ROOT CAUSE ANALYSIS METHODS AS A TOOL OF EFFECTIVE CHANGE

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Abstract

Companies which operate in reality of the free market economy encounter problems. These problems may come from internal circumstances, such as not achieving planned KPI results, or external, like acquiring necessary resources for fulfilling their liabilities to customers. In order to solve the problem the most important issue is to reach the sources of its formation and eliminate the root causes. Determining those reasons unskilfully can cause delay in solving the problem or give improper solution, which generates additional loss of, for example, time, human resources, customer confidence or cash. Based on the survey conducted in a group of 50 managers, senior and middle management level, here is presented assessment of effectives of these methods. Each respondent was asked to select which of these methods they use, and rated them on a scale from 1 to 5 the effectiveness of the method. In the survey 1 means ineffective method, and 5 perfectly identifies the root cause. Despite the fact that, taking into account the results of the survey, there are many methods to determine the root cause, the most valued methods are: 8D report, "5 why's?" and Ishikawa's diagram. Respondents also noted that often a combination of two methods is used.

Key words: Effective change, root cause analysis (RCA) methods, managing the change, survey results RCA, 8D report.

1. INTRODUCTION

When encountering a problem, it is impossible to solve it efficiently with no access to its root cause. The root cause of a given unfavourable state is considered to be its most harmful feature, condition, behaviour, action and/or idleness. They are all revealed by at least one essential state feature that was a result of more important or more basic features, conditions, behaviours, actions and/or idleness. In the reference literature there are a number of methods which might be applied to analyse

the causes. The presented methods are different from each other in terms of the reasoning method. A deductive reasoning is applied in the Ishikawa diagram, Conflict Resolution Diagram, Why-Why diagram (5 Why?) but induction is applicable to the Current Reality Tree, Why-Why diagram, case study, ABCD method, the Six Thinking Hats technique and the scenario method. The brainstorming and 8D's methods are characterised by both the inductive and deductive reasoning.

A basic purpose of this paper is answer the questions "which method managers of Polish enterprises are currently using and how they assess its efficiency?" and "how one should implement root causes analysis methods in order to achieve the intended goal?".

2. SELECTED ROOT CAUSE ANALYSIS METHODS

The authors selected 10 key RCA methods described in the literature based on preliminary direct interviews with high- and medium-level managers. The performed analysis does not cover all the RCA methods that are available in the reference literature. As part of the above, the FMEA (Failure Mode and Effect Analysis) method was intentionally omitted but was mentioned by the investigated managers. This is related to the fact that the mere method determines the risk of occurring potential problems but it does not aim at determining them.

By contrast, RCA is one of the most useful themes being used by practitioners around the globe for quite a long time in industrial problem solving on quality and productivity, plant safety, accidents, etc. (Kalantri & Chandrawat, 2013, p. 62-67) The theme is continually being developed by the researcher sand practitioners (Bhattacharya, J., 2014 p. 12-20). It can be bifurcated into two broad categories - identification of the potential causes and validation to root cause. Doggett (Doggett, A.M., 2005, p. 34-45) provides a framework formally sing the performance of the three RCA tools - cause-and-effect diagram, interrelationship diagram and reality tree. In order to validate the causes, it needs to be supported by evidence (Eckert, C & Huges, C., 2008, p. 38-43). A Bayesian network has been proposed to identify the root causes in analysing the non-random patterns of SPC charts (Alaeddini, A & Dogan, I., 2011, p. 11230-11243). It has been shown by (Huertas-Quintero et al., 2011, p. 38-46) how RCA can help to implement design for quality if the relationship between cause and effect is known.

