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STRUCTURAL ANALYSIS OF PROBLEMS
IN PUBLIC RELATIONS

Abstract

The literature on the activities of public relations (PR) is getting richer. Also, numerous empirical studies on the PR process, methods and techniques are conducted, as well as analyses on the effectiveness of PR and ethics in this field. There is a relatively small number of studies that examine decision-making processes by PR practitioners. Despite numerous discussions on the issue of decision-making, methods of decision making in public relations are not a subject of research and debate. Most decisions in this area are probably made unsystematically and in a very individual way. However, the introduction of effective methods, proven in other areas, which support decision making practice related to communication processes, can help to improve efficiency and effectiveness of the organization in the field of building relationships with the stakeholders. The authors show how the use of cognitive maps and the WINGS method can help PR consultants to choose a PR strategy in situations which can seriously jeopardize the organization's reputation.

Keywords: cognitive maps, communication models, multiple criteria decision aiding, public relations, structural methods, WINGS.

1   Introduction

This paper is an attempt to identify opportunities for using cognitive maps for making decisions in public relations (PR) activities as a method which supports

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decisions of practitioners (communication managers). The decision-making process is understood here as a situation in which a decision maker as an independent individual wants and has the authority to decide and solve a given problem (Michnik, 2013b, p. 15).

The literature on public relations definitions is very wide. Rühl highlights three perspectives of PR and three types of definitions. They are: lay (non-expert PR), professional and scholarly perspectives (Rühl, 2008, p. 22-25). One of the theories, which tries to define PR, involves the concept of a system (Pieczka, 2006, p. 333; Greenwood, 2010, p. 459). Another important approach tries to explain PR in terms of rhetoric and persuasion theory (Heath, 2000, p. 31; L'Etang, 2006, p. 359). Wojcik classifies definitions taking into account language and their cultural origin (Wojcik, 2015, p. 21-29). There is a wide range of PR definitions. The one that comes from James Grunig is the most frequently used. It is simple and clearly explains the core of PR activities: "public relations is the management of communication between an organization and its publics" (Grunig, 1984, p. 6).

In the analysis the authors refer to the definition of PR introduced by Krystyna Wojcik, which puts strong emphasis on the decision making process[1]: "Public relations are systematic and procedural activities – a system of actions in the field of social communication, a social process of a constructive dialogue, oriented towards a consensus" (Wojcik, 2013, p. 26).

The systematic and enumerating definition of PR quoted above, is very strongly rooted in management sciences and specifically underlines the importance of the decision-making process in PR, pointing at some of its essential features such as being methodical, planned, regular. It also refers to all disciplines "that create opportunities for effectiveness". The definition quoted indirectly indicates the need to formalize the decision making process in public relations, so as to achieve better results (greater effectiveness) of the selected action.

Current changes in communication technology as well as the increasing role of communication in society challenge organizational decision-making. What is more, decisions need communication for better understanding among organization's publics (Mykkanen, Tampere, 2014, p. 132) and communication needs decisions to be made. Organizations define how much communication is required for every decision and they state how a particular decision should be communicated, but at the same time they do not outline how decisions about means of communication should be made. Luhmann points out that a decision is a specific form of communication: decisions are not first made and then communicated, but decisions are decision communication (Luhmann, 2005). Every single deci-

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[1]   The original definition by Wojcik is much longer. She stressed that PR activity should be conscious, methodical, planned, systematic and permanent (Wojcik, 2013, p. 26).

sion serves as a decision premise for later decisions (Seidl, Becker, 2006, p. 27). Decision is a medium and a form of communication (Mykkanen, Tampere, 2014, p. 135).

Although decision problems that appear in PR are complicated and connected with the firm's strategy, there are no formal methods in this field. In this paper structural approaches based on cognitive maps and on the WINGS method have been proposed to aid in PR decision-making. A real-life practical problem of organizing a PR campaign when the firm's reputation is in jeopardy serves as an illustrative example.

The authors propose to begin with structuring the problem using a generic cognitive map that represents the qualitative approach. This map models the problem as a system of concepts linked by causal relations. During the construction of the map the decision maker gains a deeper understanding of the nature of the problem. The conflicting objectives and potential options of solving the problem are recognized. Drawing the cognitive map helps to find the important relations along paths linking the options with the objectives (Michnik, 2014).

In situations when the cognitive map does not provide convincing arguments for making a decision, an extended approach is proposed. A model that is capable of making more informed decisions is introduced. It is based on quantitative assessments and can better differentiate among the potential options of action at the cost of greater effort to provide quantitative data about causal relations between elements. This model is grounded in the WINGS method which provides greater flexibility in a decision process. WINGS includes, in a natural way, the strength (importance) of system elements so it can better represent the decision maker's preferences.

To the best knowledge of the authors, the solution presented in this paper is the first attempt to apply a structural approach to assist in solving a PR problem.

