PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM

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ABSTRACT

In this paper, the results of the empirical research investigating the awareness, attitudes and confidence of the interested public towards authorized companies who carry out the monitoring and controlling of environmental protection in the economy are interpreted, on the example of Croatian largest cement plant. A survey research was conducted on a target sample using an in-depth interview and participant observation. One of the research aims was to determine whether the interested public believes that inspection services monitor the activity of the cement plan adequately and whether they believe their reports. In the analysis of the empirical material a grounded theory method was used, quantification of qualitatively analyzed coded material was performed using the Statistica ver 11.00, and finally, SWAT analysis was conducted.

By analyzing the aforementioned results, it can be stated that representatives of the target groups differ from each other in the variables used, and that their attitude and opinion about content items depends on the group to which they belong. The variable referring to the confidence towards inspection services had the highest projection in the first discriminant function, and the greatest differences among the target groups occur in relation to this coded question. The second discriminant function has the highest relation to the variable referring to the alignment of Croatian and EU legislation, and therefore, it contributes the most in differentiating the target groups. The variable referring to the reliability of the measurement performed by authorized institutes and laboratories has the highest correlation to the third discriminant function and the highest projection of differences.

The majority of subjects believe that inspection services monitor the activity of the cement plant adequately and they believe their reports. The results of the SWOT analysis show that the *strengths* overcome the *weaknesses* and the *opportunities* overcome the *threats*, supporting the growth strategy.

KEYWORDS: awareness, attitudes, inspection services, economy

1. INTRODUCTION

One of the most important segments affecting the world today is climate change and its impact on the economy and population. It has become a substantial global problem, and governments take significant steps to solve this problem. The speed in which physical changes of the ecosystem occur leads to economic losses and new dangers on human health and quality of life (Batelle Report br. 8, 2002). New goals for cleaner technologies from renewable energy sources are set in front of the economy. The industry is not viewed separately from its environment, it is rather viewed as a part of the system to which it is connected, and the success of the consistence of all the links in the chain of creating values is increasingly dependent on the awareness and the attitude of the public interested in the project. In the cement industry, in addition to the importance of preserving the environment and the atmosphere, the problem of climate change

also brings forth serious financial consequences. CEMEX Croatia has been frequently exposed to the pressure of the public over the last ten years because of the consequences of the activities performed daily in the process of cement production, as well as to the recent efforts to meet the legal obligations of the Kyoto protocol, to introduce substitute fuels in the process of cement production in order to reduce the consumption of fossil fuels and adapt to the fight against climate change and reduce greenhouse gas emissions. The aim of this paper is to investigate the awareness of the interested and competent public about the acceptability of environmental impact of Cemex Croatia and to determine if the interested public thinks that the inspection services are adequately monitoring the cement plant and whether they believe their reports. The research hypothesis is: there are significant differences between the entities of the defined target and sector groups in their attitude towards the environmental impact of the cement plant and their confidence in the institutions of the system.

2. METHODOLOGY

The subject sample was defined by 100 entities, 55 of which were male and 45 were female. Mean age of subjects was 47.9 years. Subjects' age, education level, employment status and place of residence are presented in Table 1.

Table 1. Subjects' age, education level, employment status and place of residence

		N
TOTAL SAMPLE		100
Gender	Male	55
	Female	45
Age	Under 30	3
	Between 31 and 44	22
	Between 45 and 60	62
	Over 60	13
Education	High school	28
	Undergraduate/Graduate	72
Employment status	Unemployed	7
	Employed	82
	Retired	6
	Students	5
Town	Kaštela	39
	Solin	36
	Split	25