2.1. Case Study

A case is a written description of a problem or problems and their analysis. Most cases include the information on the organisation history, its internal actions and environment. The case study might present various problems related to competitors' industry and conditions, products and markets, technological base, managers' personality, organisational structure, financial statements and quantitative data from the domain of production, accounts, marketing and/or staff. A case study of an enterprise makes it possible to get relocated to a realistic situation. The situation makes it feasible to practice the abilities to make managerial decisions. The described

cases are never complete as it would be required by their completeness to give numerous details which is impossible on several description pages. Nevertheless, the information insufficiency is also typical of the real world. In the enterprise it is not always feasible to postpone the decision-making process until the satisfactory quality and available information quantity are obtained. The latter situation does not often take place at all and the decisions need to be made. In this case it is required to make certain assumptions related to the unknown factors or to neglect them. The case study method might be helpful in getting ready for such a situation. It is necessary to realise that a manager should make the best potential decisions in every condition. Furthermore, a basic benefit from applying the cases comes from the mere process of their analysis and not necessarily from the fact that the only right answer discovery has been found.

2.2. Brainstorming

This method makes it possible to express ideas that would not be normally revealed for fear for being suspected of nor seriousness or competency. The method essence is to search for ideas, concepts, solutions and information in order to achieve the intended state i.e. to collect as many ideas as possible and to select the most beneficial one out of them in the possibly shortest period of time.

Therefore, the brainstorm aims at:

- forming the wealth of ideas about the considered problem which leads to achieving the set goal
- improving the ability to cooperate in a team which facilitates the formation of creative atmosphere and encouraging enthusiasm.

The team should consist of approximately 12 people. 1/3 of these people should be laymen. In the team there should not be people in superior-subordinate relationships. The team members intelligence level and communications skills should be ensured to be identical. A session should not last longer than an hour, a creative session is usually divided into several (e.g. 3) stages separated by breaks. In the second session there are 3 participants who are not excessively conservative and know the enterprise strategy and industry potential. The problem should be presented in such a way that it will get criticised. The list with ideas should be returned to the participants in order to be completed. During the second session the ideas are divided into the hot ones (to be applied within a week), the ones dependent on additional research and analyses (1 month) and the useless ones (over 6 months). The results should be announced.

2.3. “Why-Why diagram” (5 Why?)

The why-and diagram is a tree-type diagram and its basis is the assumption that each consecutive statement is specified by asking the question “why”. The diagram is used to assess the network of problem causes and the relations between the problems. The ”Why-Why” diagram implementation results in the possibility to find problem sources with their graphic representation and to develop short- and long-term solutions to the investigated problems.

The "Why-why" diagram variation is a problem analysis by the "5 Why's" method and relies on asking the "why" question 5 times as indicated by its own name. The method objective is to diagnose the "fundamental cause". In Taiichi Ohno's view "it is necessary by the real problem solution to find a fundamental cause, not only its root. The fundamental cause is hidden deeper than the root". For this reason it is justified to ask a question about why a given problem occurred. This makes it possible to indicate the primal malfunctioning with a number of further consequences. As presented, the "5 Why's" method is applied to analyse a 7-stage "practical problem-solving" process.

The "5 Why's" method is merely a constituent part of the tool for identifying and solving problems. As it might be observed, a key solution aspect is to identify the fundamental cause. Due to that it is feasible to take effective preventive actions. The "5 Why's method " belongs to a group of methods to identify fundamental causes.

2.4. Ishikawa Diagram

Another name for the Ishikawa diagram is the "fishbone diagram" or "herringbone diagram" The Ishikawa diagram is an image of mutual correlations between process influencing factors and effects caused by them. The work on developing the chart takes place among numerous employees in the form of brainstorming. Each participant has an opportunity to speak freely as each remark is a step towards the intended objective fulfillment (Bozarth, C. & Handfield, R.B., 2012, p.126).

The diagram formation process relies on specifying the process result that will give rise to making further considerations. The mentioned process result is written on right side of the main horizontal axis. (Muhlemann, A.P., et al., 1997, p. 311). The next work stage relies on indicating main (major) causes. The application of the 5M cause classification appears to be helpful in this case (Bozarth C,. & Handfield, R.B., 2012, p.126) - Man or Manpower, Method, Machines, Material and Measurement.

Other sources (Muhlemann, A.P., et al., 1997, p. 311) also mention another 6th M as "environment and management". Nevertheless, the above described groups of causes are not required to form the Ishikawa diagram. One might specify one's own essential groups every time an individual problem is considered. Such determined main factors are put on the branching directly connecting the main horizontal axis.

