

# The Use of Telematics Solutions in Achieving Excellency in Anti Criminal Activity in Romania

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## **Abstract**

*Looking at the quality through the results of an activity, in this case an economic activity, our paper aims to identify some causal links between the preventing criminality preventing and control mechanism, based on telematics security systems, and the criminality against property status at country level. The analyzed statistical data series are focused on the evolution of criminality in Romania in the last years, and also on the monitoring marketing based on private dispatches.*

*The big picture reveals that in over 43% of the European countries there is an ascending level of burglaries.*

*In this paper we try to identify if the development of the telematics security market based on private monitoring dispatches a decrease of the criminality against property in Romania.*

*Based on this study we will be able to see if the private companies which provide security services can reach an Excellency level (considered Excellency in business), identified through country level results, based on the use of security telematics solutions.*

**Keywords:** *management, security, telematic, criminality, dispatch, quality, Business Excellency.*

**JEL classification:** M19, M10

## **Introduction**

Business Excellency, term often used in the past years in economic literature, is difficult to be defined in a single phrase. But, Business Excellency has, according to the European Foundation for Quality Management, some common features. Business Excellency tries to accomplish the activities that conduct to reaching goals on short, medium and long term at a high quality level, considering the four main directions: the business (operations), customers, employees and society (EFQM, 2016). Excellency in business seems to be the synergic result of quality activities considered through the four main streams mentioned above.

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Comparing the concept of Business Excellence with the private security the four components could be traced as follows:

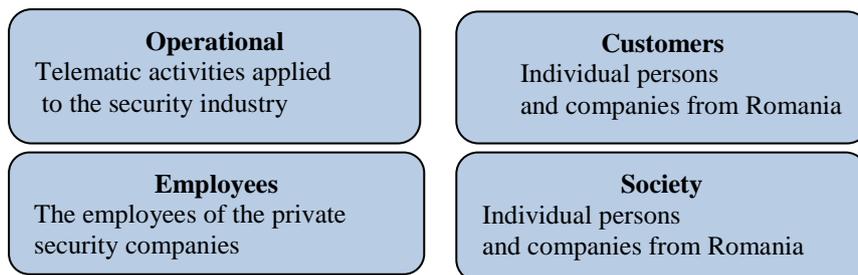
- i) Business (operations) – the remote monitoring activity of the electronic security systems. In other words, applied telematics in electronic industry dedicated to the security solutions;
- ii) Customers – in this case they are represented by any entity, person or company, active in Romania (important from the study approach) or outside Romania;
- iii) Employees – the employees of the security services providers (companies), a less important component for our study;
- iv) Society – all Romania – active individual persons and companies from Romania.

Another feature of Business Excellency is the optimization of the resource usage in the company activity (starting with the human resources, material resources, etc.).

Making a link between the Business Excellency and the Quality management some authors mention that the Business Excellency is the expression of Total Quality Management, which can be found in three versions, the European one, the American one and the Japanese one (Dinu, 2004).

One of the study premises is the high level of economic efficiency noticed in the electronic security systems field (Irimescu, 2014). Even more, the study will approach the way in which the data transmission technologies influence the efficiency and quality of these activities.

As study methodology we will have as indicator of the results the criminality level identified in the society. Based on its level we will try to identify the efficiency of the telematics solutions used in the operational business activities.



**Figure 1 Key elements of business excellence**

Source: European Foundation for Quality Management, 2016. WHAT IS EXCELLENCE? [online] Available at: < <http://www.efqm.org/efqm-model/what-is-excellence> >.

Fighting against crime is, for all European countries and not only, a very important activity for the balance and social dynamics. From all its forms, criminality is mostly visible in the crimes against property, and among them in theft cases. Even if the other crimes against property are as serious as thefts, they are detected and reported more easily.

An example is the data provided by Eurostat at European level for the house thefts. The measure unit is one thousand thefts, and the time interval is 2002 – 2012. The data was obtained by consolidating the annual series for each country.

