Some Empirical Evidences about the Biphasic Action of e-Government Processes

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The aim of the paper is to investigate - by a Business Economics approach - about the potential correlation between two clusters (or variables): innovation and ethical behaviours related to the life standards in a country. The first cluster (innovation) includes Information Communication Technologies (ICT), Research & Development Expenditure, Education Investment, (etc.); while the second one (ethical behaviours) contains elements such as ethical values, the observance of the law, merit rating system, (etc.).

Inside the first cluster are located the e-government processes that the paper systematizes in the Introduction. The central part of the paper shows the potential correlation between the two clusters by an empirical research concerning the European Union (EU) countries area.

The final pages of the paper are dedicated to comment the research result that shows the biphasic action of e-government processes: on the one hand these processes represent a right way to introduce efficiency and effectiveness in the public sector management (short period), on the other hand e-government applications can have a useful effect on the ethical shared behaviours (long period).

Keywords: Business Economics, e-Government, Ethics, Innovation

1. Introduction

The current feeling of mistrust towards the system-company can be attributed in part to problems related to so called "lacks of a business ethic approach". In particular, the behaviour of some companies, in current models of government to denature the target given by: "(…) *the production of goods or services to economic conditions, conditions for which the company has durability as a function of capacity, its existence would consolidate over time, the instrumental function which characterizes the company as part of the fulfilment of human needs* (…)" (Ferrero 1965).

The business, therefore, seems - today as yesterday - to direct its attention towards a long-term and strategic approach, making converge values and principles

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of an ethical nature. The concept of Government itself and the methods used by public companies, presents a number of critical issues (Savoie 1995), such as:

1. the risk of "*self-reference*" of the model and the related accounting records, reporting or programmatic reports produced;
2. the current "*imbalance*" in terms of informative spaces available (representing, for example, the availability of documents on web sites), reserved to the budgets of sustainability (such as the social, the environmental, etc.) compared to traditional financial statements (such as, for example, the budget, the budget report, etc.);
3. the weakness of actions on the concept of "*sustainability*": at the local side is referred to the "*social and environmental sustainability*" (strongly emphasized in the financial sustainability, it as has been told) and on the "*financial*" (poorly reflected in traditional financial statements), both attributable to a single issue: that of "*sustainable development*" of a community guided by a model reference value of improved and oriented to the ethical business;
4. (etc.).

Inside the Italian system, for example, we tried to remedy in time to these critical issues through a cyclical and often massive regulatory intervention that, in fact, led to inefficient outcomes, or in some cases, insufficient demand, which then arises spontaneously from the reasoning, whether there are other ways to improve these imbalances, as an alternative to that offered by the pure regulatory action (Puddu 2008).

The alternative way, to be followed for the improvement of the ethical model, could be represented by innovation, a cluster that includes Information Communication Technologies (ICT), Research & Development Expenditure, Education Investment, (etc.): inside the public sector management the technological component of innovation gives rise to the related concepts of e-government and e-governance (or e-democracy).

The concept of e-government (or e-administration) is referred to the use of modern Information and Communication Technologies (ICT) linked to the development of electronics and the Internet in the modernisation process of the Public Administration (Pollifroni 2005). The different processes of e-government may be analysed with reference to the various models, that the Public Institution may adopt during the modernisation process of the structure. The different e-government models are:

1. G2C model (Government to Citizen model): this model concerns the activities carried out by the Public Institution towards citizens (for example to build Institutional Portal Web and to provide Internet on line services such as the presentation of the Individual Tax Return in electronic format, or the application of electronic documents by the Registry Offices, etc.).

2. G2B model (Government to Business model): this model concerns the activities carried out by the Public Institution towards business companies (for example to provide Internet on line services such as the presentation – in electronic format - of the following documents: Income Tax Return, Annual Report, etc).
3. B2G model (Business to Government model): this model concerns the activities carried out by the Public Institution towards external supplier (for example e-procurement activities, e-auctions on line, etc.; in Italy these activities are made by Consip S.p.A., a Public Company of the Italian Treasury Department).
4. G2E model (Government to Employees model): this model concerns the activities carried out by the Public Institution towards employees (for example to provide Internet on line services such as e-learning activities).
5. G2G model (Government to Government model): this model concerns the activities carried out by the Public Institution towards other Domestic Public Institution (electronic integration between several Departments or between Central and Local Public Institution) or towards other International or Foreign Public Institutions (for example intelligence activities, International Co-operation actions, etc.).

The development of the e-government processes (conditioning processes or causes) determines an improvement in the governance processes of the Public Institution that - using highly technological solutions - are named e-governance processes (conditioned processes or effects) (Haque 2001; Osborne et al. 1992).

Consequently, the e-governance is the second aspect of technological innovation applied to Public Administration processes: that is to say the possibilities for the improvement of the democratic participation processes offered by the new technologies (Pollifroni 2005). The digital revolution multiplies the individual's possibilities of communication and interaction in an exponential fashion, making it possible to re-launch the classic idea of the individual at the centre of the "*Res Publica*" (Kettl 2000). These e-governance processes [also called digital democracy (or e-Democracy)] include, for example:

1. direct participation of the employees to the internal decision of the Public Institution: these processes influence the internal governance with activities, e.g., of internal electronic poll, also called e-Decision;
2. direct participation of the citizens to the political choices: these processes influence the external governance of the Public Institution by e-Voting activities.