The remainder of the paper is organized as follows. The next section presents general models of PR. In Section 3 key decisions in public relations are characterized. Section 4 describes a decision model based on a cognitive map. It is followed by a discussion of a cognitive map with quantitative assessments (Section 5). The application of WINGS is presented in Section 6. Summary (Section 7) and conclusions (Section 8) complete the paper.

2   Models of public relations practices

In their classic publication *Managing Public Relations*, James E. Grunig and Todd T. Hunt proposed four models of PR (Grunig, Hunt, 1984, p. 21ff.): press agentry and public information, which are based on one-way transmission from the sender to the recipient, and two-way communication models: asymmetrical and symmetrical. These four models result from the analysis of the practitioners'

experience, but they are also useful tools for the practice of PR, or directly for practical use when selecting a strategy (Grunig, 2001, p. 11ff.). These models of communication in public relations can be characterized as follows: (1) press agentry model, in which communication is used to disseminate information in order to convince public opinion; the purpose of this model is propaganda, persuasion, and communication as a one-way flow of information from the sender to the recipient; (2) public information model which, like the previous model, is a one-way communication technique but insists on truth, precision and clarity; (3) two-way asymmetrical model which assumes the use of persuasion (what is called by the authors "scientific persuasion") and of psychographic and demographic information in the practice of communication; in this model important values, attitudes and opinions are studied before a specific message is prepared. In other words, the model focuses on the use of persuasion through the understanding of stakeholders with whom the organization is planning to build relationships to create the most convincing message; (4) two-way symmetrical model which uses interactive communication by seeking ways to adapt a message to both the organization and its stakeholders; interactions rely on an honest exchange of information and efforts toward a better understanding of the various stakeholders of the organization. The purpose of this model is to use research to pursue a dialogue that is mutually beneficial for the organization and its environment, and that might change ideas, attitudes or behavior (Grunig, 2001).

These four models of PR are used in practice, though quite often without conscious reflection on their pros and cons. PR consultants use certain principles of communication intuitively; they are guided by well-known and publicized cases, rather than by reliable academic research. The use of certain models requires a prior analysis of the specific situation, problem, the current image of the organization, specific audience (stakeholders), as well as financial and organizational capabilities. Each model may find its practical application depending on the results of this analysis. As James Grunig stresses, the quality of relationships between an organization and its publics depends on the model of public relations used (Grunig, 1993).

3   Key decisions in public relations

Some decisions related to PR are strategic and require a large amount of information to identify and evaluate potential options for decision making, in the context of the desired goals. Because a PR consultant deals with multiple (at least two), usually conflicting objectives, the selection of the preferred option is not obvious. Usually it is also the case that these options are not mutually exclusive. There are situations when it is possible to implement mixed options. They occur

when an organization can distribute its available resources in specific proportions for different variants. The problem considered in this paper is exactly such a situation.

One of the situations requiring a strategic decision is a crisis, when communicating dramatic events to stakeholders can cause panic, but lack of such information will be regarded as deceitful and unethical. That is why it is so important to perform a systemic analysis of the given situation, and in particular to determine the desired aims and their mutual relations. It is also important to identify possible options for the implementation of the action. Both the amount of the data involved, and sometimes its inaccessibility, raise doubts that can be an obstacle to make an appropriate and efficient decision in a critical situation. It will be much harder to deal with a high degree of uncertainty, which often happens in PR work. As it is stated in the literature and PR practice, crisis communication is perceived as a part of the public relations field (Fitzpatrick, 1995). Furthermore, it seems that the top management is influenced much more by their PR officers than by their legal counselors (Lee, Jares, Heath, 1999, p. 266). That is why it is so crucial in the process of crisis management to make excellent decisions which do not raise doubts. In the remainder of the paper we present three formal models that can serve as useful tools for supporting PR decisions in a reputation crisis.

4   Cognitive map of a strategic problem in PR

A cognitive map is a useful tool that can facilitate analysis and solution of a complicated problem (Eden, 2004). It is constructed by an individual or a group to better understand the nature of the problem and potential ways of solving it. As such, a cognitive map is a subjective picture of an actual problem, as seen by subjects involved in its solution. In spite of being a simplified model of an actual situation, a cognitive map helps its users to better understand the problem, to structure it and to find the best possible (or at least satisfactory) solution.

Formally, a cognitive map is a digraph in which nodes represent concepts pertaining to a problem and arrows represent causal relations between concepts (because of this feature some researchers prefer to call such a map a 'causal map'). Arrows are labeled with plus or minus signs showing the character of relations. A plus sign means that when the source concept increases (becomes stronger), the result concept increases (becomes stronger), too. A minus sign has the opposite meaning: when the source concept increases (becomes stronger), the result concept decreases (becomes weaker) (cf. Montibeller and Belton, 2006).

Typically, a concept without any outgoing arrow is called 'head' and represents an objective, while a concept with no incoming arrow is called 'tail' and denotes an option (a decision alternative) (Eden, 2004). Usually, heads are lo-

cated at the top of a map, and tails at its bottom. Between tails and heads there are a number of intermediate concepts that provide causal paths linking options with objectives.