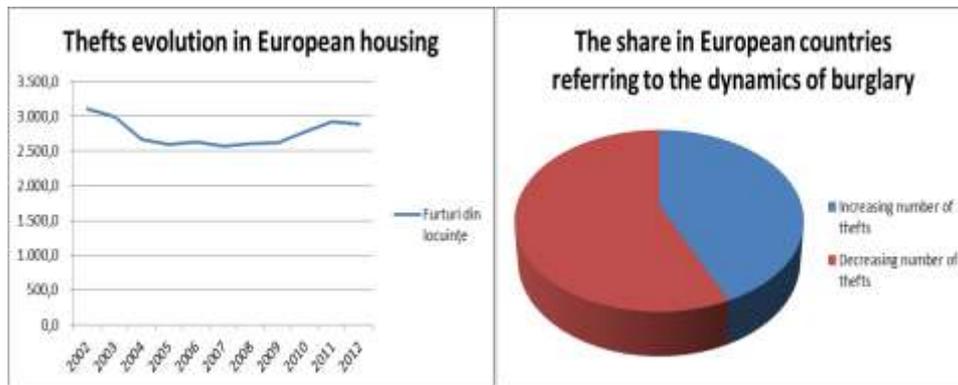
**Table 1 Domestic thefts at European level centralized**

Nivel european / an	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Furturi din locuinte	3.105,2	2.994,2	2.670,1	2.590,0	2.631,0	2.575,1	2.610,9	2.625,5	2.780,9	2.930,1	2.887,6

Source: Eurostat, 2016. Statistics regarding the criminality [online] Available at: < [http://ec.europa.eu/eurostat/statistics-explained/index.php/Crime\\_statistics/ro](http://ec.europa.eu/eurostat/statistics-explained/index.php/Crime_statistics/ro)>. Consolidated

Even if there is a descending trend (the slope of the regression is negative), it can be seen that from the absolute value approach the decrease is small, only 5.9% at European level for a ten years period. Based on this considerate can be considered that the situation apparently descending is very ample and with a big social impact.

Graphic situation looks like this:



**Figure 2 The domestic thefts evolution at European level**

Source: Eurostat, 2016. Statistics regarding the criminality [online] Available at: < [http://ec.europa.eu/eurostat/statistics-explained/index.php/Crime\\_statistics/ro](http://ec.europa.eu/eurostat/statistics-explained/index.php/Crime_statistics/ro)>. Consolidated

In time society developed various methods and techniques against this kind of negative activities, techniques that grown side by side with the criminal activity.

Also, in time and based on the consumer society development the private security industry was born. One of its goals was and still is the identification and combat of different criminal activities, like theft (in various forms).

## **1. State of knowledge and context**

In order to have a clear image of the approached domain we will discuss the state of knowledge on the following topics: security industry, telematics, security dispatches and crimes against property.

### ***1.1 Security industry***

Even authors tried to define security in many forms. One of the simplest and easiest definitions describes security as the activity, the organizations and persons which provide all security services and additional services, like investigations, guarding, patrolling, security systems and cash and transit (Kakalik & Wildhorn, 1971).

If a few decades ago security industry was limited to simple man guarding, today it can split in almost 20 different activities. Only their synergy can describe what we call today's security industry (Strom, et al., 2010): physical security, personnel security, information security, investigations, loss prevention, risk management, legal issues, emergency situations, fire protection, crisis management, emergency situations management, etc.

In fact, by its development, security industry tried to keep up with the society development, from a technological and also social approach. This way was born the holistic approach (Button, 2008). The holistic approach doesn't care anymore about the classical split of the security industry (mentioned by Strom), and starts from the customer needs. The first step of the method is defining the problem, followed by finding a system / solution to solve the problem, and last but not least following up the problem to see the evolution in time.

Only through these methods the security industry can keep up with the actual society development, which is accompanied by a development of threats and risks (terrorist attacks, the development of multinational companies with large operating areas, etc.).

### ***1.2 Telematics***

Telematics is an interdisciplinary domain that represents the synergy of the following topics: telecommunications, transport technology, electronic engineering (sensors, automation, communication equipment's, etc.) and IT (Wikipedia, 2016). Although initially was developed on the GPS applications for track and trace solutions, at this moment telematics are extended to other industrial and civil domains.