The innovation activity can be defined as scientific, technological, organizational, financial or commercial implementation of processes. Innovation is a key word now in the economic system and in the social world: innovate is often synonymous with success, to survive in the market and to gain competitive advantage (business sector). By investing in this process, the government shows more and more interest

towards the Information Technology and management techniques that can ensure an higher level of control, efficiency and quality of services, compared with increasingly rigid spending constraints and changes in the economy growing very fast, more and more demanding requirements from the user-citizen (public sector) (Bajjaly 1998; Werlin 2003).

Governments and Public Institutions in recent years have been directed toward more sophisticated methods, which provide tools for increasingly complex data analysis and stringent reporting capabilities and more sophisticated, bringing out in this way also for the public sector, by applying tools able to support the strategic control and decision making process (Brown et. al. 1998).

The development of such technology called e-government, passes thought the process of computerization of public administration and together with shares of organizational change, can handle the documentation and helping to manage processes with digital systems through the use of information and communication technologies (ICT) (Cantino 2005). This will optimize the work of the organizations and provide users (citizens and businesses) faster and new services, using, for example, the websites of the authorities concerned. Following this address, national and regional governments of the most technologically advanced countries (North America, Japan, European Area) have initiated strategic plans to guide the transition and to accelerate steps to force the diffusion of ICT in the public sector.

In recent years, in addition to the implementation and development of technological innovation, has developed a parallel process of attention to ethics, as a related discipline (Maesschalck 2004); some studies have sought to show how innovation is able to influence the ethical behaviour, triggering a virtuous circle, (such as the city satisfied with the service), to monitor and encourage ethical behaviours in several fields, such as: tax evasion control, observance of the law, reengineering a public merit rating system, (etc.) (Neilsen 1995).

The aim of this research is, therefore, found in the verification of the existence of a possible correlation between the indicators that measure the level of innovation (independent variable) and ethical behaviours (dependent variable): while these two seemingly independent aspects, if the outcome would be positive, it could be said that innovation in the public management can be a valuable tool for improving its ethical model.

2. Research Methodology

2.1. Path research of structural indicators

To achieve the goal described above, two baskets of indicators have been identified:

1. the first basket (basket of innovation indexes) is the Summary Innovation Index (SII), that is an arithmetic weighted average of 33 innovation indexes (data sources: European Commission/Eurostat);
2. the second basket (basket of ethical indexes) includes the following seven ethical indexes: 1) AEI Standard Ethics (data source: Agenzia Europea di Investimenti Standard Ethics); 2) Corruption Perception Index (CPI) (data source: Transparency International); 3) Control of corruption (data source: World Bank); 4)Voice and accountability(data source: World Bank); 5) Government effectiveness (data source: World Bank); 6) Political stability and absence of violence (data source: World Bank); and 7) Regulatory quality (data source: World Bank).

Each index has presented the following characteristics:

1. availability for the period 2003-2007;
2. applicability to almost all of the 27 European Union countries;
3. representativeness of the country;
4. possibility of comparison between them.

The research of the indicators was carried out by consulting the data sources offered by the following international bodies: European Commission, Eurostat, Transparency International, AEI (Agenzia Europea di Investimenti) Standard Ethics and World Bank. The paper continues with a brief presentation of the indices identified.

2.2. Presentation of the basket of innovation indexes

The basket of innovation indexes includes the Summary Innovation Index (SII), that is an arithmetic weighted average of 33 innovation indexes (data sources: European Commission/Eurostat). The indicator is composed of a basket of sub-indicators that vary over time.

This composite index measures the "innovation performance" through three innovation inputs [A1) drivers of innovation, A2) creation of new knowledge, A3) innovation and entrepreneurship] and two innovation outputs [B1) applications, B2) intellectual property]: the sub-indicators considered for the purposes of this study have the characteristics specified below.

A1) Drivers of innovation (7 indexes).

1. Graduates in science and engineering per 1,000 population (age group 20-29 years) - S & E graduates (% of population aged 20-29): this indicator brings together university graduates in science, physics, mathematics, statistics, computer science, engineering, architecture with the population under study, between 20 and 29 years (included).
2. Population with tertiary education in the field (age 25-64) - Population with tertiary education (% of population aged 25-64): this indicator brings

together the number of people in age group 25-64 formed for the tertiary sector, with the entire population in that range of reference.

3. Rate of broadband penetration (number of broadband lines per 100 inhabitants) - Broadband penetration rate (number of broadband lines per 100 population): this indicator brings together the number of broadband lines with the total population.
4. Participation in a long training period (age 25-64) - Participation in life-long learning (% of population aged 25-64): this indicator brings together the people taking part in a formation of long-term with the entire population within the age group 25-64.
5. Level of education achieved at a young age (% of population aged 20-24 years who have completed university) - Youth education attainment level (% of population aged 20-24 having completed at least upper secondary education): this indicator brings together people aged between 20 and 24 years who have completed university, with the entire population in that age range.
6. Internet Access or domestic - Level of Internet access of households: it indicates the ratio between the number of homes with Internet access and the total case.
7. Share or SMEs with a website - Level of Internet access of enterprises: it indicates the ratio between the number of SMEs with a website and the total number of SMEs.

A2) Creation of new knowledge (6 indexes).

1. Public expenditure on research and development (% of GDP) - Public R & D expenditures (% of GDP): this indicator has been extrapolated from the Eurostat database and shows the expenditure on research and the development level as a percentage of total GDP of each country of the European Union.
2. Private expenditure on research and development (% of GDP) - Business R & D expenditures (% of GDP): this indicator brings together all the expenditure in R & D performed by private sector (industry and services), with the GDP.
3. Share of R & D in medium-high and high technology (% of expenditure in R & D in Industry) - Share of medium-high-tech and high-tech R & D (% of manufacturing R & D expenditures): this indicator brings together the expenditure in R & D for high-and medium-high technology industry, with total spending on industrial R & D.
4. Proportion of firms that receive public funds for innovation - Share of enterprises receiving public funding for innovation: this indicator brings together a number of innovative firms that receive public funds, with the total number of firms.

