

CZECH PUBLIC ATTITUDES TO THE CHEMICAL INDUSTRY

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Abstract

In the today's challenging and dynamic market environment, it is not enough to provide customers with a wide range of high quality products, but it is also necessary to develop intangible benefits for customers, especially a comprehensive range of high quality services and partnership-based relations. Very important is a supplier's reputation as a solid business partner, too. Corporate reputation is primarily based on the reputation of the entire industry, not only for customers, but for the wider public.

This paper summarizes the theoretical background regarding the sector's reputation and summarizes the results of a primary quantitative research focused on the perception of the position and importance of the chemical industry in the national economy of the Czech Republic. The research was conducted at the turn of 2016 and 2017 using personal interviews in the Czech population aged over 15 years on a sample of 1,364 respondents selected by quota sampling.

The research has shown that the Czech public perceives the chemical industry as very beneficial to the national economy, almost at the same level as the pharmaceutical industry, automobile engineering, food and power industries. It is aware of the high usefulness of the chemical industry products for the humankind and for other industries, and the prospects of its future development resulting therefrom. It considers this sector to be a modern, dynamic one, offering a rather better salary package. To studying chemistry and the attractiveness of employment in the chemical industry, however, the Czech public attitudes are controversial, some positive, some negative. It is mainly due to the fact that the majority of the Czech population still considers this sector to be less safe, with poorer working conditions, less environmentally friendly, insufficiently supportive of social activities such as sport, culture and charity events.

Introduction

A good reputation of an industry and companies this industry is comprised of is a significant factor helping companies to assert themselves in the market more easily and succeed in the fight against the competitors. If an industry and its companies are perceived as attractive, it is much easier for the companies to establish and maintain business relationships and to find partners for cooperation.

A good reputation is a prerequisite for increasing corporate performance, strengthening the companies' position within the industry, but also the position of the industry in the national economy.

Definition of an industry and corporate reputation

A reputation of an industry or companies refers, according to Selnes¹ and Fombrun², to perception of the overall attractiveness of an industry or a company compared to the other industries, or competitors. Fombrun² develops his definition of a certain object's reputation as follows: "Reputation is how both the past activities and the future perspectives of an object (an industry, a company, a brand), which demonstrate the overall attractiveness of the object in all its main components are perceived compared to the other leading objects." In accordance with Fombrun's concept², an object's reputation is also defined by Brown et al.³. They see it as mental association connected with the assessed object, that the stakeholders actually associate with the object. Similarly, Keh and Xie⁴ also state that scientists look at an industry or corporate reputation from the economic point of view, where it is understood as an expectation and perception of the internal and/or external public towards specific attributes. They look at an industry or corporate reputation from the point of view of a relationship towards another object in the form of a global (overall) impression reflecting perception of all the involved groups – e.g. customers, employees, investors, etc., too.

To summarize the above mentioned definitions, it is possible to state that reputation has partially rational (i.e. actual comparison to other objects (other industries, competitors, actual or declared corporate behavior in the market, etc.), but also emotional aspects (i.e. individual perception, motivation, liking or antipathy, etc.), which often play a very important, but hard to affect, role. Obviously, each entity can see reputation of an industry or a particular company within the industry from a different point of view. However, from the market point of view, reputation is seen as overall (global) perception of an industry and companies in this industry in the market across all the involved parties. So, reputation can be considered as an overall assessment of the degree to which the object (an industry, a company, a brand) is basically "good" or "bad"⁵. The thing is what customers and other

groups of the public think of the industry and within the industry of the companies. Therefore, it can be considered as market-proven information – a company and the industry to which the company belongs cannot have a good reputation unless the market thinks so, and vice versa⁶.