Based on the previous definition, the telematics solutions are used for person monitoring, both geographically and for medical data, for SCADA systems (for this application less used for geographically data), for security solutions or for other solutions. Some authors consider that there is a very important similarity between the SCADA systems and the security dispatches (Bănaciu, 2014), from a structural and functional standpoint.

In our study we will analyze the efficiency of these telematics solutions used for fixed locations and based on electronic security systems.

The M2M data transmission is related to telematics (Machine 2 Machine). This transmission is made between two equipment's (one receiver and one transmitter), both wired or wireless (this is possible because of the intensive development of data networks at national and international level). The difference between M2M and telematics is that in the telematics' case there are mostly wireless systems (with an accent on the receiver – transmitter devices), and in M2M's case there are both wireless and wired transmissions. (Wikipedia, 2016).

The development of this type of technologies is a landmark and a starting point in the new security services era. They represent the starting moment of the Excellency in the private security industry, from an operational and from a security level approach.

### ***1.3 Security dispatches and monitoring***

If regarding physical security the literature is full of papers about different topics, starting from the risk theory applied in physical security to technical specialized subjects, the security systems' monitoring was always avoided (also remote video surveillance in dispatches is avoided). First papers about monitoring are about large infrastructure grids (SCADA) and about large data networks. An example can be the applied papers about punctual subjects, like physical security for energy grids, a mix between SCADA and physical security systems (Brinkman, 2015).

### ***1.4 Crimes against properties***

As they are mentioned in the Criminal Code of Romania in 2016, the crimes against property include theft, robbery and piracy, crimes against property through disregard of trust, fraud committed through computer systems and electronic payment means destruction and disturbance of possession. Even if the law in time suffered some amendments, generally the notions and their interpretations remained constant. Generally, only the aspects regarding the procedural issues changed in time (Voinea, 2015).

Referring to the four directions for defining Business Excellency, the crimes against property are those activities whose fight represents the object provided services - the operational part. The decrease of the effects of such antisocial activities represents a high level of business excellence. We only mention decrease because the causes of producing such incidents are not linked directly to the security industry. They are linked mostly to the economic level, the education level and the prevention policies implemented a national level by the state.

### ***1.5 The legal framework and standards applicable to the remote monitoring systems***

Security activities in Romania, including the monitoring services with private dispatches, are regulated by Law 333 from 2003. During time this law suffered some modifications, more or less important. But the law constantly marked some clear lines for all the parts involved in this activity.

Regarding security dispatches, the legal framework mentioned from the beginning the minimal requirements needed for the dispatches to pass the police acceptance. We must underline that a security dispatch cannot function in Romania without an acceptance from the police. The acceptance assumes the check between the minimal requirements set by the law and the situation from the field.

The specialty literature is very poor in works on this subject. Generally we can find works about punctual domains which are only tangential with the monitoring activities, but without referring directly thereto (Băltoiu, 2015).

An important landmark in functioning and approval of security dispatches is the 2013-2014 period, period when the law changed. Starting then the law accepted national dispatches and not only regional dispatches like until then. This fact was based on the technology development (fast data transmission on national level). As a first result we noticed that at national level the number of dispatches decreased to 200 from around 400 (almost half).

Regarding ISO standards applicable to the security monitoring activity we can mention ISO EN 50136. This standard covers part of dedicated data transmission, the transmission itself, the types of communication channels etc.

### ***1.6 Operation of telematics solutions in security activities.***

Starting from the telematics definition (long distance data transmission), telematics in security systems is applicable for all the monitoring (dispatching) activities. The three main streams that can be identified are: alarm systems monitoring, video systems monitoring and GPS systems monitoring in security purposes. In all three cases telematics allows the data transfer, data generated by generic security systems (alarms, technical messages and error messages) to a central point called monitoring dispatch. In the monitoring dispatch all the messages are processed and the events are handled for solving them.

The activity of alarm message transmission is framed by SR EN 50136-1-1 and is correlated with the transmission network, a part of the alarm transmission system.

Related to the Business Excellency definition previously presented, we must underline the fact that the use of the telematics solutions in the security industry contribute in reaching a high level of Business Excellency through the optimization of human resources (business excellence requires the use of all resources optimally). The use of technology leads to lower labor utilization opposing the increased use of technology. If short-term results are questionable, on long-term costs are clearly decreasing and quality will increase.

