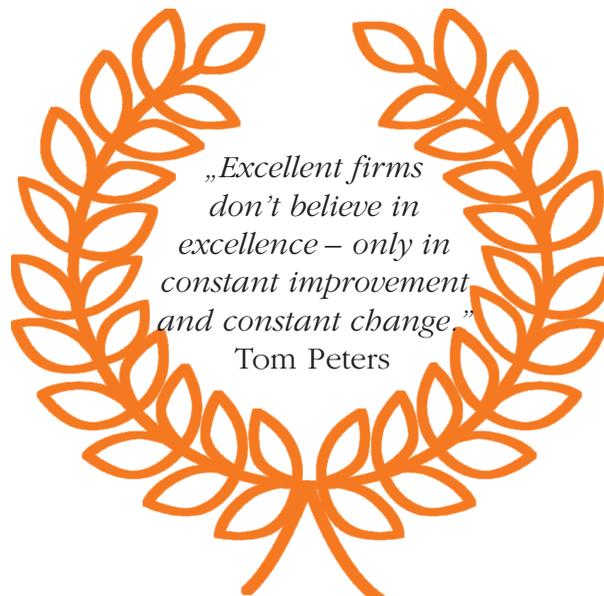
Conclusions

Even the delivering solution differs for traditional and cloud ERP, the business process of software deployment is largely common, covering the general implementation risk above explained. In the cloud version, customization, training and support remain fees separately from the standard cost. Virtualizing ERP might come under various forms, combining different services.

The ERP systems have embedded own business processes, corresponding to best practices in companies management. The implementation is often a knowledge transfer of business practices to the customer. The ERP provider (e.g. Microsoft, SAP, Oracle) release to market various ERP systems, but, because of high software complexity, requires strong expertise in various

fields (software, business process management, accounting, law, engineering) reasoning why, usually the customer get help from a consulting company, better known as partner of ERP provider.

The whole processes is assisted by deployed procedures developed by ERP provider. A clear step forward could be seen into large ERP adoption, on SME scale, by reducing cost of use, into cloud perspective. With an increased number of implementation, exposing more people to ERP culture and a better relationship between academia and business environment, will make available the premises of decreasing the failure rate. The presented example were identified by primary author as result of it participation as independent IT expert in trials. Both authors leads academic programs for business software solutions, as Microsoft Dynamics Alliance members.



REFERENCES

1. Awad, H. (2014), *Cloud computing as an operational model for ERP services: Definitions and challenges*. International Journal of Innovation and Applied Studies 8, no. 2, pp. 499-502.
2. Botta-Genoulaz, V. and Millet, P.A. (2005), *A classification for better use of ERP systems*. Computers in Industry, 56(6), pp. 573-587.
3. Brockmann, C. and Gronau, N. (2009), *Business Models of ERP System Providers*. AMCIS 2009 Proceedings, paper 582, pp. 1-11.
4. Căruțasu, G. (2011), *Sisteme integrate ERP și CRM. MS Dynamics NAV 2009*, Editura Universitară (In English: Integrated ERP and CRM Systems).
5. Căruțasu, G. et. al., (2011), *Sisteme integrate informatice pentru management*, Editura Universitară (In English: Integrated Informatics Systems for Management).
6. Duan, J., Faker, P., Fesak, A. and Stuart, T. (2013), *Benefits and drawbacks of cloud-based versus traditional ERP systems*. Proceedings of the 2012-13 Course on Advanced Resource Planning.
7. Elgral, A., and Kommos, M.E. (2012) „*In-house versus in-cloud ERP systems: a comparative study*.” Journal of Enterprise Resource Planning Studies.
8. Ionescu, S.C. (2013), *Extending the concept of quality*. International Conference on Management and Industrial Engineering.
9. Johansson, B., et. al., (2014). *Cloud ERP Adoption Opportunities and Concerns: A Comparison between SMES and Large Companies*. In Pre-ECIS 2014 Workshop „IT Operations Management” (ITOM2014).
10. Mijac, M., Picek, R., and Stapik, Z. (2013), *Cloud ERP system customization challenges*. In Central European Conference on Information and Intelligent Systems.
11. Moohebat, M. and Asemi, A. (2010), *A comparative study of critical success factors (CSFs) in implementation of ERP in developed and developing countries*, International Journal of Advancements in Computing Technology Volume 2, Number 5, pp. 99-110, December.
12. Panorama Consulting, (2015), *ERP Report*.
13. Purdescu, C.A., Purcărea, A.A. and Niculescu, C. (2011), *Logistics system functions costs analysis – a step forward to customer satisfaction*. International Conference on Management and Industrial Engineering.
14. RightScale (2015) *State of the cloud report*, available at <http://assets.rightscale.com/uploads/pdfs/RightScale-2015-State-of-the-Cloud-Report.pdf>.
15. Rosenbroijer, C.J. (2014) *Customer Relationship Management and business analytics: a lead nurturing approach*. Proceedings of DYNAA, 5(1).
16. Salleh, S.M., Teoh, S.Y. and Chan, C. (2012), *Cloud Enterprise Systems: A Review Of Literature And Its Adoption*. Pacific Asia Conference on Information Systems PACIS p. 76.
17. Stadtler, H. (2015), *Supply chain management: An overview*. Springer Berlin Heidelberg.
18. Stark, J. (2011), *Product lifecycle management*. Springer London.
19. Trusculescu, A., Drăghici, A. and Albuiescu, C.T. (2015) *Key Metrics and Key Drivers in the Valuation of Public Enterprise Resource Planning Companies*. Procedia Computer Science 64, pp. 917-923.
20. Velcu, O. (2010), *Strategic alignment of ERP implementation stages: An empirical investigation*. Information & Management, 47(3), pp. 158-166.

Customer Satisfaction in the Automotive Industry

Agnieszka Misztal (1), Iuliana Grecu (2), Nadia Belu (3)

(1) Poznan University of Technology, Poland, (2) University POLITEHNICA of Bucharest, Romania,
(3) University of Pitești, Romania

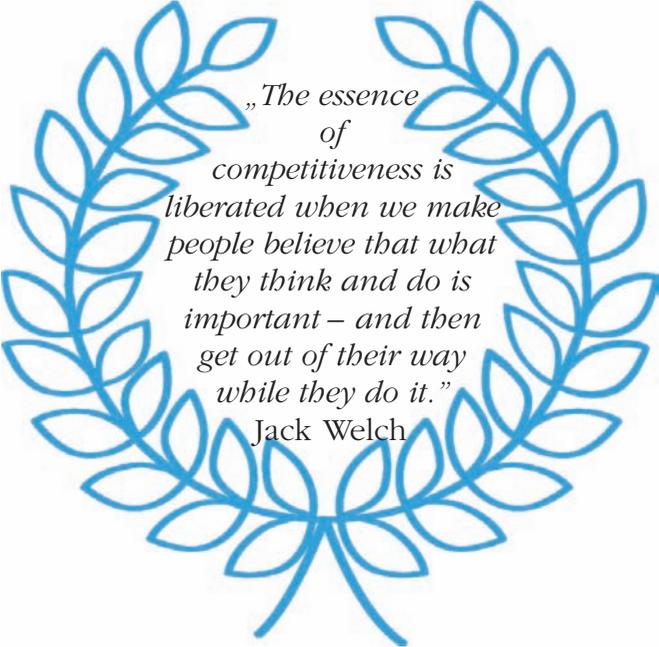
Abstract

ISO TS 16949 is a quality management assurance system that is primarily focused on the automotive industry. By applying this quality system standard, automotive manufacturers can offer superior products and good services to customers. In this study, the attention has been focused on the application of the core tools of technical specification. The case study examined demonstrates how the effective adoption of the core tools of the standard can help in increasing customer satisfaction in the automotive industry for powder painting processes.

Keywords: quality management system, APQP – Advanced Product Quality Planning, PPAP – Production Part Approval Process, FMEA – Failure Modes and Effect Analysis, 8D Methodology

Introduction

The automotive industry is one of the most important industries in the world that concerns not only the economy but also the world culture. This is vital for the growth of the labor market, providing, along with related fields, jobs for millions of people, creating the basis for a multitude of services. Each company in the field must maintain product quality, deliver on time and at a competitive price in order to achieve customer satisfaction. Quality planning is a process that leads to the effectiveness and efficiency of production processes. The correctness of quality planning lies in the fact that the individual stages and operations process should be designed so



*„The essence
of
competitiveness is
liberated when we make
people believe that what
they think and do is
important – and then
get out of their way
while they do it.”*

Jack Welch

as to eliminate the possibility of non-compliance. However, in the case of their occurrence, a high probability of detection should be ensured (Misztal, 2014). For this, companies from this field must have a Quality Management System Implemented according to ISO/TS 16949. The goal of this Technical Specification is the development of a quality management system that provides for continual improvement, emphasizing defect prevention and the reduction of variation and waste in the supply chain (ISO, 2008). ISO/TS 16949 defines the quality management system requirements for the design and development, production and, when relevant, installation and service of automotive-related products. It is applicable to sites of the organization where customer-specified parts, for production and/or service, are manufactured.

This paper presents the quality management tools required by ISO/TS 16949 to satisfy the customer's requirements. The improvement in the customer complaints process is achieved by an effective use of the 8D methodology.

A New Standard for Automotive Industry

With the assistance of the 176 Technical Committee in the International Standards Organization (ISO), the International Automotive Task Force (IATF) and the Japan Automobile Manufacturers Association (JAMA), ISO/TS 16949 was formed to provide the automotive industry suppliers a set of system quality management standards throughout the entire process including design, development, production and service. It is based on ISO 9001 and national quality standards within the automotive industry, and can easily be integrated with standards already in use. ISO/TS 16949 contains the following five core tools, which make the requirements for quality management systems even more rigorous: Advanced Product Quality Planning (APQP), Production Parts Approval Process (PPAP), Failure Mode and Effects Analysis (FMEA), Statistical Process Control (SPC) and Measurement System Analysis (MSA) (Table 1):

Table 1 – Core tools and ISO/TS requirements

Core tools	ISO/TS 16949:2009 Requirements				
APQP	7.1 Product realization	7.1.1 Planning of product realization – Supplemental	7.1.2 Acceptance criteria	7.1.3 Confidentiality	7.1.4 Change control
PPAP	4.2.3.1 Engineering specifications	7.1 Product realization	7.2 Customer-related processes	7.3.6.3 Product approval process	7.5. Production and service provision
FMEA	4.2.3.1 Engineering specifications 7.1.4 Change control	7.3.1.1 Multidisciplinary approach 7.3.2.3 Special characteristics	7.3.3.1 Product design outputs	7.3.3.2 Manufacturing process design output	7.5.1.1 Control plan
SPC	7.1 Product realization	7.5 Production and service provision	8.1 Measurement, analysis and improvement	8.4 Analysis of data	8.5 Improvement
MSA	7.5.1.1 Control plan	7.6.1 Measurement system analysis	8.1.1 Identification of statistical tools	8.1.2 Knowledge of basic statistical concepts	



Advanced Product Quality Planning (APQP)

Advanced Product Quality Planning (APQP) is a structured method for defining and executing the actions necessary to ensure a product satisfies the customer. The goal of APQP is to facilitate communication between all persons and activities involved in a program and ensure that all required steps are completed on time, with a high quality-of-event, at acceptable cost and quality levels (Misztal, 2014). APQP provides a comprehensive and flexible system for maximizing business success and has been considered a revolutionary approach to product and process improvement. Some of the benefits of using APQP in quality improvement are: to direct resources to satisfy the customer, to promote early identification of required changes, to promote documentation, to achieve standardization, to provide a quality product on time at the lowest cost.