In the case of a serious reputation crisis the main objective of the PR campaign is to re-build and strengthen the firm's reputation. A substantial cost will be another – non-desired – effect of PR activities. It is represented by the second top node on the map and can be regarded as a negative objective. The map developed for this case may look as the one shown in Figure 1.
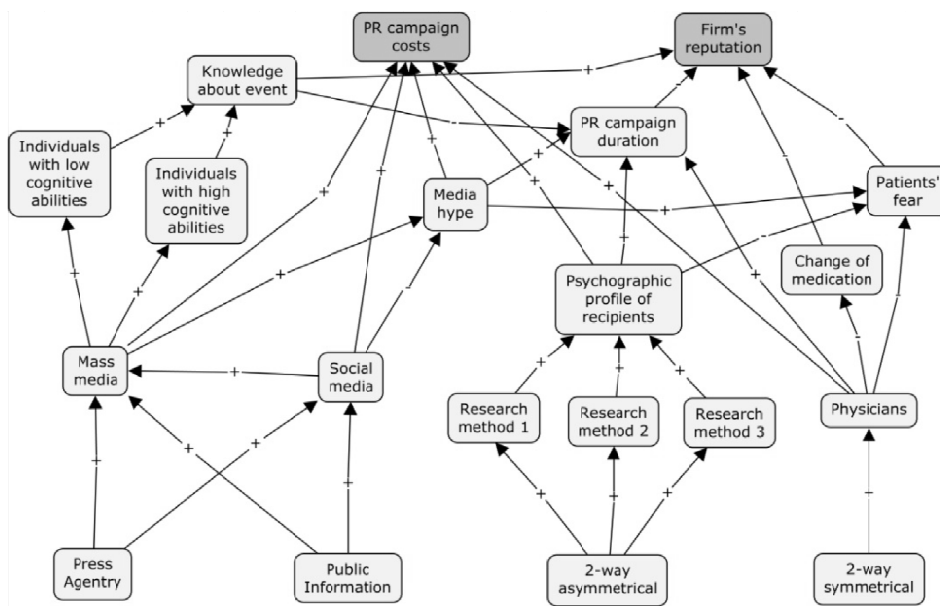

Figure 1. Cognitive map of a PR campaign

At the bottom of the map there are four options – four Grunig's PR models. In this case they can be characterized as follows:

Press Agentry. This option consists in the maximal use of mass media in order to inform the highest possible number of people, regardless of their knowledge and cognitive ability. Using mass media as a communication channel generates high cost because of traditional advertising techniques required.

Public Information. In the case of saving the firm's reputation this model applies persuasion techniques that can be used through social media. This option can lower the cost in comparison with mass media.

Two-way Asymmetrical. The main activity is a study of audiences in order to adapt communication to their profiles. This model is time-consuming and costly.

Two-way Symmetrical. This model is based on a dialog with the public. In our case the main tool is the dialog with physicians to convince them about the credibility of the firm.

A cognitive map is helpful not only in better understanding and structuring of a problem, but it can also be used to perform some qualitative analysis. The most often analyzed feature is the topological characteristics of the map. As we are interested in an evaluation of the options, we would like to determine the causal effect of each tail on each head. Two indices are used for this purpose. The first one is called partial *effect* and is the product of all signs along the path from tail to head. It is positive if the number of minus signs along the path is even, otherwise it is negative. The second is *total effect* of a tail on a head. It is positive if all partial effects of a tail on a head are positive, negative if all partial effects are negative, otherwise it is undetermined.

A map with a small number of nodes can be analyzed manually. For a larger map this may be difficult, so it is better to use a correspondence between digraphs and square matrices (Kaveh, 2013). The *adjacency matrix* for a digraph with n nodes is defined as an $n \times n$ square matrix $\mathbf{E} = [e_{ij}]$, where:

$$e_{ij} = \begin{cases} 0, \text{ if there is no arrow from } i \text{ to } j, \\ 1, \text{ if the arrow from } i \text{ to } j \text{ has } + \text{ sign}, \\ -1, \text{ if the arrow from } i \text{ to } j \text{ has } - \text{ sign}. \end{cases}$$

With the adjacency matrix, the partial effect of node i on node j can be defined as the product of the elements of the adjacency matrix along the path from node i to node j. A path that consists of k arrows has length k. The element of the k-th power of matrix $\mathbf{E}$, $[\mathbf{E}^k]_{ij}$ is equal to the algebraic sum of partial effects calculated along all paths of length k from node i to node j. Additionally, we can use the matrix of absolute values $|e_{ij}|$ to calculate the number of different paths of any length going from i to j.

For the map presented in Figure 1, the partial and total effects of the four options on the two objectives are shown in Table 1.