When reputation of any object arises, this process includes creation of emotional components and certain attitudes towards the object. These attitudes also include, apart from emotions, a cognitive component (cognitive – empirical) and a conative component (i.e. the tendency to create attitudes towards the object in a certain way according to the direction of the given attitude). Then a good reputation is developed on a long-term basis by affecting the market partners, where the basic elements of this phenomenon are deepened. These elements include credibility; reliability; reliability, and awareness of responsibility⁷. Brown et al.⁸ even declare that reputation of the entire industry and of a company within this industry is, in the relation between the buyer and the supplier, still sometimes more important than mutual confidence. There is empirical evidence of the fact that there is a significant relation between the supplier's reputation and the customer's confidence. This relation affects the degree to which B2B buyers try to develop the relationship with their suppliers, and to which they invest into their future. Therefore, a corporate reputation can be considered as one of the most significant aspects for creation and deepening of mutual relations with business partners in B2B markets. If we summarize opinions of individual authors^{4,9,10,11}, the main benefits of a positive image and a good reputation can be seen the following:

- Acquisition of all the stakeholders and the entire general public, as a positive opinion of the public, and consequently the media, helps the given entity to adapt in a particular area of business better. It creates some intangible comparative advantage towards the other competitors, and makes it easier for the entity to advance its opinions and attitudes better.
- Strengthening of relations with investors, and the willingness to provide sources for investments.
- Increasing attractiveness of an industry and a company in the labour market.
- Building a positive corporate atmosphere and increasing the employees' efforts.
- Support of sale of current products,
- Support and facilitation of launching new products onto the market.
- Possibility of achieving higher product prices the customers are willing to pay.
- Possibility of obtaining cost advantage as a result of decreasing contracting and controlling costs at the suppliers, a higher negotiation power, and obtaining lower prices when buying raw materials.
- Prevention of crises or better management of crises, as a good name eliminates or reduces, at hard times, occurrence of problems in relation to pressure groups and consumer organizations.

And last but not least, a positive reputation of an industry and the companies this industry is comprised of increases the value of products sold to the customers, it strengthens the customers' willingness to buy products of particular companies and brands repeatedly and their loyalty.

The concept of collective corporate reputation

Nowadays, a number of authors^{12,13,14} deal with corporate reputation as a multidimensional concept. It is the finding that corporate reputation is not only the result of an individual activity of a company itself in the market, so-called individual reputation^{15,16}, but it is also affected by so-called collective reputation, i.e. reputation of companies in a group sharing similar characteristics or performing activities together^{17,18,19,20}. Then collective reputation can be created on the level of so-called strategic groups, i.e. "a collection of firms within an industry that differs systematically from firms outside the group along certain strategic dimensions"¹², or on the level of whole industries. Companies for example may draw on the fact that they belong to an important concern, which has built a very good reputation and is perceived as a strong, stable, and solvent corporation²¹. An important strategic group, which companies usually enter, is a trade association^{22,23}. The definition of industry reputation is dealt with e.g. by Winn et al.²⁴, who define industry reputation as "the collective judgments of an industry by stakeholders and the general public, where that judgment is based on assessments of the economic, social and environmental impacts attributed to that industry over time."

It is obvious that reputation of an individual company is often significantly affected by the industry the company operates in²⁵. Therefore, not only it will depend on the fact how the given company is perceived towards other companies in the industry, but also on the reputation of the given industry compared to the other industries²⁶. At the same time, industry reputation may be affected by deliberate or also unintentional acts and events induced either by the members of the industry directly, or from outside. Scandals of individual companies may cast a shadow upon the entire industry, and analogously positive publicity may improve reputation of the given industry²⁴. Average companies then can then "sponge" on the industry with excellent reputation, while good companies might be hindered by bad reputation of the given industry²⁷. However, it is possible to expect that bad deeds of companies in an industry will have more significant (more damaging) effects than good deeds. If

the legitimacy of the entire industry is questioned, then any crisis may result in the fact that the industry as a whole may lose its access to sources its members need to survive^{28,29}. In such cases, companies can forfeit their fight against the competitors and connect with them to face the threat.