The APQP phases are as follows (AIAG, 2008):

1. Plan and Define Program. In this phase, the customer needs are transformed by

the company into requirements and specifications.

2. Product Design and Development. This section discusses the elements of the planning process during which design features and characteristics are developed into a near final form.
3. Process Design and Development. This section discusses the major features of developing a manufacturing system and its related control plans to achieve quality products.
4. Product and Process Validation. In this section, the product is being created for the first time using the tools and techniques developed in the previous two phases. At the end of this phase, once the product and process are validated and controlled properly the Production Part Approval Process – PPAP takes place (samples are submitted to customers).
5. Feedback, assessment and corrective action. This phase works towards the continuous improvement of the organization which is needed for any organization to compete in today's expanding market.

The research showed that only few techniques recommended for use for the APQP process is well known, understood and applied in automotive companies. There are also techniques for which company representatives unanimously declared no use. However, there is a group of techniques that would create a methodological support and cover the automotive enterprises. This need confirms good knowledge but also lack of the ability to apply (Misztal *et. al.*, 2014).

Production Part Approval Process (PPAP)

Production Part Approval Process (PPAP) is one of the most important tools to ensure

that the supplier understands all customer requirements and can translate them into processes that meet these requirements is „The Production Part Approval Process” known as „PPAP” (AIAG, 2006). At the same time through the PPAP approach, the supplier ensures that the manufacturing process has the potential to produce a permanent product in compliance with the requirements of production and the cadence imposed. The PPAP is applied to the products realized in a defined productive plant,

with reference to the materials, machinery, instruments and methods of production. It may be required for all components and materials of the finished product, also if processed by external sub-contractors. It is required in case of new component or part, design or process modification, materials or suppliers’ variation, machines or tools variation (Bevilacqua *et. al.*, 2011), Rewilak and Tokaj, 2012). Depending on customer request a PPAP file consists in the following documents (Table 2):

Table 2 – PPAP – Requirements for supplier

REQUIREMENTS – PPAP ELEMENTS	Level 1	Level 2	Level 3	Level 4	Level 5
1. Design Record	R	S	S	*	R
- for proprietary components/details	R	R	R	*	R
- for all other components/details	R	S	S	*	R
2. Engineering Change Documents, if any	R	S	S	*	R
3. Customer Engineering Approval **	R	S	S	*	R
4. Design FMEA (DFMEA)	R	R	S	*	R
5. Process Flow Diagrams	R	R	S	*	R
6. Process FMEA	R	R	S	*	R
7. Control Plan	R	R	S	*	R
8. Measurement System Analysis	R	R	S	*	R
9. Dimensional Results	R	S	S	*	R
10. Dimensional Results	R	S	S	*	R
11. Initial Process Studies	R	R	S	*	R
12. Qualified Laboratory Documentation	R	S	S	*	R
13. Appearance Approval Report (AAR) **	S	S	S	*	R
14. Sample Product	R	S	S	*	R
15. Master Sample	R	R	R	*	R
16. Checking Aids	R	R	R	*	R
17. Records of Compliance with Customer-Specific Requirements	R	R	S	*	R
18. Part Submission Warrant (PSW)	S	S	S	*	R
Bulk Material Checklist	S	S	S	*	R
Required way of presenting the evidence to customer:					
S	The organization shall submit to the customer and retain a copy of records or documentation items at appropriate locations				
R	The organization shall retain at appropriate locations and make available to the customer upon request				
* The organization shall retain at appropriate locations and submit to the customer					
** If required / applicable					

Source: Bevilacqua *et. al.*, 2011

The PPAP documentation has to be kept for one year more than the period of time in which the product is considered as active.

Measurement Systems Analysis (MSA)

MSA uses statistical and diagrammatic methods for experimental design and statistical analysis of measurement system error to assess variance in measurement systems, allowing an assessment of the variance in individual measurement equipment and inspectors, and providing a basis for the management of measurement equipment systems (Yeh *et. al.*, 2015). MSA is usually performed by designing suitable gauge repeatability and reproducibility (R&R) experiments, ignoring available data generated by the measurement system while used for inspection or process control (Scagliarini 2015). The main objective is to collect important input and output data from the process, estimate the reliability of the data, and analyze which aspects of inspectors, machines, materials, methods, or the environment produce variations. The analyzed data is then used as a reference for future improvements. Therefore, the main reason for the use of MSA is that the variation caused by inspectors, machines, materials, methods, or the environment can be controlled within a reasonable range and variations between products can be identified (Yeh *et. al.*, 2015, AIAG, 2010).

Statistical Process Control (SPC)

Statistical process control (SPC) is the application of statistical methods to the monitoring and control of a process to ensure that it operates at its full potential to produce a conforming product (Prajapati 2012, AIAG 2005, Kim 2014). Key tools in



SPC are control charts and cause and effect diagrams, focused on continuous improvement. The application of SPC permits to improve the knowledge and the characterisation of the process helps the designer to guarantee the correspondence between product and process, allows to promptly identify process drift and to take real-time corrective actions avoiding non-complying products. Finally, it is used to monitor processes in order to reduce their variability and obtain a continuous quality improvement as defined in the Deming cycle: PDCA (Bevilacqua *et. al.*, 2011).

Failure Mode and Effects Analysis (FMEA)

Failure Mode and Effects Analysis (FMEA) is one of the first structured, systematic and proactive techniques used for failure analysis. It is a widely used engineering technique for defining, identifying and eliminating known and/or potential failures, problems, errors and so on from system, design, process, and/or service before they reach the customer (Stamatis, 2003). For analyzing a specific product or system, a cross-functional expert team should be set up to conduct FMEA. The first step in FMEA is to identify all possible failure modes of the product or system. FMEA uses the Risk Priority Number (RPN) methodology. This methodology involves the assessment of

Table 3 – Severity, probability of occurrence and likelihood of detection scales

	Severity (S)	Probability of Occurrence (O)	Likelihood of Detection (D)
1	No discernible effect.	> 1/50000	1 Almost certain chance of detection. There are automatic „shut-offs” or constraints that prevent failure.
2	Problem identified by the operator, but the sorting of the product isn't necessary	> 1/10000	2 Failure (or cause) is easily detected or controlled (visually by comparison with a device) and a 100% control is established in the manufacturing range
3	A part of production sorting and retouched by the operator	> 1/5000	3 Failure (or cause) is easily detected or controlled (visually by comparison with a device) and a control with a frequency is established in the manufacturing range
4	A part of production sorting and retouched in a dedicated post	> 1/1000	4 Failure is easily detected (visually by comparison,...), but self-control isn't established in manufacturing range
5	A part of production sorting and scrapped	> 1/500	5 The failure is not detected or controlled and self-control method is not completely adapted
6	Stopping internal production	> 1/100	6 The failure is not detected or controlled easily and it isn't established a self-control in the manufacturing range
7	Stopping production at the customer with the possibility of retouching in line	> 1/50	7 Cannot detect or is not checked
8	Stopping production at the customer without the possibility of retouching in line	> 1/20	
9	Severity ranking when a potential Failure Mode affects safe vehicle operation and/or involves noncompliance with government regulation with warning.	> 1/10	
10	Very high Severity ranking when a potential Failure Mode affects safe vehicle operation and/or involves noncompliance with government regulation without warning.	> 1/5	

failure modes (whether known or potential) with respect to their „severity (S)”, „probability of occurrence (O)”, and „likelihood of detection (D)” using numerical scales ranging from 1 to 10 (Table 3).

These ratings are then multiplied together to get the RPNs. In equation form $RPN = S \times O \times D$ (Chrysler Corporation *et. al.*, 2008). Generally, the failure modes with higher RPNs are considered to be



more important and will be given higher priorities for correction. (Bozdag *et. al.*, 2015, Liua *et. al.*, 2015). According to the values of RPNs, the failure modes can be prioritized and then proper remedial actions should be preferentially taken on the failure modes with high levels of risk.

According to the ISO/TS 16949, in automotive supplying companies based on this standard, organizations shall have a defined process for problem-solving leading to root cause identification and elimination. It is up to the organization as to which method to use. However, if a customer-prescribed problem-solving format exists, the organization shall use the prescribed format (ISO, 2008).

Presently, 8D (also called G8D, Global 8D, TOPS 8D) method is a tool of ISO/TS 16949 and has been widely applied in automotive industries for service or products problem solving, including the problems with supplier qualification confirmation, manufacturing process deviations, defects, maintenance, customer complaints, returned purchases etc. (Chen and Cheng, 2010). The relationship between 8D methodology and FMEA is very strong. When a problem is encountered, the 8D is often used to find a Root Cause and permanent solution. The FMEA may provide many of the 8D inputs.

The 8D methodology is effective in developing proper actions in order to eliminate root causes and in implementing the permanent corrective actions to eliminate them. It also contributes to exploring the system of control that allowed the escape of the problem (Riesenberger and Souza, 2010, Korenko *et. al.*, 2013). The 8D methodology involves teams working together in order to solve quality problems, using a structured 8 phases (Table 4).

Table 4 – Phases of the 8D methodology

No.	Phase of the 8D methodology	Description
1	Problem description	Defining the internal or external problem with accuracy and concision. The root cause of the problem is found by using the „5 Whys?“ WWWWH (Who?, What?, Where?, When?, How?) methods. A problem well-defined is a problem half-solved.”
2	Reference to similar products	This phase is performed with the purpose to detect other products with the same nonconformity risk. The following aspects must be taken into account: the list of the detected problems, the place of their detection, the technological process in question, what other products are realized in the same process, whether here is also a nonconformity risk in what they are concerned, where these products are used.
3	The first analysis	Identifying the causes of the failure to detect the problem: - in what place should the nonconformity be detected? - why wasn't the nonconformity detected? Both the manufacturing process and the control process are taken into account. The point where the problem has escaped the control system (escape point) must be sought for and detected, as well as the moment when it could have been detected.
4	Immediate action plans	Defining and implementing setting immediate action plans to protect the internal/external customers from the problem until permanent corrective actions can be implemented. The work tools recommended for the performance of this stage are datasheets, control ranges, audit, planning.
5	Final analysis	This phase is carried out with the purpose of obtaining a real and complete of the situation in order to find the root causes and to decide the optimum actions required for the treatment of the causes. This phase aims at finding the causes, not the solutions. The final analysis implies a thorough analysis of the data. For this purpose, multidisciplinary team work is used; such teams go on the respective site in order to understand the problem. It must be noted that most of the complex problems usually have more than one root cause that interact with each other. The validity of these causes should be verified because it is essential to treat the real causes.
6	Final action plans	Establishing an implementation plan for permanent corrective actions. Permanent actions are analyzed and applied in order to prevent the recurrence of the problem permanently. The final elimination action must be focused on the real main root causes (phase 5) and on the escape point (phase 3). Thus, the aim is to solve both the root causes of the problem, as well as the root causes of the failure to detect the problem. In order to prevent the recurrence of the problem, a number of actions are applied: updating procedures, training the personnel.
7	Confirmation of the action plans	Phase 7 of the 8D method is very important due to the fact that it allows for the closing of the action plans. The effectiveness of the final action plans is checked. It is a key stage meant to avoid the recurrence of the quality problem. The Supplier Quality Service will require evidence of the effectiveness of the action plans and, in order to be able to validate the 8D, may also perform an audit if it finds that the effectiveness of such actions is not trustworthy. So long as the effectiveness of the actions is not proven, the supplier should make sure that it supplies 100% good parts by carrying out checks. The Supplier Quality Service will be notified in what the results of such checks are concerned.
8	Preventing a recurrence of the problem	Identifying possibilities for improvement and establishing a process of initiatives for improvement: modifying specifications, update training, review work flow, and improve practices and procedures in the scope required to prevent recurrence of this and all similar problems in the future.