2.5. Conflict Resolution Diagram

A conflict resolution diagram is another thinking process used in the Theory of Constraints. The diagram is used to analyse the reasons for forming a system limitation and the attempts to solve it by eliminating a preliminary conflict between the previously chosen assumptions. The Conflict Resolution Diagram structure is very simple. To fulfil the objective at least two situations (needed to achieve the objective – Needs) must occur. Nevertheless, it is necessary to take appropriate actions to make the situations be possible to occur. It might turn out that one cannot perform the actions as they oppose to each other and their simultaneous performance might create

a conflict. Such a conflict might be exemplified by: Prerequisite 1 – increase in investment expenditure, Prerequisite 2 – decrease in the enterprise expenditure.

The Conflict Resolution Diagram is a frequently used problem identification and solving tool. Its popularity is mainly implied by its application simplicity and transparency. This causes that the diagram might be executed in numerous groups by means of the brainstorming method. The tool efficiency might be shown by its application by such recognised authors as Mabin, Davies (Mabin, V.J. & Davies, J., 2003, p. 661–680, p. 670) and Chou, Lu i Tang (Chou, Y.C., et al., 2012, p. 4690).

2.6. Current Reality Tree

The Current Reality Tree comes from the Theory of Constraints. In the enterprise activity improvement the Theory of Constraints is focused on the enterprise internal process and system constraints. A constraint is a resource which makes it infeasible to fulfil the system design objective at a better level (Simatupang, T.M. , et al., 2004, p. 58). The enterprise functioning improvement might occur at 3 levels. There are processes in the entire organisation and their correlations (Gupta, M.C. & Boyd L.H., 2008, p. 997) at the highest level. There are 5 basic organisation improvement steps according to TOC presented below (Goldratt, 2005):

1. Identify a constraint in the system
2. Define how to use the constraint in the system
3. Subordinate everything to the above decision.
4. Raise the constraint in the system.
5. Go back to step 1.

One searches for real reasons for the newly occurred problems by analysing the symptoms observed in the organisation activity. According to this logic one might find traces of making a diagnosis in medicine. While identifying the reasons for biliousness a doctor makes a diagnosis based on symptoms and examination results. Such an action is also applied in enterprises. The right diagnosis makes it possible to focus the activity on the area in which it is the most efficient.

2.7. ABCD Method

Another name for the ABCD method is the Suzuki method. It makes it possible to specify the significance and rank of particular problem causes. This method is very simple and widely used and needs active participation of a carefully selected team of employees. They are experts on their own fields and are knowledgeable about the problem from their own experience. This method might be used in all enterprises regardless of their activity profile and size. The ABCD (Suzuki) method might be applied if it is unknown which causes from their group have the smallest or even minimal influence on the analysed problem. Thereby, the method makes it possible to confine the scope of action by specifying the most significant causes that influence the analysed problem. Once the problem is defined and the work team is selected, the procedure is included in 4 stages:

Ordering the significance indicators from the smallest to the biggest value which makes it feasible for the work team to state which causes have the largest or an average or minimal influence on a given problem.

2.8. 8D Report

8D (8 Disciplines) is a methodology of solving problems related to the possibilities of improving products or goods. This method has 8 stages (Duffy L., 2013, p. 119-120) presented in Table 2.

Every step taken within 8D 's is significant and the next step efficiency is conditioned by its execution precision. The 8D's method is a combination of 3 elements: problem solving process, standardisation and the unified form of reporting results. The method is intended to identify, correct and eliminate repeating problems with goods quality. 8D is applied to analyse and solve both internal and external problems with the enterprise functioning. Their causes are unknown or their significance was not previously determined.

2.9. Scenario method

The scenario method might be applied to consider relations between events and the influence of an object on the environment. This method is used to form long-term quantitative or qualificative or material or non-material forecasts. The scenario should include such information as: the specification of hypothetical situations and their sequential future occurrence and the presentation of existing variants in the case of each event. The variants might facilitate the event occurrence or prevent from it.