LEGEND: N- the number of subjects

The subjects were divided into nine subsamples (target groups) which were qualitatively defined as:
ORGANIZATIONS – representatives of non-governmental environmental organizations of Split-Dalmatia County, 10 subjects; *TOWNS* – representatives of local government employees from Kaštela, Solin and Split, 10 subjects; *BUYERS/SUPPLIERS* – representatives of buyers and suppliers of CEMEX Croatia, 10 subjects; *POLITICS/SCIENCE* – representatives of local political structures and scientists, 10 subjects; *SPONSORSHIP AND DONATIONS RECIPIENTS* – representatives of beneficiaries and recipients of CEMEX sponsorships and donations, 10 subjects; *KAŠTELA RESIDENTS* – representatives of neighbours of the plant "Sv. Juraj" in Kaštel Sućurac, 15 subjects; *SOLIN RESIDENTS* – representatives of neighbours of the plant "Sv. Kajo" in Solin, 15 subjects; *CEMEX EMPLOYEES* – representatives of CEMEX employees, 10 subjects; *THE COUNTY* – representatives of local government employees of Split-Dalmatia County, 10 subjects.

Out of the abovementioned subsamples, three new clusters (sectors) consisting of the total of 70 subjects were classified, which were qualitatively defined as:
PUBLIC SECTOR – 30 subjects from the target groups: *TOWNS, POLITICS/SCIENCE* and *THE COUNTY*.
CIVIL SECTOR – 20 subjects from the target groups: ORGANIZATIONS and *SPONSORSHIP AND DONATIONS RECIPIENTS.*
ECONOMIC SECTOR – 20 subjects from the target groups: *BUYERS/SUPPLIERS* and *CEMEX EMPLOYEES.*

The variable sample is represented by a set of 6 qualitatively defined questions which were used in an open and/or indirect interview.

The first variable, which was code-named *awareness_environmental impact of* CEMEX, was defined based on the first question:
1. *In your opinion, how well informed are you on the environmental impact of CEMEX?*

The second variable, which was code-named *impact of CEMEX_acceptable*, was defined based on the second question:
2. *Is that impact (of CEMEX) acceptable?*

The third variable, which was code-named *environmental impact of CEMEX _reduced,* was defined based on the third question:
3. *Do you think that the environmental impact of CEMEX has been increased or reduced in the last few years?*

The fourth variable, which was code-named *measurement reliability_authorized institutions*, was defined based on the fourth question:

4. *In your opinion, is the measuring done by the authorized institutions controlling CEMEX reliable?*

The fifth variable, which was code-named *inspection services_report authenticity*, was defined based on the fifth question which reads:

5. *Do you believe that the inspection services sufficiently monitor the operation of the cement plant and do you believe their reports?*

The sixth variable, which was code-named *eu ecological requirements_croatian ecological requirements*, was defined based on the sixth question:

6. *Do you think that cement plants in the EU work under stricter ecological requirements than those in Croatia?*

A problem-oriented in-depth interview was conducted with 100 subjects divided into nine target groups and three control sector groups representing a target sample of the interested public which is rich in information and, in its activity, involved in forming the attitudes of others.

After being presented with the problem and the aim of the research, all subjects gave a willing consent for participation in the research.

Based on written transcripts, numerical coding of responses was performed for the purposes of forming the entity matrix, defined by the overall subject sample and coded variables, for further statistical analysis. By descriptive analysis, frequency of the six code-named variables, applied for each questions, was determined, as well as their relative and cumulative values. Discriminant analysis of differences between the defined subsamples (target groups) was also conducted, as well as the analysis of differences between the three classified clusters (sectors).

Quantification of qualitative empiric material and transformation to the numerical form was performed for the purposes of further statistical analysis. Complete statistical analysis was performed by STATISTICA, Ver.10.00 software package. *SWOT* analysis was also used in this research.

3. RESULTS AND DISCUSSION

Quantitative analysis of the entity matrix and the first variable was based on the responses obtained by the qualitatively defined first interview question:
In your opinion, how well informed are you on the environmental impact of CEMEX?

The respondents expressed their opinion on the level of awareness about the environmental impact of CEMEX. Their responses were defined at three levels:

The *first group* represents those entities who responded: I am informed a little, I am not adequately informed, I have partial information. Quantitatively, these responses were coded by 0 (zero) for further statistical data analysis.

The *second group* defined their responses affirmatively: Yes, I am informed, I am adequately informed, I have good information. Quantitatively, these affirmative responses were coded by the number 1 (one) for further statistical data analysis.