The Application of 8D Methodology

In our paper, we have focused on the use of 8D method to solve the various problems encountered in the production of automotive components. In our case, it was a problem that occurred during powder painting processes. Powder painting is the application of solid powder to create

industrial coatings. The powder is applied by an electrostatic process to a substrate, usually metal, and acquires excellent properties when the particles are heated and polymerize on the substrate.

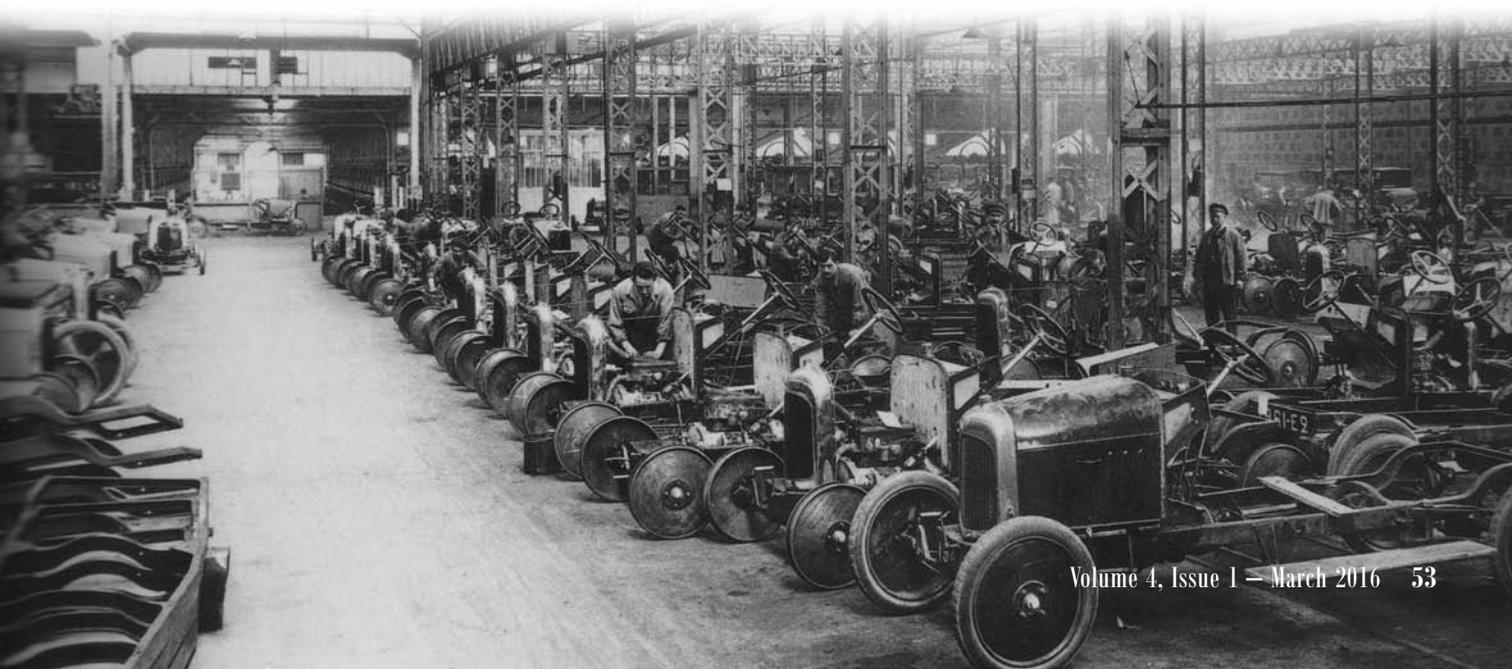
This problem was solved by using an 8D method, implemented and reported by a number of tables (Table 5):

Table 5 – 8D report

Reference Number: 1904007524	Issued by: C.A.	Validated by: R.G.	
Parts name: Support	Function	Function	
	Date 23.11.2015	Date: 23.11.2015	
1. Details of the problem		Date:	
Report N°: 6102-3339		Affected quantity: 4	
Description: <i>Painting failures.</i> <i>Areas uncovered with paint</i> <i>Paint scratches</i>			
		Yes	No
	Recurrence		√
2. Other concerned similar products?			
Can this defect appear on other similar parts?			
	Yes	No	Comments / Results
Other pieces	√		
Products same family	√		
Left/Right		√	
Symmetric product		√	
Front / Back		√	
Others		√	
3. First analysis			
At what moment in the process, would the nonconformity have discovered?			
		Yes	No
During the Manufacture Process		√	
On the finished product (by ex: final Control)		√	
Before the expedition			√
Which are the non-detection reasons? <i>New parts</i> <i>Nonconforming self-control</i>			

4. Immediate action plan			
Which are the actions began to prevent the delivery of not corresponding products to the customer?			
	Actions	Quantity conform	Quantity Not conform
During the manufacturing process		0	0
Current stock		0	0
Stocking in Shop		0	0
Spare pieces		0	0
Others		0	0
How are OK products identified? Labeled: Checked 100%			
Expedition date / Remarks			

5. Final analysis	End date of analysis	23.11.2015
Indicate the real causes on the whole Process: * Man, Material, Machine, Methods * Who, Where, When, Why, How * Changement de fabrication. Processus de Retouches * Maintenance		
Causes:	Responsibility	Service
Nonconforming self-control	D.G.	Production
New products, undisclosed by operators	P.R.	Production
The hanging of parts on the carriers is nonconforming	P.R.	Production
The available conditioning does not protect the parts against scratching due to contact between them	C.A.	Quality
The instruction sheet about the parts hanging is missing	P.R.	Production



6. Definitive action plans	Date of application		W49
Which are the actions organized to prevent the future manufacture of non-corresponding products? (Such as: securitization, Poka Yoke...)			
Actions	Responsibility	Service	Date
Realization of a Quality Alert	C.A.	Quality	W48
Training of the operators concerning the all new products	P.R.	Production	W48
Achievement of the instruction about sheet about the parts hanging to avoid the failures	C.V.	Production	W46
Training of the operators concerning the parts hanging on the carriers	C.V.	Production	W48
Defining, with the customer, the conditionings to protect the parts during transportation	C.A.	Quality	W49
100% Control and labeling of the first three deliveries	C.A.	Production	W48

7. Action Plans Confirmation	Validation date	23.11.2015
The begun actions were confirmed as being effective?	Yes	No
	√	
Comment? <i>8D audit performed to demonstrate if the actions are sustainable and effective.</i>		

8. Preventing a recurrence of the problem	Closing Date:		
After the update of the actions, the following subjects require one updated?			
	Yes	Responsibility	Date
Internal instructions sheet			W48
Manufacturing programme	√		W46
Control Plans, control cards			
FMEA			W46
Plans			
Control equipment, sizes			
Others			
8D Audit	√		W50

FMEA Application for Powder Painting Processes

The evaluation of the failure modes is carried out by scoring the respective risk factors of occurrence, severity, and detec-

tion. For this purpose, scales proposed in table 3 are being used. The failure modes with higher RPNs are assumed to be more important and will be given higher priorities for correction (Table 6):

Table 6 – FMEA Report for powder painting process

Potential failure modes	Potential failure effect	Potential causes of failure	Detection	S	O	D	RPN
FM1. Missing painting	Painting layer nonconforming	C1. Application system fails	Unitary visual control at stall	8	3	5	120
		C2. Insufficient lighting	Unitary visual control at stall	8	1	5	40
		C3. Robot fails	Unitary visual control at stall	8	2	5	80
FM2. Nonconforming Adherence	Painting layer nonconforming (possibility of layer detachment)	C4. Robot fails	Unitary visual control at stall Daily control of adherence	8	2	3	48
FM3. Overload paint	Painting layer nonconforming	C5. Insufficient lighting	Unitary visual control at stall	8	1	5	40
		C6. Robot fails	Unitary visual control at stall	8	2	5	80
FM4. Bending radius nonconforming	Part rupture, assembling impossible	C7. Application system fails	Unitary visual control at stall	8	3	5	120
FM5. Insufficient thickness of paint	Painting layer nonconforming	C8. Application system fails	Unitary visual control at stall	8	3	5	120
		C9. Insufficient lighting	Unitary visual control at stall	8	1	5	40
		C10. Robot fails	Unitary visual control at stall	8	2	5	80
FM6. Grains	Painting layer nonconforming	C11. Presence of dust in the cabin	Unitary visual control at stall	4	2	5	40
FM7. Nonconforming brilliance		C12. Level of baking isn't respected	Unitary visual control at stall Daily control samples per plate	8	2	2	32

Conclusions

Solving claims in the automotive industry is more „delicate” than in other industrial branches due to the fact that the required quality level is higher in this area. Supplying products with nonconformities

that are subsequently mounted on cars may be reflected, in certain cases, in human lives. A well-adjusted claim-solving process in place ensures the supplying entity that it will minimize the claim-related costs, and that its image will not be deteriorated in the client's perception, and also



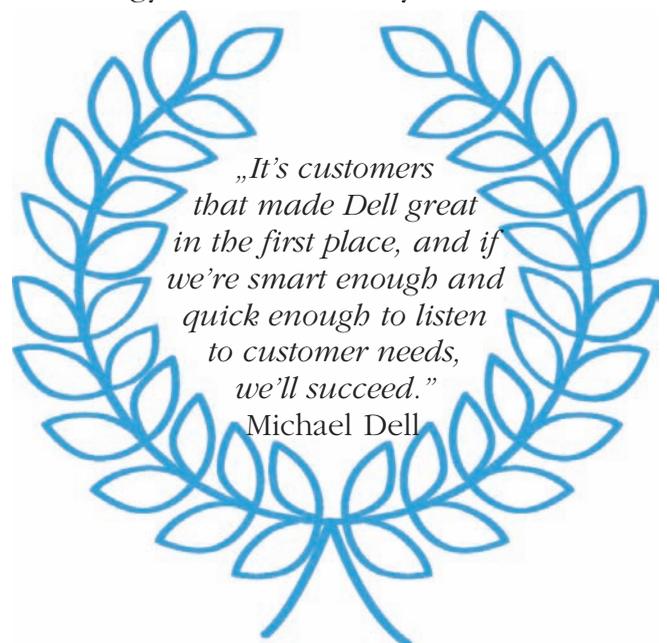
that the future contracts are not endangered. It appears as one of the basic problem-solving methodology, 8D offers an essential solution from identifying the root cause until the implementation of the preventive action. When solving a complaint, 8D reports are always demanded from suppliers.