5. University R & D financed by the private sector - University R & D expenditures financed by business sector: this indicator brings together the expenditure in R & D in universities, with total expenditure in R & D university, highlighting the degree of cooperation between public and private.
6. Share of venture capital investments in High-tech venture capital (% of venture capital invested): this indicator brings together the investment of venture capital in high-tech, with total investments of venture capital. Investment of venture capital in high-tech refers to the following areas: computer science, electronics, biotechnology, medicine, industrial automation and financial services.

A3) Innovation and entrepreneurship (6 indexes).

1. Industrial products and services, created in SMEs (% product and service): this indicator is the sum of all products / services created by SMEs in innovation activities (for businesses to innovate means both producing knowledge by them self, or producing it by collaborating with other firms), with the total number of products / services generated by SMEs.
2. Proportion of Early-stage venture capital (% of GDP): this indicator measures the dynamism in creating new business.
3. SMEs innovating in cooperation (% product and service): this indicator measures the flow of knowledge and between enterprises and between public research and enterprises.
4. Expenditure on innovation - Innovation expenditures (% of turnover): this indicator links total expenditure on innovation by all firms producing goods or providing services, with the total turnover generated from goods / services.
5. ICT expenditure (% GDP) - ICT expenditures (% of GDP): this indicator links the total expenditure in Information and Communication Technology (ICT), with the GDP.
6. Share of SMEs that do not change on a technical level - SMEs using non-technological change (% of SMEs) : this indicator considers the companies that do not implement technical improvements, new facilities and do not change the design of at least one product.

B1) Applications (7 indexes).

1. Employees in high-tech services (% of the workforce) - Employment in high - tech services (% of total workforce): this indicator brings together people working in areas of high-tech services (post and telecommunications, information technology including the development of software and services for R & D), with the total workforce in all industries and services.

2. Employed in the production of high-or medium-high technological content (% Labour Force) - Employment in medium/ high and high - tech manufacturing (% of total workforce): this indicator brings together the number of employees in the production of products of high or medium-high technological content (chemical, machinery, office equipment, telecommunications, precision instruments, automobiles, aerospace and other transport equipments) with the total workforce.
3. Exports of high technology products as a share of total exports: this indicator measures the competitiveness of the European Union in commercialising the results of research and development and innovations on international markets.
4. Sales of new products (% of sales) - Sales on new market products (% of turnover): this indicator brings together the revenue generated from the sales of new or improved products, with the total turnover.
5. Sales of new products for the firm, but not new to the market (% of turnover): this indicator brings together the revenue generated from new products considered by some businesses but not regarded as such by all the companies on the market, compared with the total turnover.
6. Value-added in high-tech manufacturing (% of manufacturing value-added) : this indicator brings together the value added industrial production in five high-tech sectors (pharmacy, office equipment, telecommunications equipment, aerospace), with the total value added of the manufacturing sector.
7. SMEs Rate of volatility (sum of birth rate and death rate): this indicator links the rate of volatility, with the total number of SMEs; the rate of volatility interprets business dynamism and the contribution given to increase productivity. A high degree of volatility indicates a capability to adapt to changes.

B2) Intellectual property (7 indexes).

- European habitants: this indicator brings together the number of high-tech patents validated by the European Patent Office, with the total population.
- American habitants. (New) USPTO high- tech patents: this indicator is the U.S. equivalent, of the above described for Europe.
- EPO patents: this indicator brings together the number of patents approved by the European Patent Office (EPO) with the total population.
- USPTO patents per million Americans: this indicator brings together the number of patents approved by the U.S. Patent Office (USPTO) with the total population.
- New Triadic patent families per million population: this indicator brings together the number of patents of the “triad”, with the total population. A patent is the triad if and only if it was lodged with the European Patent Office (EPO), the Japanese Patent Office (JPO) and the U.S. Patent and Trademark Office (USPTO).

- Number new domestic community trademarks (CTM) per million population: this indicator brings together the number of new trade marks, with the total population.
- Number of (new) domestic community industrial designs per million population: this indicator brings together the new design community, with the total population.

2.3. Presentation of the basket of ethical indexes

The second basket (basket of ethical indexes) includes the following seven ethical indexes:

- AEI Standard Ethics (data source: Agenzia Europea di Investimenti Standard Ethics). Evaluations in terms of ethical Rating (national or regional) have as a reference the concept of Ethics and Social Responsibility issued according to parameters set by international bodies like the UN, OECD and the European Union. The final evaluations of the EEA Ethics Standards are expressed in the form of a rating to eight levels (EEE, EEE-, EE+, EE, EE-, E+, E, E-). The rating is the result of statistical and scientific activity carried out with the intention of photographing the world of business in relation to ethical principles promoted by large international organizations.
- Corruption Perception Index (CPI) (data source: Transparency International). The index of perceptions of corruption in English Corruption Perception Index (CPI) is an indicator published annually since 1995 by Transparency International ordering the countries of the world on the basis of the level that the existence of corruption is perceived among public and political office.
- Control of corruption (data source: World Bank). The indicator provided by the World Bank measures the ability of the political, legal and judicial systems to prevent and combat corruption.
- Voice and accountability (data source: World Bank). This index provided by the World Bank measures the degree of civil liberties and political rights and influence of the effective population in the election of political leaders, so far, to the level of independence of the media from political pressure.
- Government effectiveness (data source: World Bank). The indicator published by the World Bank that measures the quality of public services, the credibility of the Government on the measures to be implemented, the quality of the bureaucracy and the independence of civil servants from political pressure.
- Political stability and absence of violence (data source: World Bank). The index published by the World Bank, which measures the perceptions of the likelihood that destabilize the government or be removed by unconstitutional or violent means, including domestic violence and terrorism.
- Regulatory quality (data source: World Bank). Indicator published by the World Bank, which measures the ability of the government in formulating and

implementing policies that can enable and promote the development of the private sector.