Table 1: Partial and total effects of options on objectives for the cognitive map of a PR campaign

Option	Firm's reputation			PR campaign's costs		
	No of (+) paths	No of (−) paths	Total effect	No of (+) paths	No of (−) paths	Total effect
Press Agentry	10	2	Undefined	3	1	Undefined
Public Info.	10	2	Undefined	3	1	Undefined
2-way asym.	3	0	Positive	3	0	Positive
2-way symm.	2	1	Undefined	1	0	Positive

Three of the options have undefined total effect on the firm's reputation and only one – the 2-way asymmetrical – a positive effect. But this option has also a positive total effect on the PR campaign's costs. Both Press Agentry and Public Information have also undefined total effect on the PR campaign's costs. Thus, the comparison of total effects does not make clear the differences between the options.

The other topological characteristics such as *potency* or *shortest path* do not help much in our case, either. The *potency* of an option is defined as the number of objectives it influences (Eden, 2004). In our case all options influence both the positive objective (reputation) and the negative one (costs). The option with the shortest path to the objectives can be considered as the most influential (Hall, 2002). In our case the two-way symmetrical model has the shortest path to the firm's reputation (three paths of length 3), but it also has the shortest path (of length 2) to costs (Press Agentry and Public Information have paths of the same length to costs).

Since the qualitative assessment does not give enough information to differentiate among the options[2], we can try to extend our analysis by incorporating some quantitative characteristics into our model. The use of quantitative assessment of causal influences is described in the next section.

5   Aiding PR Decisions with Quantitative Cognitive Map

In the previous section we discussed the use of a cognitive map for deeper understanding and structuring of the problem of a PR campaign. We also analyzed some additional characteristics of the options developed from the topological structure of the cognitive map. However, it turned out that a cognitive map in its original form does not provide enough information to make a well-founded decision. This is not unusual, and researchers tried to develop more extended models to evaluate decision options (Roberts, 1976; Kosko, 1986; Montibeller et al., 2008).

We propose to introduce to the map developed in the previous section, a quantitative assessment of the influence of a source concept on a result concept. For this purpose we use a numerical 9-point scale in which 1 means the weakest influence, and 9, the strongest, with the appropriate sign. Figure 2 presents the cognitive map with the numerical assessments based on the experience of one of the authors (AAM).

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[2]   In the paper Montibeller and Belton (2006) the authors call this effect 'indistinction'.
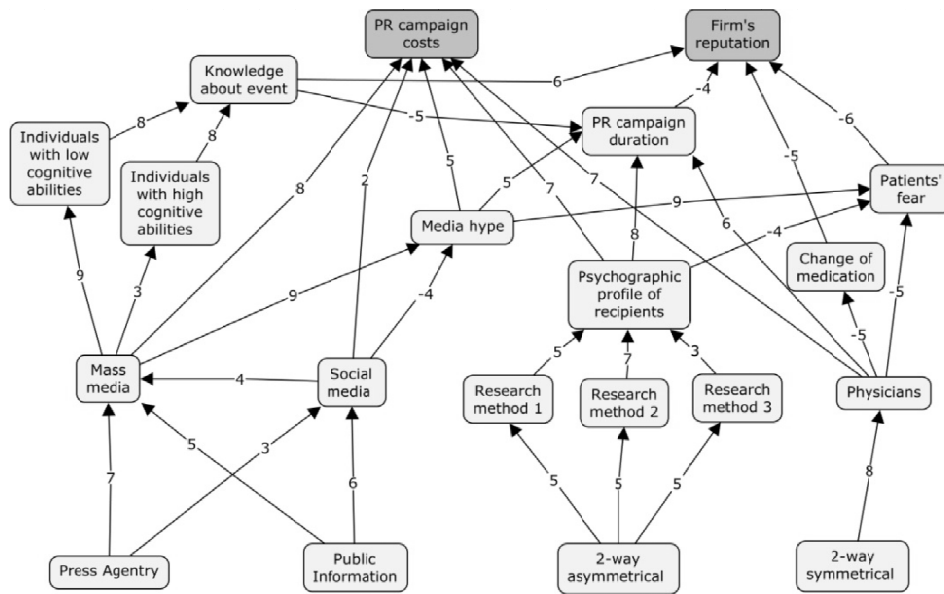
Figure 2. Quantitative Cognitive Map of a PR campaign

We introduce a matrix similar to the adjacency matrix used in Section 4. This matrix differs from the adjacency matrix in that it has numbers from 1 to 9 (with a sign) instead of +1 and −1 only (Roberts, 1976). In this case partial effects will change. In the adjacency matrix they can have three values only: 0, −1, +1, while now they can have many different values, being products of numbers from 1 to 9 (with signs). Consequently, the element (i, j) of the k-th power of this matrix is an algebraic sum of partial effects along all paths of length k. Now we can sum the partial effects along all paths of different lengths to evaluate the influence of each option on each objective. This model has one important disadvantage. In the type of problems considered here, one can expect that the influence along a longer path will be weaker than along a shorter one. But with numbers larger than 1 the effect is opposite[3]. This is why we propose to normalize the evaluations by dividing each of them by 10. After this transformation, all elements of the matrix are lower than 1 and we achieve the desired effect: the influence along a longer path is weaker.