The classification of the scenario methods into 4 groups is as follows: scenarios of possible events, simulation scenarios, scenarios of environment states and scenarios of environment processes:

1. The essence of scenarios of possible events is to make lists of events to be taken place in the future and the enterprise capacity to adjust to the above changes. The formation of a scenario related to the development of the situation in the environment is possible due to the design of an appropriate enterprise reaction.
2. Simulation scenarios make it feasible to make an advance value assessment in the case of particular strategic decisions dependent on the environment influence.
3. What the scenarios of environmental states provide is a generalised environment image and are qualitative by nature. The scenarios specify the influence of particular environment process on the enterprise and estimate the probability of their occurrence in the future,
4. The scenarios of processes in the environment are an extension of the environment state scenario method by focusing on the processes with a potentially large impact force on the enterprise.

2.10. Six Thinking Hats technique

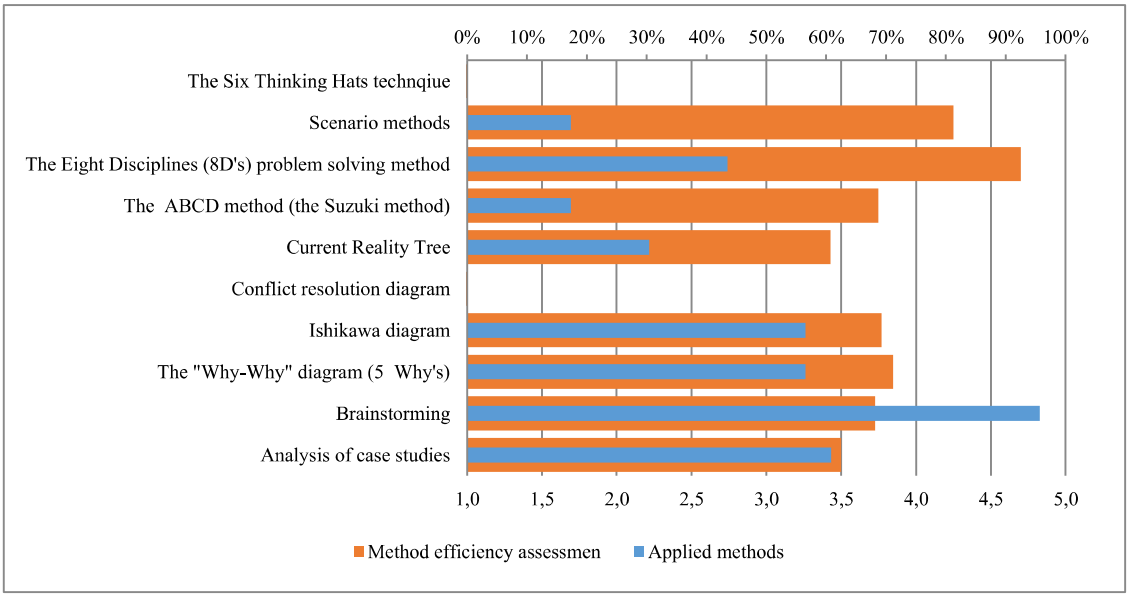
The author of the Six Thinking Hats technique is Edward de Bono and the technique is one of the creative thinking methods. Managers of contemporary enterprises encounter situations and problems which need to be solved by going beyond standard thinking frames. Therefore, modern management may be compared to "creative management" that needs not only creative thinking, imagination and analytical capabilities but also intuition. At the beginning it is required by the application of such techniques to appropriately formulate a problem that will undergo further analysis. It recommended to formulate problems by means of open questions (e.g. "How?" "Why?")

Edward de Bono distinguished 6 styles which people use in the thinking process. As regards to this method, all participants think in a parallel way which means that "all thinkers think in the same direction". The participants simultaneously adopt the thinking style assigned to each hat and express loudly their thoughts related to the ruling colour when the deliberation meeting is in progress. Therefore, each hat executes a different task (de Bono, 1985).