Context:

To understand the context and the importance of these telematics solutions in handling by the security companies of security incidents, we will present the evolution from the last years at European and national level regarding the thefts from houses. Data is provided by Eurostat and the unit is one thousand incidents.

**Table 2 Number of thefts from homes at European level**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	The slope of the regression curve
Belgium	79,2	64,0	57,5	57,0	63,6	63,0	64,0	69,4	68,5	75,3	80,7	1,01
Bulgaria	31,6	28,2	25,6	22,4	23,5	22,2	20,0	23,7	24,0	20,3	16,8	-1,01
Czech Republic	11,9	12,2	11,7	10,4	9,6	9,2	9,1	9,6	10,1	9,6	9,7	-0,26
Denmark	35,6	33,9	33,0	29,4	31,2	36,3	44,0	48,7	44,8	45,4	43,5	1,57
Germany	130,1	123,3	124,2	109,7	106,1	109,1	108,3	113,8	121,3	132,6	144,1	1,00
Estonia	7,4	6,5	5,8	4,8	3,9	3,1	3,3	3,0	3,2	2,8	2,7	-0,45
Ireland	15,5	16,4	24,9	26,4	24,8	23,6	24,7	26,9	25,4	27,7	27,8	0,99
Greece	31,8	31,2	26,5	37,6	42,1	49,9	59,0	63,9	90,9	96,9	87,9	7,33
Spain	93,8	88,1	81,6	81,5	81,0	72,7	93,9	97,8	111,7	100,8	126,4	3,18
France	224,2	216,8	202,9	181,5	177,8	165,8	166,3	179,4	186,5	216,3	135,4	-4,65
Croatia	4,2	4,1	3,7	3,4	3,0	3,1	2,7	2,8	3,1	3,5	4,3	-0,05
Italy	169,4	173,1	112,1	122,3	143,7	169,4	153,1	152,8	171,3	207,7	240,8	6,76
Cyprus	1,2	3,2	3,3	2,8	3,1	2,7	2,6	2,4	3,3	3,4	3,0	0,07
Latvia	5,2	5,3	6,0	4,3	4,6	3,7	3,5	4,1	4,2	:	:	-0,22
Lithuania	7,0	8,6	9,2	7,1	6,6	5,5	6,1	5,8	4,9	4,1	3,5	-0,47
Luxembourg	2,0	2,2	2,1	1,5	1,8	2,0	1,7	1,8	1,5	2,2	2,0	-0,01
Hungary	22,9	19,4	18,7	17,8	16,9	17,4	16,5	16,2	19,9	21,1	22,6	0,05
Malta	0,7	0,7	0,8	1,1	0,9	0,7	0,7	0,7	0,7	0,7	0,8	0,00
Netherlands	101,9	103,6	96,0	96,0	95,2	89,4	91,2	94,6	102,8	108,7	112,1	0,78
Austria	12,7	13,4	20,3	21,2	18,9	20,0	18,6	21,2	15,7	15,6	15,5	0,08
Poland	67,3	65,2	66,8	59,3	46,6	37,6	31,5	33,0	37,9	39,6	41,0	-3,53
Portugal	20,0	22,0	22,6	21,8	23,3	22,3	29,7	26,0	26,6	28,3	25,1	0,71
Romania	12,0	10,1	10,0	9,1	9,2	10,8	10,3	11,6	14,2	16,3	15,3	0,55
Slovenia	3,1	2,4	2,8	2,3	2,2	2,3	2,0	2,2	2,6	2,5	2,7	-0,02
Slovakia	2,8	2,6	3,0	2,8	2,6	2,4	2,1	2,3	1,9	1,7	1,7	-0,13
Finland	7,4	7,4	7,9	7,3	5,9	6,5	6,0	6,5	6,5	6,7	6,3	-0,13
Sweden	16,6	17,3	17,6	16,7	15,0	16,9	18,2	20,5	19,8	22,2	21,3	0,55
England and Wales	437,6	402,3	321,5	300,5	292,3	280,7	284,4	268,6	258,2	245,3	227,3	-17,65
Scotland	29,6	24,8	23,6	21,2	20,4	17,5	17,2	16,7	17,7	17,4	15,7	-1,18
Northern Ireland	10,1	8,9	7,3	7,3	6,8	6,7	7,4	7,3	7,1	6,7	5,9	-0,27
Iceland	3,2	2,9	2,8	2,2	2,4	2,3	2,7	3,5	2,9	1,9	1,4	-0,09
Liechtenstein	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,00
Norway	10,5	10,5	8,6	8,1	7,3	6,8	8,1	9,0	7,3	5,8	6,0	-0,39
Switzerland	60,8	68,6	70,4	61,2	56,7	57,5	55,7	25,4	24,1	27,4	34,3	-4,62
Macedonia	0,8	1,1	1,3	1,1	1,4	1,6	1,3	1,6	1,6	2,2	2,0	0,11
Serbia	9,1	6,9	7,6	7,7	6,2	6,2	6,4	6,1	6,8	6,9	6,7	-0,15
Turkey	29,1	32,2	36,9	58,1	90,2	73,7	69,8	81,0	90,1	96,4	113,8	7,86