3. Data Standardization and presentation of correlation data-results

In order to compare these indexes, their values have been standardized, and traced back to a single scale in terms of cents: the process used is explained below.
Innovation Indicators. Summary Innovation Index (SII) Standardization was obtained by multiplying by 100 the original data, according to the following proportion:

Since the original: Given standardized (x) = 1:100.

Ethics Indicators.

1. AEI Standard Ethics. Cents in the conversion of this quality indicator is obtained through the following conversion scale: EEE=100; EEE-= 85.71428571; EE + =71.42857143; EE=57.14285714; EE-=42.85714286; E +=28.57142857; E=14.28571429 and E-=0.
2. Corruption Perception Index (CPI). The indicator in question is represented by a scale from 0 to 10, its conversion into cents was realized through the following proportion: since the original: Given standardized (x) = 10:100.
3. Control of corruption. 4) Voice and accountability. 5) Government effectiveness. 6) Political stability and Absence of Violence. 7) Regulatory quality. The five indicators of the World Bank are expressed on a scale whose values range from -2.5 to +2.5. Cents in the conversion has been obtained through the following conversion scale: since normalized (x) = (as original + 2.5) * 20.

For the purposes of this work, the calculation of the correlation was obtained by the following indicators:

- the independent variable “Innovation”: the indicator is calculated as a result of several sub-indicators and corresponds to the Summary Innovation Index;
- the dependent variable “Ethics”: the data used is the value that results from the average of the basket composed of the seven indicators described above;
- the values that derives from the process of normalization of the original data bases.

The following tables and charts show, year by year, the results of the research.

Table 1. Calculation of the correlation between "Innovation" (independent variable: x) and "Ethics"(dependent variable: y) – Year: 2003

Nations	**x**	**y**	**(x – mx)**	**(y – my)**	**$(x – mx)^2$**	**$(y – my)^2$**	**$(x – mx)^2$ $(y – my)^2$**
Austria	47,00	81,67	8,48	9,46	71,94	89,42	80,20
Belgium	51,00	79,73	12,48	7,51	155,79	56,45	93,78
Bulgaria	20,00	51,29	-18,52	-20,92	342,94	437,77	387,46
Cyprus	29,00	67,90	-9,52	-4,32	90,60	18,63	41,09
Denmark	68,00	89,57	29,48	17,36	869,16	301,20	511,65
Estonia	35,00	69,27	-3,52	-2,95	12,38	8,70	10,38
Finland	69,00	89,67	30,48	17,46	929,12	304,73	532,10
France	48,00	74,56	9,48	2,34	89,90	5,49	22,21
Germany	59,00	79,33	20,48	7,11	419,49	50,60	145,70
Greece	26,00	63,43	-12,52	-8,78	156,71	77,16	109,97
Ireland	50,00	79,84	11,48	7,63	131,82	58,18	87,58
Italy	32,00	65,29	-6,52	-6,93	42,49	47,99	45,15
Leetonia	16,00	61,47	-22,52	-10,75	507,08	115,56	242,07
Latvia	23,00	64,53	-15,52	-7,68	240,82	59,03	119,23
Luxemburg	50,00	84,15	11,48	11,93	131,82	142,33	136,97
Malta	27,00	75,48	-11,52	3,26	132,68	10,65	-37,59
Netherlands	50,00	85,07	11,48	12,86	131,82	165,29	147,61
Poland	21,00	58,36	-17,52	-13,85	306,90	191,92	242,69
Portugal	21,00	73,23	-17,52	1,02	306,90	1,03	-17,79
United Kingdom	57,00	81,76	18,48	9,54	341,57	91,05	176,35
Czech Republic	32,00	63,49	-6,52	-8,73	42,49	76,16	56,89
Romania	16,00	45,98	-22,52	-26,24	507,08	688,39	590,82
Slovakia	23,00	60,22	-15,52	-12,00	240,82	143,91	186,17
Slovenia	32,00	68,43	-6,52	-3,78	42,49	14,31	24,66
Spain	32,00	75,27	-6,52	3,06	42,49	9,34	-19,92
Sweden	82,00	88,97	43,48	16,76	1890,64	280,73	728,53
Hungary	24,00	66,49	-14,52	-5,73	210,79	32,80	83,15
European Average	38,52	72,22	====	====	310,69	128,85	175,08
Correlation Index				0,88			

Source: own creation

Table 2. Calculation of the correlation between "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2004