3. RESULTS OF THE RESEARCH ON APPLYING THE ROOT CAUSE SPECIFICATION METHODS IN POLISH ENTERPRISES

One performed survey research among higher- and medium-level managers in Polish enterprises in order to investigate the application of the methods as described in chapter 2 and to get familiar with a subjective assessment of how efficient these methods are. The research embraced large and medium-sized production or logistic service enterprises that function all across Poland. 50 surveyed managers participated in the research that lasted the first 6 months at the turning of 2016 and 2017. Instrument used in survey was questionnaire send via e-mail. From 50 companies 40% are large and 60% are medium-sized companies.The performed research results are presented in Figure 1.

Figure 1. Results of the survey of the familiarity and efficiency assessment of the RCA methods



Source: the authors' own elaboration based on the results of the survey research conducted at the turning of 2016 and 2017

The brainstorming method is the most popular and is used by more than 9 out of 10 surveyed managers. The next 3 methods are the analysis of case studies, "Why-Why" diagram, Ishikawa diagram respectively. All the mentioned methods are applied by more than 50% of the respondents but such methods as the conflict resolution diagram and the Six Thinking Hat technique are not used by the surveyed respondents. Interestingly, the rarely used 8D's report is the most efficient. As regards to the method efficiency hierarchy, the scenario method is at the second position and is used by only 15% of the managers. The efficiency assessment of the most frequently used method, i.e. the brainstorming method looks interesting. Although this method is the most frequently used, its efficiency assessment is rated 3.75 and it is the third result from the end. The results related to the managers' opinion on the 8D's method implementation efficiency inspired the authors to make considerations on its appropriate implementation in the enterprise.

4. 8D's METHOD IMPLEMENATION AND APPLICATION

The 8D's is a multi-stage team actions that are referred to other methods and tools from the quality management area at each stage. Therefore, 8D's is an ordered process that forms an action scheme. The course of actions according to 8 steps should provide a solution to the quality problem by means of various methods and quality improvement tools. 8D's aims at defining and eliminating the causes of these problems. The 8D's method application makes it easier to determine the incompatibility cause and to give an opportunity to verify the completed actions. It should be emphasised that the focus in the 8D's method is put on team work by contrast to other problem solving schemes. The team work is essential to be successful

in fulfilling action stages that require the knowledge not only about the mere production process or the product but also the specifics of the entire enterprise. This tool is very frequently used in modern industries or highly competitive industries where a large emphasis is put on the quality development (Dhafr, N. et al., 2006, p. 536-542).

The next action stages in the 8D's method are presented in table 2. (Chen, H.R. & Cheng, B.W., 2010, p. 339-350) indicated the tools and techniques that are most frequently applied in the practice of production enterprises. The tools and techniques might be applied at particular 8D's method fulfillment stages. In practice problem root causes proposed by single people are put in the 8D's report. The causes are not supported by available methods of broader team analysis methods, e.g. brainstorming, 5 Why?s and cause-and-effect diagram. In turn, this is related to the inappropriate selection of corrective/preventive actions.

8D's specifies a systematic approach to solving problems and documenting the solved problems. The 8D's disciplines/steps with their complementary tools or techniques are presented in table 2.

Table 1 Proposition of applying selected quality management tools and techniques at particular 8D's method stages

Method stage	Name of the stage	Stage fulfilment supportive tools and techniques
D1	Establish a 8D team	Previous 8D's reports, Ishikawa diagram, diagram of relations
D2	Define and describe the problem	Previous 8D's reports, brainstorming, control sheet, comparative analysis, histogram, Ishikawa diagram, FMEA, Pareto chart, ABCD method, process capability, SPC data
D3	Develop and implement interim containment plan	Previous 8D's reports, comparative analysis, risk analysis, FMEA analysis, process capability, Gantt chart
D4	Determine, identify, and verify root causes of the problem	Previous 8D's reports, FMEA analysis, Ishikawa diagram, diagram of relations, matrix diagram, PSVA (Cyplik & Hadas, 2011, LogForum 7, 1, 1.) and others
D5	Verify permanent corrective actions	Previous 8D's reports, ABCD method
D6	Define and implement corrective actions	Previous 8D's reports, flowchart, PDPC chart, Gantt chart
D7	Prevent recurrence	Previous 8D's reports, FMEA analyses, Pareto chart, SPC data
D8	Congratulate your team	Previous 8D's reports,

Source: the authors' own elaboration based on: Chen, H.R. & Cheng, B.W., 2010. A case study in solving customer complaints based on the 8Ds method and Kano model. *Journal of the Chinese Institute of Industrial Engineers*, 27(5), p. 339-350.