The fact how corporate reputation will be affected by collective reputation, i.e. reputation of strategic groups or industries, will depend on the proximity of the relationship between the company and its stakeholders^{14,30}. If a stakeholder has direct experience with the company (high proximity), his/her perception of the corporate reputation will be most significantly affected by his/her specific experience with the given company³¹. On the other hand, a stakeholder who has little or no direct experience with the company (low proximity), he/she will be, when assessing the good name of the company, considering the reputation of the entire group or industry where, as he/she perceives it, the given company belongs¹⁴.

Therefore, a logical step in corporate reputation management will be to analyze the effects of collective reputation on reputation of the given company as perceived by individual stakeholders. Companies will also aim to identify the current reputation of strategic groups or industries, and develop it effectively to contribute to positive reputation of individual companies as much as possible. The attention of our research was focused on identification of the current reputation of the chemical industry as perceived by the Czech public. The research outcomes indicate what areas of chemical companies' collective reputation the companies in this industry should focus their common efforts on to make the reputation of the entire industry develop in a positive direction.

The aim, methodology, discussion and result analysis of primary research

The main research aim was to identify the reputation of the chemical industry as perceived by the public in the region of East Bohemia from the point of view of its position in the national economy of the Czech Republic. The research was realised using the method of personal interviewing, where the interviewers were students of University of Pardubice at the turn of 2016 and 2017. The research involved 1364 respondents in total. They were selected by quota sampling, where the structure of the sample set according to age, sex, and education corresponded with the structure of the population of the entire Czech Republic according to these checking features, published on the pages of the Czech Statistical Office. The data were processed and analyzed through the statistical software IBM SPSS Statistics, version 24, using the procedures of frequencies, bivariate correlation, dimension reduction, crosstabs, compare means, and nonparametric tests.

Benefits of the chemical industry compared to other industries

In the first part of the research, the respondents assessed benefits of various industries for development of the economy in the Czech Republic, including chemical industry. The research outcomes are summarized in Table I.

Table I

Perception of the beneficial effect of chemical industry on development of the economy in the Czech Republic compared to other industries by the Czech Republic population (15+)

Industry	Relative frequency of answers*					Percentiles*		
	1	2	3	4	5	25	50	75
Pharmaceutical industry	1 %	4 %	16 %	37 %	42%	4	4	5
Automobile industry	2 %	4 %	19 %	35 %	40%	4	4	5
Machinery industry	1 %	5 %	16 %	45 %	33%	4	4	5
Power engineering	1 %	7 %	23 %	38 %	31%	3	4	5
Chemical industry	1 %	6 %	21 %	47 %	24%	3	4	4
Food industry	2 %	7 %	23 %	39 %	29%	3	4	5
Construction industry	2 %	6 %	29 %	42 %	21%	3	4	4
Agricultural production	2 %	10 %	27 %	36 %	25%	3	4	5
Electrical engineering	1 %	9 %	30 %	38 %	21%	3	4	4
Wood processing industry	3 %	15 %	36 %	33 %	13%	3	3	4
Textile industry	4 %	16 %	36 %	32 %	12%	3	3	4
Mining industry	4 %	18 %	37 %	28 %	13%	3	3	4
Glass industry	6 %	18 %	35 %	27 %	14%	3	3	4
Metallurgical industry	5 %	17 %	41 %	26 %	11%	3	3	4
Footwear industry	9 %	22 %	34 %	26 %	9%	2	3	4
Leather industry	13 %	27 %	36 %	18 %	6%	2	3	3

Note: *Used scale 1 - completely non-beneficial, 2 – quite non-beneficial, 3 – partly beneficial, 4 – quite beneficial, 5 – completely beneficial.