The values of total effects calculated using the normalized matrix are presented in Table 2. They are re-normalized so that the sum of evaluations for each objective is equal to 1. The option 'Public Information' received the highest ef-

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[3]   If a map contained loops (cycles) the partial effect could be even infinite. However, as it is advised to avoid loops in cognitive maps, this effect does not occur. In our case there are no loops in the map and the longest paths contain five segments.

fect on the firm's reputation. The order of the remaining options is: 2) 2-way symmetrical, 3) Press Agentry, 4) 2-way asymmetrical. The ranking changes when we take into account costs (a negative objective): 1) 2-way symmetrical, 2) 2-way asymmetrical, 3) Public Information, 4) Press Agentry.

Table 2: Total effects of the options on the objectives

Option	Firm's reputation	PR campaign's costs
Press Agentry	0,209	0,361
Public Info.	0,352	0,258
2-way asym.	0,127	0,216
2-way symm.	0,312	0,165

To better see the relationships between the options we can draw a 2--dimensional graph with Costs on the horizontal axis and Reputation on the vertical one (see Figure 3). Now it is clearly visible that the 2-way symmetrical option dominates both the 2-way asymmetrical and Public Agentry ones. Also, Public Information dominates Public Agentry.
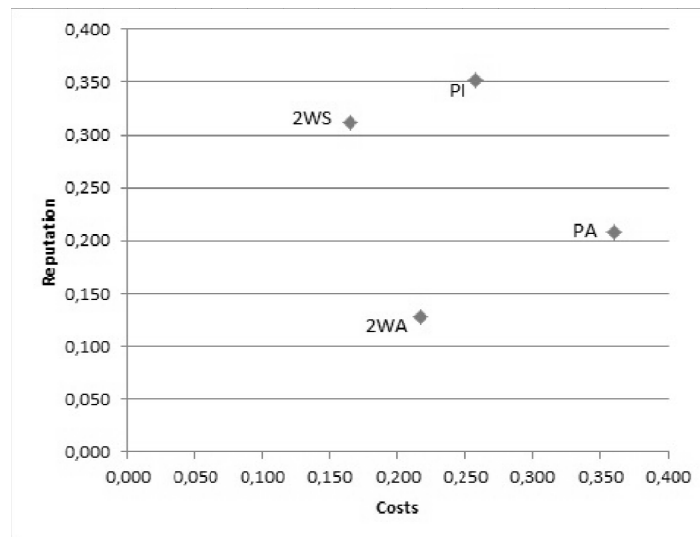

Figure 3. The graph of the options: Reputation vs. Costs

With this model the decision maker can make a more informed decision. For instance, she/he can decide to use the most resources for more effective options: 2-way symmetrical and Public Information, and only a very small part for the other two (in a PR campaign it is practically impossible to completely neglect any of the options).

6   Aiding the PR decision with WINGS

6.1   The WINGS procedure

Here we present the WINGS procedure which is based on the original paper (Michnik, 2013a).

Stage 1. Construction of the model of a problem

At the beginning the user selects n components that constitute the system and analyzes the important interdependencies among them. The result of this step is presented as a digraph in which nodes represent components and arrows represent their mutual influences. The WINGS digraph is a network similar to a cognitive map with quantitative evaluations (see Section 5), but different in two important features: 1) loops (cycles) are allowed; 2) there are only positive influences in the network[4].

Stage 2. Input of data (feeding the model with data)

In the initial phase, the user chooses also verbal scales for both strength of components and their influences. The number of points on the scale depends on the user's intuition. The minimal number suggested is three or four, e.g., low, medium, high, very high (importance/strength or influence). The scale can be expanded by adding, e.g., "very low" and/or other verbal descriptions, depending on the user's needs. Since the scale represents subjective assessments of the user it is not recommended to use a scale with too many points.

Next, the user assigns numerical values to verbal evaluations. This assignment depends on the user's assessment, but for simplicity and to preserve a balance between strength and influence, it is best to use integer values and the same mapping for both measures. The lowest non-zero point on the verbal scale is mapped to 1, which is a natural unit. Since we apply a ratio scale here, the higher points are mapped to the ratios of the corresponding numerical values to the first-level (unit) value. The mapping can be linear or non-linear, depending on the user's evaluation of the relations between concepts in the system.

Stage 3. Calculations

All numbers assigned are inserted into the direct strength-influence matrix $\mathbf{D} = [d_{ij}]$, $i, j = 1, \dots, n$.

– Strengths of components constitute the main diagonal: d_{ii} = strength of component i.
– Influences are the remaining elements: for $i \neq j$, d_{ij} = influence of component i on component j; $i, j = 1, \dots, n$.