The *third group* of respondents was classified according to the answer: I am not informed. Quantitatively, these negative answers were coded by the number 2 (two) for further statistical data analysis.

Frequency of the coded answers for the overall sample was determined by descriptive analysis.
The results of frequencies of all entities and the first variable *awareness_environmental impact of CEMEX* are presented in Table 2.

The total of 93% of respondents thinks that they are well informed and familiar with environmental impact of CEMEX. Those partially and insufficiently informed on the environmental impact of the cement plants were quantitatively expressed by 6%, and only one respondent declared he was not informed.

Table 2. Relative and cumulative frequencies of the variable *awareness_environmental impact of CEMEX*, N=100

	Count	Cumulative - Count	Percent	Cumulative - Percent
0	6	6	6.00	6.00
1	93	99	93.00	99.00
2	1	100	1.00	100.00

Legend: 0-partially, little; 1-well, adequately; 2-not informed

Quantitative analysis of the entity matrix and the second variable was based on the responses obtained by the quantitatively defined second interview question which reads:
Is that impact (of CEMEX) acceptable?
The respondents expressed their attitude on how they accept the environmental impact of CEMEX plants. Their responses were classified at three levels.

The *first group* was classified according to the negative response and it represents those entities that responded: Environmental impact of the CEMEX plants is not acceptable.

Quantitatively, these responses were coded by 0 (zero) for further statistical data analysis.

The *second group* was classified according to the affirmative response and it represents those entities that responded: Yes, the impact is acceptable, it is acceptable now, it has been acceptable for the last few years, etc. Quantitatively, these responses were coded by the number 1 (one) for further statistical data analysis.

The *third group* represents those entities who defined their responses as: I am not sure, I am partially informed, I don't know enough, I am not fully informed, I know some information but not all, etc. Quantitatively, these responses were coded by the number 2 (two) for further statistical data analysis.

Frequency of the coded answers for the overall sample was determined by descriptive analysis.
The results of frequencies of all entities and the second variable code-named *impact of CEMEX_acceptable* are presented in Table 3.

The total of 68% respondents thinks that the impact of CEMEX is acceptable. There were 15 respondents who gave a negative response and 17 entities did not have an opinion on this question because they were not sure about the right answer, were partially informed, didn't know enough, were not fully informed, knew some information but not all, etc.

Table 3. Relative and cumulative frequencies of the variable *impact of CEMEX_acceptable*, N=100

	Count	Cumulative - Count	Percent	Cumulative - Percent
0	15	15	15.00	15.00
1	68	83	68.00	83.00
2	17	100	17.00	100.00

Legend: 0-no; 1-yes; 2- I am not sure, I am partially informed

Quantitative analysis of the entity matrix and the third variable code-named *environmental impact of CEMEX_reduced* was based on the responses obtained by the quantitatively defined third question which reads:
Do you think that the environmental impact of CEMEX has been increased or reduced in the last few years?

The respondents expressed their attitude on the increase or reduction of environmental impact of CEMEX.
Their responses were defined at three levels:

The *first group* was classified according to the negative response and it represents those entities that responded: No, the environmental impact of CEMEX has not been reduced. Quantitatively, these responses were coded by 0 (zero) for further statistical data analysis.

The *second group* was classified according to the affirmative response and it represents those entities who responded: Yes the impact has been reduced, it has been obviously reduced, CEMEX is investing in environmental protection, the production has been reduced, the installations have been shut down, CEMEX has done a lot for protecting the environment, the impact is completely acceptable, etc. Quantitatively, these responses were coded by the number 1 (one) for further statistical data analysis.

The third group represents those entities that defined their responses as: I am not sure, I am partially informed, I don't know enough, I am not fully informed, I know some information but not all, etc. Quantitatively, these responses were coded by the number 2 (two) for further statistical data analysis.

Frequency of the coded answers for the overall sample was determined by descriptive analysis.
The results of frequencies of all entities and the third variable *environmental impact of CEMEX_reduced* are presented in Table 4.