The results of FMEA analysis with the quality proofs submitted to the customer to obtain „PPAP approved” if prepared correctly and with full involvement of engineers who thoroughly analyze the implemented process, are able to effectively prevent against the majority of non-conformances prior to serial production. Such preventive approach is indispensable for suppliers whose customers have begun to require failure rate 0 PPM. In the present financial and economic context, the use of modern methods of quality management in the long term represents the only way to control the risk and expense of resources from development of products and processes in the automotive industry.

REFERENCES

1. AIAG (2005) *Statistical Process Control (SPC). Reference Manual* 2nd Ed. AIAG.
2. AIAG (2006) *Production Part Approval Process (PPAP). Reference Manual*. 4th Ed. AIAG.
3. AIAG (2008) *Advanced Product Quality Planning and Control Plan APQP. Reference Manual*. 2nd Ed. AIAG.
4. AIAG (2010) *Measurement Systems Analysis (MSA). Reference Manual*. 4th Ed. AIAG.
5. Bevilacqua M., Ciarapica F.E., Giacchetta G., Marchetti B. (2011) Overview on the Application of ISO/TS 16949:2009, in a Worldwide Leader Company in The Production of Stainless Steel Tubes for Automotive Exhaust Systems, *International Journal of Productivity and Quality Management*. 7 (4). pp. 410-439.
6. Bozdag E., Asan U., Soyer A., Serdarasan S. (2015) Risk prioritization in Failure Mode and Effects Analysis Using Interval Type-2 Fuzzy Sets. *Expert Systems with Applications*. 42. pp. 4000-4015.
7. Chen H.R., Cheng B.W. (2010) A Case Study in Solving Customer Complaints Based on the 8Ds Method and Kano Model. *Journal of the Chinese Institute of Industrial Engineers*. 27(5). pp. 339-350.
8. CHRYSLER CORPORATION, FORD MOTOR COMPANY, GENERAL MOTORS CORPORATION (2008) *Potential Failure Modes and Effects Analysis (FMEA). Reference Manual*. 4th Ed. CHRYSLER CORPORATION, FORD MOTOR COMPANY, GENERAL MOTORS CORPORATION.

9. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION. (2008) *ISO/TS 16949:2009 Quality Management Systems – Particular Requirements for the Application of ISO 9001:2008 for Automotive Production and Relevant Service Part Organizations*. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION.
10. Kim J., Al-Khalifa K.N., Jeong M.K., Hamouda A.M.S., Elsayed E.A. (2014), Multivariate statistical process control charts based on the approximate sequential chi(2) test, *International Journal of Production Research*, Vol. 52, Issue 18, pp. 5514-5527.
11. Korenko M. *et al.* (2013) Application of 8D Method for Problems Solving. *Bulletin of the Lviv National Agrarian University*. (17) pp. 330-339.
12. Liang M., Tang J.F., Gong J., Zeng Z.J. (2006), Study on process performance and capability to production part approval procedure QS-9000, *Proceedings of the 1st International Conference on Product Innovation Management*, pp. 27-31, Hubei Peoples Press.
13. Liua H.-C., Youa J.-X., Youb X.-Y., Shan M.-M. (2015) A novel Approach for Failure Mode and Effects Analysis using Combination Weighting and Fuzzy VIKOR Method. *Applied Soft Computing*. 28. pp. 579-588.
14. Misztal A., Bachorz S. (2014) Quality Planning of Parts Machine Production Based on Housing of Cylinder Head Milling Machines. *Applied Mechanics and Materials*. 657. pp. 986-990.
15. Misztal A., Belu N., Rachieru N. (2014), Comparative analysis of awareness and knowledge of APQP requirements in Polish and Romanian automotive industry, *Applied Mechanics and Materials*, Vol. 657 pp. 981-985.
16. Prajapati D.R. (2012) Implementation of SPC Techniques in Automotive Industry: A Case Study. *International Journal of Emerging Technology and Advanced Engineering*. 2 (3). pp. 227-241.
17. Rewilak J. and Tokaj T. (2012) Measurement of Effectiveness of New Products Implementation Process According to APQP/PPAP Requirements – Proposition of Indices. *Management and Production Engineering Review*. 3 (4). pp. 69-79.
18. Riesenberger C.A., Sousa S.D. (2010) The 8D Methodology: An Effective Way to Reduce Recurrence of Customer Complaints? *Proceedings of the World Congress on Engineering 2010*. III. London.
19. Scagliarini M. (2015), A Method for Improving Multivariate Measurement Systems Assessment, *Quality and Reliability Engineering International*, Vol. 31, Issue 6, pp. 977-988.
20. Stamatis D.H. (2003) *Failure Mode and Effect Analysis: FMEA from Theory to Execution*. 2nd Ed. New York: ASQC Press.
21. Yeh T.-M., Pai F.-Y and Huang C.-W. (2015) Using Fuzzy Theory in %GR&R and NDC of Measurement System Analysis. *Engineering*. 7. [Online] p. 161-176. Available from: <http://dx.doi.org/10.4236/eng.2015.74013> [Accessed: 25th September, 2015].



New Technologies and Private Life

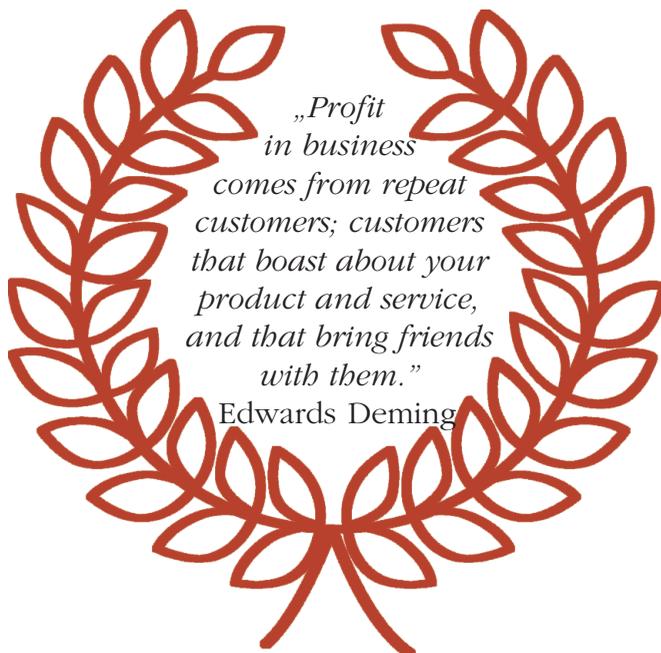
Marc Richevaux (1), Doina Corina Șerban (2)

(1) University Littoral Côte d'Opale, France, (2) University POLITEHNICA of Bucharest, Romania

Abstract

The control of the employees' use of the Internet is legitimate. Its implementation requires the greatest prudence; it can generate penal infringements constituting attacks to the private life of the employees. The authors are not always the employers, which could be described as accomplices, but the data-processing directors or other tallies of the company in charge of the implementation of control. The possibilities of being exonerated from penal responsibility are limited. Some precautions need to be taken: not to commit an offense; to consult the work's council.

Keywords: Internet, information, communication, employer



Introduction

Recently we witnessed an exponential development of the internet; a network specialized in information which allows the exchange of electronic documents, computerized data, economic information, diagrams, sounds etc. The Internet now gives an increasingly fast access to increasingly reliable information.

In the economic field, the internet is presented in the form of a tool of information and management, offering the companies of many interactive services: online marketing, publicity, commercial billposting display, tariffs, including possibilities of automatic updates, technical documentation, databases with strong added value and other means of management to lower cost. The Internet can be thus a formidable

tool to increase the productivity of the companies and to improve their management. For all these reasons a considerable number of companies has already made the choice be active on the Internet or are on the point of doing so in the near future.

The Internet is a very powerful tool, and the companies' users are increasingly numerous. Among those which are connected, all employees, or a great number of them, often profit from a broad access to the network. But The Internet is made such as it can also be used for other ends by the employees. In a procedure of dismissal for serious misconduct of an employee, a recent case of the Supreme Court of Appeal, Social Chamber (Puigellier, 2009), admitted as proof that phone-tapping carried out after the employee has been informed of it could be used as proof in a procedure of dismissal, but it acts of a species of a particular nature which cannot be generalized without precautions.

An employee whose mission was to take Stock Exchange orders per telephone restricted himself to make bets for his personal account with the resources of the company and during work. The employee had been informed beforehand of the existence of recordings that were allowed as proofs.

Current Legal Provisions

The principle according to which conventions are carried out in good faith (art. no. 1134, alienate 3, Civil Code) is also applicable to the contract of employment (art. no. L 121-1, Labor Code). It should logically lead the employees to an exclusively professional use of the Internet of the company or in any case to encourage them with a very moderate use of this tool when for personal purposes. However,



the reality of the companies is sometimes different.

The persons in charge for the company can thus be tempted to set up and to implement checking procedures for the use of the Internet by their employees. The Court of Appeal considered this dismissal as deprived of the real and serious cause. Such checking procedures of the use of Internet by the employees are not illicit. They must, however, take into account the basic rights of the employee (art. 120-2 Labor Code), including the rights inside the company, in particular, the right to respect of their private life (De Tissot, 1995).

But this right is not the only one whose violation generates penal sanctions which can be very serious. There are fines to be imposed and even imprisonment. Contrary to generally accepted ideas, they do not concern only the employer. The existing legal regulations allow solving most of the problems raised by the introduction and the use of The Internet in the companies.

When one mentions the attacks to the private life, one thinks of pictures of show-business stars published in the press or on the Internet without their consent. Generally, one thinks much less of those situations which involve a manager of a

company and the employees as victims. They can involve civil judgments (art. 9 and 1382 civil Code) and even penal charges of the employer and/or his exposed employees.