The 8D's report chronologically presents the process of identifying corrective and preventive actions and ensures that the solutions, decisions and planning are based on protected data. The problem analysis by means of the 8D's method results in guaranteeing a real solution to the existing problems. The report might be used as a control of action progresses and includes data about both corrective and preventive actions and data related to verifying whether the implemented actions are long-lasting, efficient and effective (Michalos, G. et al, 2010, p. 81-91.)

In his publication *8D structured problem solving: A Guide to Creating High Quality 8D Reports* Rambaud mentions what one should take into account while forming and developing an 8D's report (Rambaud, L., 2006). Both the guidance and the full process course related to completing the 8D's report are presented in table 3.

Table 2 "8D's" process course model

Responsibility	Process course
Department in which the problem was diagnosed	1. Information on the problem. The 8D's report opening Developing steps D0-D3
Quality department	D0 Problem presentation. Description of symptoms.
Quality department	D1 Team formation.
Quality department	D2 Presentation of symptoms by a person responsible for the problem occurrence area Problem identification.
Quality department	D3 Identification and implementation of temporary corrective actions (ICA - Interim Containment Actions)
8D's team	D4 Specification of a root cause or root causes.
8D's team	D5 Planning long-term (permanent) corrective actions (PCA Permanent Corrective Actions). Possible development of several alternative actions.
8D's team and the person responsible for the area	D6 Implementation of long long-term improvement actions. Introducing the most efficient and potentially effective actions.
8D's team and the person responsible for the area	D7 Implementing long-term and systematic actions that prevent the problem reoccurrence.

Responsibility	Process course
Quality department	2. Closing the 8D and the information for the team on the 8D closure
Quality department	D8 Appreciation of team achievements.

Source: the authors' own elaboration based on: Rambaud, L. (2006). *8D structured problem solving: A Guide to Creating High Quality 8D Reports*, 1st ed., Breckenridge, CO: PHRED Solutions, 147.

Before the process of analysing the problem by means of the 8D's report method is commenced, one should collect input data and report the problem. Then the next number is assigned to the report and the report with the problem should be put in the 8D's report register. It is important to describe the problem symptoms in a precise way as they will be useful in the RCA.

Once the problem and its occurrence symptoms are precisely described, the first step is initiated, i.e. the team is established. Its leader should be a person from the quality department or a person responsible for the process with the identified problem. An expert on the problem occurrence domain should be an integral team member. If necessary, the remaining team members might get consulted by representatives of the problem-related areas. It is possible to adjust the team at each process moment dependent on the need related to particular stages or dependent on the identified root causes.

In the second step, i.e. D2, one should collect such input data as: precise problem description, figures, specifications of correct process patterns, known cases of flaws or incompatibilities. If possible, the results of analysing the incompatibilities should be collected. In cooperation with various enterprise departments one should present the inconsistencies and incompatibilities as precisely as possible. If the problem is repeatable, one should put the number of the earlier report and check what the conclusions were and what actions were previously taken. This aims at eliminating a situation in which one will take actions that did not bring the required result in the past.

The next 3D step aims at stopping unrequired problem effects. Once the problem and its effects are precisely analysed, one introduces actions intended to negative process results. The specification of the above actions takes place with the use of consultancies by a person responsible for the problem-included process component or with this person's participation. These actions result in stopping the increase of the problem results or a considerable decrease in negative effects implied by the incompatibilities.

Step D4 is a step related to the RCA by means of such available methods as FMEA analysis, Ishikawa diagram, diagram of relations, matrix diagram, virus analysis or other methods presented in chapter 2 in this article. When this step fulfilment is in progress, it is necessary to examine the data collected in step 2. If it is a repeatable problem, one should verify the results of analysing root causes in the

previous 8D's report. It is necessary to pay attention to the already defined causes and to verify whether there are no other previously undefined causes. If the problem gets repeated several times, one might use the Ishikawa diagram to find the inefficient problem detection cause. This will make it possible to eliminate the cause.