Source: Eurostat, 2016. Statistics regarding the criminality [online] Available at: <  
[http://ec.europa.eu/eurostat/statistics-explained/index.php/Crime\\_statistics/ro](http://ec.europa.eu/eurostat/statistics-explained/index.php/Crime_statistics/ro)>

To identify for each set of data the overall trend, we will calculate in the last column the slope of the regression according to:

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$

where  $x$  and  $y$  are the averages for the samples.

Based on the results we can observe, it can be seen that in 16 from 37 cases (in more than 43% of the cases) we have a positive result, fact that indicates an ascending trend of the series of data.

This way we can observe that in almost half of the European countries an increase of the home thefts was recorded. This fact underlines the importance of the telematics solutions for the private companies.

## 2. Methodology and data

The way we try to analyze the subject matter is by identifying the correlations between different data series from public sources. The main data providers are Romanian Police, The National Statistical Institute and Eurostat. Also we will identify the trends and the correlations between them to understand the way the criminality level is modified by the use of telematics solutions.

### 2.1 Quantitative data series

2.1.1 A first data series that will be analyzed is the number of total thefts at national level. In period 2004-2009 Romanian Police published data about the total number of thefts and also about total number of auto thefts and home thefts. Data series are:

**Table 3 The thefts situation nationwide**

National / year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total thefts	48065	43191	41624	44370	39519	46431	48828	47322	56732	57557	164396	108439
Total thefts without AUTO	40997	37595	36271	37493	32908	36696	x	x	x	x	x	x
Residential thefts	10002	9135	9165	10829	10285	11574	x	x	x	x	x	x
Thefts from auto	5948	4514	4087	5060	4256	6768	x	x	x	x	x	x
Auto thefts	1120	1082	1266	1817	2355	2967	x	x	x	x	x	x

Source: Poliția Română, 2016. Statistics regarding the criminality [online] Available at: < <https://politiaromana.ro/ro/utile/statistici-evaluari/statistici>>

From the above mentioned data we can see a sudden increase of the crime activity starting with 2014. We cannot tell from the available information whether this increase is justified by some statistical reporting issues or by the criminal activity itself.

Why is this data relevant for our paper? Because telematics solutions used in security are used mostly for identifying thefts and thefts attempts from any kind of unit (commercial locations, banks, residential locations, etc.).

2.1.2 The second data series analyzed is the number of fixed locations monitored in private security dispatches in Romania. The source for the data is the Romanian Police. The data is consolidated from the annual activity reports.

**Table 4 The number of monitored locations in private security dispatches**

National / year	2009	2010	2011	2012	2013	2014	2015
Monitored locations	78000	82000	104000	117000	123000	150000	164000

Source: Poliția Română, 2016. Statistics regarding the criminality [online] Available at: <  
<https://politiaromana.ro/ro/utile/statistici-evaluari/evaluari>>

2.1.3 The third data series considered relevant for our paper is the number of economic units which have as activity CAEN code 8020. This code is, according to actual law, used for the security monitoring activity based on private dispatches.