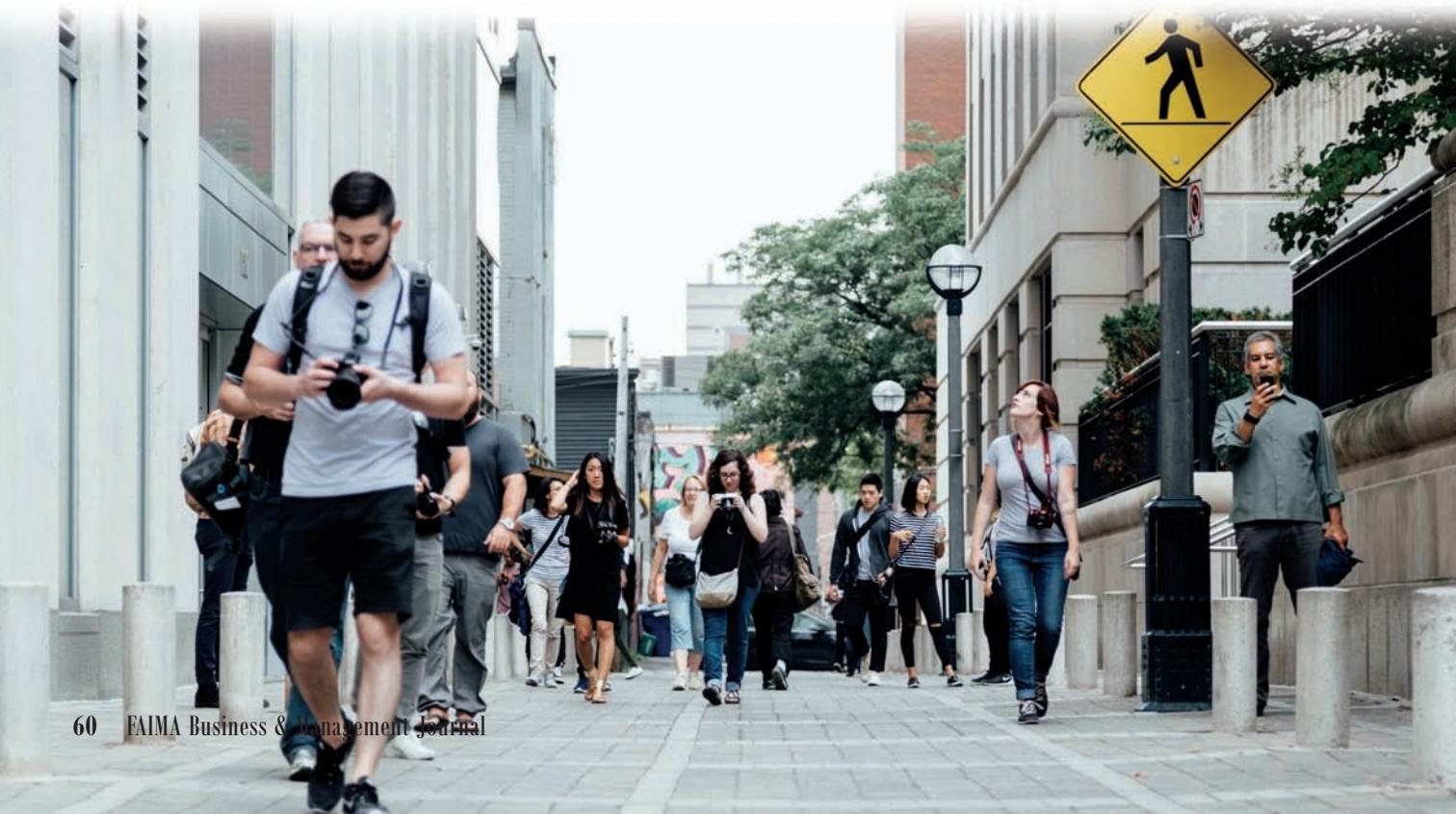
New information technologies, in particular the internet, are increasing the number of such situations. They can also be the occasion of penal judgments of employees. Such examples include employees condemned because they have used devices allowing them to listen to and to record telephone conversations of their employer, or for involuntarily prejudicing another employee. The legal framework of the employees as authors of infringements is the little known criminal law of work (Fortis, Courret, 1996).

In certain circumstances, the employee can be regarded as the principal author of the infringement. This can be the case if the infringement is an attack of the employee, which is made by using the resources of the company. It is, for example, the case of the employee opening emails considered

as subjected to the principle of correspondence privacy. It is often encountered the opposite situation too when the private life of the employee is affected by the misconduct of the structures of the company they work for. Generally, the responsible persons are the executives of the company who manage the installation, the operation, methods of control and the use of the information processing systems. The implementation of such procedures can sometimes result in attacks to the private life of the employees, which can constitute penal infringements and, for this reason, be sanctioned. Therefore, the operation of the company can have as consequences attacks to the basic rights or the private life of the employees.

The Concept of Private Life

The Penal (Criminal) Code represses the attacks on private life (article no. 226-1, Penal Code). The text accuses the actions of collecting, recording or transmitting by



any means, the words pronounced/written on a purely private or confidential basis. The Penal Code (art. no. 226-2, Penal Code) considers also the conservation of the disclosure or the use of any recording obtained using one of the means envisaged by the previously mentioned article (art. no. 226-1). The judges can regard the Internet as a mean for instrumenting attacks on the private life of employees. The means consist in using an apparatus, such as a microphone, tape recorder, telephone etc. For the courts of law, the cases that were already judged in other fields are extended to current new cases, allowing the courts to reach the same result.

The text of the incrimination extends even to the words pronounced in a public place, but on a confidential basis, for example at a workshop, office, in a store etc. this makes it possible to include the words pronounced in the company, but on a private and confidential basis. In these circumstances, one can raise the point that sometimes words collected through the Internet are not collected vocally. However, taking into account the jurisprudence used in the field, the argument is of little weight in the courts of law. It was already judged that the employees of a company cannot only have conversations of a professional nature, and recording them constitutes an offense or attack to the private life of the concerned employees. Recently, it was concluded in court that the emails constitute private correspondences. Even if this decision appears to move away from the principle of the restrictive interpretation of the criminal law to which it is normally attached, it shows the will of the courts of law to interpret these concepts in an extensive way, in order to accomplish the scope of the text: protection of the employees.



The question is thus to delimit what can be regarded as private life. There is no precise definition of this concept. It was circumscribed with the general civil jurisprudence, but it is transposable to the penal field which is of interest for the present paper. One can thus consider that the private life includes all that relates to the health status, the family or emotional life, the residence, the private address and telephone numbers, excepting some particular cases of the professional life of the company, i.e. finally it accounts for all the activities which the employee intends to preserve and to keep secret. This framework is very broad and has to be discussed to what point it encompasses the use of the networks such as the Internet by the employees.

Attack to the Private Life

The operation of the company can be the occasion of an attack to the private life of the employees, and generate disputes.

offered by the company, but also to control the employee through the Internet is substantial, revealing astonishing possibilities. Their implementation requires some essential precautions.

Internet network contains a lot of information of all kinds, so it is sometimes difficult to find in a reasonable and convenient time, what one seeks. This is why websites containing search engines are very popular. They make it possible to launch searches by a word or an expression on all Internet websites listed by the system and to find the wished ones. It is not illegal that an employer uses technology to implement, after informing the personnel and the administrative committees of the enterprise (art. no. L 432-2-1, Labor Code), the monitoring of the way the employees use the ITC facilities provided by the company. The utilization of telematics telephones, Minitel, and the Internet leave traces which the employer can analyze in order to establish a professional misconduct of the employees, allowing the employer him to justify the dismissal (art. no. 122-14-3, Labor Code), together with a disciplinary sanction (Pellisier, 1987), the denunciation of law infringement (art. no. 40, Penal Code). The employer must, however, take account of the existence of the laws protecting the basic rights of the employees (art. no. 120-2, Labor Code), especially the protection of their private life (art. no. 9, Civil Code).

The Case of the Emails

The secrecy of the private correspondence, even if it is received at the workplace, is protected by law. Admittedly, receiving private correspondence at work can be sanctioned, since it can be argued that it affects work inside the company,

but this does not authorize the employer to gain access to such correspondence. The clauses detailing the rules and procedures which authorize access to private correspondence are usually canceled by the courts (Chelle, Pretot, 1993).

The issue of the employers opening emails of the subordinates is regulated; it is prohibited by law since it falls under private correspondence (Court Paris, 2nd November, 2000). A recent decision in this field, surely to be followed by many others in the same direction, considers that the email is private correspondence and that it cannot be opened by anyone else but its recipient. Opening an email for one is not the intended recipient is considered an offense (law no. 91-646 of July 10th, 1991 relative to the secret of correspondence sent by telecommunications). This law recognizes the confidentiality of the emails (Prieur, 2000), it has judge that: „the sending of electronic messages from person to person constitutes private correspondence and that this relation is protected by the law, since the contents which it vehicles is exclusively intended by a named person to another also individualized person, with the difference of messages placed at the disposal of the public”. This decision does not distinguish between the electronic correspondences and the other correspondence forms.





In this setting, the term „correspondence” indicates any relation in writing existing between two identifiable people, such as letters, messages, being them in closed or opened folders. Consequently, the private correspondences (for the telephone calls, but transposable to the electronic mail) are defined as: „In order for the communication to be regarded as private, it is necessary not only that the call is personal and private, but that the whole of the telephone exchange is such, i.e. it does not correspond to a public act of communication” (Metz, July 18th, 1980).

The field of application of the privacy of the correspondence (art. no. 226-15, Penal Code) is defined in the same time by objective elements (the character of the conveyed message) and subjective elements (the will of the correspondents to preserve a confidential character to the communication). This definition can nowadays be switched imperceptibly from the field of telecommunications to that of electronic communications, which became the most important type of communications due to digitalization.

The problem now passes then from legal to the technical field, which could simplify the process of obtaining proofs or evidence. The email being confidential, the employer cannot open it. It can be instituted a double transport system that can allow the easy distinguishing through a sign if the message is of a confidential/private nature, or of professional nature. The

private messages’ number and frequency allow, without the need to opening them, to establish if the respective situation constitutes a threat to the organization of the company, if it justifies a sanction or even a dismissal due to real and serious disorganization of the enterprise.

The installation of methods of control of the use of Internet by the employees can result in attacks on the private life of the employees, which are regarded as penal infringements.

The Author of the Infringement

One of the important issues once such infringements are brought to courts refers to the debate according to which, given that the employer provides the means by which the offense was committed, the employer can be considered as a joint author or complicit (art. no. 59 and 60, Penal Code, and art. no. 121-6, New Penal Code), or even as the intellectual author of the infringement, a category which the current criminal law does not apprehend (Pradel, 2000).

The answer to the debate is, however, clear: the principal author is the one which handles the system that allows the attack on the private life, or the one which sets up the means, making it possible to lead to these results. Such an author is seldom the employer. It is almost always an employee. In the current state of jurisprudence, it appears difficult to admit that the position of the employee and the subordination that it involves are sufficient elements to be regarded as constraints (art. no. 122-2, Penal Code), which rejects the role of the author of the infringement.

For the courts: „The author of the infringement the person who performs the accused facts” (art. no. 121-4, Penal Code).

Consequently, the author of the infringement is the one who opens an email addressed to an employee without having the right to do so. This applies even if the person does not act of its own initiative, but on the order of the employer. The situation could suggest that an order of an employer must be regarded as a constraint, which should dismiss the infringement. Currently, the courts do not share such a point of view.



The Constraints in Criminal Law

The constraint consists in abolishing the will of the author (the one who commits the offense), on arguing that it removes the author's freedom and thus it diminishes and even abolishes the infringement fault (art. no. 122-2, Penal Code). Indeed, in order to be demonstrated a penal infringement, the meeting of three elements is necessary: the legal element, the material element, and the moral element.