Nations	**x**	**y**	**(x – mx)**	**(y – my)**	**$(x – mx)^2$**	**$(y – my)^2$**	**$(x – mx)^2$ $(y – my)^2$**
Austria	46,00	82,36	7,63	10,46	58,21	109,43	79,81
Belgium	49,00	78,59	10,63	6,69	112,99	44,75	71,11
Bulgaria	21,00	52,01	-17,37	-19,89	301,73	395,60	345,49
Cyprus	29,00	65,40	-9,37	-6,50	87,80	42,22	60,89
Denmark	66,00	90,14	27,63	18,25	763,40	332,89	504,11
Estonia	34,00	69,77	-4,37	-2,13	19,10	4,54	9,31
Finland	68,00	89,76	29,63	17,86	877,91	319,01	529,21
France	48,00	75,33	9,63	3,43	92,73	11,78	33,05
Germany	59,00	79,73	20,63	7,83	425,58	61,35	161,58
Greece	26,00	62,80	-12,37	-9,09	153,03	82,70	112,50
Ireland	49,00	79,53	10,63	7,63	112,99	58,25	81,13
Italy	33,00	63,58	-5,37	-8,32	28,84	69,27	44,70
Leetonia	16,00	60,20	-22,37	-11,70	500,43	136,83	261,68
Latvia	24,00	63,30	-14,37	-8,60	206,51	73,92	123,55
Luxemburg	50,00	84,09	11,63	12,19	135,25	148,64	141,78
Malta	27,00	73,63	-11,37	1,74	129,29	3,01	-19,74
Netherlands	49,00	84,93	10,63	13,03	112,99	169,84	138,53
Poland	21,00	56,42	-17,37	-15,48	301,73	239,56	268,85
Portugal	24,00	71,75	-14,37	-0,15	206,51	0,02	2,17
United Kingdom	57,00	82,22	18,63	10,32	347,06	106,46	192,22
Czech Republic	33,00	62,72	-5,37	-9,18	28,84	84,27	49,30
Romania	15,00	46,55	-23,37	-25,35	546,17	642,47	592,37
Slovakia	22,00	60,73	-16,37	-11,16	267,99	124,62	182,75
Slovenia	34,00	68,40	-4,37	-3,50	19,10	12,23	15,29
Spain	31,00	74,27	-7,37	2,38	54,32	5,64	-17,51
Sweden	80,00	88,97	41,63	17,07	1733,03	291,51	710,78
Hungary	25,00	66,00	-13,37	-5,89	178,77	34,74	78,81
European Average	38,37	71,90	====	====	288,97	133,54	176,06
Correlation Index				0,90			

Source: own creation

Table 3. Calculation of the correlation between "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2005

Nations	**x**	**y**	**(x – mx)**	**(y – my)**	**$(x – mx)^2$**	**$(y – my)^2$**	**$(x – mx)^2$ $(y – my)^2$**
Austria	48,00	82,10	9,44	10,96	89,20	120,06	103,48
Belgium	49,00	77,33	10,44	6,19	109,09	38,26	64,61
Bulgaria	20,00	52,09	-18,56	-19,05	344,31	362,93	353,50
Cyprus	30,00	66,07	-8,56	-5,08	73,20	25,78	43,44
Denmark	65,00	88,80	26,44	17,66	699,31	311,72	466,89
Estonia	35,00	69,50	-3,56	-1,64	12,64	2,70	5,85
Finland	65,00	88,87	26,44	17,73	699,31	314,30	468,82
France	48,00	75,44	9,44	4,30	89,20	18,49	40,61
Germany	59,00	80,22	20,44	9,07	417,98	82,29	185,46
Greece	26,00	61,98	-12,56	-9,17	157,64	84,08	115,13
Ireland	50,00	80,50	11,44	9,36	130,98	87,55	107,09
Italy	33,00	60,13	-5,56	-11,01	30,86	121,22	61,17
Leetonia	17,00	60,77	-21,56	-10,38	464,64	107,70	223,70
Latvia	24,00	63,43	-14,56	-7,71	211,86	59,46	112,24
Luxemburg	53,00	82,63	14,44	11,49	208,64	131,97	165,93
Malta	28,00	71,77	-10,56	0,62	111,42	0,39	-6,57
Netherlands	49,00	83,64	10,44	12,50	109,09	156,25	130,55
Poland	22,00	54,69	-16,56	-16,45	274,09	270,63	272,35
Portugal	23,00	71,60	-15,56	0,46	241,98	0,21	-7,14
United Kingdom	56,00	80,27	17,44	9,13	304,31	83,33	159,24
Czech Republic	33,00	61,96	-5,56	-9,18	30,86	84,30	51,01
Romania	16,00	47,07	-22,56	-24,08	508,75	579,82	543,12
Slovakia	23,00	61,89	-15,56	-9,25	241,98	85,62	143,93
Slovenia	34,00	67,67	-4,56	-3,48	20,75	12,09	15,84
Spain	32,00	73,67	-6,56	2,53	42,98	6,39	-16,58
Sweden	78,00	87,03	39,44	15,88	1555,86	252,31	626,54
Hungary	25,00	63,82	-13,56	-7,32	183,75	53,65	99,29
European Average	38,56	71,14	====	====	272,77	127,91	167,76
Correlation Index						0,90	

Source: own creation

Table 4. Calculation of the correlation between "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2006