The data is from the National Statistic Institute, covering the period 2008-2014:

**Table 5 The number of companies registered with CAEN 8020**

National / year	2008	2009	2010	2011	2012	2013	2014
Commercial units with CAEN 8020	126	283	310	271	323	389	455

Source: Institutul Național de Statistică, 2016. Tempo Online. [online] <  
<http://statistici.insse.ro/shop/?lang=ro>>

## 2.2 Series trends

2.2.1 Based on the data mentioned at 2.1.1 we will make an extrapolation and we will obtain new data for the missing series. To estimate thefts for auto (auto and from auto) we will use the linear regression methodology. We will consider as a landmark the total number of thefts per year, the depending data theft from auto series for 2004 – 2009, and the independent data series total number of thefts for 2004 – 2009.

The equation for estimation is  $a+bx$ ,  
 where

$$a = \bar{y} - b\bar{x}$$

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$

Based on the new data series obtained we can obtain the data series for theft without auto. We will make the difference between the total number of thefts and the auto thefts cumulated.

Using again the linear regression we will generate the calculation for the total number of residential thefts. We will have as landmark the total number of thefts, as a dependent data series the residential thefts for 2004-2009 and as independent data series the total number of thefts for 2004-2009.

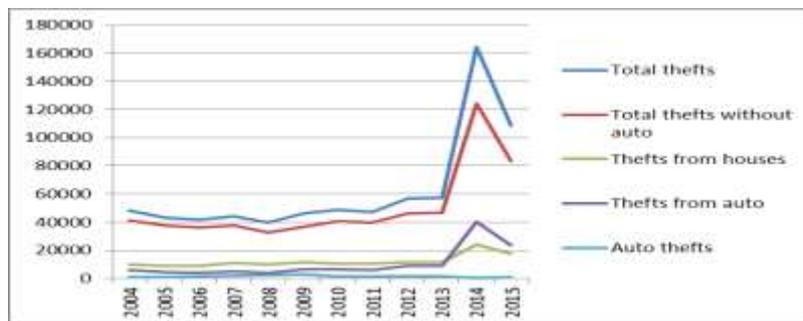
The data series after calculation looks like:

**Table 6 Thefts at national level (extension)**

National / year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total thefts	48065	43191	41624	44370	39519	46431	48828	47322	56732	57557	164396	108439
Total thefts without AUTO	40997	37595	36271	37493	32908	36696	40576	39489	46284	46880	124035	83625
Residential thefts	10002	9135	9165	10829	10285	11574	10742	10567	11661	11757	24181	17674
Thefts from auto	5948	4514	4087	5060	4256	6768	6543	6107	8834	9073	40034	23818
Auto thefts	1120	1082	1266	1817	2355	2967	1709	1727	1614	1604	327	996

Source: linear regression

Data presented above looks as follows:



**Figure 3 Thefts at national level (extension)**

Source: linear regression

2.2.1 Based on data mention above we will estimate the forecast for 2015 using linear regression. The purpose is to correlate by date this data series and total number of thefts.

**Table 7 The number of commercial companies with CAEN 8020 registered (extension)**

National / year	2008	2009	2010	2011	2012	2013	2014	2015
Commercial units with CAEN 8020	126	283	310	271	323	389	455	481

Source: linear regression

### 2.3 Series correlations

Based on data correlation we will try to identify the way which telematics solutions influences the prevention and reduction on crimes related to thefts, contributing or not to reaching a Business Excellency level for the providing security companies.

#### 2.3.1 Monitoring locations versus thefts

By analyzing the two series we expect to see that while the number of monitored locations increases, because of the fast alarm notification and response, the number of the thefts to decrease.