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[4] WINGS shares this feature with other similar methods, such as DEMATEL and ANP.

1. Matrix **D** is scaled according to the following formula:

$$\mathbf{S} = \frac{1}{s}\mathbf{D},$$
(1)

where **S** is the *scaled strength-influence matrix* and the scaling factor is the sum of all elements of matrix **D**:

$$s = \sum_{i=1}^{n}\sum_{j=1}^{n} d_{ij}.$$
(2)

2. The *total strength-influence matrix* **T** is calculated from the following formula:

$$\mathbf{T} = \mathbf{S} + \mathbf{S}^2 + \mathbf{S}^3 + \cdots = \frac{\mathbf{S}}{\mathbf{I} - \mathbf{S}}.$$
(3)

Thanks to the scaling defined in Eq. (2) the series in the following formula converges, and thus matrix **T** is well defined (mathematical details can be found in Michnik (2013)).

As already mentioned in Section 4, the correspondence between matrices and digraphs allows an obvious interpretation of the above formulas. The *ij*-th element of $\mathbf{S}^k$ (the *k*-th power of matrix **S**) is the product of influences of component *i* on component *j* taken along the path of length *k* (if there is no such path, that element is equal to zero). Matrix T, as the sum of all powers of matrix S, comprises influences along all paths of any length. An important feature of WINGS is that a non-zero strength of the component also contributes to its total impact. The inclusion of the strength of a component introduces a self-loop into the model. As a result, paths of any length occur in the system and the sum in Eq. (3) contains infinitely many of terms.

Stage 4. Output of the model

Total impact
It represents the influence of component *i* on all other components in the system and is equal to the sum of the elements of matrix **T** from row *i*.

$$I_i = \sum_{i=1}^{n} t_{ij}.$$
(4)

Total receptivity
It represents the influence of all other components in the system on component *i* and is equal to the sum of the elements of matrix **T** from column *i*.

$$R_i = \sum_{j=1}^{n} t_{ij}.$$
(5)

Total involvement

The sum of all influences exerted on and received by component i, that is, $I_i + R_i$, determines the total involvement of component i in the system.

Role (position) of the component in the system

The difference between all influences exerted on and received by component i indicates its role (position) in the system: if it is positive, component i belongs to the *influencing (cause) group*; if it is negative, component i belongs to the *influenced (result) group*.

The analysis performed with WINGS gives the user synthetic profiles of the system components. They result from a combination of two values assigned to each component: its intrinsic (initial) strength and its influence on other components. The values of total impact, total receptivity, total involvement and role allow ranking of the system components.

6.2   Solving the PR problem with the WINGS procedure

The cognitive map developed in Section 4 is a point of departure for the WINGS model of a PR campaign. Since the problem contains opposite objectives, we separate them into two networks. The first network contains beneficial objectives, in our case: strengthening the firm's reputation. The second network contains detriments, in our case: campaign costs and weaker effects of a lengthy campaign. This procedure has been developed by T. Saaty for applications of his ANP method (Saaty, 2005). Both networks are presented in Figure 4 and Figure 5, respectively.
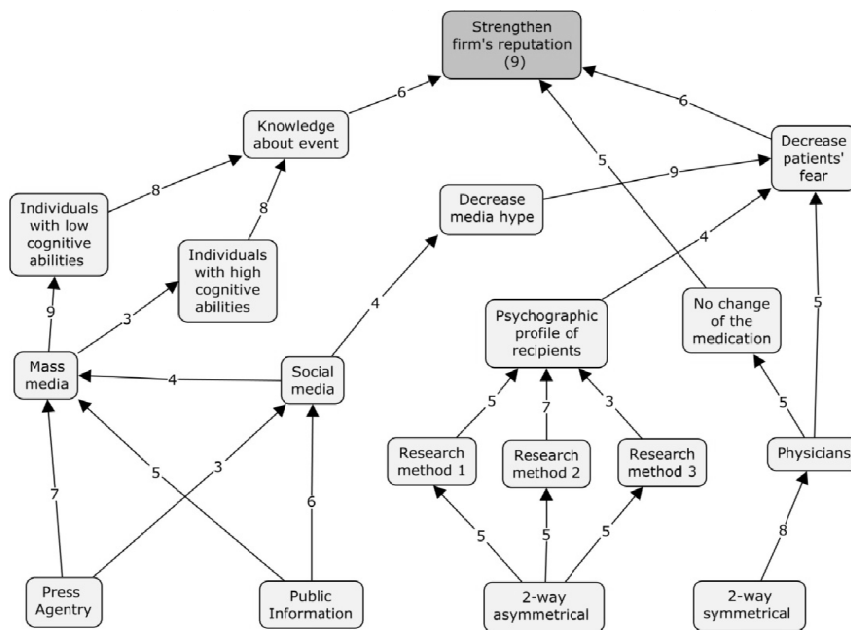

Figure 4. WINGS network of PR campaign – benefits

The interrelations and values are copied from the quantitative cognitive map – this allows, despite obvious differences, to make reliable comparisons between these methods. The difference is in the possibility to include the importance (strength) of some selected concepts. Obviously, this applies to the objectives. 'Strengthen the firm's reputation' obtained the highest value 9 (although it should be noted that this does not change the final result because this is the only objective in the benefits network). The detriments network contains two objectives and here different importance values lead to different results, as they play the role of relative weights. In our case the user assigned the lowest non-zero value to costs (1) and a very high value (8) to the weaker effects of a lengthy campaign. Calculations made according to Stage 3 of the WINGS procedure give the output presented in Table 3.