Chemical industry is perceived by the Czech population aged 15 and over as highly beneficial for development of the Czech Republic economy, just as pharmaceutical, automobile, machinery, and food industries. From the point of view of the beneficial effect on the Czech Republic economy, it took the fifth place, the differences between chemical industry and the other industries that top the chart are very small. However, perception of the beneficial effect of the chemical industry on the Czech Republic economy statistically significantly differs in relation to a number of characteristics of the respondents, which was confirmed both by Pearson's χ^2 tests of concordance of empirical distribution of frequencies, and by nonparametric tests of concordance of medians. People with chemical education, or if a member of their family has chemical education, consider chemical industry significantly more beneficial for the Czech Republic economy than the other industries. Similarly, if they, or anyone from their family, work in chemical industry, they consider chemical industry significantly more beneficial for the Czech Republic economy than other industries. Analogously, this industry is considered as more beneficial by people with a higher education than by those with a lower education, by people with technical education than by those who studied humanities, and by people in active work processes (students, employees, self-employed persons) than by pensioners and the unemployed. By contrast, perception of the beneficial effect of chemical industry on the Czech Republic economy does not depend on age, sex of the Czech Republic population aged 15 and over, or on the fact whether they live close to a chemical company or not.

Reputation of the chemical industry as perceived by the Czech Republic population aged 15 and over

In the second part of the research, the respondents from the Czech Republic population aged 15 and over assessed the chemical industry from the point of view of its importance for mankind, the society, and the Czech Republic economy, impacts on the environment, quality of products and services, innovativeness, safety and attractiveness of employment therein. Nonparametric correlation analysis of perception of the beneficial effect of individual partial aspects of the chemical industry reputation through Spearman's rho discovered a very strong correlation among most of the studied factors. Therefore a factor analysis was used to reveal a smaller number of general factors for choosing brick and mortar pharmacies to purchase. To find latent variables or factors, principal components were used with the Varimax orthogonal rotation, which will allow better interpretation of the factors. The suitability of the use of the factor analysis was assessed by the Kaiser-Meyer-Olkin measure (KMO) and Bartlett's sphericity test. Assumptions of the factor analysis were met as KMO was 0.865 and the null hypothesis of Bartlett's sphericity test, which assumed that the correlation matrix of the variables is an identity matrix, could be rejected. To find a suitable set of factors, we used Cattell scree plot. Five factors were identified in the overall explained variance of 65.269 percent. The basic factors determining the chemical industry reputation include "benefits for mankind and the Czech Republic economy", "innovativeness and competitiveness of chemical industry", "attractiveness of employment in chemical industry", "positive impacts on the environment", and "support of public events and charity". Each of the factors is affected by a number of aspects of chemical industry reputation. Table II summarizes the outcomes of perception of individual aspects of the chemical industry reputation within the set factors.

Table II

Perception of aspects of chemical industry reputation by the Czech Republic population aged 15 and over

Factor	Aspects of chemical industry reputation	Relative frequency (%)					Percentiles*		
		1	2	3	4	5	25	50	75
Benefits of chemical industry for mankind and CZE economy	Product benefits for mankind	2	8	22	43	25	3	4	5
	Future growth prospect	1	9	28	38	24	3	4	4
	Benefits for other industries	1	8	30	41	20	3	4	4
	Benefits for overall development of economy	1	11	32	40	16	3	4	4
Innovativeness, competitiveness of chem. industry	Up-to-dateness of used technologies	1	14	39	34	11	3	3	4
	Ability to launch progressive products	10	31	35	18	5	3	3	4
	Ability to rival foreign competitors	4	23	40	24	10	2	3	4
Employment attractiveness	Attractiveness of wages and salaries	3	13	40	35	9	3	3	4
	Favourability of working conditions	3	15	40	34	7	3	3	4
	Possibility of self-fulfilment	4	15	42	31	8	3	3	4
	Safety at work	6	24	35	26	10	2	3	4
Positive impacts on environment	Investments into the environment	9	29	36	19	7	2	3	4
	Ability to reduce water pollution	9	30	33	22	6	2	3	4
	Ability to reduce emission of pollutants into the air	9	30	34	21	5	2	3	4
	Ability to reduce contamination of soil	10	31	35	18	5	2	3	3