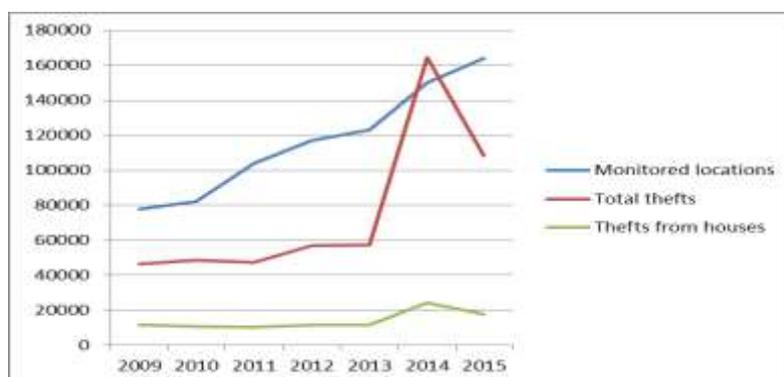
The analyzed data series are:

**Table 8 Data series for monitored locations, total number of thefts and residential thefts**

National / year	2009	2010	2011	2012	2013	2014	2015
Monitored locations	78000	82000	104000	117000	123000	150000	164000
Total thefts	46431	48828	47322	56732	57557	164396	108439
Residential thefts	11574	10742	10567	11661	11757	24181	17674

Source: Poliția Română, 2016. Statistics regarding the criminality [online] Available at: <  
<https://politiaromana.ro/ro/utile/statistici-evaluari/evaluari>>

Chart data presented above is as follows:



**Figure 4 Data series for monitored locations, total number of thefts and residential thefts**

Source: tabular processing

Pearson correlation coefficient is calculated based on the following formula:

$$Correl(X, Y) = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

$\bar{x}$  și  $\bar{y}$  are the averages for the two data series.

Based on the formula, the correlation coefficient between the total number of monitored locations and the number of thefts is 0,786. Statistically speaking this value shows a high directly correlation. This fact is not as we expected.

Also based on the above mentioned formula, the correlation coefficient between the total number of monitored locations and the residential thefts is 0,758, also showing a directly and high correlations. Also in this case the result is no as we expected.

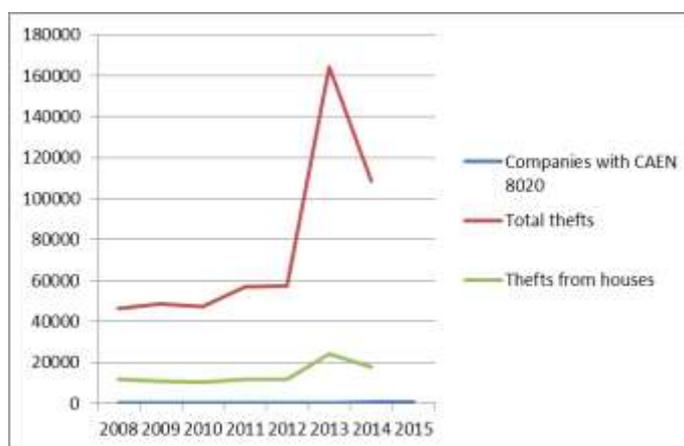
### 2.3.2 CAEN 8020 versus thefts

The three data series for which we will calculate the correlation coefficient are as follows:

**Table 9 Data series for CAEN 8020 commercial companies, total number of thefts and total number of residential thefts**

National / year	2008	2009	2010	2011	2012	2013	2014	2015
Monitored locations	126	283	310	271	323	389	455	481,29
Total thefts		46431	48828	47322	56732	57557	164396	108439
Residential thefts		11574	10742	10567	11661	11757	24181	17674

Source: Poliția Română, 2016. Statistics regarding the criminality [online] Available at: <  
<https://politiaromana.ro/ro/utile/statistici-evaluari/evaluari>>



**Figure 5 Data series for CAEN 8020 commercial companies, total number of thefts and total number of residential thefts**

Source: tabular processing

The correlation coefficient obtained for the CAEN 8020 commercial companies and total number of thefts is 0.83, and for the correlation between CAEN 8020 commercial companies and residential thefts is 0.814. Both cases correlation is directly very high. We cannot decide which of the two series the cause is and which the effect is.