80% of respondents expressed the opinion that the impact had been reduced, that CEMEX is investing in protecting the environment, and that the production has been reduced and some of the installations shut down. They believe that the impact is acceptable. 10% of the entities stated that the impact had not been reduced and that the changes were only "cosmetic", while 10% thinks that they are partially informed, not sure, not fully informed so they decided on the undefined answer.

Table 4. Relative and cumulative frequencies of the variable *environmental impact of CEMEX_reduced*, N=100

	Count	Cumulative - Count	Percent	Cumulative - Percent
0	10	10	10.00	10.00
1	80	90	80.00	90.00
2	10	100	10.00	100.00

Legend: 0-no; 1-yes; 2- I am not sure, I am partially informed

Quantitative analysis of the entity matrix and the fourth variable was based on the responses obtained by the quantitatively defined fourth question which reads:
In your opinion, is the measuring done by the authorized institutions monitoring CEMEX reliable?
The respondents expressed their attitude on reliability of measurement done by authorized institutions monitoring the operation of CEMEX.

Three levels of responses were defined as follows:
The respondents who answered affirmatively and who did not express confidence in measuring done by authorized institutions monitoring CEMEX, and the entities who stated that the results should be consistent but they were unfortunately not sure about that, were coded by zero (0) for further statistical data analysis.

The respondents who believe the measuring results and find them reliable and consistent were quantitatively defined by the number one (1) for further statistical data analysis.

The entities who were not sure, not adequately informed or not familiar with the way in which the measuring had been conducted, gave an answer coded by the number two (2).

Frequency of the quantitative answers for the overall sample was determined by descriptive analysis.

The analysis of the frequency results of all respondents and the fourth variable code-named *measurement reliability_ authorized institutions* was defined by a relative value of 73% of respondents who believe the results of measuring done by authorized institutions responsible for monitoring CEMEX, and who find them reliable and consistent.

16% of respondents claimed the opposite and did not believe the authorized institutions, while 11% of respondents were indecisive because they were not sure, were partially familiar with the facts or thought they did not have enough information.

The results of frequencies of all entities and the fourth variable code-named *measurement reliability_authorized institutions* are presented in Table 5.

Table 5. Relative and cumulative frequencies of the variable *measurement reliability_authorized institutions,* N=100

	Count	Cumulative - Count	Percent	Cumulative - Percent
0	16	16	16.00	16.00
1	73	89	73.00	89.00
2	11	100	11.00	100.00

Legend: 0-no; 1-yes; 2- I don't know, I am not sure, I am partially informed, I do not have an opinion

Quantitative analysis of the entity matrix and the fifth variable was based on the responses obtained by the qualitatively defined fifth interview question:
Do you believe that the inspection services sufficiently monitor the operation of the cement plant and do you believe their reports?

The respondents expressed their attitude on the objectivity of the inspection services, quality of their supervision, and reliability and authenticity of their reports.
Three levels of responses were defined as follows:

The *first group* was classified according to the negative response and it represents those entities who responded: inadequate supervision, poor supervision, I do not believe

the reports, I question their objectivity and authenticity. Quantitatively, these responses were coded by zero (0) for further statistical data analysis.

The *second group* defined their response affirmatively as follows: yes, inspection services are doing a good job, I believe the authenticity of their reports. Quantitatively, these affirmative responses were coded by the number one (1) for further statistical data analysis.

The *third group* of respondents remained undefined and was classified according to the answer: I do not know, I am not sure, I am not adequately informed, I am not familiar with the facts sufficiently to answer, I am partially informed, etc.

Quantitatively, these incomplete answers were coded by the number two (2) for further statistical data analysis.

Frequency of the coded answers for the overall sample was determined by descriptive analysis.
The analysis of the frequency results of all respondents and the fifth variable code-named *inspection services_report authenticity* indicated a relative value of 78% of entities who believe the reports of the inspection services, who think that they perform the control and supervision well.

On the other hand, the respondents who question the authenticity of the reports and believe that the authorized inspection services do not provide sufficient control were numerically defined by a relative value of 20 %.

2% of the entities were not adequately informed, were not sure and remained undefined at this question.
All quantitative results of frequency N=100 and the coded variable *inspection services_report authenticity* are presented in Table 6.