Table 3: Total Impacts of the options in Benefits and Detriments networks

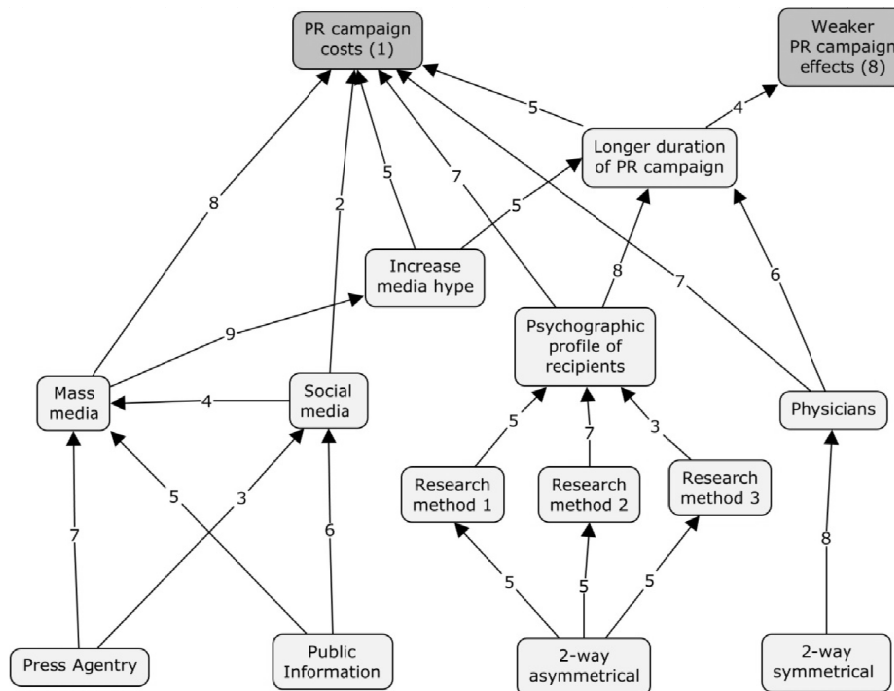| Option	Benefits	Detriments
Press Agentry	0,231	0,233
Public Info.	0,253	0,252
2-way asym.	0,333	0,329
2-way symm.	0,184	0,185

Figure 5. WINGS network of PR campaign – detriments

Similarly as in Section 5, the results can be illustrated with a 2-dimensional graph (Figure 6). A comparison with the quantitative cognitive map reveals the essential difference between the two solutions. First of all, in WINGS, no option dominates the other ones (this may be regarded as a more realistic result). Now the 2-way asymmetrical model is the most effective, but it also has the highest detriment value (in terms of costs and negative effects of the campaign). The 2-way symmetrical model has the smallest value in both dimensions.
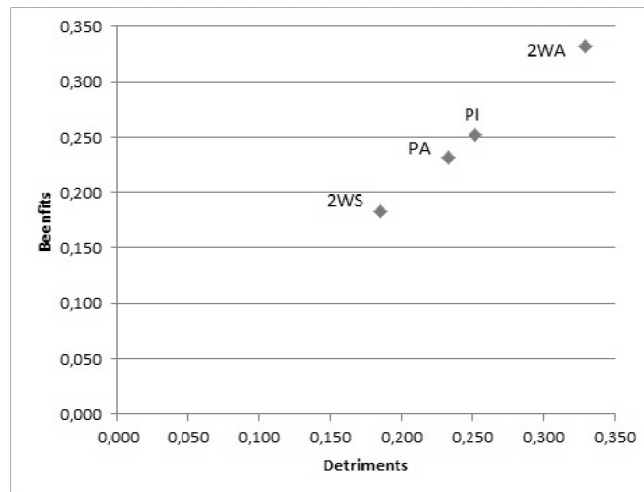

Figure 6. The graph of options: Benefits vs. Detriments

This difference can have several causes, the main one being the method of calculating the final outcome of an option. In the quantitative cognitive map the total effect of an option is the sum of all partial effects on a given objective. In WINGS it is the total impact which comprise the influence on all components of the system. The calculation of a similar measure for the cognitive map is not applicable because the map contains opposite objectives.