Nations	**x**	**y**	**(x – mx)**	**(y – my)**	**$(x – mx)^2$**	**$(y – my)^2$**	**$(x – mx)^2$ $(y – my)^2$**
Austria	48,00	82,24	8,85	11,03	78,36	121,74	97,67
Belgium	48,00	77,67	8,85	6,46	78,36	41,76	57,20
Bulgaria	22,00	52,09	-17,15	-19,12	294,06	365,46	327,82
Cyprus	32,00	67,40	-7,15	-3,81	51,10	14,52	27,24
Denmark	64,00	89,37	24,85	18,16	617,61	329,82	451,33
Estonia	37,00	70,73	-2,15	-0,48	4,61	0,23	1,03
Finland	67,00	88,79	27,85	17,58	775,73	308,94	489,54
France	48,00	74,84	8,85	3,63	78,36	13,20	32,17
Germany	59,00	80,24	19,85	9,03	394,10	81,61	179,34
Greece	25,00	61,52	-14,15	-9,69	200,17	93,95	137,13
Ireland	49,00	80,42	9,85	9,21	97,06	84,74	90,69
Italy	33,00	58,75	-6,15	-12,46	37,80	155,30	76,62
Leetonia	18,00	62,40	-21,15	-8,81	447,24	77,63	186,33
Latvia	26,00	62,47	-13,15	-8,74	172,87	76,45	114,97
Luxemburg	57,00	82,86	17,85	11,65	318,69	135,73	207,98
Malta	29,00	72,57	-10,15	1,36	102,98	1,84	-13,76
Netherlands	48,00	83,27	8,85	12,06	78,36	145,50	106,77
Poland	23,00	54,21	-16,15	-17,00	260,76	289,09	274,56
Portugal	25,00	70,00	-14,15	-1,21	200,17	1,46	17,08
United Kingdom	55,00	82,04	15,85	10,83	251,28	117,37	171,74
Czech Republic	34,00	62,88	-5,15	-8,33	26,50	69,45	42,90
Romania	17,00	48,67	-22,15	-22,55	490,54	508,30	499,34
Slovakia	24,00	61,55	-15,15	-9,66	229,47	93,35	146,36
Slovenia	36,00	68,97	-3,15	-2,24	9,91	5,03	7,06
Spain	32,00	70,36	-7,15	-0,85	51,10	0,73	6,09
Sweden	76,00	87,17	36,85	15,96	1358,06	254,75	588,19
Hungary	25,00	64,02	-14,15	-7,19	200,17	51,70	101,73
European Average	39,15	71,21	====	====	255,76	127,39	163,89
Correlation Index				0,91			

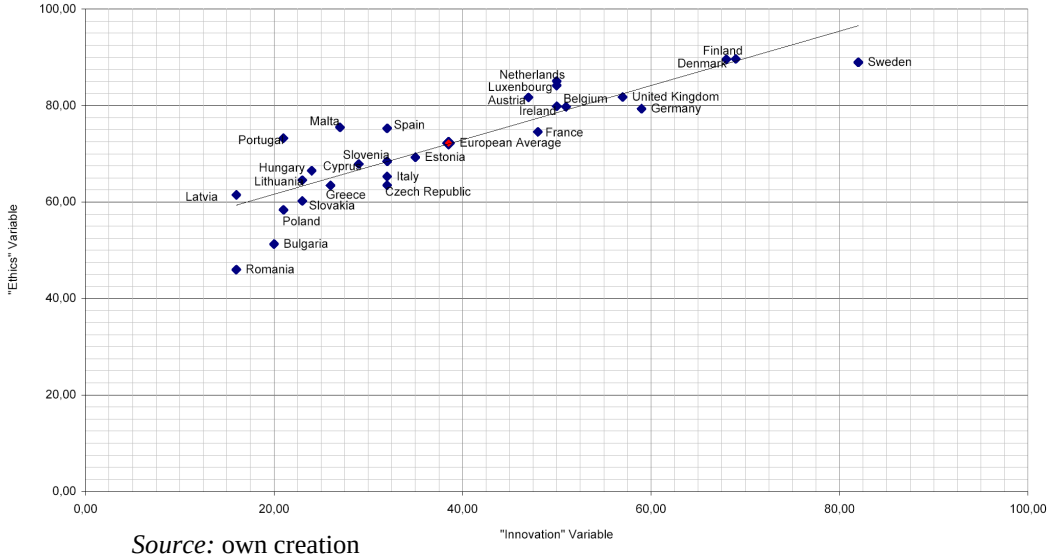
Source: own creation

Table 5. Calculation of the correlation between "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2007

Nations		**x**	**y**	**(x – mx)**	**(y – my)**	**$(x – mx)^2$**	**$(y – my)^2$**	**$(x – mx)^2 (y – my)^2$**
Austria	48,00	82,36	9,00	11,01	81,00	121,15	99,06	
Belgium	47,00	77,27	8,00	5,92	64,00	35,06	47,37	
Bulgaria	23,00	52,15	-16,00	-19,20	256,00	368,69	307,22	
Cyprus	33,00	67,23	-6,00	-4,12	36,00	16,96	24,71	
Denmark	61,00	89,34	22,00	17,99	484,00	323,67	395,80	
Estonia	37,00	70,37	-2,00	-0,99	4,00	0,97	1,97	
Finland	64,00	87,44	25,00	16,09	625,00	258,96	402,31	
France	47,00	74,24	8,00	2,89	64,00	8,37	23,14	
Germany	59,00	80,04	20,00	8,69	400,00	75,56	173,85	
Greece	26,00	61,12	-13,00	-10,23	169,00	104,74	133,04	
Ireland	49,00	80,99	10,00	9,64	100,00	92,84	96,35	
Italy	33,00	60,31	-6,00	-11,05	36,00	122,02	66,28	
Leetonia	19,00	58,67	-20,00	-12,69	400,00	160,94	253,72	
Latvia	27,00	62,37	-12,00	-8,99	144,00	80,73	107,82	
Luxemburg	53,00	83,69	14,00	12,34	196,00	152,21	172,72	
Malta	29,00	72,27	-10,00	0,91	100,00	0,84	-9,15	
Netherlands	48,00	84,22	9,00	12,86	81,00	165,48	115,77	
Poland	24,00	59,40	-15,00	-11,95	225,00	142,76	179,23	
Portugal	25,00	69,75	-14,00	-1,61	196,00	2,58	22,48	
United Kingdom	57,00	81,27	18,00	9,92	324,00	98,42	178,58	
Czech Republic	36,00	62,79	-3,00	-8,56	9,00	73,28	25,68	
Romania	18,00	49,58	-21,00	-21,77	441,00	474,05	457,23	
Slovakia	25,00	62,16	-14,00	-9,19	196,00	84,44	128,65	
Slovenia	35,00	68,93	-4,00	-2,42	16,00	5,85	9,67	
Spain	31,00	70,10	-8,00	-1,25	64,00	1,56	10,00	
Sweden	73,00	88,43	34,00	17,08	1156,00	291,61	580,61	
Hungary	26,00	62,99	-13,00	-8,36	169,00	69,90	108,69	
European Average	39,00	71,35	====	====	223,56	123,47	152,33	
Correlation Index				0,92				