Table 6. Frequencies of the variable *inspection services_report authenticity.* N=100

	Count	Cumulative - Count	Percent	Cumulative - Percent
0	20	20	20.00	20.00
1	78	98	78.00	98.00
2	2	100	2.00	100.00

Legend: 0-no; 1-yes; 2-I don't know, I am not sure

Quantitative analysis of the entity matrix and the sixth variable was based on the answers obtained by the sixth interview question:
Do you think that cement plants in the EU work under stricter ecological requirements than those in Croatia?
The respondents expressed their opinion about their knowledge on the ecological requirements in the EU and Croatia.
Three levels of responses were defined as follows:

The *first group* was classified according to the negative response and it represents those entities who responded: No, European ecological requirements are not stricter in the EU, Croatia has the same ecological requirements as the EU, regulations, laws and requirements are the same in the EU and Croatia. Quantitatively, all responses were coded by zero (0) for further statistical data analysis.

The *second group* defined their answer affirmatively as follows: Yes, ecological requirements are stricter, especially in Scandinavian countries, EU has better supervision and requirements than Croatia. Quantitatively, all affirmative responses were coded by the number one (1) for further statistical data analysis.

The *third group* of respondents remained undefined and was classified according to the answer: I don't know, I am not sure, I am not adequately informed, I am not familiar with the facts sufficiently to answer, etc. Quantitatively, these incomplete answers were coded by the number two (2) for further statistical data analysis.

Frequency of the coded answers for the overall sample was determined by descriptive analysis.
The analysis of the frequency results of all respondents and the sixth variable code-named *eu ecological requirements_croatian ecological requirements* indicated a relative value of 45% of entities who believe that EU does not have stricter ecological requirements than Croatia, but that these are better enforced and applied.

Relative value of 24% accounts for the respondents who think that Croatia and EU have comparable ecological regulations, laws and requirements. The total of 31% entities were not adequately informed, were not sure and remained undefined at this question. All quantitative results of frequencies N=100 and the coded variable *eu ecological requirements_croatian ecological requirements* are presented in Table 7.

Table 7. Frequencies of the variable *eu ecological requirements_croatian ecological requirements,* N=100

	Count	Cumulative - Count	Percent	Cumulative - Percent
0	45	45	45.00	45.00
1	24	69	24.00	69.00
2	31	100	31.00	100.00

Legend: 0-no; 1-yes; 2-I don't know, I am not sure, I am partially informed

Table 8 shows statistically significant differences of all six code variables used according to target groups, their separate Wilks' lambda values that indicate the overlapping between the variables, F-test value that indicates the ratio of differences between the groups and within the groups, and the level of statistical significance p.

Variables: *awareness_environmental impact of CEMEX*, *inspection services_report authenticity* and *eu ecological requirements_croatian ecological requirements* were statistically significant at the level of p=0.00, whereas the variable *measurement reliability_authorized institutions* had a tendency of significance at the level of p=0.06.

Table 8. Analysis of differences of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* according to the *target group*, N=100

variable	Wilks' - Lambda	F-test	p-value
awareness_environmental impact of CEMEX	0.12	3.2	0.00
impact of CEMEX _acceptable	0.09	0.4	0.93
environmental impact of CEMEX _reduced	0.10	1.6	0.15
measurement reliability_authorized institutions	0.11	2.0	0.06
inspection services_report authenticity	0.24	17.8	0.00
eu ecological requirements_croatian ecological requirements	0.13	5.1	0.00

Legend:Wilks' lambda- coefficient of statistical significance, F-test- coefficient of F-test differences, p-value- level of significance

Discriminant analysis on six variables between the nine target groups determined three statistically significant functions. Coefficients of canonical discrimination, Wilks' lambda, as well as their level of statistical significance, are presented in Table 9.

The first two discriminant functions are significant at the level of p=0.00 whereas the third discriminant function has the level of significance p=0.01.

BY ANALYSING THE RESULTS WE CAN STATE THAT REPRESENTATIVES OF THE TARGET GROUPS DIFFER SIGNIFICANTLY IN THE VARIABLES USED AND THAT THEIR ATTITUDE AND OPINION ABOUT THE CONTENT QUESTIONS PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM DEPEND ON THE GROUP TO WHICH THEY BELONG.