With WINGS we are able to aggregate benefits and detriments into a single measure that provides a ranking of options. There are several alternative ways of doing this (Saaty, 2005; Wijnmalen, 2007). In both networks, benefits and detriments, the scales are normalized (the sum of evaluations is equal to 1), so the weights assigned by the user to benefits and detriments directly reflect their relative importance (they also sum up to 1). We propose the following formula:

$$AS(i) = w_b b_i - w_d d_i, \tag{6}$$

where:

$AS(i)$ – aggregated score of option i,

w_b (w_d) – weight of benefits (detriments); $w_b + w_d = 1$,

b_i (d_i) – benefits (detriments) score of option i.

The aggregated scores for the full range of weights are presented in Figure 7. For the decision maker who is focused on benefits, the 2-way asymmetric model ranks first, followed by Public Information. The decision maker who is more sensitive to costs and to the weaker effects of a lengthy campaign will prefer to concentrate on the 2-way symmetrical model (ranking first) and Public Agentry which ranks second.
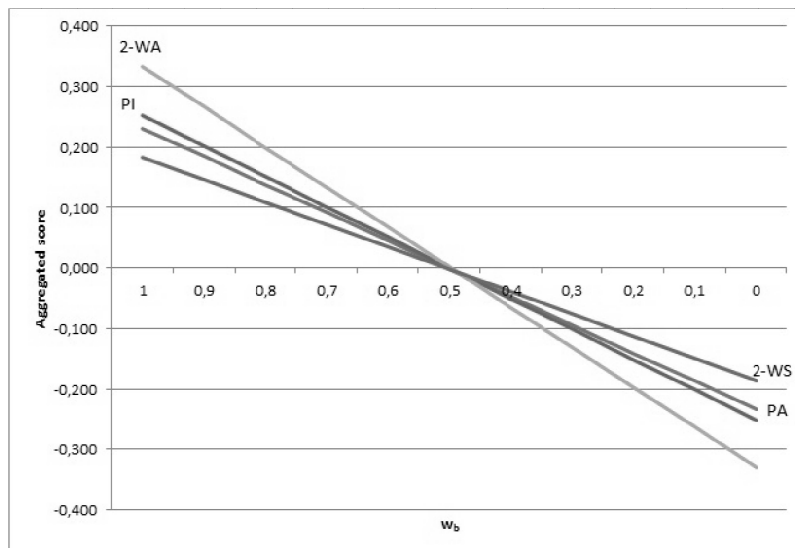

Figure 7. Dependence of aggregated scores of options on the relative weights of benefits and detriments

7   Summary

In this paper we have proposed a structural approach to the decision problem in public relations. This approach draws from formal analysis based on structuring a problem with the aid of causal reasoning and graphical tools. First, the original version of the cognitive map was used to help to determine the important concepts involved in the problem and to analyze the causal relations between them. The cognitive map is a relatively simple tool based on the qualitative assessment of the relations between its components. However, it may be not sufficient to help in decision making because in many cases its results are ambiguous. To obtain a more definite advice a quantitative evaluation may be needed.

An extension of the generic cognitive map with quantitative evaluation is proposed as a more sophisticated approach to obtain evaluations of potential decision options. This is done at the cost of providing more input data – the quantitative assessments of influence. With some technical manipulations (such as normalization), such an approach is possible (the cognitive map has no loops), but even then a ranking of the options is not easy to obtain.

Finally we presented the WINGS method, a general systemic approach that can be applied to solve a variety of complicated problems. Its main distinguishing feature is the ability to evaluate both the strength of the acting factor and the intensity of its influence. When WINGS is used as a tool of multiple criteria decision aiding, the strength (or importance) of the factor plays the role of a criterion weight. WINGS allows the evaluation of alternatives when interrelations between the criteria cannot be neglected. To perform a comprehensive analysis of the PR problem we proposed to use separate networks for benefits and detriments. This approach facilitates the structuring of the problem allowing the user to analyze the positive and negative consequences of the chosen options separately. The outputs of the WINGS network have been aggregated to assign a single score to each option and to rank them.

8   Conclusions

The authors are aware of some simplifications applied in the presented case. However, the aim of this article was to show a practical application of methods for supporting decision-making process in specific PR activities. The chosen example of a reputation crisis is widely known, not only among PR specialists. This case not only shows a method for selecting a communication model appropriate in such a situation, but it also reveals the complexity of the decision--making process, even though it involves one of the most common and best--known processes, which is communication. The task of identifying not only models of communication, but also its means and techniques, is tackled only in a limited way by practitioners and researchers in public relations. Most often it is assumed that the choice depends on the purpose and audience of communication. Proposing the cognitive map as a possible tool is only one example of the use of structural analysis in the practice of PR. Decision making in PR, in times of significant dynamics of the environment and of the development of new communication techniques, becomes increasingly complex and at the same time demands higher responsibility. Therefore, methods and techniques of decision making developed by operational research experts who are supported by information techniques can become increasingly important in the practice of PR.

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