Once the source causes are specified, the corrective actions are specified and planned. These actions aim at eliminating the source causes. As regards to the actions planned in D5, they are intended to eliminate the problem causes by contrast to the D3 actions that should decrease or eliminate the problem effects. Similarly to the D4 step, one should check whether similar actions were implemented to the repeating problem. A particular emphasis should be put on the verification of the proposed actions before they are implemented in order to guarantee their effectiveness and efficiency.

In D6 one implements the actions that were approved in the previous step. A particular emphasis is put on validating selected long-term improvement actions after they are implemented. The D5 and D6 steps might be included in the 8D's report together although they have two separate process steps. One should precisely specify the action execution time and a person responsible for the execution.

When the cause is identified and the improvement actions are implemented, one should move on to step D7, i.e. to apply the actions that will prevent the problem to occur in the future. An example of this action is an update of the control plan, procedures, instructions, process schemes and FMEA. In highly developed enterprises from the automotive industry one also applies a lessons learned tool.

In the last D8 step one should verify whether all the previous steps have been fulfilled and finished and the actions have been executed according to the plan and brought the planned effect. An appreciation of the entire team achievements is a frequently forgotten element of the entire process. The appreciation is of motivate value for the team for the sake of solving similar problems in the future.

The mere problem solving tool possession is not a success determinant. The tool needs to be implemented. The Kotter's 8-step method is the most structured one among numerous change management methods. This method was precisely described by Julien Pollack • Rachel Pollack (Pollack, J. & Pollack, R., 2015, p. 51–66) and is used in many areas of life which is proven by Gala L. and Hladik M. (Gala, L. & Hladik, M., 2016, p. 594-606). In table 4 there are stages with activities that support particular change implementation stages.

Table 3. Accelerators in particular steps of the change implementation according to John Kotter

	Stage	Change accelerators
1	Create Urgency	To make the team realise the urgency of using a big chance. This is of large importance for popularising the awareness that the enterprise needs constant strategic modifications. The modifications should always be suitable to the biggest chance in sight. As Kotter says, the feeling of urgency emerges at the hierarchy top and needs to be constantly confirmed and supported by managers to make the employees wake up every morning with a firm intention to act, execute tasks on the work day in order to approach the strategic

	Stage	Change accelerators
		objective. The constant feeling of urgency gives a firm competitive advantage and might stimulate an army of volunteers and to maintain a dual operating system (the old and new one) in good shape. The feeling of urgency persuades the managers to focus on chances and makes it possible for the network to develop for the benefit of the organisation.
2	Form a powerful coalition	To build and keep the change management team. The strategic network core is the change management team that consists of volunteers from the entire enterprise. All the team members are equal to each other. No integral hierarchy makes the information transfer slower. The team might get familiar with the enterprise environment and interior, notice details and have a general panoramic view. The team might also use all the information to make decisions for the benefit of the entire enterprise. The decisions might be related to what strategic initiatives might be initiated and how to perform them in the best way,
3	Create a Visio of change	To formulate a strategic vision and to grasp transformation initiatives intended to use the big chance. According to Professor Kotter the vision is a compass for the dual operating system. An ideal vision is achievable and easy to be communicated, emotionally attractive and strategically clever. The vision gives the change management team an idea of success, a sufficient amount of information and the feeling of direction. Due to the above the team might rapidly make consecutive decisions with no need to ask permission questions at each bend.
4	Communicate the vision	To present the vision and strategy in such a way that they command the employees' involvement and attract a bigger and bigger army of volunteers. If the strategy and vision are explicitly formulated and assume that a lot is at stake and the change management team promotes them in an authentically involved and haunting way, the employees will talk about them with no cynicism. The cynicism is often awaken by messages that flow in a cascade-like manner through the consecutive hierarchy ranks. If the presentation is appropriately and creatively performed, it might get widespread in a virus-like way and will attract employees that will accept the ambitious message objective and get involved in its fulfilment,
5	Remove obstacles	To accelerate the fulfilment of the set vision and chances due to involving the network in removing obstacles. In this case the team establishes cooperation with additional volunteers that have appropriate information from each domain related to the topic. This aims at fact and efficient acting.
6	Create short-term wins	To celebrate fast, visible and important victories. In Professor Kotter's view people are not too patient so the proves of the strategic objective successful fulfilment should appear early. The most certain success guarantee is given by fast, obvious and unambiguous victories that are explicitly related to the enterprise vision. The celebration of these trophies buoy up the volunteers and persuade the employees to support the vision.
7	Build on the change	To keep the pace and intensity of actions, To keep constantly learning based on one's own experiences. To stop the premature