Table 9. Discriminant analysis of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* between the target groups, N=100

	Eigen- value	Canonicl - R	Wilks' - Lambda	Chi-Sqr.	df	p-value
1	2.98	0.87	0.09	221	48	0.00
2	0.75	0.65	0.36	94	35	0.00
3	0.36	0.52	0.62	43	24	0.01
4	0.14	0.35	0.85	15	15	0.47
5	0.03	0.17	0.97	3	8	0.94
6	0.00	0.06	1.00	0	3	0.96

Legend: Can. R-coefficient of canonical discrimination, Wilks' lambda- coefficient of statistical significance, Chi.Sqr.- Chi Square -coefficient of statistical significance, df- degrees of freedom, p- level of significance

The contribution of each variable used in explaining the differentiating power in discriminant function is presented in Table 10.

The variable *inspection services_report authenticity* had the highest projection in the first function and the groups differed most according to this coded question.

The second function had the highest correlation to the variable *eu ecological requirements_croatian ecological requirements* and therefore it contributed most to the differentiation between the target groups.

Measurement reliability_authorized institutions had the highest correlation to the third discriminant function and the highest differentiating projection.

Table 10 Discriminant analysis of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* between the *target groups*, N=100

variable	Root 1	Root 2	Root 3	Root 4	Root 5	Root 6
awareness_environmental impact of CEMEX	-0.06	-0.58	-0.13	0.70	0.37	0.07
impact of CEMEX _acceptable	0.26	0.10	-0.13	-0.24	0.90	-0.19
environmental impact of CEMEX _reduced	-0.13	0.17	0.60	0.36	-0.27	-0.62
measurement reliability_authorized institutions	0.04	0.13	0.61	0.12	0.48	0.61
inspection services_report authenticity	0.97	-0.06	-0.16	0.18	0.03	-0.05
eu ecological requirements_croatian ecological requirements	-035	0.80	-0.32	0.32	0.07	-0.16

Legend: ROOT- discriminant function

Centroids of the target groups are presented in Table 11, indicating how much each group participates in explaining each discriminant function, and based on its sign, which groups are separated.

In the first function, the representatives of *ORGANIZATIONS* and *SOLIN RESIDENTS* differ significantly in their attitudes and opinions in comparison to the seven remaining *target groups*. In the second function, the representatives of the *target groups TOWNS, BUYERS/SUPPLIERS, POLITICS/ SCIENCE* and *SOLIN RESIDENTS* differ significantly in comparison to the five remaining defined subsamples. In the third function, the representatives of *TOWNS, SPONSORSHIP AND DONATIONS RECIPIENTS, SOLIN RESIDENTS* and *CEMEX EMPLOYEES* and *THE COUNTY* are distinguished by their positive centroids and they differ significantly in their attitudes and opinions on the content domain *Environmental impact of the cement plant.*

Table 11 Centroids of the target groups in discriminant analysis

	Root 1	Root 2	Root 3	Root 4	Root 5	Root 6
ORG	-3.8	-0.59	-0.4	0.05	0.00	-0.09
TOW	0.7	0.31	0.0	0.67	-0.10	-0.01
BUY/SEL	1.0	1.81	-0.1	-0.52	-0.06	-0.07
POL/SCI	1.6	0.27	-0.1	0.61	0.03	-0.03
SPO/DON.REC	0.9	-0.45	0.6	-0.12	0.43	-0.02
RES/KAŠ	0.6	-0.36	-1.2	-0.19	0.04	0.05
RES/SOL	-2.0	0.73	0.5	0.02	0.00	0.09
CEM/EMP	0.9	-0.95	0.5	-0.22	-0.18	-0.00
COU	0.9	-0.95	0.5	-0.22	-0.18	-0.00

Legend: ROOT- discriminant function

After analysing the differences between the *target groups*, discriminant analysis was applied between the three defined *sector groups*.
Quantitative values of the applied coded variables and their individual statistical significance for the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* are presented in Table 12. Out of the total of six variables, two coded answers were statistically significant: **awareness_ environmental impact of CEMEX** and **inspection services_ report authenticity** at the level of p=0.01 and p=0.00.