The legal element is the legal text present in the general Penal Code, but it can also be a text of another nature (e.g. certain texts of the labor law), which indicates a certain behavior liable of a penal infringement and envisages the corresponding sanction. The material element is the actual achievement of the facts. The moral element is the intention and the will to transgress the law.

In order for an event to cause this effect (to abolish the infringement fault based on the moral element because of doubting the will to perform the act), it must be irresistible and remove the acting agent any possibility of choice. For the courts, since there is the possibility of choice, the constraint does not exist anymore. For the correction jurisdictions, the employee is considered to always have a possibility of choice, even if it is a difficult one.

For the courts, the constraint exists only in the event of absolute impossibility to respect the law. The physical constraint, which abolishes the freedom of movement, is more easily allowed, but it is difficult to see his application in the present case. The moral constraint is more easily rejected.

If the data-processing person in charge, who has the authority of monitoring and controlling how the employees use the company resources wants to be guarded against penal judgments, must watch that he/she will not commit such offenses, but this is not always easy. If this supervisor is high in the hierarchy of the company, he/she could delegate this function to a subordinate, who could then be considered as the principal author of the infringement. In this case, the courts could question the validity of the delegation, as they regularly do, as in the jurisprudence regarding hygiene and safety (Richevaux, Top, 2006).



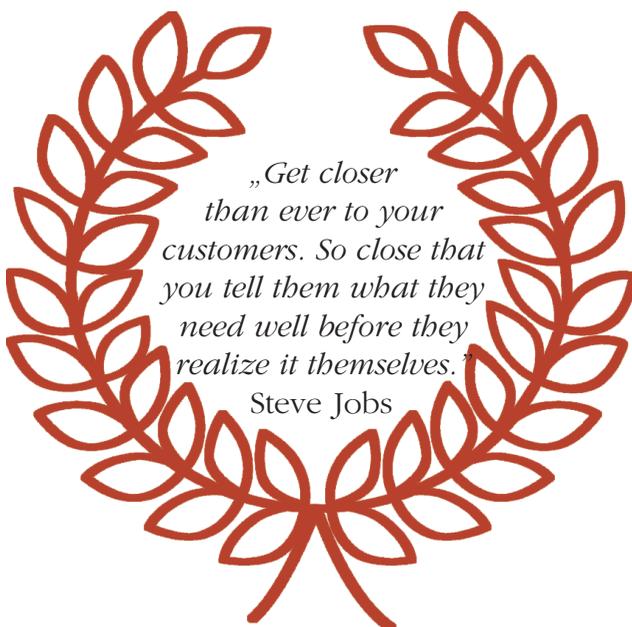
Conclusion

In order for the infringement to exist, the intention element is necessary to be demonstrated, because the law punishes authors which „voluntarily” undermine the private life of others. In order for the judges to condemn such an author, they must establish the existence of this intentional element. Taking into account the

criminal jurisprudence, it is likely that the judges will seldom admit the involuntary character of the actions, and will demonstrate the intentional element of the infringement, from the very existence of the control system, even if its finality is not to attack the private life of employees, but to protect the legitimate interests of the company.

REFERENCES

1. Chelle, D., Pretot, X. (1993) Le contrôle administratif du règlement intérieur d'entreprise, évolution récente de la jurisprudence. (In English: *Administrative Control of the Business Internal Rules, Recent Developments in Case Law*). *Revue de Jurisprudence Sociale*. 563.
2. Fortis, E., Couret, A. (2012) *Droit pénal du travail: Infractions, responsabilités, procédure pénale en droit du travail et de la sécurité sociale*. (In English: *Criminal Labor Law: Offenses, Liability, Criminal Proceedings in Labor Law and Social Security*). 23.
3. De Tissot, O. (1995) La protection de la vie privée. (In English: The Protection of the Private Life). *Revue de Jurisprudence Sociale*. 222.
4. Pelissier, J. (1987) L'interprétation jurisprudentielle du droit disciplinaire. (In English: The Judicial Interpretation of Disciplinary Law). *Revue de Jurisprudence Sociale*. 45.
5. Pradel, J. (2000) *Droit pénal general*. (In English: *General Criminal Law*). Paris: Cujas.
6. Prieur, C. (2000) *Observations sous tribunal correctionnel Paris*. (In English: *Observations in Paris Correctional Court*). *Le Monde*. 4th November.
7. Puigellier, C. (2009) *Cour de Cassation Chambre sociale* (In English: *Supreme Court Social Chamber*). *Revue de Jurisprudence Sociale*. 10472.
8. Richevaux, M., Calciu, M., Vernier, E. (2002) *Travail et nouvelle économie. Aspects de gestion et de droit*. (In English: *Work and New Economy. Aspects of Management and Law*). Paris: L'Harmattan.
9. Richevaux, M., Top, D., (2006) *Les grands principes du droit communautaire du travail*. (In English: *The Main Principles of Community Labor Law*). Târgoviște: Bibliotheca.



Effect of Employees' Loyalty

Alexandra Ioanid, Florin Dănălache, Olivia Doina Negoită

University POLITEHNICA of Bucharest, România

Abstract

A few years ago the global economic slowdown and, most recently, issues around corporate governance in spite of corporate scandals that have rocked the business world globally. We learn from recent history that things are constantly changing (at an ever more rapid pace) and, as such, the key challenge is to create business strategies that are capable of ensuring long-term success. Another important factor is that all of these phenomena are essentially short-term responses to crises and are not conducive to long-term value creation. The focus of this paper is on the following key questions: How do people policies enhance value for shareholders and stakeholders alike? What compromise, if any, should businesses make between developing and implementing people policies that respond to all stakeholders' interests and achieve and demonstrate business success? How could loyalty be developed as company value? The results of the present research are aspects of people policies and potential impacts on shareholders and stakeholders and the key challenges the businesses need to address in order to obtain success through people.

Keywords: value, people, loyalty, key challenge, success.

Introduction

It is widely recognized the next leap in business performance will require a profoundly different approach to the way organizations engage talent as a response to challenging times. The secret lies in the balance between intensified global competitions and understand that we need to create higher value products and services, drawing on new skills and innovation. People became the most valuable resource of the company.



Make Things Happen!

Each day brings new announcements of corporate bankruptcy, reorganizations, equity spin-offs, tracking, stock issues, divestitures, buyouts, mergers and corporate cost – cutting/ downsizing programs. Many thousands of other companies are affected by this activity as competitors, customers, or suppliers of companies that are restructured. Once considered a rare event, restructuring has become an important part of everyday business practice. In this new competitive landscape, every manager can benefit from understanding how corporate restructuring can be used to advance the firm’s business goals, gain competitive advantage, and create value for shareholders. Despite the expanding impact and reach of corporate restructuring, however, much of what transpires in a restructuring is typically hidden from public view.

The companies will be operating in the future in a new business environment in which value creation depends on social

and environment issues as much as on economic ones. More than ever, companies will need to ensure their own sustainability based on the values of their employees. Diverse external pressures are adding to the challenges facing business: the economic slowdown makes the future for business less certain than it has been for some time; customers’ expectations are becoming ever more demanding thereby increasing the onus to find new sources of potential differentiation; global capital market adjustments combined with high-profile corporate scandals have altered shareholder expectations and heightened the need to re-build trust between business and its stakeholders through improved transparency; the ageing population, changing preferences between work and leisure and increasing mobility are among many forces altering the shape of the potential workforce; other diverse stakeholders, including governments, are showing growing interest in businesses’ performance and their rights and responsibilities with regards to their employees (Koller, 2010).

A company’s value consists of more than what is shown in the traditional income statement and balance sheet. Hidden assets, consisting of the employees’ competence, computer systems, work processes, trademarks, customer lists, and so on, are obtaining increasing importance in assessing the value of a company as we show in Figure 1:

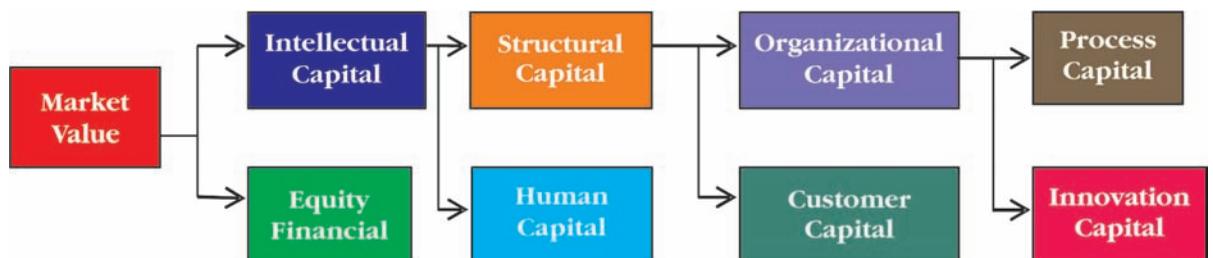


Figure 1 – Hidden assets of a company

In today's business environment are two sets of inter-connected forces which have an important role in creating value for the business: the emphasis on tangible assets such as plant and machinery has broadened to include less tangible assets linked to brand and reputation and to intellectual and human capital. A considerable proportion of this value is embedded in people since employees are key revenue generators, especially in knowledge-based businesses, as well as being important influences on the perception of the brand; the perceived conflict between the perspectives of value held by shareholders (investors)

and other stakeholders, including employees, has weakened.

Generating Value by Employees

If we examine how human resource adds value to the company we find that are based on the existence of strong values, a culture based on fairness, trust and integrity. Ensuring employees to have the right to a fair, safe and productive environment is a premise for getting high value through employees. We believe this desire can be achieved by doing the actions shows below in Figure 2:

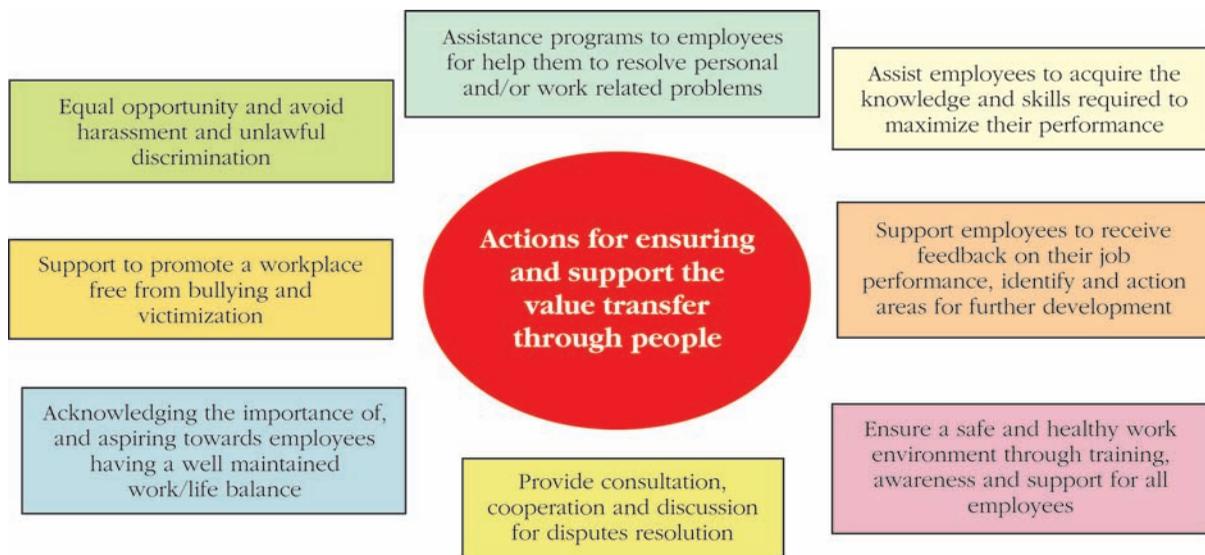


Figure 2 – *Actions for ensuring the value transfer through employees* (Kokemuller, 1997)

Organizational value is generated by packaging competence of the employees. The dynamics of value creation lie in leadership that makes competence multiplicative. By linking managerial abilities – leadership – with innovative human capital, the company increases its organizational capabilities to be able to anticipate and interpret expectations, needs and demand in the market. The last years have seen many management approaches for improving organizational value. A few of them have failed because the performance targets

were unclear or not in line with the main objective of creating value. In order to provide a precise metric-value was issued the Value-based management. It is well known that value is created only when company invest capital at returns that exceeds the cost of the capital. In accordance with Value-based management, managers align company's overall aspirations, analytical techniques, and management processes to focus management decision-making on the key drivers of value.