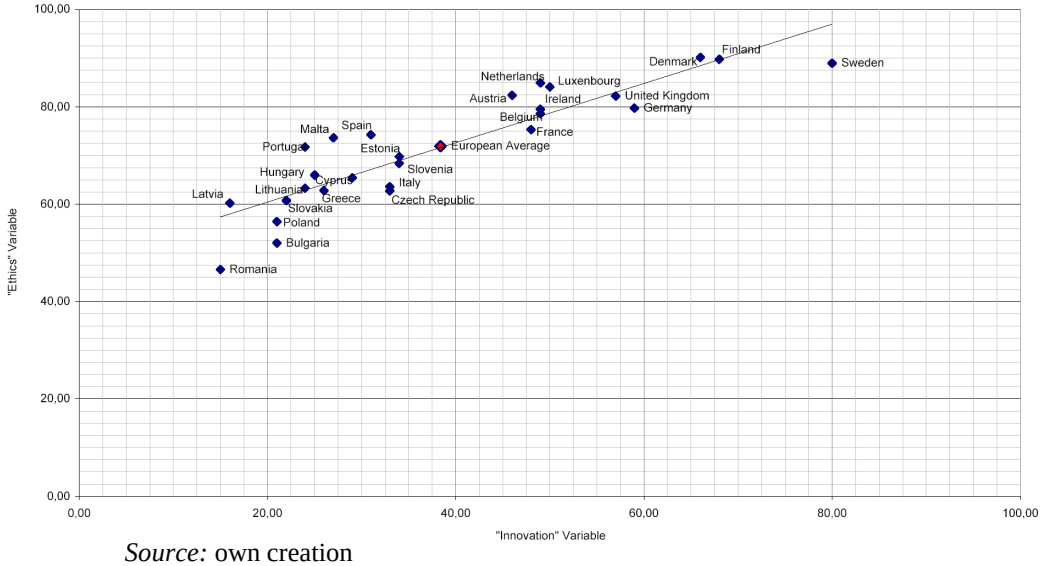
Source: own creation

Figure 1. Scatter chart and trendline concerning the two variables "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2003



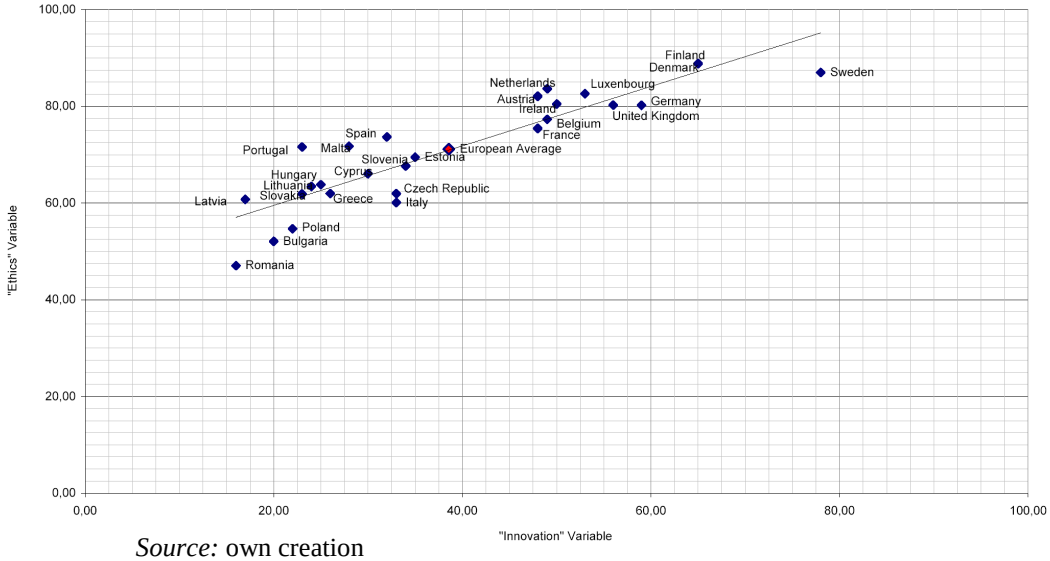
Source: own creation

Figure 2. Scatter chart and trendline concerning the two variables "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2004