Table 12 Analysis of differences of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* according to the *sector group,* N=70

variable	Wilks' - Lambda	F-test	p-value
awareness_environmental impact of CEMEX	0.58	4.5	0.01
impact of CEMEX _acceptable	0.53	1.2	0.30
environmental impact of CEMEX _reduced	0.51	0.1	0.95
measurement reliability_authorized institutions	0.51	0.4	0.67
inspection services_report authenticity	0.80	17.9	0.00
eu ecological requirements_croatian ecological requirements	0.51	0.3	0.76

Legend: Wilks' lambda- coefficient of statistical significance, F-test- statistical significance of differences, p-value- level of significance

Coefficient of canonical discrimination of 0.65 indicates that the first discriminant function, with 12 degrees of freedom, is statistically significant at the level of p=0.00 (Table 13).

Table 13 Discriminant analysis of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* between the sector groups, N=70

	Eigen- - value	Canonical - R	Wilks' - Lambda	Chi-Sqr.	df	p-value
1	0.73	0.65	0.51	44.0	12	0.00
2	0.15	0.36	0.87	8.8	5	0.12

Legend: Canonical-R-coefficient of canonical discrimination, Wilks' lambda-coefficient of statistical significance, Chi.Sqr.-Chi Square- coefficient of statistical significance, df- degrees of freedom, p- level of significance

By inspecting the factorial structure of discriminant functions, we can see the contribution of each coded variable in the discriminant power of differences. The variable ***inspection services_report authenticity*** with its numerical value of 0.92 explains the first function for the most part and represents their correlation (Table 14).

Table 14 Discriminant analysis of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* between the sector groups, N=70

variable	Root 1	Root 2
awareness_environmental impact of CEMEX	-0.26	-0.92
impact of CEMEX _acceptable	0.18	0.18
environmental impact of CEMEX _reduced	-0.04	-0.10
measurement reliability_authorized institutions	0.07	0.01
inspection services_report authenticity	0.92	-0.13
eu ecological requirements_croatian ecological requirements	-0.15	0.17

Legend: ROOT- discriminant function

Centroids of the *sector groups* in Table 15 indicate how much each group participates in explaining each discriminant function and based on its sign, which groups are separated.

In the first and the only significant discriminant function, the *civil sector* differs with statistical significance in the variables of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* in comparison to the *economic* and the *public sector.*

Table 15 Centroids of the sector groups in discriminant analysis

sector	Root 1	Root 2
civil	-1.30	-0.03
public	0.60	-0.35
economic	0.50	0.55

Legend: ROOT- discriminant function

SWOT analysis of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM*

Strengths:

- *1st question:* the analysed frequency results of all entities and the first variable *awareness_ environmental impact of CEMEX* indicate that the target groups including the representatives of *CEM/ EMP* (CEMEX employees), *BUY/SUP* (buyers and suppliers) and *SPO/DON.REC* (*sponsorship and donations recipients*) think that they are well informed and familiar with the environmental impact of CEMEX, as does the *economic sector* (16/20).

- *2nd question:* affirmative coded answer for the variable *impact of CEMEX_acceptable* was given by the representatives of the *economic sector* (17/20), who think that the environmental impact of CEMEX is acceptable, as does the majority of the target group *CEM/EMP* (CEMEX employees), *BUY/SUP* (buyers and suppliers) and *SPO/DON.REC* (*sponsorship and donations recipients*).

- *3rd question:* by analysing the frequency of the third variable *environmental impact of CEMEX_reduced*, it can be noticed that the representatives of *BUY/ SUP*, *SPO/DON.REC* and *CEM/EMP* think that the environmental impact of CEMEX has been reduced. All respondents of the target groups and the *economic sector* responded affirmatively.

- *4th question*: the analysis of the frequency results of all entities and the fourth variable code-named *measurement reliability_authorized institutions* indicates that the economic sector fully (30/30) believes the results of measurement done by the authorized institutions responsible for monitoring CEMEX, and that they find them reliable and consistent.