	Stage	Change accelerators
		declaration of a victory. When the enterprise takes the foot off gas, cultural resistance increases and caucuses get established. Here it is clear once again why the change urgency feeling is so important in the functioning of strategic networks. The notion of the networks is explained in detail by Kotter in the reference article. This notion makes people act. If it is insufficient or neglected from the very beginning, the determination of the army of volunteers gets weaker and they will not resist the temptation to slow down the pace or even to stop. The volunteers will start focusing on their own work within the hierarchical structures and the hierarchy will prevail again.
8	Anchor the changes in corporate culture	To strengthen strategic changes in the enterprise culture. No strategic initiative – neither the big, nor the small one – will be complete until it is anchored in the enterprise everyday activities. A new direction of actions or a newly conceived method needs to sink into the enterprise culture. This will happen, if the initiative starts bringing visible effects and make the enterprise get closer to a strategically better future.

Source: The authors' own elaboration based on: Kotter JP (2012) *Accelerate!: How the most innovative companies capitalize on today's rapid fire strategic challenges*. Harvard Business Review 90: 43–58

One might conduct a change in each organisation by means of the 8-step change management and accelerators as presented above.

5. CONCLUSION

Based on the data collected in the survey research it might be stated that there are a number of different methods to specify the root causes. Eight out of ten of the investigated methods were labelled to be used in a manager's work. Nevertheless, the 8D's report is the most highly ranked in terms of their efficiency. The 8D's report grade 4.7 given by the investigated managers. No other method was assessed as highly as the 8D's report. It is implied by the research that the 8D's report is not the most frequently applied method as it is placed at the 5th position among 10 investigated methods. The reasons for that were mentioned by the surveyed managers. In their view the above method assessment is caused by its multi-stage nature and time-consumption. The 8D's report is doubtlessly a more complex method than the brainstorming method which is the most frequently applied method to analyse root causes. As regards to the efficiency assessment, the brainstorming method is placed at the 6th position. An additional conclusion drawn from the feedback from the surveyed managers is that most of them stated that a combination of 2 or more methods was applied in numerous cases to solve one problem.

It is required by some of the mentioned methods to establish a team of experts or moderators. One group of methods has a precisely formalised methodology. Others are less formalised or not at all. In particular methods one might observe the scaling of problem determining factors or a visual presentation of results. Nevertheless, the

managers, who use the 8D's report, emphasised that this method was the most complex one. It makes it feasible not only to identify the root causes but also to plan corrective, improvement and preventive actions. This enables systematisation of taken actions and a consequent retention of the problem effects.

The 8D method application is possible if the investigated system is a developed system - the epistemological level higher than zero (classification according to Cavallo (Cavallo, 1979)).

In the case of a system at the epistemological level 0, it is required to apply qualitative methods to its assessment due to the lack of data. When analysing the selected methods in this chapter one should state that none of them enables an honest analysis. In such a situation it is recommended to apply a virus analysis to assess the system at the epistemological level 0 (Cyplik & Hadas, 2015).

As part of analysing the system at the epistemological levels 1-3, the management steps as presented in the article will make it possible to effectively implement the 8D's report. Particular attention should be paid to the change accelerators that are a "flywheel" of changes. The omission or careless fulfilment of any Kotter's change steps will cause the planned change objective to be significantly different from the assumed level.

In order to further research into the effectiveness of RCA methods, questionnaires should be conducted in other European countries: both in developed countries and fast growing countries.

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