There are three levels through which HR departments add value to the company: functional (transaction, administration, and compliance cost centers who view employees as an overhead cost to be minimized) add value by preventing loss through policy enforcement; processes add value by removing barriers to performance (elements of strategic HR in a function that views employees as a leverage-able asset); systems (investment and ROI centers who align and improve strategically-focused employee performance) have integrated all best practices aligning them as a strategic system (Becker *et. al.*, 1997, Becker *et. al.*, 2001).

Also rigorous recruitment and selection procedures, performance-contingent incentive compensation systems, and management development and training activities linked to the needs of the business ensure high-performance work systems which

drive profits, growth, and ultimately market value (Chen, 2002).

Several years ago, Watson Wyatt study showed that when a company identifies the core competencies that it needs to be successful in the future it has developed a powerful tool to help meet its objectives. Competencies help employees to understand the company’s strategy and achieve its goals. Competencies support different roles played by people including common language for employees and managers; development of the individual, linking pay, promotion and growth in relation with organization values; guiding employees and managers to define value in the future in a time of dramatic changes, as we show in Table 1. Competencies serve as a powerful communication vehicle to focus all members of the organization on the skills and activities that will create both value and wealth.

Table 1 – Critical Competencies for ensuring value

CRITICAL COMPETENCESIS – by Industry, listed in order of statistical significance					
MANUFACTURING	HIGH TECH	HEALTH CARE	ENERGY	FINANCE	SERVICES
Organizational skills	Interpersonal skills	Analytical skills	Organizational skills	Ability to influence	Ability to influence
Creativity	Ability to influence	Knowledge of business	Technical knowledge	Ability to lead/Manage	Interpersonal Skills
Ability to deal with ambiguity	Technical knowledge	Willingness to learn	Flexibility	Creativity	Technical knowledge
Ability to influence/persuade	Readability	Ability to lead/manage	Willingness to learn	Technical knowledge	Ability to deal with ambiguity
Communicate skills	Ability to lead/manage		Ability to influence		

Source: Watson Wyatt Worldwide, 1998

The development of professional skills ensures the company’s value. A sum of research on companies’ HR practices found that those with the most integrated high-performance work systems had economically and statistically significantly higher

levels of company performance. According to John Tomer, High Performance Work Systems (HPWS) are organizations that utilize a fundamentally different approach (a radically different employer-employee relationship) to managing than the traditional

hierarchical approach associated with mass production/scientific management.

Jeffrey Pfeffer (1998) the essential seven key dimensions characteristics of HPWS: (1) Employment security, (2) Selective hiring of new personnel, (3) Self-managed teams and decentralization of decision making as the basic principles of organizational design, (4) Comparatively high compensation contingent on organizational performance, (5) Extensive training (6), Reduced status distinctions and barriers, including dress, language, office arrangements, and wage differences across levels, (7) Extensive sharing of financial and performance information throughout the organization. The secret of the Value based management is to grow employee involvement, commitment and empowerment. For this is very important to be developed Leadership skills of the managers capable of creating an economic thinking for employees. They have to understand concepts like market value, productivity and Tobin's q , (the ratio between a physical asset's market value and its replacement value).

Pilot Study

The case study was developed into two stages; first of all, the authors analyzed what factors influence the loyalty among young respondents and listed the factors that have the most impact on the decision of maintaining one's job versus starting over at a new employer. Secondly, based on the results obtained in the first stage, the authors together with an HR manager involved in this study designed a model that wants to increase young employees' loyalty.

The lack of employee loyalty is a problem many organizations encounter. For many employers is very difficult to keep employees satisfied with their tasks, wages



or benefits packages, as the competitors attract them with wealth promises. This study focuses on the age group 18-30 years, as these employees are the ones with the most unpredictable behavior regarding their loyalty to the employer, as the results of the research showed. Even if they have a good position and are likely to be promoted in the future they risk and change jobs without thinking too much.

The main objective of this paper is to determine what are the main reasons that make young employees be disloyal and what could make them become loyal. A structured interview was used as a main survey tool in this research study on a group of 80 Romanian employees and 9 human resources managers of organizations based in Romania.

When asked what the employer could do in order to increase the loyalty of the

employee, the answers were as follows (Figure 3):

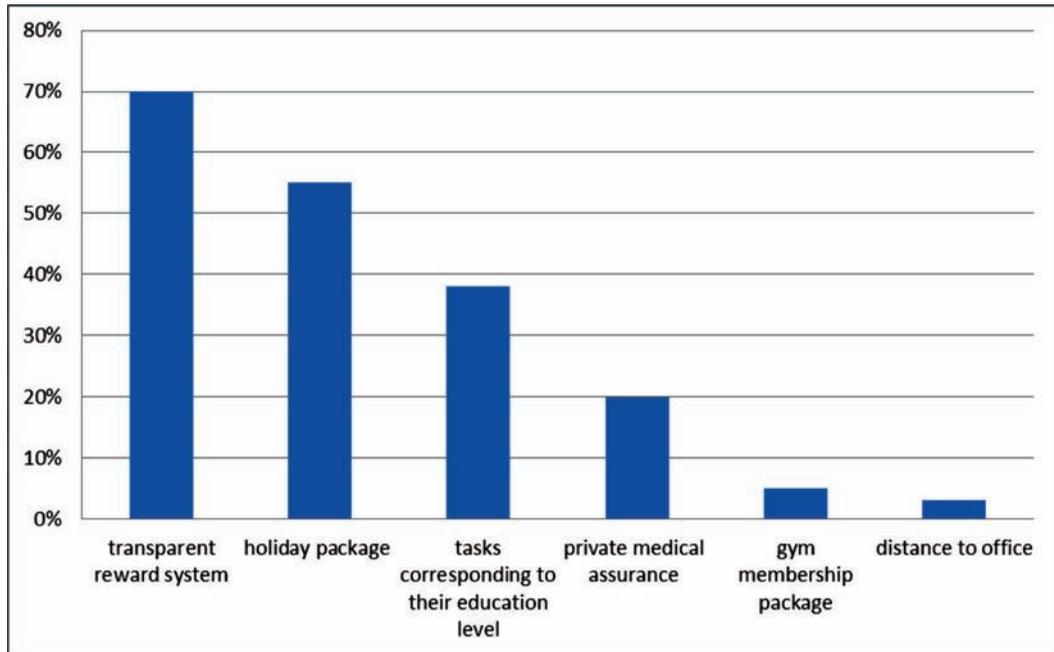


Figure 3 – Factors increasing employees' loyalty

About 70% of the interviewees want a transparent reward system, in order to know what exactly will be their benefits if they exceed the targets they were asked to meet, for example exceeding the sales target for a season or a year. 20% of the employees that mentioned this aspect as bothering about their job motivated that even if they perform well the given tasks, at the end of the year they don't receive any reward because it wasn't stated clearly in their contract from the beginning what the rewarding system consists of.

Results show that for 55% of the employees, it is very important if the company offers a holiday package once per year and most of them would not change their job. This situation is encountered for now only within military system or with employees of the ministers of internal affairs; all the other employees from the private sector that we got to interview did

not receive such packages. However, there is a big advantage for the employer if it is able to offer this kind of benefits as it would increase employees' loyalty.

Authors noticed that 38% of the employees interviewed complained about the fact that they need to perform tasks under their education level, for example being hired as an engineer, but having to do besides the tasks mentioned in the contract, some administrative or customer service related activities. Most of the employees that found these criteria important in relation with their loyalty towards the company that hired them said that if their given tasks were correlated with their education level, experience, and skills, it will be more likely to be loyal to the company.

20% of the interviewees mentioned the benefits packages like private medical assurance as being important when they talk about loyalty towards the employer,

because if a private medical assurance is important to them and the company that they are offered another job doesn't have it, they will simply refuse the offer and remain to work with the actual employer.

Only 5% of the persons interviewed said they are more likely to be loyal if they are offered a sport club membership package or if their employer has an agreement with a sport or health club that allows the employee to pay only half on the club's membership subscription, the other half being covered by the organizations. However, his situation is encountered only at corporations with more than 10,000 employees.

3% of the interviewees said that if the office is close to their home, they might

think twice before leaving the company in case of another job offer from a company located further away. 30% of interviewees admit as being important for them to be able to reach the working place comfortably, without losing too much time on the way or changing several means of transportation. The acceptable amount of time to be spent on the way to the working place is of maximum one hour for all interviewees that found this criterion important.

When asked what are the things they don't like about their current job, that can affect their loyalty towards the employer, the interviewees answered as follows (Figure 4):

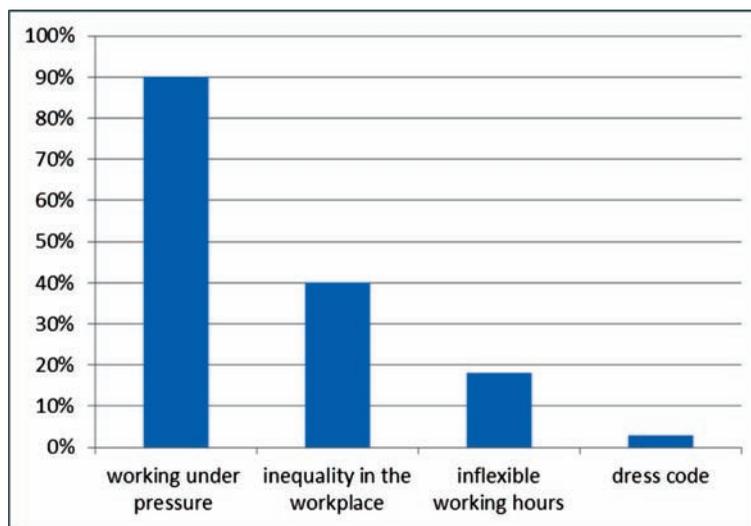


Figure 4 – Factors decreasing employees' loyalty

Authors find out that 90% of the employees interviewed said they are working under a lot of pressure because their managers are giving too many tasks or they want certain tasks to be finished in a short amount of time, which sometimes leads to extra-working hours. Only 15% of the interviewees who mentioned this criterion are paid for the extra hours they do, the rest are not paid anything more than the salary. This is the most common reason

why employees start to search for other jobs and when offered something leave without looking back. The HR managers we talked to confirmed this situation as well, but they are not able to do anything to change that because of the small budgets the companies have.