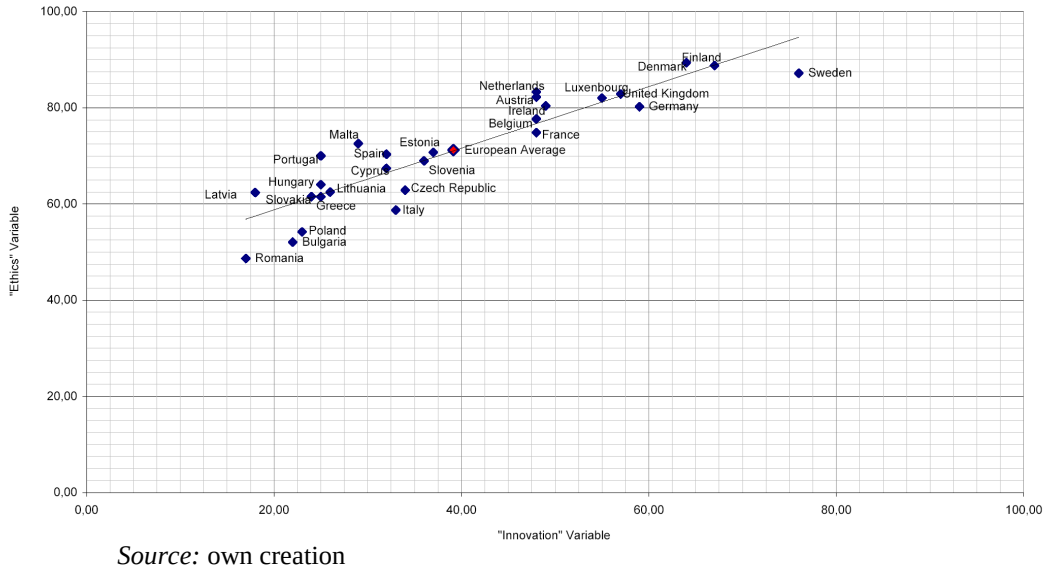
Source: own creation

Figure 3. Scatter chart and trendline concerning the two variables "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2005



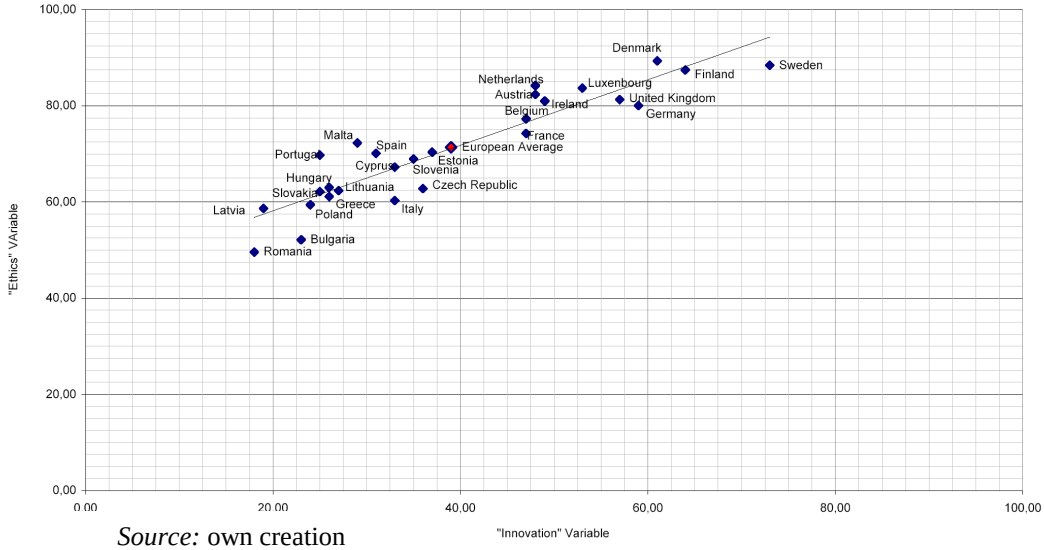
Source: own creation

Figure 4. Scatter chart and trendline concerning the two variables "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2006



Source: own creation

Figure 5. Scatter chart and trendline concerning the two variables "Innovation" (independent variable: x) and "Ethics" (dependent variable: y) – Year: 2007



Source: own creation

4. Conclusion

The contribution of this research has had, as prerequisite, the identification in the current processes for improvement and development of models of government of the crucial role represented by the share of the underlying reference model value, measured by ethical parameters.

In the model, the issue of governance and their criticality, has been pressing an action that often, as we have already registered, leading to inefficient results, or in some cases, insufficient demand, born spontaneously the reasoning above is whether there are other ways in addition to that legislation, the improvement of these imbalances: the alternative way (followed in this study) was designed to measure the level of innovation, cluster where the e-government processes are located.

According to the empirical evidence outlined above, taking place within the community, could be a positive measure between the two variables: innovation and ethical behaviours of a country (which ranges from 0.88 and 0.92 for the period 2003-2007).

The data-results show that in countries where the economic system is more oriented towards innovative practices (e.g., Sweden, Finland and Denmark), there are also the highest ethical standards. In conclusion, therefore, it is possible to state that the implementation of the component of innovation (a cluster that includes

Information Communication Technologies (ICT), Research & Development Expenditure, Education Investment, etc.) is one way to improve the ethical behaviour of a country, consequently overcoming the limitations and weaknesses produced by the mere regulation.
In conclusion the research results could shows the biphasic action of e-government processes:

- on the one hand these processes represent a right way to introduce efficiency and effectiveness in the public sector management (short period analysis);
- on the other hand e-government applications can have a useful effect on the ethical shared behaviours, such as tax evasion control, observance of the law, reengineering a public merit rating system, (etc.) (long period analysis).

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