Factor	Aspects of chemical industry reputation	Relative frequency (%)					Percentiles		
		1	2	3	4	5	25	50	75
Support of public events and charity	Support of charitable events in chem. Industry	12	28	42	16	3	2	3	3
	Support of sport in chem. Industry	14	27	39	17	4	2	3	3
	Support of culture in chem. industry	12	28	42	15	3	2	3	3

Note: *Used scale 1 – miserable, 2 – quite lower, 3 – partly high, 4 – quite higher, 5 – high.

The Czech Republic population aged 15 and over believe that chemical industry has is quite higher beneficial effect on mankind, on the Czech Republic economy, and within its framework on other industries, and that it has quite higher future growth prospect. They consider this industry as quite more up-to-date, capable of launching new products with medium level of competitiveness towards foreign competitors. Attractiveness of employment in this industry is considered by the Czech Republic population aged 15 and over as “partly high”, particularly due to medium attractiveness of wages and salaries, working conditions, the possibility of self-fulfilment, and safety at work. Chemical industry is also believed to have quite worse impacts on the environment due to only medium high investments into the environmental protection and a lower ability to reduce water pollution, emission of pollutants into the air, and contamination of soil. According to the Czech Republic population aged 15 and over chemical industry provides quite lower support of charitable events, sport, and culture.

Conclusion

An important phenomenon of modern management is positive reputation of an industry and companies. It plays an increasing role in making decisions concerning the choice of area of business, in the process of getting partners for this business, and it increases attractiveness of the offer for the customers, or it affects attractiveness of jobs in the industry and the company.

Industry or corporate reputation refers to perception of overall attractiveness of the industry or the company compared to the other industries, or competitors. Reputation refers to the fact how people perceive both the past activities, and the future prospects of an object (an industry, a company, a brand), which demonstrate overall attractiveness of the object in all its main components compared to the other leading objects. Reputation has partially rational aspects at actual comparison to other objects (other industries, competitors, actual or declared behaviour of the company in the market, etc.), but also emotional aspects (i.e. individual perception, motivation, liking or antipathy, etc.), which often play a very important role, which is however hard to affect. Obviously, each entity may see reputation of an industry or a particular company in this industry from a little different point of view. However, from the market point of view, reputation is seen as overall (global) perception of an industry and companies in this industry in the market across all the involved parties. Reputation can thus be considered as an overall assessment of the degree to which the object (an industry, a company, a brand) is basically “good” or “bad”. This also applies to the chemical industry and its companies.

As the quantitative research, conducted by the team of authors at the turn of 2016 and 2017 in the Czech Republic population aged 15 and over, showed, chemical industry reputation as perceived by the Czech public is controversial.

chemical industry occupies an important position among the other industries and is perceived as highly beneficial for development of the Czech Republic economy. It is mainly opinion of people who studied chemistry and chemical technology and/or work in the chemical industry. The beneficial effect of the chemical industry is also more positively perceived by active population (students, employees, self-employed persons) than among people out of work (pensioners and the unemployed), and among population with technical education than among those who studied humanities. People with a higher education perceive the chemical industry more positively.

On the other hand, they still have the persisting opinion that the chemical industry cares for the environment insufficiently, it does not provide ideal wages or working conditions, it is not safe enough, and it does not make enough efforts to develop the community from the point of view of charity, contributions to sport and culture.

The chemical industry is perceived as very beneficial for mankind and economic growth, but it has rather worse reputation due to its medium-intensive care for the environment, less attractive wages and salaries and working conditions, lower safety at work, and less intensive support of the community from the point of view of charity and contributions to sport and culture.

Acknowledgement

This paper was supported by grant of University of Pardubice No. SG 370002/20.

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