The next issue that interviewees find as having a negative impact on their motivation and loyalty towards the company they work for is the fact that within an



organization some employees are being treated better than others by their direct managers. Examples of this situation mentioned during the interviews were: getting easier tasks than others, being allowed to get late at work repeatedly or being sent abroad for business interest even if someone else from the company closed the deal with the external partners etc. Also, another situation was mentioned a few times during the interviews – that some employees' errors are being corrected without punishments, while, for others, the wages are reduced with 10-15% in the month they committed the error. About 40% of the interviews desire that all the employees would be treated equally by the managers.

Results show that 18% of the interviewees are bothered if the company has fixed hours for starting and ending the working program, mentioning it is very hard to arrive on time especially if they live far from the working place and depend on traffic conditions, and that this situation is representing a source of stress for them, proffering companies with flexible program. However, out of all the companies that the interviewees work for, only about 4% have flexible hours.

Other possible sources of disloyalty mentioned during the interviews (less than 3% of the interviewees find them important), were the obligation to dress in a certain way, even by wearing a uniform of by the recommendation of wearing office clothing, or the fact that there is no lunch break.

Because the authors wanted to investigate the employers' opinion of their employees' loyalty, there were conducted interviews with 9 HR managers. The answered showed that even if the company tries to fulfill all the expectations of the employees with motivation packages, as well as with showing flexibility to their needs, the age group 18-30 is still not being very loyal. The explanation would be that even if they have good working conditions, they are offered private medical assurance and gym membership subscription, and the company has a transparent reward policy, young employees still need to experiment and learn new things, so they would leave the current job without thinking too much before taking this decision.

The employees aged 18-30 are the ones that companies need to invest in the most, because they are usually inexperienced and they require training, but at the same time they are the ones that leave first from the company, so HR managers prefer to hire employees aged more than 30, because they are more stable and bring value to the company. The unemployment rate is still very high among youth and according to EY Romania, last year the percentage was of 25.7%

Increasing Employees' Loyalty

Based on the results presented above, the authors worked together with one of

the HR managers involved in this study and designed a package that should increase young employees' loyalty. Taking into consideration the factors in which most Romanian young employees showed interest (transparent reward system, holiday

package, private medical assurance, sport or health club membership subscription, distance to office and tasks corresponding to their educational level), the authors decided to implement in a firm the following program (Figure 5):

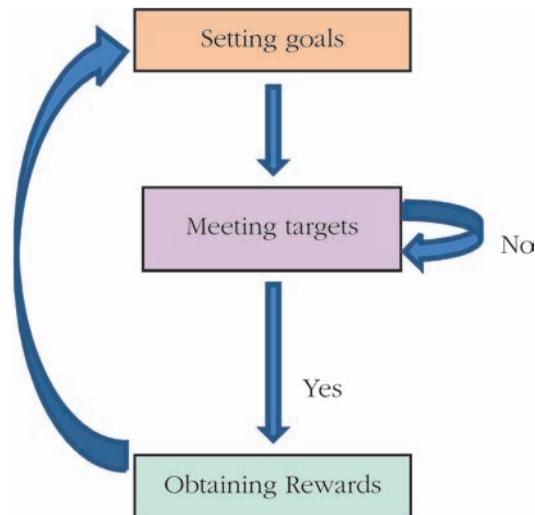


Figure 5 – *Goals-Rewards model*

This model implies that the employee will set some objectives for the next period (few weeks or a longer period up to one year) and the manager will agree with these goals. At a period agreed by both the employee and the manager, they will meet and check if the goals were met and the manager will reward the employee with the promised bonus or salary raise that was negotiated previously in the goal setting phase.

The model above takes into consideration the fact that 70% of the respondents want to have a transparent reward system at their work place, so the authors decided to give the opportunity to the young employee to discuss and agree on the goals and on the rewards for successfully meeting the targets with the manager. In case the targets are met, the employee will obtain the reward promised, that can be for example a holiday ticket at the end of the year since this motivates more than 50% of the interviewees. In case they couldn't meet the targets they can either try again to perform better the tasks, or discuss with the manager to change their tasks if it's not correlated to their education or expertise. This program can be repeated periodically according to the preference of both the employee and the employer, but the authors recommend such a discussion every month.



This model was implemented in one firm, but the results were positive because after another round of interviews with the HR manager and the employees that tested this model, the authors noticed that the trust between the young employees and the manager has grown with about 10%. The trust was built on the fact that the employee had a better idea of what the employer expects and also the employer could evaluate employee's performance in a more transparent way.

Results and Discussion

Taking into consideration the results obtained from the interviews, the following leadership techniques could be used to increase loyalty, motivation, involvement and satisfaction of young employees and make sure that the rewards programs are efficient in increasing loyalty with young employees.

The first recommendation is to make the young employee feel useful to the company by understanding exactly how important the given tasks are for the functioning of the entire department or organization. This can be done by integrating every employee in the team, building trust within the team so that the young employees would be able to learn from the experienced ones in a good working environment, where the accent is put on mentoring and not on competition (Reichheld, 1992).

The young employees would be more loyal if the skills they have would be used for the designated tasks, as many complained that even if they graduated from university or manage well several foreign languages, they are doing the tasks that don't require superior education. Also, a transparent system of rewarding would be a plus for the loyalty of young employees,

most of the employees mentioning that if they would have information about the reward system they would be more motivated to accomplish their tasks successfully.

Extra benefits packages like private medical assurance, health club subscription or holiday allowance increase the loyalty of young employees, but can not guarantee that in the case of another offer they wouldn't leave the company.

Surprisingly, the results showed that young employees don't find important if the company is offering a phone, laptop or any other devices like this, justifying it by the fact that they already have them. However, they would wish to have a company car, but due to the fact that they not very experienced, they are not having this benefit. None of the interviewees in this study was given a company car, but most



of them would like this situation to happen.

As the authors implemented a goals-rewards model in a firm and the results were positive, the future direction would be to implement the same model into different firms and see if more firms will improve communication with their employees and also the loyalty of young employees would grow.

Conclusion

Employees are the most valuable asset any company has, so increasing their loyalty should be a priority for any human resource manager. After 30 years old, employees become conservative, finding it more difficult to change jobs and they prefer to develop within the company. With time, they gain experience and expertise and are better appreciated and sometimes, especially within multinational corporations,

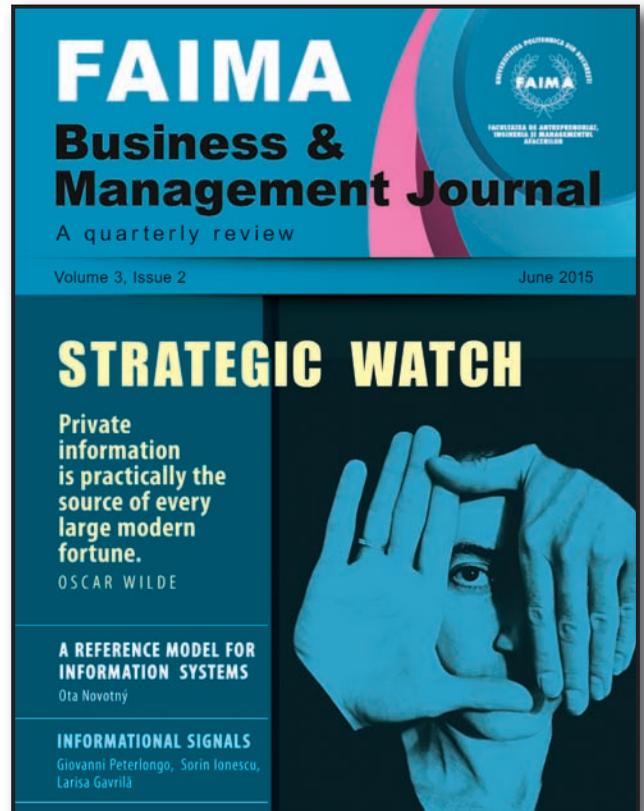
rewarded accordingly to their results. Starting from this premise, the study confirms the hypothesis, that only after 30 years old employees become truly loyal to their employer, and that up to that age employees are willing to experience more regardless of the risks they take. In conclusion, the group of employees that bring value in a company are the ones older than 30, that already have the necessary experience to perform well the tasks, without being necessary to be trained for a long period of time.

The recommendations the authors make after analyzing the results of the pilot study for the employers who want to reduce costs implied when replacing employees are to create a goals-rewards system so that the employees would feel they have real chances of promoting if they obtain performance and create value for the organization. Finding ways to motivate the employees will have effects on increasing the performance, as well as the loyalty of employees.



REFERENCES

1. Becker, B., Huselid, M., Pickus, P. and Spratt, M. (1997) HR as a Source of Shareholder Value: Research and Recommendations. *Human Resource Management*. 36 (1). pp. 39-47.
2. Becker, B., Huselid, M. and Ulrich, D. (2001) *Making HR a Strategic Asset*. Working paper. State University of New York at Buffalo.
3. Chen, Z.X., Tsui, A.S. and Farh J.-L. (2002) Loyalty to supervisor vs. organizational commitment: Relationships to employee performance in China. *Journal of Occupational and Organizational Psychology*. 75(3). pp. 339-356.
4. Kokemuller, N. (1997) How Does HR Add Value to an Organization? *Huston Chronicle*. June.
5. Koller, T. (2010) *Valuation: Measuring and Managing the Value of Companies*. 5th Ed. McKinsey & Company.
6. Pfeffer, J. (1998) *The Human Equation: Building Profits by Putting People First*. Boston: Harvard Business School Press.
7. Reichheld, F.F. (1992) Loyalty-based management. *Harvard Business Review*. 71(2) pp. 64-73.
8. WATSON WYATT WORLDWIDE. (1998) *Competencies and the Competitive Edge: Corporate Strategies for Creating Competitive Advantage Through People*. Executive Summary.





Topics in future issues of FAIMA Business & Management Journal

2016

Customer Retention
Organizational Processes
Crisis and Change
Business and Networks

Volume 4, Issue 1 – March 2016
Volume 4, Issue 2 – June 2016
Volume 4, Issue 3 – September 2016
Volume 4, Issue 4 – December 2016

2017

Creating Value
Companies Relations
Branding and Competitiveness
Management of Tomorrow

Volume 5, Issue 1 – March 2017
Volume 5, Issue 2 – June 2017
Volume 5, Issue 3 – September 2017
Volume 5, Issue 4 – December 2017