- *5th question*: the analysis of the frequency results of all entities and the fifth variable code-named *inspection services_report authenticity* indicates that the *economic sector* fully (30/30) believes the inspection services supervising and monitoring the legality of operation of CEMEX, and finds their reports to be authentic.

Weaknesses:

- *6th question*: the analysis of the frequency results of all entities and the sixth variable code-named

eu ecological requirements_croatian ecological requirements indicates that 50% of representatives of the economic sector think that EU cement plants work under stricter ecological standards and that the legislation in the area of environmental protection is at the higher level.

Opportunities:

- *1st question:* the analysed frequency results of all entities and the first variable *awareness_ environmental impact of CEMEX* indicate that 93% of respondents think that they are well informed and familiar with the environmental impact of CEMEX, the whole *public sector* thinks (30/30) that they are well informed and familiar with the environmental impact of CEMEX, as does the majority of the *civil sector* (19/20).

- *2nd question*: the frequency results of all entities and the second variable code-named *impact of CEMEX_acceptable* indicate that 68% of respondents believe that the environmental impact of CEMEX is acceptable, as do the representatives of the *public sector* (22/30).

- *3rd question:* the frequency results of all entities and the third variable *environmental impact of CEMEX_reduced* indicate that 80% of respondents expressed a clear attitude that the environmental impact of CEMEX has been reduced, that CEMEX is investing in environmental protection, and that large investments in environmental sanitation and protection are evident. The majority of both *public* (25/30) and *civil sector* (15/20) expressed the attitude that the environmental impact of CEMEX has been considerably reduced.

- *4th question*: the analysis of the frequency results of all entities and the fourth variable code-named *measurement reliability_authorized institutions* was defined by a relative value of 73% of respondents of the target groups who believe the results of measurements done by the authorized institutions responsible for monitoring CEMEX, and they find them to be reliable and consistent, as do the representatives of the *public sector* that fully supports the work of the authorized institutions.

- *5th question*: the analysis of the frequency results of all entities and the fifth variable code-named *inspection services_report authenticity* indicates a relative value of 78% entities who believe the reports of the

supervising inspection services, they believe that their monitoring and supervision of the legality of the CEMEX operation are being executed professionally, as does the majority of the public sector (28/30).

Threats:

*   *6th question*: the analysis of the frequency results of all entities and the sixth variable code-named *eu ecological requirements_croatian ecological requirements* indicates a relative value of merely 45% entities who think that EU does not have stricter ecological requirements than Croatia, as does the minority of the *civil sector* (9/20). The majority (11/15) of the *target group KAŠ/RES* (Kaštela residents) thinks that EU cement plants work under stricter standards, whereas the representatives of the *target group SOL/RES* (Solin residents) stated that they did not know or were not sure (12/15).

SWOT analysis of the content domain *PUBLIC CONFIDENCE IN INSTITUTIONS OF THE ENVIROMENTAL PROTECTION SYSTEM* indicates that the *strengths* (5) overcome the *weaknesses* (1) and the *opportunities* (5) overcome the *threats* (1), which supports the theory of growth.

CONCLUSION

The representatives of the interested public differed significantly depending on the target and sector group to which they belong because they do not have at their disposal a good enough set of information about the environmental impact of the cement plant. They express significant distrust in institutions of the system that monitor the operation of CEMEX, but also express the opinion that EU cement plants work under stricter ecological standards. SWOT analysis showed that the strengths and the opportunities overcome the weaknesses and the threats, which significantly supports the growth strategy. Therefore, the initial hypothesis that reads: there are significant differences between the entities of the defined target and sector groups in their attitude towards the environmental impact of the cement plant and their confidence in the institutions of the system is fully confirmed and accepted. CEMEX should continue with the existing environmental monitoring and report to the public about all activities to ensure an acceptable impact and constantly improve their own structure, reputation and image. It is necessary to constantly set new goals of environmental protection and to reduce the pressure on the environment, to build confidence in new technologies of the cement industry, and to point to examples of good practice of EU cement plants.

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