### 2.3.3 CAEN 8020 versus monitored locations

The correlation between the number of CAEN 8020 commercial companies and the number of monitored locations will be analyzed distinctively. The data presented in tabular form are:

**Table 10 Data series for CAEN 8020 commercial companies and monitored locations**

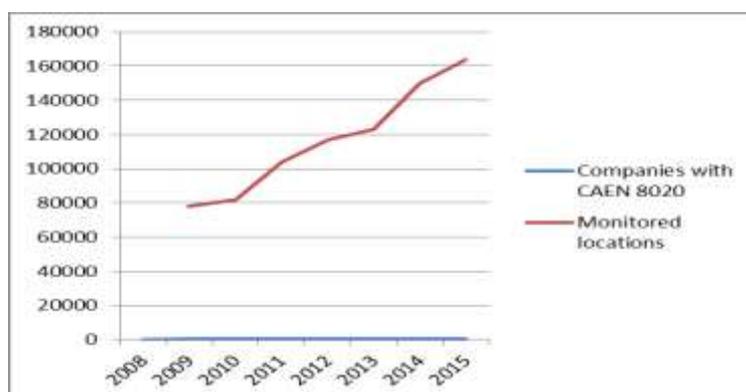
National / țeara	2008	2009	2010	2011	2012	2013	2014	2015
Commercial units with CAEN 8020	126	283	310	271	323	389	455	481
Monitored locations		78000	82000	104000	117000	123000	150000	164000

Source: Poliția Română, 2016. < <https://politiaromana.ro/ro/utile/statistici-evaluari/evaluari> >

Because data series are not complete for 2008 we will analyze only for 2009-2015 period.

The correlation coefficient is 0.9177, which indicates a very high correlation. In some cases such a result can indicate a calculation error, but because the result seems to be logical we will consider that is correct.

The two series looks like:



**Figure 6 Data series for CAEN 8020 commercial companies and monitored locations**

Source: tabular processing

Graphical representation is not relevant because the order of magnitude between the two series is different, a difference of thousands.

### 3. Results

The results obtained and given in the foregoing can be summarized as per the following table:

**Table 11 Correlations results**

<i>Correlation</i>	<b>Monitored locations</b>	<b>Total thefts</b>	<b>Total residential thefts</b>	<b>CAEN 8020</b>
<b>Monitored locations</b>	x	0.786	0.758	0.9177
<b>Total thefts</b>	0.786	X		0.83
<b>Total residential thefts</b>	0.758		x	0.814
<b>CAEN 8020</b>	0.9177	0.83	0.814	x

*Source:* tabular processing

Interpreting the correlation coefficients, the above results can be presented in the following form:

**Table 12 Correlations results**

<i>Correlation</i>	<b>Monitored locations</b>	<b>Total thefts</b>	<b>Total residential thefts</b>	<b>CAEN 8020</b>
<b>Monitored locations</b>	x	high	high	very high
<b>Total thefts</b>	high	x		very high
<b>Total residential thefts</b>	high		x	very high
<b>CAEN 8020</b>	very high	very high	very high	x

*Source:* tabular processing

The above mentioned result indicates that the correlations between series are directly and high.

### Conclusion

The above mentioned results don't sustain the estimated conclusions from the beginning of the study. Thus, an increase of the monitored locations' number doesn't indicate a decrease of total thefts or total residential thefts. The conclusion is that the number of the monitored locations is rather a result of the increase of the number of crimes.

Similarly, the number of commercial companies with CAEN for monitoring activities is directly correlated at a very high level with the number of crimes. As in the first case, we consider that the number of the commercial companies is rather a consequence of the number of crimes and not vice versa.

The general conclusion of the study is that, at least based on the analyzed results, telematics solutions applied in security industry applied in monitoring dispatches don't influence indirectly the crime number and level, to their decrease.

For that reason, it is possible that the use by the security companies of this kind of monitoring services may not be a solution for reaching a Business Excellency level.

Apart from the above statistical findings, we consider that the subject needs to be reevaluated from an European approach and also followed in time. According to some recent papers (Năstase, 2013), international collaboration for sharing experience can be very important, and regarding our subject, maybe the key of reaching a Business Excellency level through telematics solutions can be found in the West European countries expertise.

Technology generally applied in various fields paved to achieve the operational excellence in business. We believe that will be possible in the security industry too. It may be a matter of time or maybe just the context, security market in Romania having some distinct features compared to the European one (level of development and stability, etc.).

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